Note about the content of the abstract book
The organizing and abstract review committees have not made any edits to the content of the abstract. The abstracts are, therefore, presented as they were submitted by the authors.
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The Department of SSPE has the longest history of pre-service and in-service professional teacher training in Hong Kong, making very significant contributions to the professional development of physical education teachers and health professionals in the field. At undergraduate levels, the Department offers two fulltime undergraduate degree Programs, namely, the Bachelor of Education in Physical Education, Exercise Science and Health and the Bachelor of Science in Exercise Science and Health Education. At postgraduate levels, a number of taught Programs are offered to students with diverse academic backgrounds who are interested in gaining a qualification in Sports and Exercise Science. The Department mission is to provide excellent research in Sports Science and Physical Education in order to promote and develop the health and wellbeing of people. In line with the mission and vision of the University, the Department has developed a strong network with many international strategic partners over the past two decades. The Department is ranked 21st and 26th in QS World University Rankings by Subject (Sports-related Subjects) in 2018 and 2017 respectively.

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The Journal of Sport and Health Science, sponsored by Shanghai University of Sport, is a peer reviewed journal dedicated to the advancement of sport/exercise/health sciences. By publishing original research studies, scholarly reviews, systematic review and meta-analysis, opinion papers, and research highlights/commentaries. It’s current SCI/SSCI impact factor is 2.531. For more information visit www.jshs.org.cn.

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Symposium 24
13077: Active Healthy Kids Report Card on Physical Activity for Children and Youth in Asian: Existing Evidence and the Way Forward (Convenor: Prof. Stephen H. Wong)

Department of Sports Science and Physical Education, The Chinese University of Hong Kong

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The Panel on Ageing is Sponsored by

TANITA Health Equipment H.K. Ltd.
Welcome from the President and Co-Chairs

Dear ISBNPA members and delegates,

We are excited to welcome you all to the 17th scientific annual meeting for the International Society of Behavioral Nutrition and Physical Activity; our first in Asia! Hong Kong is a vibrant, densely populated territory in southeast China that is open all hours. The people are extremely warm and welcoming, and you will most likely be overwhelmed with the amazing food choices. Luckily Hong Kong is also highly walkable, so it is possible to burn off all that delicious food.

We have a tightly packed program with 9 workshops, 46 symposia, 213 oral and 87 short-oral sessions. In total we received 862 abstract submissions. We welcome those of you who are attending an ISBNPA conference for the first time and welcome back old friends who are regular attendees. The social program is also busy and we hope you can join us at some if not all of these events.

We have changed our program this year and for the first time we are featuring four outstanding mid-career researchers. Dr Jean Adams, Dr Matthew Buman, Dr Genevieve Healy, and Dr Vivica Kraak will present the latest research in the fields of nutrition and physical activity in a shorter TED-style format. We also have three keynotes from senior scientists in the field (Professor Yeoh Eng Kiong, Professor Corinna Hawkes, and Professor Aubrey de Grey) and continue with our two invited early career researcher and two PhD talks in the program.

With the success of our special panel last year on sugar tax, this year after the Closing Ceremony we will hold another panel on the topic of the "The Future of Ageing". Professor William Kearns will present on the use of technology in the future of ageing and Professor Aubrey de Grey will present a transhumanist view of ageing whereby ageing will eventually disappear. This panel will be Chaired by members of our Ageing Special Interest Group (SIG), Dr Sebastien Chastin and Dr Shilpa Dogra. ISBNPA is proud to continue to support LMIC delegates attend the conference with 10 scholarships provided this year. The SIGs will also be very active, with new awards for the best presentations about the topics they cover, which will be in addition to our usual ones for best overall presentations and posters. We congratulate all the award winners and welcome our scholarship recipients.

We would like to acknowledge and thank the conference Organising Committee, our Executive Director Antonio Palmeira, Kat Duda and Misha Sirois from Venue West, as well as Dr Jane Yu and Elizabeth Leung from the Chinese University of Hong Kong for doing such an outstanding job in creating an exciting meeting that incorporates the breadth of research interests of ISBNPA members and delegates.

We wish you all a wonderful meeting and hope that you learn something new, enjoy catching up with old friends and make some new ones, but most importantly, have a great time.

Best wishes,

Professor Ralph Maddison
ISBNPA President

Alfred Deakin Professor Jo Salmon
ISBNPA Past President, Organising Committee Co-Chair

Professor Stephen Wong
Organising Committee Co-Chair

![Professor Ralph Maddison](image1)
![Professor Jo Salmon](image2)
![Professor Stephen Wong](image3)
Thank you to the ISBNPA 2018 abstract reviewers

The ISBNPA 2018 Abstract Review and Scientific Committees wish to acknowledge the abstract reviewers for the ISBNPA 2018 Annual Meeting. Their expertise is central to the quality of communications of the meeting.

Thank you for your invaluable contribution to the ISBNPA.

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Chair of the Abstract Committee

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Keynote Abstracts

Keynotes

**Professor Yeoh Eng Kiong: Issues of Ageing and Systems Rethinking**

Population ageing is a global phenomenon. Worldwide, the proportion of people aged 65 years and over was 8.5% in 2015, and is projected to reach 17% by 2050. Issues arising from population ageing include increase in health and social care costs; the need to redefine retirement; and concerns related to workforce productivity. Addressing the unprecedented challenges requires a rethink and re-examination of our political, social systems and physical infrastructures. The diversity of older persons is demonstrated by the wide range of intrinsic capacities in the older population, from individuals who are in excellent health, to those who have lost much capacities to function fully without support and aids. The number of older persons with substantial loss of their intrinsic capacity can be reduced through policies, programmes and services that i) reduce prevalence of chronic diseases 70% of which are life-style related, ii) early detection of early chronic diseases and better chronic disease management, and iii) improve the physical and social infrastructures. Unhealthy dietary habits and physical inactivity are major life style factors for chronic disease and aggravate the challenge by contributing to frailty in older persons.

This paper will discuss the issues arising from the ageing population in the context of frailty and health and elaborate on two health system responses, i) developing an infrastructure for an integrated person-centred care system, ii) creating a health-enabling network for health and long term care. In addition, governments also need to invest in strategies for age-enabling communities (1) Collaborative governance comprising government, business sector and civil society, (2) Building social capital for resource transfer, intergenerational solidarity, senior volunteerism and lifelong learning, and (3) Investing in technology for an age-enabling city.

Practically, strategies will need to be person centred and heighten personal lifestyle; re-orient preventive services including evidence-based chronic disease screening; strengthen primary care to make services accessible and affordable; and identify complex interventions to address multimorbidity. Policies should be formulated to expand the existing role of community health centres and team-based person centred; enlist the organized and concerted efforts of different stakeholders; and research to evaluate new models of elderly care.

**Professor Corinna Hawkes: Reshaping Food Systems for Health: Evidence and the Struggle for Real Change**

The world has a problem to solve. It is estimated that at least one out of three people experience some form of malnutrition, including obesity. Diet is the second cause of mortality globally. The state of global public health is therefore hugely influenced by nutrition and what we eat. Food systems can play a fundamental role in changing this. In her presentation, Professor Hawkes will set out how food systems need to change to make a real difference to diets and nutrition - but also how effecting real change in the food system will be a challenging struggle. She will explore the changes that need to be made to align food systems for nutrition-enhancing outcomes and outline the challenges to doing so. She will end with an agenda of we need to do in our own work to meet these challenges, including by aligning with people in other sectors and disciplines who also want to see real change in the global food system.
Dr. Aubrey de Grey: Rejuvenation Biotechnology: Why Age May Soon Cease to Mean Aging

People are living longer than they used to - no longer because of reductions in child mortality, but because we are postponing the ill-health of old age. But you've seen nothing yet: regenerative medicine and other new biomedical technologies will eventually be so comprehensive that people will stay truly youthful however long they live - which means they may mostly live very long indeed. The social and economic consequences of this transition will pervade every aspect of our lives - and we must be ready for it now, because even though these medicines are probably still a couple of decades away, the most seismic changes in society will be those that occur when the world wakes up and realises that the transition is coming, which is probably only a few years away. I will discuss both the biology and the sociology of what will be the most momentous advance in the history of civilisation.

Mid-Career Researcher Keynotes

Is cooking at home the silver bullet?
Jean Adams, University of Cambridge

Consumption of more food prepared at home is associated with a range of positive health outcomes. Conversely, consumption of more food prepared away from home is associated with a range of negative health outcomes. There is some evidence of socio-economic inequalities in consumption of both food prepared at, and away from, home. This has led to interest in home food preparation as a strategy to improve dietary public health and reduce inequalities, with a particular focus on interventions aiming to improve cooking skills. There are a number of problems with this focus on cooking skills interventions to improve dietary public health. There is high prevalence in self-reported basic cooking skills in the population; cooking skills are only one of a range of determinants of preparation and consumption of food prepared at home; and improving cooking skills appears to be low priority for many people. In addition, cooking skills interventions tend to be high-agency, high-risk interventions: targeted at those identified to be most in need and relying on participants to mobilise substantial personal resources to benefit. High-agency, high-risk interventions are likely to be less effective than population strategies and more likely to lead to inequitable outcomes. Finally, there is some evidence that ‘home cooking’ means different things to different people and may be associated with particularly unhealthy dietary components in some groups. These problems are coupled with a lack of conceptual clarity over what ‘cooking’ is and ‘cooking skills’ are.

Smartphones and Wearables: Health Promotion Across the 24 Hours

Dr. Matthew P. Buman, Arizona State University

Health behaviors such as sleep, sedentary, and physical activity make up the 24 hours and are inextricably related, i.e., when we do more of one, we inevitably do less of another. Smartphones and wearable technologies offer new opportunities to assess and intervene upon these behaviors in novel ways that allow us to leverage their dynamic interplay and potentially develop
interventions that are more effective. Dr. Buman will first provide an underlying basis for the dynamic interplay of behaviors across the 24 hours and their synergistic role in the development of chronic disease. He will then provide an overview for the use smartphones and wearables (both research and consumer-based) to assess and intervene on health behaviors across the 24 hours and provide real-world examples of technology-supported intervention approaches that target sleep, sedentary behavior, and physical activity. Finally, he will present a unifying framework for the development and integration of 24-hour interventions can harness technology for behavior change.

**Mobilizing the Business Sector to Create Healthy and Sustainable Food Environments**

Assistant Professor Vivica Ingrid Kraak, Department of Human Nutrition, Foods, and Exercise Virginia Tech

Creating sustainable, resilient and healthy food environments and systems is a grand challenge to address human health and climate change. Every week, about half (48%) of people globally report eating away from home. Future trends suggest that customers will demand more convenient, tasty, affordable, healthy and environmentally conscious choices when eating out. Food industry and restaurant businesses will need to cater to these demands to remain relevant, competitive and profitable. This presentation will explore how restaurant firms can use comprehensive marketing-mix and choice-architecture strategies—the 8 Ps (i.e., ambience and atmospherics, product profiles, portions, pricing, promotion, default picks, priming and prompting, and proximity) to encourage blue nudges (health) and green nudges (environment) for customers. These strategies are applicable to other settings where people select, buy and consume food. I will also examine peoples’ roles as customers, citizens, researchers, advocates and activists to help mobilize and hold a diverse business sector accountable for creating healthy, resilient and sustainable food environments that support “one health” for people and the planet.

**Supporting workers to stand up, sit less, and move more – from research to translation**

Dr. Genevieve Healy, University of Queensland

If you work in an office, chances are that you spend most of your day sitting. And, at the end of the day, you feel tired, stiff, sore and grumpy. Sound familiar? Over the past decade, the Stand Up Australia program of research has been investigating the benefits of reducing prolonged sitting in the workplace. This has included descriptive studies exploring how much workers sit; laboratory studies examining the mechanisms for those physical symptoms; measurement studies evaluating the amount, pattern, and context of sitting; and, intervention trials investigating the feasibility, acceptability, and effectiveness of organisational, environment, and/or individual strategies (and various combinations of these) to reduce sitting time. The results? In short, workplace sitting can be reduced and interventions to reduce sitting are highly acceptable to employers and employees. But, how do these research findings then get taken up into policy and practice? This TED Talk style presentation will showcase the journey I have taken so far across the research to practice continuum. I will also discuss my key learnings so far, including the critical role of industry partnerships, and speculate on “what next?” for supporting workers – and organisations – to stand up, sit less, and move more.

**Public panel: The Future of Ageing**
Meeting the Challenges of an International Aging Population: The Promise of Gerontechnology

Dr. William D. Kearns, Society for Gerontechnology

The care of the world’s aging population increasingly challenges nations with working-age populations that have shrunken due to declining fertility rates and improvements in medical care. The result has been an inverted pyramid of care with many more older adults to care for and fewer laborers. Improved healthcare has contributed to the longevity of older adults have amplified the care challenge rather than lessen it. Nevertheless, technology solutions and environmental enhancements allow adults to remain independent and age in place much longer. This lessens the impact by delaying transition into more expensive long-term care.

The International Society for Gerontechnology (ISG) mission fosters the development of technologies to help people live well to a great age. Its mission today has never been more relevant. Older adults are a large and growing market segment for new technologies that address their desires and needs, especially in rapidly developing Asian marketplaces. In the West new federal policies embracing reindustrialization could potentially trigger significant economic development in this sector leading to a thriving export market.

We contend developers with deep understanding of customers’ requirements and desires will design superior products and services. ISG’s members bring multidisciplinary expertise spanning engineering, anthropology, medicine, architecture, and behavioral sciences. They actively contribute to best practices informing industry and healthcare policymakers via the society’s peer-reviewed journal, Gerontechnology. In my presentation I will define ISG’s goals and mission and describe its roles in worldwide research and educational efforts to provide improved care for older adults.

Recent advances in the damage-repair approach to combating aging

Dr. Aubrey de Grey (SENS Research Foundation)

Aging doesn’t have much of a future - its days are numbered. In this panel I will expand upon some of the topics that I covered in my keynote presentation, with an emphasis on the value that could be obtained today from taking our heads out of the sand and coming to terms with the fact that aging is on the vere of being brought under truly comprehensive medical control. This applies even to those who feel they are probably too old to benefit personally from these advances, since the legacy of the last mortal generation will be that they fought to hasten the defeat of aging, and thereby saved more lives than any other group of people in history.

Symposia

Jun 04, 08:00 - 09:15: Symposia

S.01: 13023: European Fans in Training (EuroFIT): The power of football in living a healthy lifestyle (Convenor: Dr. Femke van Nassau) (Grand Ballroom)

ADAPTING EVIDENCE-BASED GROUP DYNAMICS PRINCIPLES FOR A COMMUNITY-BASED LIFESTYLE INTERVENTION TARGETING CHILDHOOD OBESITY IN LONDON, ONTARIO, CANADA
Burke S M1. 1Western University, London, Ontario.
S.01.1
USING MOTIVATIONAL THEORY TO PROMOTE HEALTH BEHAVIOUR CHANGE IN THE EUROPEAN FANS IN TRAINING (EUROFIT) PROJECT
Silva MN¹, Roberts G², Teixeira PJ¹, La Guardia JG³, Andersen E², Bunn C⁴, Gray CM⁴, Hunt K³, Sorensen M², van de Glind I⁵, van der Ploeg HP⁷, van Nassau F⁷, Wyke S⁴.¹Interdisciplinary Center for the Study of Human Performance (CIPER), Faculty of Human Kinetics, University of Lisbon, Lisbon; ²Norwegian School of Sport Sciences, Department of Coaching and Psychology, Oslo; ³University of California Santa Barbara, Santa Barbara; ⁴Institute of Health and Wellbeing, College of Social Sciences, University of Glasgow, Glasgow; ⁵Institute of Social Marketing, University of Stirling, Stirling; ⁶Radboud university medical center, Radboud Institute for Health Sciences, Scientific Center for Quality of Healthcare (IQ healthcare),Nijmegen; ⁷VU University Medical Center, Amsterdam Public Health research institute and Department of Public and Occupational Health,Amsterdam.

SIG: Theories of motivation

Purpose: Critical evaluation of applied theory is needed for a more integrated understanding of behavior change interventions, their usefulness, and effectiveness. Simply claiming that an intervention is theory-based does not make it so. This paper describes how constructs from Self-Determination and Achievement Goal Theories (SDT & AGT) were used to inform EuroFIT intervention strategies and data from the RCT used to whether the program effected motivational targets. Methods: Alongside other perspectives (e.g. from masculinity theory and previous experience of FFIT), SDT and AGT were integral component of the EuroFIT program and measurement protocol, and will be detailed according to the Theory Coding Scheme (TCS; Michie &Prestwich, 2010). In short, affiliation to clubs was leveraged to engage men, as well as to increase group relatedness, interest in the program, and adaptive motivation for behaviour change. The program was designed to help men develop autonomy and mastery, gradually build competencies through optimally challenging physical activity and dietary changes, and strengthen relatedness through connections to group members and the club. Results: Using the TCS, SDT and AGT will be presented in relation to the EuroFIT intervention development and implementation. We will describe i) relevant constructs of these theories targeted, ii) how they were measured, iii) which behavior change techniques were used to impact those constructs, and iv) how the study design allows for these theories to be tested and refined, including associations among the theoretical construct and whether they changed. Future analyses will test the associations between theory use and intervention effectiveness. Conclusion: Main constructs and strategies from SDT and AGT were used in EuroFIT to develop an autonomy-supportive, task-involving, intervention motivational climate, and these variables were affected by the intervention. The findings represent a first step to explore the efficacy of motivational variables to enhance sustained behavior change in interventions.

S.01.2
EFFECTIVENESS OF THE EUROFIT LIFESTYLE PROGRAM DELIVERED TO MALE FOOTBALL FANS ACROSS EUROPE
van der Ploeg HP¹, van Nassau F¹, Andersen E², Bunn C³, Gray CM³, Hunt K⁴, Jelsma JGM¹, Roberts Glyn², Silva MN⁵, Teixeira P⁵, Wyke S³.¹VU University Medical Center, Amsterdam Public Health research institute and Department of Public and Occupational Health, Amsterdam; ²Norwegian School of Sport Sciences, Department of Coaching and Psychology, Oslo; ³Institute of Health and Wellbeing, College of Social Sciences, University of Glasgow, Glasgow; ⁴Institute of Social Marketing, University of Stirling, Stirling; ⁵Interdisciplinary Center for the Study of Human Performance (CIPER), Faculty of Human Kinetics, University of Lisbon, Lisbon.

SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: The primary aim of the randomized controlled trial (RCT) of the European Fans in Training (EuroFIT) program is to determine whether EuroFIT can help men aged 30-65 years with a self-reported BMI ≥27 kg/m² to increase their physical activity and decrease their sedentary time 12 months after baseline. Methods: A pragmatic, two-arm, randomised controlled trial was conducted in 15 premier football
clubs in the Netherlands, Norway, Portugal and the UK (England). Participants were measured at baseline, post-program and 12 months after baseline. Primary outcomes were changes in total physical activity (i.e. steps per day) and total sedentary time (i.e. minutes per day spent sitting) objectively assessed with the activPAL. Secondary outcomes include weight, BMI, waist circumference, resting systolic and diastolic blood pressure, cardio-metabolic blood biomarkers and food intake. We conducted linear mixed effects regression analyses, including random effects for country and football club, and fixed effects for study group and baseline measurement of the outcome. Results: 1113 male football fans were recruited across the 15 clubs. 560 men were allocated to the intervention group and received the 12-week intervention program. 553 men were randomized to the waiting list comparison group. In both intervention and control group ~90% returned for 12M measures. Data analyses of outcome measures are still underway at time of writing. During the presentation results of the primary and selected secondary outcomes will be presented and discussed. Conclusions: The EuroFIT RCT will provide evidence on the effectiveness of the EuroFIT program delivered in football clubs to their male fans. The results will build on those of the Scottish trial of Football Fans in Training and are relevant to decision-makers considering future investment in lifestyle change programs delivered in professional sports-club settings.

A MIXED METHODS PROCESS EVALUATION OF THE EUROFIT INTERVENTION

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SIG: Implementation and Scalability

Purpose: The aim of the EuroFIT process evaluation is to investigate: (1) how program implementation is achieved in the 15 football clubs and 4 countries; and (2) the processes through which the EuroFIT program affects outcomes. Methods: Data was collected from participants in the intervention arm of the EuroFIT trial using: participant questionnaires (n = 500); attendance sheets and coach reports (n = 360); observation of sessions (n = 30); coach questionnaires (n = 30); usage logs from a novel device for self-monitoring physical activity and non-sedentary behaviour (SitFIT); an app-based game to promote social support for physical activity outside program sessions (MatchFIT); interviews with coaches (n = 15); football club representatives (n = 15); and focus groups with participants (n = 30). Qualitative data were analysed in each participating country using the framework approach, with regular meetings to discuss the coding framework. Quantitative data were analysed descriptively. Convergence matrices were used, as part of a triangulation protocol, to compare findings from across the clubs and countries involved in EuroFIT. Results: The program was very popular amongst the intended target population i.e. overweight men who are engaged football fans. The study received in excess of 3000 expressions of interest for ~1000 places, indicating high demand. Attendance data for EuroFIT suggest that the program was not only attractive, but also compelling: EuroFIT participants attended an average of ~9/12 sessions. Such levels of interest and participation in public health programs are extremely rare. Conclusions: Taken together, this suggests that EuroFIT can access, through collaboration with professional football, an important population who need health-supporting intervention.

S.02: 13128: Scaling Up Childhood Obesity Prevention Interventions from Feasibility, RCT to Translation (Convenor: Dr. Deirdra Chester) (Salon 1-2 )

FEASIBILITY OF EMBEDDING A COMMUNITY NUTRITION PROGRAM INTO A MEDICAL CLINIC SETTING

Shiits MK¹, Diaz Rios LK², Ontai L³, Panarella KH⁴, Styne DM⁵, Townsend MS³,¹California State
University, Sacramento, Sacramento, CA; 2University of California, Merced, Merced, CA; 3University of California, Davis, Davis, CA; 4University of California, Agriculture and Natural Resources, Davis, CA; 5University of California, Davis Children's Hospital, Sacramento, CA.

SIG: Children and families

Purpose: Physicians indicated lack of time and expertise to facilitate pediatric obesity prevention to families within the constraints of a medical office appointment. Existing government funded community nutrition programs have the expertise and staff to do so. The purpose of the study was to test feasibility of embedding an existing community nutrition program into a medical clinic setting to support pediatric obesity prevention. Methods: Physicians were trained to refer families to the intervention and provided with custom prescription referral pads. An 8-week general nutrition, physical activity and parenting intervention anchored with guided goal setting and motivational modeling was deployed in the medical clinic setting over 1.5 years by existing community nutrition program staff. Referral, enrollment, and attendance data were collected. Parent and physician feasibility surveys were administered. Results: Twelve intervention series with parents or caregivers (n=65) were conducted at five medical clinics. Physicians (n=62) generated 375 referrals with one physician referring 36% of patients. One in six referrals led to one parent enrolled. Three attempts by phone were made before reaching each parent. Once enrolled, 85% of parents completed 5 or more sessions, reported nutrition topics (95%) and goal setting activities (84%) as "liked very much" and 84% identified physician referral as an important reason for enrolling. Most physicians (n=17) reported the intervention as useful to parent/patients (82%) and physicians (77%) while 94% thought physicians from other clinics would refer patients to the intervention. Conclusion: The potential for synergism between existing community nutrition programs and family/pediatric medical clinics exists as the community nutrition program would benefit from physician referrals and the physicians and medical clinic would benefit from the parent/patient receiving pediatric obesity prevention intervention. Results from this study indicate this is a feasible strategy as physicians referred patients and parent/patients enrolled and completed the intervention both indicating positive benefits. However, feasibility is contingent upon physician motivation to refer patients and community nutrition program staff time to contact referred patients for enrollment. Funding: This material is based upon work that is supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award number 2015-68001-23280.

S.02.2
TRANSLATING A CLINICAL-BASED FEEDING INTERVENTION TO A COMMUNITY SETTING

SIG: Implementation and Scalability

Purpose: While a growing body of literature suggests that interventions to prevent obesity in early childhood can be successful, most of this work has demonstrated effects within the context of controlled research investigations. Knowledge of the extent to which preventive interventions can be adapted for real world settings is limited, despite the potential of discordance between controlled interventions and practical settings. Food, Fun, and Families (FFF) is a USDA-funded parenting intervention that demonstrated efficacy for reducing low-income children's intakes of saturated fat and added sugars in a clinical research setting. The objective of this presentation is to describe adaptations that took place to scale up FFF for use within the Supplemental Nutrition Assistance Education Program (SNAP-Ed), one of the largest US nutrition education programs. Intervention and implementation outcomes were compared across FFF clinical and SNAP-Ed community settings. Methods: Adaptations, based on Adaptome (2016), included core components, cultural, mode of delivery, target audience, and service setting adaptations. Primary intervention outcomes were children's intake of saturated fats and added sugars, assessed by three 24-hour dietary recalls compared from pre- to post-intervention. Implementation fidelity was evaluated using ratings of adherence to the intervention protocol and overall expertise. Results: Key adaptations to FFF
were a decrease in the number of intervention sessions, changes in intervention locations, and level of training provided to interventionists. Whereas the clinical FFF intervention observed positive changes in saturated fats and added sugars, the community FFF intervention reported significant improvements in dietary fiber and calcium. On average, the extent to which the community interventionists (n=6) adhered to the content of FFF was high. Adherence to the protocol, including the facilitated dialogue techniques, was also high. Conclusion: The results highlight the role and importance of modifying tested interventions to adjust to multiple, practical factors, and better suit different settings to achieve higher reach, adoption, effectiveness, implementation consistency, and maintenance. Documenting modifications is critical to informing future translational projects and should be recorded in future translational studies.

S.02.3  
Preliminary Results of Using Child Feeding Curriculum with an Existing Nutrition Program  
Hughes SO, Power T, Baker SS, Aragon C, Barale KV, Parker L, Lanigan J, Garcia KS. Baylor College of Medicine, Houston, TX; Washington State University, Pullman, WA; Colorado State University, Fort Collins, CO.

SIG: Children and families

Purpose: Childhood obesity rates are particularly high in low-income, minority populations. We developed a family-based prevention program (SEEDS) to promote child eating self-regulation and acceptance of novel foods using self-determination theory. A randomized controlled trial (RCT) on 254 low-income mothers demonstrated that the SEEDS program increased parental responsiveness to child fullness cues, increased parental promotion of novel foods, and improved meal structure through serving appropriate child portion sizes. The current study examines effectiveness of disseminating content from SEEDS program through federally-funded nutrition education programs for families by adding a modified version of the program to the existing Eating Smart ? Being Active EFNEP nutrition program currently being offered in over 40 states and U.S territories. Two implementation methods are being compared: 1) an in-class implementation where videos and in-class activities were added to the Eating Smart ? Being Active program and 2) an online implementation where the participants view online videos and complete online activities after in-person classes. The design is an RCT where participants are randomly assigned to one of the two implementation conditions or to an control group. Methods: Videos from the SEEDS program were modified and additional footage was added to enhance the newly developed in-person and online parenting curriculum. In-class activities and online games were developed to support material in the videos. Participants are mothers who are participating in the existing EFNEP nutrition program in the states of Colorado and Washington. The online and in-person curriculum was piloted with thirty low-income parents. When completed, approximately 350 mothers will have participated in this study. Results: Preliminary pilot results showed significant increases in parental responsiveness during feeding, child involvement in food preparation, use of measured portions, responsiveness to child satiety cues, and offering new foods. The RCT is currently being conducted in two counties in Colorado and three counties in Washington. Conclusions: Extension appears to be an effective way to disseminate feeding information to low-income parents through the EFNEP program. Funding: This material is based upon work that is supported by the National Institute of Food and Agriculture, USDA, 2011-68001-30009 and 2015-68001-23311.

S.03: 13063: Children need skills to be active and they need to think they are skilled: Actual and perceived motor skill in children from Asia (Convenor: Associate Professor Lisa Barnett) (Salon 3-4)

S.03.1  
Perception and reality of movement skill competence in Chinese children  
Diao Y, Cuixiang D, Barnett LM, Li J. School of Physical Education and Health, East China Normal University, , Shanghai; Institute for Physical Activity and Nutrition, School of Health and Social Development, Deakin University, Geelong; School of Sports, Shandong Normal University, , Shanghai.
SIG: Children and families

Purpose: Fundamental movement skill (FMS) ability and positive perceived physical competence contribute to physical activity. Chinese young children have poorer FMS and lower perceived physical competence than children of some western countries. Thus, the purpose was to examine the relationship between perceived movement skill competence and FMS in children in Shanghai. We also explored sex-based differences and whether children changed perception with age. Methods: A total of 192 children (94 boys, 98 girls), aged 6 to 9 years old (8.0±0.84), from two elementary schools participated. FMS (Test of Gross Motor Development-3 comprising seven object control skills and six locomotor skills) and the pictorial scale for Perceived Movement Skill Competence (PMSC) in the same skills were assessed. Independent samples t test assessed sex differences. Stepwise regression analyses examined PMSC as a predictor of FMS, after age and sex adjustment. An interaction between age and skill perception was included in each model. Results: Girls' skills were lower than boys in each domain except actual locomotor skills. Children's PMSC significantly predicted their actual FMS (ßa; = 0.26, t = 4.00, p <.001), explaining 6.3% of the adjusted variance. When separated by subtypes, the locomotor model (ßa; = 0.31, t = 4.40, p < .001) explained more adjusted variance (9.1%) than the object control model (ßa; = 0.13, t = 2.18, p = .03); 1.7% of the adjusted variance. The interaction term was not significant in any of the models. Age was not significant but remained in the model. Sex was significant. Conclusion: Chinese young children's PMSC was associated with their actual FMS confirming Stodden and colleagues' (2008) conceptual model. Yet Liong (2015) found in Australian children that only boys' perceived and actual object control skills were significantly associated, suggesting there may be cultural differences regarding relationships between PMSC and actual FMS. Chinese young children have less experience in object control skills than children of other nations. Also, the National Physical Fitness Test for Students contains few object control skills (Diao YC, Li Jing, 2013). It is therefore important to promote Chinese children's FMS (particularly in ball skills) as a strategy to increase physical activity.

S.03.2

IMPROVING FUNDAMENTAL MOVEMENT SKILLS IN HONG KONG PRIMARY SCHOOL CHILDREN: THE A + FMS CLUSTER RANDOMIZED CONTROLLED TRIAL

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SIG: Children and families

Purpose: Hong Kong is a densely populated city; there is limited space for physical activity in many districts within the territory. To some students, school physical education (PE) is the only platform for their development of fundamental movement skills (FMS) and perceptions of physical competence, which is related to their physical activity (PA) participation throughout their lifespan. Developing children's confidence and competence in FMS requires formative assessments to inform instruction and learning. However, few studies have examined the impact of teaching and assessment strategies on children's perceived and actual FMS. This study aimed to evaluate the efficacy of an assessment-based intervention that emphasizes fun, mastery, and support (A+FMS) on FMS, perceptions of physical competence, movement skill competence, teacher support, and enjoyment of primary schoolchildren. Methods: Utilizing a cluster randomized controlled trial, 282 students from 10 Grade 3 classes (from 5 schools) were randomly assigned into an experimental group or a wait-list control group. Teachers in the experimental group attended a six-hour training workshop and integrated 550 minutes of Assessment for Learning strategies into school PE for 8 to 13 weeks. Data from objective assessments of students' movement skills (i.e., jump, skip, hop, overhand throw, dribble and catch), self-reported perceptions of physical and movement skill competence, teacher support, and enjoyment were collected at pre- and post-intervention. A 3-level (time within student within class) multilevel analysis was conducted to determine the effects of the intervention. Results: Significant intervention effects were found for locomotor skills (between group difference = 2.47 units; 95% CI [0.81, 4.14]), overall FMS competence (3.72 units, 95% CI [1.43, 6.01]) and perceived teacher support (0.21 units, 95% CI [0.00, 0.41]). Intervention-group students had significantly lower perceived physical competence (-0.16 units; 95% CI, [-0.31, 0.02]) than the control group. Conclusions: An assessment-based teacher-led FMS intervention was effective in improving FMS proficiency in primary school children. The decrease in perceived competence highlights the needs for
primary PE to expand the focus in developing positive perceptions of skill competence among children, in addition to its role in facilitating the development of FMS.

S.03.3
THE EFFECTS OF AN INDO-SKIP MOTOR SKILL INTERVENTION ON INDONESIAN PRESCHOOLERS' MOTOR COMPETENCE AND PERCEIVED MOTOR COMPETENCE

Bakhtiar S¹, Famelia R², Goodway JD².¹Universitas Negeri Padang, Padang, , West Sumatera; ²The Ohio State University, , Columbus, Ohio.

SIG: Children and families

Purpose: Research has demonstrated the contribution of motor competence and perceived motor competence to physical activity in childhood. Thus, this study examined the impact of a fundamental motor skill program called INDO-SKIP on Indonesian pre-schoolers' motor competence and perceived motor competence. Methods: The INDO-SKIP program was taught by trained preschool teachers for eight weeks, two sessions/week, for 30 minutes/session (480 min). Participants were 156 (girls n=87) Indonesian pre-schoolers aged 47 to 83 months (M=69.32 mos., SD=5.35) recruited from four kindergarten centers in a large city in West Sumatera, Indonesia. Classrooms were randomly assigned to the INDO-SKIP intervention or the control group. Pre-schoolers were pre and post tested on: 1) Motor Competence, measured by Movement Assessment Battery-2 (MABC-2) for age band 1: 3-6 years, and 2) Perceived Motor Competence, measured by the Perceived Physical Competence subscale (PPC) of the Pictorial Scale for Perceived Competence and Social Acceptance for Young Children, and the Pictorial Scale of Perceived Movement Skill Competence (PMSC). Three, 2 Group x 2 Time repeated measures ANOVAs (Manual Dexterity, Balance, and Total Motor Competence) were conducted. Results: To date, there is no prior evidence of using MABC-2 to collect motor competence of Indonesian children. At the pretest, on average children were at the 45th percentile (SD=34.42) for Manual Dexterity, 50th percentile (SD=27.81) for Aiming and Catching, 91st percentile (SD=20.79) for Balance, 70th percentile (SD=29.74) for total motor competence, and felt "pretty good" (3.3 on both PPC and PMSC) about their motor skills. It was found that from pretest to posttest, children improved significantly on Manual Dexterity (F[1,154]=23.44, p<.001, h2=.13); Balance (F[1,154]=10.32, p=.002, h2=.06); and Total Motor Competence (F[1,154]=41.77, p<.001, h2=.21), with no interaction effects. Since there was significant pretest differences between groups on Aiming & Catching, PPC, and PMSC, two-way ANCOVAs were conducted on those variables. There was a significant effect of intervention on children's PPC (F[1,153]=12.34, p=.008, h2=.05) and children's PMSC (F[1,153]=12.84, p<.001, h2=.08). However, there was no significant improvement on children's Aiming & Catching skills. Results Overall, this study shows that INDO-SKIP program can improve Indonesian pre-schoolers' motor competence and perceived motor competence.

S.04: 13186: DEBATE SYMPOSIUM: Interventions based on behavioural theory work in the real world (Convenor: Dr. Derwin Chan) (Drawing Room)

S.04.1
IN FAVOR: INTERVENTIONS BASED ON BEHAVIORAL THEORY WORK IN THE REAL WORLD

Hagger Martin¹.¹Curtin University, Perth, Western Australia.

SIG: Theories of motivation

Objective. I contend that theories derived from behavioral science, and the evidence base developed applying these theories to understand processes in health behavior, can be, and are, effective in informing population-level interventions to promote greater participation in physical activity and eating behavior. Method. I conducted a brief review of primary research, systematic reviews, and meta-analyses applying theory in behavior change interventions in physical activity and healthy eating based on an electronic database search. Results. I demonstrate how researchers have developed an evidence base of behavioral theories that work in changing behavior at the population level, including identification of key mediators.
that 'do the work' in changing behavior. I outline how this evidence has informed large-scale interventions that are optimally effective in changing behavior, through systematic 'mapping' of theoretical constructs onto methods that form the 'active' content of interventions. I cite examples of 'real world' interventions based on behavioral theory and the evidence base that have been effective in changing health behavior at the population level. In contrast, I contend that the absence of a theoretical framework precludes any understanding of how a behavioral intervention works. This limits policymakers' ability to infer whether an intervention will be effective across contexts and populations, identify which components of the intervention lead to change and which are redundant, and assess how extraneous variables may magnify or diminish intervention effects. Clear evidence of how interventions work, their active content, and whether they will likely be effective across populations is essential information on which policymakers need to rely when deciding which interventions to support and fund. I contend that failure to evoke consistent long-term population-level behavior change is a due to systemic failure of policymakers to put theory-based behavioral interventions known to be effective into practice, or failure to invest sufficient resources in to do so. Conclusions. I conclude that theory-based interventions work, and are eminently translatable to large-scale interventions to change health behaviors. I contend that interventions that are not based on theory are likely to be inefficient and less effective, and may not generalize across contexts and populations.

S.04.2
OPPOSING: INTERVENTIONS BASED ON BEHAVIORAL THEORY DO NOT WORK IN THE REAL WORLD
Weed Mike¹.¹Canterbury Christ Church University, Canterbury, Kent.

SIG: Theories of motivation

Objective: I argue that, despite showing promise at individual intervention level, behavioural theories have done little to shift population behaviours and thus improve public health, particularly in relation to physical activity and diet. Method: I have analysed global data on physical activity, eating behaviours and obesity, and national data for a mixed sample of developed and developing countries. Key national policies and programmes in the sample countries were identified, as well as the evidence bases for their implementation and evaluations of their effectiveness, including the extent to which behavioural theory features. Results: I summarise data that shows that, despite 30+ years of interventional research applying or developing behaviour change theories, progress towards shifting population behaviours has been glacial, and in some significant cases population health has deteriorated. Evidence bases are often underpinned by elements of behavioural theory, but population behaviours have not shifted for three reasons. Firstly, evidence bases are often an agglomeration of efficacy evidence from small-scale interventions which have not been properly synthesised, nor tested for effectiveness in phase IV trials. Thus, behavioural theory is shown to have promise in the hothouse of the lab or the controlled environment of phase I-III trials, but is rarely systematically tested for effectiveness in diverse populations. Secondly, behavioural theories are often presented in ways that are too complex to be scalable and inform national policies and programmes. Consequently, only "remnants" of theory remain, often as explanatory devices or frameworks rather than agents of change. Thirdly, national time-series data shows that despite static population behaviours, individual behaviours are significantly volatile, which I argue suggests behavioural interventions: (a) don't stick; (b) reflect behavioural volatility over time rather than influencing behaviours. Conclusion: I conclude that, for the reasons outlined, behavioural theory has been ineffective in shifting population behaviour over time. However, I also speculate as to whether attempts to use behavioural theory to drive national policies and programmes have resulted in negative public health outcomes, and that theory contaminates rather than improves national policies and programmes. In this respect, I ask whether behavioural theory may be, literally, worse than useless.

S.04.3
DEBATE DISCUSSION: INTERVENTIONS BASED ON BEHAVIORAL THEORY WORK IN THE REAL WORLD
Chan Derwin¹, Chatzisarantis Nikos¹.¹University of Hong Kong, Hong Kong; ²Curtin University, Perth, Western Australia.
SIG: Theories of motivation

This is a 40-minute discussion of the debate participants and the audience moderated by the Chair, Dr. Derwin Chan and Discussant Prof. Nikos L. D. Chatzisarantis

S.05: 13058: Health promotion focusing on men: how to engage men in lifestyle interventions? (Convenor: Prof. Greet Cardon) (Lounge )

S.05.1
THE FATHER'S ROLE IN CHILDHOOD OBESITY PREVENTION: INVESTIGATING THE ASSOCIATION BETWEEN FATHERS' HEALTH STATUS AND THE WEIGHT STATUS AND HEALTH BEHAVIOURS OF THEIR YOUNG CHILDREN.
Latomme J., Van Stappen V., Huys N., Cardon G., Lateva M., Lindstrom J., Kivela J., Gonzalez-Gil E M., De Miguel-Etayo P., Nanasi A., Androutos O., Kolozsvari L R., Manios Y., De Craemer M., Chakarova N., Ghent University, Ghent; Medical University Varna, Varna; National Institute for Health and Welfare, Helsinki; University of Zaragoza, Zaragoza; University of Debrecen, Debrecen; Harokopio University, Athens; Medical University of Sofia, Sofia.

SIG: Children and families

Objective. To investigate the association between Belgian fathers' health status and the weight status and health behaviours of their primary school-aged children. Methods. Belgian parents of primary school children (n=1369) filled out a questionnaire on their child's physical activity (PA) and sedentary behaviour (SB), and their risk for type 2 diabetes (T2D) using the FINDRISC questionnaire (including questions on PA & fruit & vegetable (FV) intake). During home visits anthropometric data were recorded of both parents and their child (height, length and waist circumference). Multiple linear regression analyses were conducted. Results. After controlling for factors related to the mother that may influence the outcome variables (e.g. mothers' risk on T2D, mothers' age, etc.), significant associations were found between fathers' health status and their child's weight status, PA and SB. Fathers' T2D risk score, Body Mass Index (BMI) and age were significant and positive predictors of the child's body weight, while fathers' FV intake was inversely associated with the child's body weight. Fathers' PA was a significant and positive predictor of the child's PA, while fathers' T2D risk score was inversely associated with the child's PA. Last, the child's SB was significantly and positively predicted by fathers' T2D risk score and age, and fathers' FV intake was inversely associated with the child's SB. Fathers' T2D risk score explained up to 5.5% of the variation in the child's body weight, PA and SB. The other significant predictors (fathers' BMI, fathers' age, fathers' FV intake and fathers' PA) explained up to 10.7% of the variance in the child's body weight, PA and SB. Conclusions. The results show that there are statistically significant and important associations between Belgian father's health status and their children's weight status and health behaviours (PA and SB), independent of the health status of the mother. This highlights the unique influence that fathers have on their children, and as some of these factors can be addressed (e.g. father's BMI, father's PA and/or FV intake), a rationale is provided for developing lifestyle interventions targeting fathers to improve the health and healthy lifestyle behaviours of fathers and their children.

S.05.2
THE POWER OF FOOTBALL – ATTRACT AND MOTIVATE MALE FOOTBALL FANS TO CHANGE UNHEALTHY LIFESTYLES

1VU University Medical Center, Amsterdam Public Health research institute and Department of Public and Occupational Health, Amsterdam; 2Norwegian School of Sport Sciences, Department of Coaching and Psychology, Oslo; 3Institute of Health and Wellbeing, College of Social Sciences, University of Glasgow, Glasgow; 4Institute of Social Marketing, University of Stirling, Stirling; 5University of California Santa Barbara, Santa Barbara; 6PAL Technologies
Parenting improvements (e.g., new understanding of the father role, improvements in parenting beliefs and general inductive approach. Results: Qualitative analysis of the interviews yielded four themes; (i) analysis by an independent researcher. The qualitative analysis was conducted stratified by baseline physical activity status. The interviews were transcribed and analysed using thematic one participated in the study, 23 were randomly selected (mean (SD) age: 41.4(4.8) years) to participate in a intervention. Methods: Of the 115 fathers who participated in the study, 23 were randomly selected (mean (SD) age: 41.4(4.8) years) to participate in a on one semi-structured interview about their perceptions of the program and its impact. Selection was stratified by baseline physical activity status. The interviews were transcribed and analysed using thematic analysis by an independent researcher. The qualitative analysis was conducted in NVIVO 9 using a general inductive approach. Results: Qualitative analysis of the interviews yielded four themes; (i) Parenting improvements (e.g., new understanding of the father role, improvements in parenting beliefs and

SIG: Theories of motivation

Purpose: Lifestyle interventions targeting physical activity, sedentary time and dietary behaviours have the potential to initiate and support behavioural change and result in public health gain. Although men have often been reluctant to engage in such lifestyle programs, many are at high risk of several chronic conditions. We have developed an evidence and theory-based, gender sensitised, health and lifestyle program (European Fans in Training (EuroFIT)), which is designed to attract men through the loyalty they feel to the football club they support. Methods: EuroFIT builds on the success of the Scottish Football Fans In Training (FFIT). EuroFIT is a 12-week group lifestyle program for overweight middle-aged men delivered at professional football clubs throughout Europe. It aims to improve physical activity, dietary and sedentary behaviours by means of behavioural change techniques, social group support, a unique pocket worn activity tracker (SitFIT) that allows real-time self-monitoring of steps and sedentary time, and an online team game to encourage walking (MatchFIT). EuroFIT explicitly targets theory-derived mechanisms of action (e.g. autonomous motivation, task-oriented goals), makes use of the most evidence-based self-regulation techniques (e.g. self-monitoring, goal setting, implementation intentions) and is also informed by sociological theory and how gendered identities relate to health behaviours. EuroFIT aims to attract men from all walks of life, including socially disadvantaged groups. EuroFIT is evaluated in fifteen clubs in the Netherlands, Norway, Portugal and the UK (including Arsenal, Benfica, PSV, and Rosenborg). Results: Recruitment and retention rates were high in EuroFIT, with several clubs over recruiting in just a couple of days, which illustrates the enthusiasm and interest from male football fans in the program. Methods for recruitment and the toolbox of behaviour change techniques to initiate and sustain long-term lifestyle changes will be discussed as well as how the program is gender-sensitised in relation to context, content and style of delivery. Conclusions: Using the power of football, we can attract inactive overweight male football fans to a healthy lifestyle program delivered at their club, a high-risk group who is often underrepresented in other health promotion programs.

S.05.3

“IT HAS REALLY OPENED MY EYES”: EVALUATING THE BROADER IMPACT OF A PHYSICAL ACTIVITY INTERVENTION TARGETING DADS AND DAUGHTERS.

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SIG: Children and families

Purpose: This study explored the experiences of fathers who participated in the ‘Dads And Daughters Exercising and Empowered’ (DADEE) randomized controlled trial. DADEE was the first physical activity program internationally to explicitly target fathers and daughters. The program also provided fathers with positive role modelling and parenting strategies to improve their daughters’ physical and social-emotional well-being. During the trial, fathers and daughters both demonstrated significant and sustained increases in physical activity, which were maintained at 9 months post-intervention. Methods: Of the 115 fathers who participated in the study, 23 were randomly selected (mean (SD) age: 41.4(4.8) years) to participate in a one-on-one semi-structured interview about their perceptions of the program and its impact. Selection was stratified by baseline physical activity status. The interviews were transcribed and analysed using thematic analysis by an independent researcher. The qualitative analysis was conducted in NVIVO 9 using a general inductive approach. Results: Qualitative analysis of the interviews yielded four themes; (i) Parenting improvements (e.g., new understanding of the father role, improvements in parenting beliefs and
practices), (ii) Improved family physical activity patterns (e.g., improvements in their daughter's physical activity and family co-physical activity), (iii) Gender roles (e.g., new awareness of the need for gender equity in sport), (iv) Broader social impact (e.g., profound improvements in the father-daughter relationship, co-parenting practices, and daughters' social emotional well-being). Conclusions: This qualitative analysis provided novel data regarding potential mechanisms which may have contributed to the sustained physical activity improvements observed for both fathers and daughters who participated in DADEE. Importantly, the program provided fathers with a newfound awareness of their unique and important influence on their daughter's physical activity behaviour. Through the DADEE program, fathers also identified improvements in their parenting practices and beliefs and were motivated to improve their daughters' physical, social and emotional development through one-on-one time and co-physical activity. Fathers also reported that the program was instrumental in changing their way of thinking in addressing gender inequities. Targeting these outcomes in future research may be a useful way to engage and assist fathers and daughters to improve their physical activity levels.

S.06: 13087: Active transport and active sites for children in high density cities (Convenor: Dr. Nicolas Oreskovic) (CES 2-3)

S.06.1
LIVING IN SCHOOL CATCHMENT NEIGHBOURHOODS: PERCEIVED BUILT ENVIRONMENTS AND ACTIVE COMMUTING BEHAVIORS OF CHILDREN IN CHINA
Sun Guibo1, Han Xili1, Oreskovic Nicolas1,1Faculty of architecture, the University of Hong Kong, Hong Kong; 2School of urban design, Peking University, Shenzhen; 3Havard medical school, Boston.

SIG: Policies and environments

Objectives: Little is known about the pattern of school commuting in China where physical inactivity has increased among children in recent decades. This study aims to estimate the proportion of children living within walking-distance neighbourhoods who actively commute to school taking consideration of China "attending nearby school" education system, and to identify the built environment characteristics that correlate with active school commuting behaviors in China. Methods: We recruited 1,090 children in Shenzhen to estimate the proportion of children living within walking-distance neighbourhoods who actively commute to school taking consideration of China "attending nearby school" education system, and to identify built environment characteristics that correlate with active school commuting behaviors in China using multilevel modelling. Results: We found three out of four children (N=805) lived within their school catchment area in our study samples, of which 87% were active commuters. Perceived points of interests along routes were positively associated with active travel. Safety was associated with different routes choices to and from school. Compared to children who commuted alone, children who travelled with classmates or parents were less likely to use different routes to and from school. Conclusions: This study highlights the importance of considering the local context of school catchment planning in understanding school commuting behaviors in mainland China.

S.06.2
SITE PREFERENCE AND AFTERSCHOOL PHYSICAL ACTIVITY IMPACT OF CHILDREN IN CHINA
Han Xili1,1School of Urban Design, Peking University Shenzhen Graduate School, Shenzhen.

SIG: Policies and environments

Objective: Children in China finished the school in afternoon very early. The afterschool physical activity is thus very important. We aim to understand the site preference and its impact on children's afterschool physical activity in China. Methods: We selected three primary schools with 12 classrooms to conduct our survey. Students (N=395) finished physical activity diary in one week. Information was collected including the durations, types, sites, companionship and extracurricular classes. Multiple linear regression models were used for data analysis. Results: We found Moderate to Vigorous Physical Activity (MVPA) is associated with active travel mode choice, companionship with friends, and exercise in playground after
Male has a higher MVPA. Sites, including school playground, home area and neighbourhood open space with facilities for children, were associated with a richer type of MVPA. Home area and neighbourhood open space can attract a richer type of MVPA, but children had a lesser duration than school playground. Extracurricular classes took much time of children, but has increased the frequencies of MVPA of the children. The street in neighbourhood had a marginal effect on children's afterschool physical activity. Conclusions: Site preference influenced children's afterschool physical activity in China. An elaboration of the sites can help tailoring effective interventions for physical activity promotion.

S.06.3
PERCEIVED NEIGHBORHOOD ENVIRONMENT AND INDEPENDENT MOBILITY AMONG CHILDREN RESIDING IN AN ULTRA-DENSE METROPOLIS
Huang W Y¹, Chow B C¹, Department of Physical Education, Hong Kong Baptist University, Kowloon.

SIG: Policies and environments

Objective: The freedom of children to move around in their neighborhood without adult supervision is known as independent mobility (IM). Such unsupervised travel has been found to be beneficial to psychosocial, cognitive and developmental health for children. This study reported preliminary findings on how the perceived environmental factors influence IM during home-school journeys among children in Hong Kong. Methods: A total of 267 grade 6 children (mean age = 12.1 years, 141 boys and 126 girls) were recruited from 6 schools. IM was self-reported and defined as travel alone to and from school, respectively. Sociodemographic characteristics, mode of transport, perceived social (parental and peer support for physical activity, social cohesion) and environmental factors (road safety and sport facilities) were collected through the self-reported or parent-reported questionnaires. Generalized estimating equations were performed to assess the association of social and environmental factors with IM, while controlled for age, sex, number of siblings, body mass index (BMI), education level of mothers, and clustering effect of school. Results: Over 60% of the boys independently travelled to and from school, whereas approximately half of the girls did so. After controlling for the covariates, children who had no cars at home (OR=4.55, 95% confidence interval: 1.60, 12.94) and reported more sport facilities in their neighborhood (OR=1.46, 95% confidence interval: 1.00, 2.12) were more likely to travel independently from home to school. These two factors demonstrated similar relationships with IM during after school travel. Furthermore, Safety was negatively associated with IM when the children travelled from home to school (OR=0.42, 95% confidence interval: 0.22, 0.80). Conclusions: Interventions to increase children's IM may need to target those children who have cars at home and have few sport facilities in their neighborhood. Future research should investigate independent travel to destinations other than school and outdoor play.

S.07: 13084: Hero or villain?: the role of RCTs in evaluating technology-based interventions
(Convenor: Associate Professor Carol Maher) (Concord 1)

S.07.1
A COMPARISON OF EFFECTIVENESS OF A WEB-BASED PHYSICAL ACTIVITY INTERVENTION EXAMINED ACROSS A RANDOMIZED CONTROLLED TRIAL AND A REAL-WORLD RANDOMIZED ECOLOGICAL TRIAL
Vandelanotte C¹, Kolt G², Capnerchione C³, Savage T², Rosenkranz R⁴, Maeder A⁵, Van Itallie A¹, Tague R², Oldmeadow C⁶, Mummery WK⁷, Duncan M⁶.¹Central Queensland University, Rockhampton, Queensland; ²University of Western Sydney, Sydney, NSW; ³University of British Columbia,Vancouver, BC; ⁴Kansas State University, Manhattan, Kansas; ⁵Flinders University of South Australia, Adelaide, SA; ⁶University of Newcastle,Newcastle, NSW; ⁷University of Alberta, Edmonton, AB.

SIG: E- & m-health

Objective: The majority of knowledge about what works in web-based behaviour change interventions is derived from randomised controlled trials. However, few web-based interventions that have been
examined in controlled conditions are disseminated into the real world. The purpose of this study was to compare the effectiveness of the same web-based physical activity interventions in both a randomised controlled trial (RCT) and a real-world randomised ecological trial (RET). Methods: For the RCT, 504 inactive participants were randomised into a control group, an intervention group using the existing 10,000 Steps website, and an intervention group using a new website with social network features (WALK 2.0). Objective outcomes (Actigraph accelerometry, website usage) were assessed at 0, 3, 12 and 18 months. For the RET, 1,328 adults spontaneously singing up for the free 10,000 Steps website were randomised into either the 10,000 Steps website or the WALK 2.0 website. Outcomes (Active Australia Survey, website usage) were assessed at 3 and 12-months. Results: Drop-out attrition (60% retention at 18-months in RCT vs. 5.7% at 12-months in RET) and non-usage attrition (across groups participants stopped using the websites after more than 25 weeks in the RCT vs. 1.5 weeks in the RET) were much higher in the RET, while website usage was much lower (on average 3.6 [WALK 2.0] and 1.6 [10,000 Steps] website visits per week in the RCT vs. 0.7 [WALK 2.0] and 0.5 [10,000 Steps] visits in the RET). Physical activity change at 3 months was much higher in the RET: +45 min/week [WALK 2.0] and -1 min/week [10,000 Steps] in the RCT vs. +140 min/week [WALK 2.0] and +40 min/week [10,000 Steps] in the RET. Conclusions: Large differences in outcomes between RCT and RET were observed. While differences in physical activity may partially be attributed to using different measurement methods, this study nevertheless demonstrates the risks associated with an over-reliance in RCT outcomes and emphasises the need for dissemination and implementation studies that aim to assess the real-world impact of web-based interventions.

S.07.2
ADAPTING AN EVIDENCE-BASED MHEALTH ONLINE SOCIAL NETWORKING PHYSICAL ACTIVITY INTERVENTION FOR MASS DISSEMINATION

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SIG: E- & m-health

Purpose: Technology-based health behaviour interventions offer considerable promise for mass-scalability. Yet, many interventions developed through research never attempt delivery at scale. Furthermore, software designed for evaluation in a randomised controlled trial (RCT) will incorporate specific features (such as screening of potential users) or intentionally omit other features (such as ability to share data via online social networks) which are peculiar to the RCT context. This study aimed to systematically identify software modifications required to adapt a physical activity smartphone app intervention ("Active Team"), originally developed and evaluated in the context of a (RCT), to make it suitable for mass dissemination. Methods: An intervention mapping framework was used to analyse user feedback from the Active Team RCT and guide research team discussion across multiple planning meetings. This identified four key foci for software improvements. (1) Addition of sharable features, to assist the program to disseminate organically via online social networks. (2) Improved flexibility regarding privacy, to allow users to choose to use the program individually, with existing friends, or as part of the broad online community of users. (3) Integration with leading activity trackers and step counting smartphone apps. (4) Removal of registration screening process, and replacement with new instructional features to allow users to orientate themselves to the app features without any external guidance. Results: Software improvement objectives were addressed through (1) development of a variety of sharable features, such as ability to post challenge results to Facebook, and send app invitations and content to Facebook friends who aren't current users; (2) customisable privacy settings, so users can choose whether to see and share data with their existing friends only, or the wider Active Team community; (3) automatic step count entry from leading wearables and smartphone apps: Fitbit, Garmin, Apple Health and Google Fit; and (4) development of an app tour and "coach marks" throughout the app. Conclusion: Extensive software modifications were required to adapt a RCT-originated intervention for mass dissemination in the "real world". Findings highlight the obstacles to translation of technology-based interventions which have been designed for evaluation in a traditional RCT.
USING ADAPTIVE DESIGN AND BAYESIAN UPDATING TO OPTIMISE E&MHEALTH BEHAVIOUR CHANGE INTERVENTIONS

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SIG: E- & m-health

Purpose: At present, the refinement of e- & mHealth interventions typically relies on post-hoc analyses at the end of an evaluation. While some useful insights are often gained, the process is too slow and costly to be effective. To keep up with rapid technological advancements and a growing market, more efficient and cost-effective methods of optimisation are needed. An adaptive design approach using Bayesian updating may be promising in this regard. The Bayesian methodology allows for continuous updating and includes prior knowledge resulting in small sample inference. Thus developers can assess issues with interventions in real-time, testing possible solutions. This presentation highlights potential benefits and constraints of this approach in an e- & mHealth context based on pre-specified scenarios. Methods: A hypothetical modular e- & mHealth intervention was constructed and population attrition simulated. Bayesian updating was used to assess common problems observed in e- & mHealth interventions, including high non-usage, particularly mid-intervention, or in certain population groups (e.g. those less motivated). The interventions were then updated and Bayesian analysis employed to assess improvement. Possible study designs were then modelled, and potential constraints and benefits of the approach were identified. Results: Potential benefits include the ability to quantify small sample information regarding intervention design decisions, and continual reassessment of questions of interest e.g. what works best for whom, and whether an updated module indeed improves the intervention. These design questions can be addressed in the development phase without requiring separate studies to answer them. This system however has several constraints, including the need to continually accrue participants, and the capacity to update intervention components both efficiently and without disrupting use for participants already on-study. The sensitivity of continual Bayesian updating to identify issues and differentiate the impact of manipulations may also be an issue and requires further study. Conclusions: Employing an adaptive design approach with continual Bayesian updating may improve current e-& mHealth intervention development and refinement. However, further research exploring the practicality of this approach in the real world is needed.

S.08: 13107: Understanding sedentary behaviour in adults: latest evidence regarding patterns, measurement tools, and intervention strategies (Convenor: Miss Sofie Compernolle) (Concord 2-3)

S.08.1

PATTERNS OF SEDENTARY ACTIVITIES BY WEIGHT STATUS: A COMPOSITIONAL DATA ANALYSIS

Compernolle Sofie1, Chastin Sebastien1,2, De Bourdeaudhuij Ilse1, Cardon Greet1, De Cocker Katrien1, Van Dyck Delfien1.1Ghent University, Ghent; 2Glasgow Caledonian University, Glasgow.

SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: High levels of sedentary time are related to adverse health outcomes. To develop effective sedentary behavior interventions, detailed insight is needed into the contexts in which people with different weight status are sedentary. However, as these context-specific sedentary behaviors are codependent, they should be studied relative to each other. Therefore, the aim of this study was to describe the composition of sixteen different context-specific sedentary activities in adults and older adults and to examine weight group differences by taking into account the compositional structure of the data. Methods: This cross-sectional study was conducted in 2014 among a Flemish sample of adults and older adults. Week and weekend day context-specific sedentary behaviors were assessed using a validated questionnaire. Compositional descriptive statistics were performed to determine the relative contribution of context-specific sedentary behaviors in the three weight groups. Principal component analyses and MANOVA statistical tests were conducted to examine differences between weight groups. Results: In total, 301 adults (mean age: 43.3 ±smn; 24.6) and 258 older adults (mean age: 74.0 ±smn; 6.2) participated in
this study. Apart from sitting at work, television time and sitting for meals emerged as the most time-absorbing sedentary activities in all three weight groups. Statistically significant differences were found in context-specific sedentary behaviors between weight groups (p<0.001). Whereas overweight and obese participants were more likely to spend time while reading (p<0.001), watching television (p<0.001) and for meals (p=0.02), their healthy weight counterparts were more likely to spend time sedentary while socializing (during the weekends) (p=0.01), listening to music (p<0.001), and for transport (p<0.01). Conclusions: There are important differences in the contexts in which sedentary behavior take place by weight status; these should be taken into account when designing weight group-specific sedentary behavior interventions.

S.08.2
DEVELOPMENT AND TESTING OF A HOME-BASED ENVIRONMENTAL AUDIT FOR SEDENTARY BEHAVIOR
Perkett Mackenzie1, Patterson Freda1.1University of Delaware, Newark.

SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: While up to 90% of bouts in adult sedentary time occur at home, research suggests that there is much variability in sedentariness across different demographic subgroups in the home. For example, in a large population sample, males with no college reported 5.47 mean hours of sedentary time per day as compared to 4.19 hours in females. Little is known about how the home environment may relate to this wide range in sedentary time. To address this gap, the purpose of this study is to develop and test a comprehensive home-based environmental audit for sedentary behavior. A second goal is to objectively characterize home-based sedentary behavior and its relative contribution to total sedentary time. Methods: To develop the assessment tool, an exhaustive search of current home environment sedentary behavior assessments was conducted so that key content domains and survey items could be catalogued. Following expert review and synthesis of this literature, the home environment domains of layout, residents, appliances and equipment, lifestyle, and aesthetics were identified and survey items written. Instrument pilot testing on 20 adults enabled wording and formatting refinements to be made. To validate the instrument, 100 free-living adults (50 females + 50 males without college education), aged 45-65 years will complete the instrument and wear a portable camera (SenseCam) and an actigraph device for 11 consecutive days (1 week and 2 weekends) to capture real-time sedentary and movement patterns in the home. Qualitative content analysis of the SenseCam video footage will be evaluated to characterize home-based sedentary behavior. These mixed-level data will be analyzed to determine awake time (in minutes) spent standing, lying, reclining, and sitting for each of the 11-days. Factor analysis of the Home Audit Tool for Sedentariness will be conducted, and scale validity assessed. Results: This project is ongoing and data are expected spring 2018. Conclusions: The extent to which time spent standing, lying, reclining and sitting is associated with the home environment domains of layout, residents, appliances and equipment, lifestyle, and aesthetics will be ascertained from this work.

S.08.3
USER EXPERIENCES OF A WEARABLE SEDENTARY BEHAVIOR MONITOR IN THE WORKPLACE
Jelsma Judith1, Loyen Anne1, Renaud Lidewij1, Huysman Maaike1, Coffeng Jennifer1, Van Nassau Femke1, van der Ploeg Hidde1.1VU Medical Center, Amsterdam.

SIG: E- & m-health

Purpose: Large volumes of sitting time have been associated with multiple health risks. Desk-based work is a substantial contributor to high levels of prolonged sitting in white collar workers. Activity/sitting trackers could be used to allow office workers to monitor their daily sitting time and to assist them in reducing their sitting time. We will provide insight in user experiences of a newly developed activity/sitting tracker used in the workplace setting. Methods: To reduce prolonged sitting time 123 office workers received an activity/sitting tracker (the Activator, PAL technologies) as part of a larger lifestyle intervention delivered in a Dutch insurance company. The Activator is worn on the front of the thigh, either in the front trouser pocket or attached with an elastic band to clothing. The Activator allows traditional self-monitoring of steps...
as well as upright time (either standing or moving) and sitting time, and provides real time feedback through a smartphone app. The device offers the opportunity to set haptic vibration feedback after 15-30 minutes of consecutive sitting time. User experiences with the Activator were collected from 6 focus group interviews with participants, which were held with 6-8 participants three months after the start of the intervention, emails from participants, and feedback to the physiotherapists that delivered the intervention. The framework analysis approach was used to identify user experiences. Results: Positive user experiences comprised the self-monitoring of steps and sitting time throughout the day. Participants became more aware and conscious of their current lifestyle behaviour and the haptic vibration function was a reminder to interrupt prolonged sitting time. However, the following negative user experiences for the Activator were reported: technical (e.g. connectivity problems with the Activator and app), wearing (e.g. elastic band damaged the clothes), and reliability (e.g. occasional perceived under or incorrect reporting). Participants gave suggestions for improving the user interface and real time feedback. Conclusions: The Activator was regarded as a useful tool for monitoring sitting time and steps throughout the day. For successful widespread use, it is important to take into account the user experiences and further develop this device accordingly.

S.09: 13041: Cooking skills and diet quality in three continents (Convenor: Prof. Moira Dean) (Oasis)

S.09.1
TO CHOP OR TO SHOP?: DOES INCLUDING CONVENIENCE PRODUCTS IN YOUR COOKING MATTER?
Lavelle F1, Dean M1.1Queen's University Belfast, Belfast.

SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: It has been suggested that there is no longer a need for cooking, with convenience products replacing this outdated practice. However, although convenience products may have time saving attributes, they have also been associated with weight gain and are said to have negative dietary implications. There has been little research investigating the differences in types of home meal preparation. Therefore, this novel study aimed to investigate the differences between using basic ingredients vs convenience products when cooking and their associations with cooking/food skills confidence, cooking identity, food neophilia, cooking creativity and dietary patterns. This is a novel study that classified type of cooking using a systematic researcher classification of ingredients rather than asking the respondents. Methods: A nationally representative cross-sectional survey was conducted on a sample of 1049 from the island of Ireland, assessing components such as diet quality and cooking and food skills confidence. From participants stated ingredients list used to prepare their most common main meal, two researchers systematically classified the ingredients into basic ingredients or convenience products. ANOVAs with Bonferroni post-hoc comparisons were used for the analysis, with a significance level set at 0.05. Results: Participants that used basic ingredients had both higher cooking and food skills confidence (P<0.001), prepared meals at home more frequently (P<0.01), were more creative in the kitchen (P<0.001), and had greater food neophilia (P<0.001) than those who used convenience products. Additionally, those that cooked with basic ingredients consumed take away food less frequently than those who used convenience products (P<0.001). Furthermore, basic ingredient cooks consumed more vegetables than those who used convenience products (P<0.001). Conclusions: The results indicate numerous positive benefits of using basic ingredients in cooking over the use of convenience products including a lower consumption of takeaways and a greater consumption of vegetables. This study provides new evidence for the benefits of using basic ingredients in home cooking. Health promotion strategies and interventions encouraging home cooking with the aim of improving diet quality should promote messages for using basic ingredients or moving towards using more basic ingredients in cooking to improve negative dietary patterns.

S.09.2
COOKING SKILLS AND CONFIDENCE ARE RELATED TO DIET QUALITY IN A NATIONAL SURVEY OF AUSTRALIANS
Collins C¹, Brown H¹, Rollo M¹, Bucher T¹.¹University of Newcastle, Newcastle.

SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: There is limited evidence on how cooking and food skills contribute to diet quality in a global setting. Using validated measures this study addressed this shortfall by assessing cooking skills and investigated the link between cooking skills and diet quality in an Australian sample. Methods: A national cross-sectional online survey recruited adults from across Australia from August 2016-2017. Participants self-reported their cooking and food skills. The cooking and food skills ability scales asked participants to rate on a scale from 1 to 7 (1 = very poor; 7 = very good) how good they were in performing a range of skills (blending, stewing, roasting, baking, meal planning, preparing meals in advance, following recipes). Demographic data included age, sex, education level and BMI. Diet quality was assessed using the Australian Recommended Food Score (ARFS), a brief validated index. Results: A total of 910 adults completed all survey components, mean (SD) age 45.2 (16.1) years, BMI 25.4 (5.6), 81% female. 33% trade certificate or lower, 35% undergraduate education. Older adults and females were significantly more confident in both their cooking and food skills compared to others. Although weakly correlated, overall diet quality measured by the ARFS, was statistically significantly positively correlated with confidence in both food skills (r=0.31, p<0.001) and cooking skills (r=0.22, p<0.001). ANOVA results showed that those in the bottom quartile of ARFS were less likely to score highly for cooking creativity, liking of new things, cooking identity and nutrition knowledge. Using hierarchical multiple regression analysis, the variation in the ARFS was significantly (F = 15.8, p<0.001) explained by food skills confidence, creativity, age, sex, income and infrequent consumption of take-away food. Conclusions: Results indicate that among a large sample of Australians those with greater confidence in their cooking and food skills have better overall diet quality. The relationship between food and cooking skills with age, sex and education level and nutrition knowledge provide support for development and testing the impact of cooking skills interventions as a strategy to improve dietary intakes and nutrition related health in adults in Australia.

S.09.3
DO PARENTAL COOKING AND FOOD SKILLS MATTER FOR CHILDREN’S DIET QUALITY?
Wolfson J¹.¹University of Michigan, Michigan.

SIG: Children and families

Purpose: Cooking meals at home is associated with better diet quality, healthier weight, and could be a key modifiable determinant of childhood obesity. Over the past several decades, evidence suggests that cooking skills have declined in the USA, which may have contributed to a shift away from home prepared meals towards greater consumption of restaurant and convenience foods. Though cooking interventions to address obesity are increasing, robust evidence for a positive relationship between cooking skills and practices and children’s diet quality does not currently exist. In this study, we conduct a large national survey of parent’s cooking and food skills, cooking confidence, attitudes and behaviour and explore how these are associated with children’s diet quality. Methods: We will conduct a web-based, national survey of parents with at least one child between the ages of two and nine (target N approximately 1,200). We will use Amazon Mechanical Turk (MTurk) to conduct the survey, and will employ quotas and a participant screener to achieve a representative sample. Participants will complete the survey online answering validated questions about their cooking and food skills, cooking confidence, attitudes, perceptions and behaviour, and Food Agency. Participants will then answer questions about the bodyweight status and diet quality of their oldest child within the target age group. Analyses will include cross tabulations, ANOVAs with Bonferroni post-hoc comparisons, and multivariable regression models controlling for important socio-demographic measures. Significance will be considered at p<0.05. Results: The survey will be completed in early 2018. Results will report on prevalence of cooking and food skills, confidence, and behaviour overall and among population subgroups of parents of children 2-9 years old. We will also report on associations between parental cooking and food skills, cooking behaviour and children's diet quality and body weight status. Conclusions: This study represents the most comprehensive picture of parental cooking skill and behaviour in the USA to date and will be informative to advance understanding the prevalence of cooking skills and behaviour and their relationship to diet quality. Results will shed light on a
potentially important, modifiable determinant of the home food environment and childhood obesity risk.

**Jun 04, 11:35 - 12:50: Symposia**

**S.10: 13189: Conceptual and Practical Issues of Measuring Food Literacy: A Cross-National View (Convenor: Dr. Helen Vidgen) (Drawing Room)**

**S.10.1 ASSESSING INDIVIDUAL FOOD LITERACY SKILLS AND INVESTIGATING THE CONSEQUENCES OF LIMITED FOOD LITERACY AT INDIVIDUAL AND COMMUNITY LEVELS IN ITALY**

*Palumbo Rocco*¹, Annarumma Carmela¹, Adinolfi Paola¹, Troiano Ersilia², Vezzosi Stefania².¹University of Salerno, Fisciano, Salerno; ²Italian Association of Dietitians - ANDID, Verona, Veneto.

**SIG:** No, this does not fit in any of the above mentioned special interest groups

**Purpose:** The Italian Food Literacy Project is the result of a partnership established between the Italian Association of Dietitians (ANDID) and the Interdepartmental Center for the Research in Economics, Law, and Management of Public Sector Organizations. It is intended at assessing individual food literacy skills and at investigating the consequences of limited food literacy at both the individual and community levels.

**Methods:** Drawing on the European Health Literacy survey and on the conceptual model proposed by Vidgen and Gallegos (2014), a self-reporting survey consisting of 46 items was arranged, in order to assess individual food literacy. The survey was administrated to a representative sample of 1.000 Italian citizens. A PAPI approach was used to collect relevant data. Also, respondents were asked to fill a socio-demographic questionnaire, in order to obtain some evidence about the main correlates of limited food literacy. Results: A large part of the sample was found to live with inadequate food literacy. This result is consistent with evidence in the field of health literacy, supporting the understanding of limited food literacy as a silent epidemic which affect a wide share of the Italian population. Interestingly, people living with low education levels and those reporting to belong to the lower social classes of the population were consistent in reporting lower food literacy skills as compared with their counterparts. Gender was not found to perform as a significant correlate of limited food literacy, while older people were at greater risks of limited food literacy as compared with younger people. Additionally, financial deprivation was the most significant and relevant correlate of limited food literacy. Conclusions: Limited food literacy was prevailing in the Italian sample. Tailored interventions are required in order to face the challenges which are raised by inadequate individual food literacy skills. First of all, a specific food literacy concern should be attached to traditional education curricula, in an attempt to raise the awareness of food-related issues. Moreover, policy makers should strive for increasing the individual self-efficacy in dealing with food issues. In fact, limited food literacy is associated with higher risks of adopting inappropriate food behaviors.

**S.10.2 TOWARDS THE MEASUREMENT OF FOOD LITERACY: THE DEVELOPMENT AND VALIDATION OF THE SELF PERCEIVED FOOD LITERACY SCALE IN THE NETHERLANDS**

*Poelman M P*¹, Dijkstra S.C², Sponselee Hanne¹, Kamphuis C M³, Battjes-Fries M C⁴, Gillebaart Marleen¹, Seidell J C².¹Utrecht University, Utrecht; ²VU-University Amsterdam, Amsterdam; ³Louis Bolk Institute, AJ Bunnik.

**SIG:** No, this does not fit in any of the above mentioned special interest groups

**Purpose:** A general measure of people's capacity to plan, manage, select, prepare and eat foods in order to reach a healthy food intake is currently lacking. Therefore, the aim of this study was to develop and validate the Self-Perceived Food Literacy (SPFL) scale. Methods: 50 items for the SPFL-scale were generated based on expert insights and literature. A cross-sectional survey was conducted among a sample of Dutch adults in order to determine convergent, divergent and criterion validation against psychosocial variables that were expected to correlate significantly with food literacy (e.g. self-control,
impulsiveness) and against the expect outcome of high food literacy, namely healthy food consumption. Principal Component Analyses (PCA), Pearson correlation tests and linear regression analyses were conducted. Distinctiveness of the SPFL-scale was determined by comparing SPFL-scores of the adult population with that of dieticians. Results: A total of 755 adult participants completed the online survey. Their average age was 44.8 (SD:16.1) years, the majority were women (90.7%), had a healthy weight (61.4%) and were highly educated (59.1%). Of the initial 50 items, 29 items remained after PCA and reflected eight domains of food literacy. SPFL was positively correlated with self-control (r=0.51, p =<.001) and negatively with impulsiveness (r=−0.31, p=<.01). Participants that revealed higher levels of food literacy reported a higher frequency of fruit consumption (=5 times/week), vegetables consumption (=5 times/week) and fish consumption (=1 times/week) and those who reported to consume larger portions of fruit (=2 pieces/day) and vegetables (=200gram/day) in comparison with participants who had lower levels of food literacy. For example, a higher degree of food literacy on a scale of 1-5 (B=0.45, SE=0.05, t=8.23, 95%-CI=0.34 to 0.56) was positively associated with the amount of vegetables consumed daily. Small, but statistically significant differences in SPFL-scores were found between dieticians (n=207) and the adult sample (B=0.08, SE=0.03, t=2.83, 95%-CI=0.03 to 0.14). Conclusions: A 29-item SPFL-scale provides a validated, expert and theory-driven tool for adults. Higher levels of food literacy were associated with more self-control, less impulsiveness, and healthier food consumption. Additional research is needed to validate the SPFL-scale in different populations and in different contexts, settings and situations.

S.10.3 TOWARDS A FRAMEWORK FOR THE MEASUREMENT OF FOOD LITERACY

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Although the concepts of food literacy are widely discussed in the literature, its measurement is challenging, and scientific efforts are scarce. Based on literature research on food literacy concepts and measurements, the aim of this study was to explore/define a framework including the core attributes of a food literacy measure. Methods: Towards a framework for the measurement of food literacy, several steps were undertaken. First, Literature on the conceptualization of food literacy was reviewed and food literacy definitions, domains and characteristics in and a systematic reviews were extracted and core concepts of food literacy were defined. Moreover, tools used to measure the effectiveness of food literacy interventions were explored and key components were collected. This was followed by the generation of a questionnaire item pool from validated tools identified in systematic reviews. Subsequently, step one and two were discussed with PI’s of international research groups (in Canada, Australia, Italia, Netherlands) currently working on the development of food literacy measures, and their experiences and methodology in their efforts were discussed. Outcomes from each stage of content validation strengthened the conceptualisation of a measurement framework and contributed to the final framework and recommendations. Analysis and synthesis of findings these steps were discussed by the international research team and has been used as input for the food literacy measurement framework. Results: The proposed framework recommends a comprehensive measure for food literacy should reflect the following five attributes: (1) have a theoretical and conceptual framework to guide questionnaire development, (2) apply the European health literacy framework across the four domains of food literacy, (3) emphasise the measurement of knowledge, skills and behaviour rather than intention or confidence, (4) consider contextual factors and (5) measure against diet quality. The framework describes consensus points that address key considerations and complexities associated with developing a measure for food literacy. Conclusions: The consensus points established through this study will inform the development and testing of a comprehensive, content-valid international measure for food literacy.
Jun 05, 08:00 - 09:15: Symposia

S.11: 13178: Developing systems for conceptualisation and device-based assessment of 24-hour behavioural profiles: The evolution of time-use epidemiology. (Convenor: Associate Professor Scott Duncan) (Grand Ballroom)

S.11.1 INTEGRATING SLEEP, SEDENTARY BEHAVIOUR, AND PHYSICAL ACTIVITY IN THE EMERGING FIELD OF TIME-USE EPIDEMIOLOGY

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: The aim of this study was to conceptualise the emerging field of time-use epidemiology and provide a framework for its future development. Methods: We conducted a thorough review of studies using integrative approaches to investigate epidemiological aspects of sleep, physical activity, and sedentary behaviour. Based on the literature review we defined time-use epidemiology and its position among the established branches of science, explained its main concepts, defined most relevant terms, recommended adequate data analysis methods, developed a theoretical model for future studies, and identified key research questions. Results: We defined time-use epidemiology as the study of determinants, incidence, distributions, and effects of health-related time-use patterns in populations and of methods for preventing unhealthy time-use patterns and achieving the optimal distribution of time for population health. As a theoretical model for future studies, we proposed the Framework for Viable Integrative Research in Time-Use Epidemiology (VIRTUE framework). The framework acknowledges the compositional nature of time-use data and incorporates research on: 1) methods in time-use epidemiology; 2) outcomes of health-related components of time use; 3) optimal time-use balance and its prevalence in populations; 4) determinants and correlates of health-related components of time use; and 5) effectiveness of time-use interventions. Conclusions: It is likely that more deaths globally are attributable to unhealthy time use than to obesity or smoking, potentially making it the most relevant modifiable lifestyle and behavioural risk factor of our time. We hope that governments, leading health organisations, and other public health stakeholders will recognise the enormous importance of healthy time use, and provide adequate support for future studies in time-use epidemiology.

S.11.2 UTILITY OF A NOVEL DUAL-ACCELEROMETER SYSTEM FOR CAPTURING 24-HOUR BEHAVIOURAL PROFILES IN FREE-LIVING POPULATIONS

Duncan S1, Stewart T1, Neville J1, Mackay L1, Walker C2, Berry S2, Morton S2.1Auckland University of Technology, Auckland; 2University of Auckland, Auckland.

SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: To advance the field of time-use epidemiology, a tool capable of monitoring 24-hour movement behaviours including sleep, physical activity, and sedentary behaviour is needed. Traditional hip-mounted accelerometer methods are unable to differentiate between low intensity movements (i.e., lying/sitting/reclining/standing/non-wear) and typically suffer from low compliance. These limitations prevent the development of accurate 24-hour behavioural profiles. This study explored the utility of a novel dual-accelerometer system for capturing 24-hour movement patterns in two distinct free-living populations. Methods: A sample of 100 children and 100 adults were recruited from two separate studies: Growing Up in New Zealand and Workplace Job Demands (respectively). Using purpose-built hypoallergenic patches, participants were fitted with two Axivity AX3 accelerometers; one was attached to the anterior aspect of the thigh, and the other to the lower back offset from the spine. Participants were instructed to wear these at
all times for one week, and only remove them if they experienced irritation. These devices are waterproof, and contain an inbuilt temperature sensor that helps identify when the device is attached to the skin. Raw data (100 Hz) were processed in MATLAB to obtain measures of compliance (via the temperature sensor) and basic activity/posture descriptives (via individual axes, vector magnitude, and activity counts). Results: The adult sample averaged 164.9 ±smn; 24.4 hours of wear time (98% of a full week), while the child sample averaged 143.8 ±smn; 46.8 hours (86% of a full week). Using machine learning techniques, we were able to build 24-hour movement profiles by identifying the time spent active (across a range of intensities), sleeping, sitting, reclining, and standing within each 24-hour day. Conclusions: This study demonstrated that a dual-accelerometer protocol using skin attachment leads to high wear time compliance, and is appropriate for monitoring 24-hour movement behaviours in both children and adults. The next step will be to utilise compositional data analysis techniques to elucidate interactions among key behavioural components and their effect on health outcomes.

S.11.3
VALIDITY OF A DUAL-ACCELEROMETER SYSTEM FOR CLASSIFYING PHYSICAL ACTIVITIES AND SEDENTARY BEHAVIOURS
Stewart T¹, Hedeyatrad L¹, Narayanan A¹, Neville J¹, Duncan S¹. ¹Auckland University of Technology, Auckland.

SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Single hip, wrist, or thigh-mounted accelerometers cannot accurately classify the broad range of postures and activities needed to develop 24-hour movement profiles. The purpose of this study was to examine the criterion validity of a dual-accelerometer system for detecting various modes of physical activity and sedentary behaviour in both children and adults. Methods: Eighty participants (40 adults and 40 children) were equipped with two Axivity AX3 accelerometers; one was attached to their thigh, and one to their lower back. Participants performed a series of 10 activities (e.g., sitting in a chair, sitting on the floor, standing, walking and running at different speeds, lying on a bed in different positions) for 6 minutes each. Each activity was captured by video camera which served as the ground truth. Various accelerometer signal features were extracted (e.g., axis mean, variance, magnitude, autocorrelation). Data were randomly split into training (70%) and test (30%) sets while preserving activity class proportions. The training data were fed into a random forest classifier (a machine learning technique), to determine the optimal combination of features (and their thresholds) for classifying each activity. 10-fold cross-validation with 5 repeats was used to determine optimal model tuning parameters. The final trained model was used to predict activities on the test set. Results: The random forest model was trained on approximately 120,000 seconds of activity data. When applied to the test set, the final model was able to discriminate between each of the 10 activities extremely well. The sensitivity and specificity for each activity class ranged from 0.94 to 1, with an overall balanced accuracy of 99.6% (kappa = 0.99). Model performance was similar for both adults and children. Conclusions: This validation study demonstrated that a dual-accelerometer system previously shown to have high wear compliance, can also accurately discriminate between different postural positions and activities. While these results are promising, further work is needed to test if these activity recognition models perform similarly in a free-living setting.

S.12: 13006: International Insights – using novel measurement approaches to understand the multifactorial determinants and implications of child food insecurity (Convenor: Mr. Matthew Landry) (Salon 1-2)

S.12.1
SIBLING DYNAMICS AND COMPLEXITIES OF INTRA-HOUSEHOLD FOOD INSECURITY EXPERIENCES
Perez CL¹, Garcia R², Sharkey JR²,¹Johns Hopkins Bloomberg School of Public Health, Baltimore, MD; ²Texas A&M School of Public Health, College Station, TX.

SIG: Socio-economic inequalities
Purpose: Past studies have shown that children are capable of reporting on their own food security status and that relying only on parent proxies as a way to measure a child's food security experiences often results in inaccurate reports. Using the experiences reported by children, this paper addresses a critical gap in the literature and aims to understand the sibling dynamics and complexities of intra-household differences in food insecurity by building on and expanding previous work looking at mother-child dyad responses of children's food security experiences. Methods: Using a current study of mother-child dyads who reside in functionally rural areas of colonias along the Lower Rio Grande Valley border with Mexico, an additional child was recruited to create a sample of 88 sibling dyads (n = 176 children). Child sibling pairs were interviewed separately by promotora-researchers using the 9-item Child Food Security Survey Module in Spanish. Food security concordance and discordance was assessed during two in-home visits between August 2013 and November 2013. Cohen's kappa statistic (κ) was used to evaluate dyadic agreement in intra-household food security experiences by individual question and overall level of food security. Results: When examining food security levels among each child during each time-period, younger siblings are experiencing higher rates of low food security or very low food security. The change in food security from summer to fall was significant overall (p<0.001). At least 20% of children reported no change between the summer and the fall. However, more of the younger siblings reported their food security decreasing from the summer to the fall. There was no significant difference between the individual food security scores between older siblings and younger siblings during each of the time periods (p= 0.74; p>0.05). Conclusions: Overall, food insecurity was more pervasive in the summer when compared to the fall. Understanding intra-household food security experiences among children is a key strategy to improving nutritional health in families.

S.12.2
HOW FOOD INSECURITY AMONG CHILDREN CONTRIBUTES TO POOR PERFORMANCE AT SCHOOL AND TO HEALTH DISPARITIES IN THE LONG TERM
Veugelers P.1, 1School of Public Health, University of Alberta, Edmonton, Alberta.

SIG: Socio-economic inequalities

Purpose: The detrimental consequences of food insecurity for social wellbeing and health are broadly reported but the relationship between food security and school performance, and particular the role of diet quality in this relationship, has not been widely studied. Objective: To examine the importance of food insecurity among Canadian children for school performance in the short term and health disparities in the long term. Methods: We surveyed a representative sample of grade 5 students and their parents in the Canadian province of Nova Scotia. Parents completed the short-form Household Food Security Survey Module as well as questions about household income and their educational attainment (SES). Students completed a 147-item food frequency questionnaire. We linked this survey information with students' performance on standardized exams written a year later when in grade 6. We applied mixed-effect logistic regression to assess the relationship between food insecurity and academic expectations while adjusting for diet quality and for potential confounders including gender and SES. Results: Of the 4105 students surveyed, 9.8% lived in household with low food security and 7.1% in household with very low food security. Compared to students from households without food insecurity, those from households with very low food security had 0.65 times the odds (OR=0.65; 95 % CI 0.44, 0.96) of meeting expectations for reading and 0.62 times the odds (OR=0.62; 95 % CI 0.45, 0.86) of meeting expectations for mathematics. These relationships were independent of diet quality and SES: students who reported poor diet quality and higher sugar consumption, and from low SES households were less likely to do well in school. Conclusions: The negative effect of food insecurity on school performance is over and above the effects of diet quality and SES. Even with effective food programs, food insecurity will continue to negatively affect learning and herewith, in the decades ahead, disadvantage these students' job opportunities and income. The next generation of children growing up in these food insecure circumstances will face the same challenges as their parents: The perpetuating cycle of poverty, food insecurity and poor health continues.

S.12.3
UNDERSTANDING CHILD FOOD INSECURITY IN RURAL AND REMOTE WESTERN AUSTRALIA – DETERMINANTS, PREVALENCE AND SOCIO-DEMOGRAPHIC PREDICTORS
Godrich S¹, Lo J¹, Davies C², Darby J¹, Devine A¹.¹Edith Cowan University, Perth, Western Australia; ²University of Western Australia, Perth, Western Australia.

SIG: Socio-economic inequalities

Objective: Children and families in rural and remote Western Australia (WA) face unique food issues. The purpose of this study was to (i) understand the determinants of food security among children in rural and remote WA; (ii) measure child food insecurity using the first Australian application of the Child Food Security Survey Module (CFSSM), and (iii) ascertaining socio-demographic predictors of child food insecurity. Methods: This mixed-methods study utilised semi-structured interviews with health, education and youth worker stakeholders (n=20); questions were underpinned by the 'Determinants of Food Security' framework. Interviews were analysed thematically using NVivo 10. Pictorial surveys with child/caregiver dyads (n=256) incorporating the CFSSM were utilised to ascertain the prevalence and socio-demographic predictors of child food insecurity. Logistic regression analyses were performed using IBM SPSS (version 23). Results: Qualitative interview data were categorised within food availability, access, utilisation dimensions, resulting in the classification of 16 sub-themes. Food availability was inequitable across regional and remote WA; local food supply increased availability, quality and decreased price. Formal social support options were limited in many locations and public transport was occasionally non-existent. Low socio-economic groups reportedly possessed limited food literacy skills, while frequent power outages affected food storage and preparation. Quantitative analyses revealed one in five children were food insecure. Socio-demographic predictors included family receipt of welfare (OR 2.60; CI 1.15, 5.91; p=0.022), and living in a location classified as medium socio-economic disadvantage (OR 2.60; CI 1.18, 5.72; p=0.017). Conclusions: This study highlighted the complex issue of child food insecurity in WA, reinforcing the disadvantages faced by many rural residents. Overall, an adequate social security safety net is required. Creation of supportive environments must considered strategies across availability, access and utilisation dimensions to facilitate equitable access to nutritious food. Place-based approaches that consider the needs of communities should focus on building a local/regional food supply, increasing employment options, equitable social support and food literacy skill building.

S.13: 13154: Beyond School Walls: Students as change agents for health behaviours of peers, family, and the community (Convenor: Dr. Kate Storey) (Salon 3-4)

S.13.1
SIMILARITY OF SCHOOL AND NON-SCHOOL PHYSICAL ACTIVITY BETWEEN FRIENDS: A SOCIAL NETWORK STUDY
Stearns J.¹, Veugelers P.J.², Wu B.², Godley J.³, Spence J.C.¹.¹Faculty of Physical Education and Recreation, University of Alberta, Edmonton, Alberta; ²School of Public Health, University of Alberta, Edmonton, Alberta; ³Department of Sociology, University of Calgary, Calgary, Alberta.

SIG: Children and families

Purpose: In childhood, friends tend to participate in similar levels of physical activity (PA). However, it is currently unclear whether this similarity holds across different days of the week and time periods of the day, particularly when children are at or not at school. The purpose of this study was to examine whether 1) friends are more similar in their PA compared to non-friends, 2) whether best friends have greater similarity in PA compared to close friends, 3) whether greater similarity in PA is seen for both school time and non-school time segments, and 4) whether the effects differ by gender. Methods: This is a cross-sectional study of 23 schools and 625 grade five children participating in A Project Promoting healthy Living for Everyone (APPLE Schools) in Edmonton and Fort McMurray, Canada. Children nominated up to 10 close friends and 5 best friends in their school and grade and wore time-stamped pedometers for 9 consecutive days. Both close and best friendships were represented as directional dyadic variables. Weekly pedometer steps were broken down into total steps, school day steps, school day –sh; at school steps, school day –sh; outside of school steps, and non-school steps. Similarity in PA was represented as the difference in steps taken within dyads. Multiple Regression - Quadratic Assignment (MR-QAP)
Procedure in UCINET was used to analyze each school separately, controlling for several covariates. Results were combined in a meta-analysis. Results: Preliminary results indicate greater similarity in PA existed between close friends compared to non-friends in both school and non-school time segments. Also a higher magnitude of similarity existed between best friends compared to close friends. However, heterogeneity was observed across schools. Differences in effect between genders were also found. Conclusions: The similarity of PA between friends could be due to students selecting friends who are similarly active, or friends influencing the PA of one another over time. Heterogeneity across schools suggests that school-level factors may be important. These findings support the potential value of friendship- or peer-based PA programming that harness students as agents of change within schools and communities.

S.13.2
SUSTAINABILITY VIA ACTIVE GARDEN EDUCATION (SAGE): ENHANCING THE SOCIAL RETURN ON INVESTMENT FROM SCHOOL PROGRAMMING
Lee R.E.\(^1\), Lorenzo E.\(^1\), Szszulski J.\(^1,2\), Arriola A.\(^1\), Soltero E.G.\(^1,3\)Center for Health Promotion and Disease Prevention, College of Nursing and Health Innovation, Arizona State University, Phoenix, Arizona; \(^2\)College of Health Solutions, Arizona State University, Phoenix, Arizona.

SIG: Children and families

Purpose: The Ecologic Model of Physical Activity (EMPA) suggests that actions in one micro-environment, like early care and education centers (ECEC), may influence actions in other micro-environments, like the home, via dynamic exo-environmental linkages. This collection of studies explored how experiences that children have at ECEC may influence parent behavior and the home environment. Methods: Over three controlled experiments (SAGE 1 N=9; SAGE 2 N=11; SAGE 3 N=13), Sustainability via Active Garden Education (SAGE) was developed and tested as a 12-session, garden-based physical activity and fruit and vegetable promotion program for children age 3-5 years delivered in ECEC. SAGE uses the plant lifecycle as a metaphor for human development. Children learn how to plant, water, weed, harvest, and do simple food preparation along with active learning songs, games, science experiments, mindful eating exercises, and interactive discussions. In SAGE 2 and 3, parents received weekly newsletters linked to the curriculum and local resources and events. Newsletters were developed using nominal group technique and later evaluated by focus groups. SAGE 1 parents completed measures about perceived benefits from their child's participation. SAGE 2 and 3 parents reported parenting practices and home fruit and vegetable availability. Results: In SAGE 1, most parents believed that SAGE improved their child's knowledge of physical activity (83%) and nutrition (92%) and improved their own knowledge of physical activity (69%) and nutrition (83%). Over half (54%) stated that their child asked to do SAGE activities at home. Focus groups rated newsletters favorably, liking content, colors, organization, layout, and reading level. SAGE 2 and 3 parents reported more practices encouraging and fewer practices discouraging (ps=.05-.17) their children's physical activity after participation in SAGE. SAGE 2 and 3 produced modest but consistent increases in home fruit and vegetable availability after the SAGE interventions. Conclusions: Activities that happen in the child's ECEC micro-environment may have exo-environmental ripple effects beyond what happens in the ECEC, enhancing the social return on investment from school programming. Children are part of a dynamic system and can serve as active change agents, influencing parents and other family members as well as the home environment.

S.13.3
HIGH SCHOOL STUDENTS ADVOCATING FOR HEALTHIER FOOD AND PHYSICAL ACTIVITY ENVIRONMENTS
Shah S.\(^1,2\), Foley B.C.\(^1,2\), Shrewsbury V.A.\(^1,2\), Venchiarutti R.\(^1,2\), Hardy L.\(^2\), Flood V.\(^3,1\)Primary Health Care Education and Research Unit, Western Sydney Local Health District, Westmead, New South Wales; \(^2\)Sydney Medical School, The University of Sydney, Sydney, New South Wales; \(^3\)Faculty of Health Sciences, The University of Sydney, Sydney, New South Wales.

SIG: Children and families
Purpose The social environment and influence of peers are recognised as strong determinants of behaviour as adolescents transition to independence. SALSA (Students As LifeStyle Activists) is an innovative peer-led education program that educates and empowers high school students to lead a healthy lifestyle in a supportive school environment. https://www.youtube.com/watch?v=jiudp1few9Q. This study aimed to develop and test the feasibility of the SALSA Peer Leaders (15-16 year olds, Year 10 students) to advocate to key stakeholders for healthier food and physical activity environments in their local neighbourhoods. Methods We adapted Millstein and Sallis' multi-level conceptual youth advocacy model for obesity prevention to inform our intervention. In partnership with three high schools, one local council and a national Australian Football League Club, we developed and tested a three-stage intervention. Year 10 students volunteered to participate in: 1) the SALSA program at their school, 2) a leadership training day that included brainstorming sessions, YouTube videos showing how environments influence behaviours and a guided process of developing a pitch to communicate group ideas effectively and, 3) an event to pitch to relevant stakeholders and receive feedback on ideas for improving neighbourhood food and physical activity environments. Process data were collected throughout the intervention. Semi-structured group discussions were held with students following the intervention and feedback was recorded. Results Forty-two students from three high schools attended both stage one and two. These students developed six pitches to improve their neighbourhood food and physical activity environments. Feedback from the workshop indicated that students enhanced their confidence, teamwork and communication skills. In stage three, two schools were invited to pitch their ideas to the local council. Only one school group was able to attend the event in person, while another found it more feasible to pitch via a pre-recorded video. Students who participated in all three stages of the intervention reported that they felt a sense of responsibility and enjoyed contributing to the future of their neighbourhood. Conclusion Through harnessing relevant partnerships, youth advocacy training can build capacity in adolescent school students to identify and develop strategies to address neighbourhood challenges to healthy living.

S.14: 13096: Technology-based nutrition and physical activity interventions for children and adolescents (Convenor: Associate Professor Laura Burrows) (Drawing Room )

S.14:1
A WEB-MEDIATED INTERVENTION TARGETING PHYSICAL ACTIVITY AND HEALTHY EATING BEHAVIORS FOR EDUCATORS IN EARLY CHILDHOOD EDUCATION AND CARE SETTINGS: USING A CLUSTER RANDOMIZED STEPPED WEDGE DESIGN

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SIG: E- & m-health

Purpose Early childhood education and care (ECEC) setting are critical environments for the promotion of physical activity (PA) and healthy eating behaviors. However, professional learning for educators in this area is limited. The purpose of this study was to evaluate the efficacy of a PA/healthy eating technology-mediated professional learning program for early childhood educators. Methods Fifteen ECEC services located in Tasmania, Australia were recruited and data were collected from February to December 2016. A cluster randomized stepped-wedge interventional design was employed. Center and child-level data were collected at four times during 2016. The intervention comprised of a 12-week online professional learning program for educators (known as HOPPEL), which focused on healthy eating behaviors and PA. Following the 12-week intervention period, centers participated in a maintenance period that varied in length (as per the stepped-wedge design). Environmental center changes were assessed using the Environment and Policy Assessment Observation System (EPAO). Changes in children’s objectively measured physical activity were assessed objectively using Actigraph accelerometers. Multi-level mixed effects linear regression models were used to test the intervention effects. Results All centers participated in HOPPEL and data were collected from each center at each time point. Data were collected from 314 children (m=3.25yrs). Significant increased changes were reported for PA sub-component of the EPAO at 12 weeks (r=0.04) and were maintained after the maintenance period after (r=0.02). Total EPAO scores also showed significant increased differences between control and intervention after the maintenance period only (r=0.03). Significant differences were found for light –sh;moderate-vigorous-physical-activity (LMVPA)
The results of this study suggest that a web-mediated professional learning program for early childhood educators can be an effective method of modifying center-level and child-level outcomes in the area of PA and healthy eating behaviors. This is one of the first studies to evaluate the efficacy of a web-mediated professional learning program for early childhood educators and has the potential to be used as an effective professional learning model for other key ECEC areas.

S.14.2
EFFICACY OF AN ONLINE HEALTHY LIFESTYLE PROGRAM FOR PARENTS OF PRESCHOOL-AGED CHILDREN: RESULTS OF A RANDOMIZED CONTROLLED TRIAL
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SIG: E- & m-health

Purpose Parent-focused eHealth obesity interventions have been limited, but have shown promise in children older than 5 years. The aim of this study is to determine the efficacy of an online healthy lifestyle program for parents of 2-5-year-olds. The foundations for healthy lifestyle are formed at this stage, making parental influence vitally important. Methods Eighty-six parent-child dyads were recruited to a randomized controlled trial in six cohorts from January 2016 to June 2017. The intervention group participated in the 11-week Time2bHealthy online program. The comparison group received weekly emails which included current best practice information pertaining to similar content areas. Data were collected on child body mass index, dietary intake, screen-time, sleep and parent self-efficacy at baseline and follow-up time-points (12 weeks and 6 months post-intervention). Children also wore an accelerometer for 7-days at each time-point. Preliminary analysis was conducted using ANCOVA and the final data will be analysed using linear mixed models. Results As of October 2017, four cohorts had completed the intervention and follow-up data collection (n=63). Preliminary analysis found that there was no significant difference between groups in changes in body mass index from baseline to 12 weeks (p=0.062) or baseline to 6 months (p=0.774). Compared with the comparison group, children in the Time2bHealthy group showed a greater reduction in intake of cakes and biscuits (p=0.036), sugary cereals (p=0.049), juice (p=0.027) and sweets (p=0.009) between baseline and 12-week follow-up. Difference in cake and biscuit intake between groups remained significant at 6 months (p=0.020). Compared to the comparison group, children in the Time2bHealthy group showed a greater reduction in watching movies/programs on TV/DVDs on weekends (p=0.049) and watching movies/programs on devices on weekdays (p=0.029) at 6 months. Conclusion The Time2bHealthy program has the potential for broad reach as it negates many barriers associated with traditional delivery methods of childhood obesity prevention programs. Data collection for the remaining two cohorts will be finalized in December 2017 and the complete results of the study will be presented at the symposium (n=86).

S.14.3
SMARTLIFE: THE DEVELOPMENT OF A MOBILE EXERGAME FOR PROMOTING PHYSICAL ACTIVITY AMONG ADOLESCENTS
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SIG: E- & m-health

Purpose The purpose of this study was to assess how a mobile location-based exergame to increase physical activity in adolescents, can be optimally integrated in adolescents’ daily life. The game receives its input from a smart shirt and the game design not solely departs from the content of the game, but also strongly considers the most suitable context for game play. Methods This study used a qualitative approach. In September 2017, eight focus group discussions were held at two public schools in Belgium, in classes of different educational tracks and age groups, ranging from 12 to 18 years. Each focus group consisted of 6 adolescents of the same school class. Equal distribution of gender in each focus group was pursued. Topics were current gaming practices, daily schedule and activities and the role and place of
gaming in their daily life. The focus group discussions were transcribed, coded in NVivo 11 and thematically analyzed. Results Depending on the regime of the school, smartphone use may be prohibited during school hours, which excludes school breaks as gaming time. Adolescents indicated leisure time and travel time to and from school as an ideal moment for playing a location-based mobile game. As such, this everyday routine can be made more fun and substitution of motorized transportation by for example bicycle use can be encouraged, when possible. Furthermore, the social context of the game was considered important. Therefore, game-play should allow friendly competition or cooperation with peers. The location of game-play should be restricted within a limited radius of the players' residence or indications of safe locations suggested by the players. Preferred activities included both indoor as outdoor activities (for example, dancing, stretching, cycling and running). Conclusions The results demonstrate how focus group discussions can be applied to detect the ideal context for a game play of location-based mobile exergame aimed at promoting physical activity among adolescents. An exergame that can be integrated in daily activities and played with adolescents' peers appears a promising concept design. Further development of the game will incorporate this concept.

S.15: 13068: Defining, Operationalising and Measuring Physical Literacy: Australia's Journey in Multi-Stakeholder Engagement to Promote Movement, Physical Activity, and Sports Participation (Convenor: G C (Lounge))

S.15.1 WHAT IS PHYSICAL LITERACY, REALLY? A MODIFIED DELPHI METHODOLOGY TO DEFINE AND OPERATIONALISE PHYSICAL LITERACY.

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SIG: Policies and environments

Purpose: Accompanying significant interest in the term physical literacy, there has also been substantial debate about the meaning of the concept. In May 2016, The Australian Sports Commission tasked our team with developing a readily acceptable and widely applicable definition. The outcomes were constrained by the following requirements: applicable to all age groups; applicable to a wide range of stakeholders spanning education, recreational sport, elite sport and health context; and also accessible to practitioners, recipients (including children and parents), policymakers and researchers alike. Methods: Following a substantial review of the literature, we implemented a modified Delphi methodology to leverage leading international experts' viewpoints against the foundation of existing knowledge in this area. The above constraints guided the process. We used a one-day workshop to launch the process, and then surveys were sent to the panel seeking their advice on which concepts were considered to be: core to a definition, versus which were (a) constructs/components; (b) associated variables (antecedents/consequences); or (c) philosophical considerations. Three rounds of Delphi were completed with the results analysed and fed forward into the next round. Results: Following two one-day workshops and three rounds of Delphi, we arrived at the following four defining statements. Core: Physical literacy is lifelong holistic learning acquired and applied in movement and physical activity contexts (94% consensus). Construction/Domains: It reflects ongoing changes integrating physical, affective, cognitive and social capabilities (94% consensus). Importance: It is vital in helping us lead healthy and fulfilling lives through movement and physical activity (100% consensus). Aspiration: A physically literate person is able to draw on their integrated physical, affective, cognitive, and social capacities to support health promoting and fulfilling movement and physical activity - relative to their situation and context - throughout the lifespan (94% consensus). Conclusion: The concept of physical literacy is tightly bound up in discussions of philosophy, importance and pedagogy. Once these considerations are dissociated, a core definition emerges representing the potential of all humans to learn, develop and thrive through their physical embodiment. These four defining statements were accepted as having met the project requirements; to define and operationalise physical literacy.

S.15.2 CAN WE USE THE PERIODIC TABLE OF ELEMENTS TO FURTHER OUR UNDERSTANDING OF PHYSICAL LITERACY?
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SIG: Policies and environments

Purpose: Part of the Australian approach to physical literacy was to establish a visual model to help in the understanding of the complex construct of physical literacy. The purpose was to determine whether physical literacy could be explained to a multi-disciplinary group of stakeholders using the principles applied by Dmitri Mendeleev in constructing the Periodic Table of Elements. Methods: The authors reviewed empirical and grey literature sources published on the original work of Dmitri Mendeleev. Considerations in the construction of the Periodic Table of Elements provided insight to some of the complexities that occur when attempting to define physical literacy. The principles of the Periodic Table of Elements were applied to the construct of physical literacy and various scenarios were constructed to illustrate how this approach can help our understanding of physical literacy. Results: Chemists began actively identifying elements in the mid 1700's but after a century of investigation, they still used a variety of symbols and acronyms. They had failed to adopt a common lexicon with their discoveries. In 1869, Mendeleev provided a tabular diagram of known elements. Mendeleev's chart also allotted spaces for elements that were yet to be discovered but predicted may have existed. Physical literacy is a construct that many researchers and stakeholders believe is multifaceted. There is still a failure to adopt a common lexicon pertaining to this construct. Much in the same way Mendeleev was able to predict future elements, the periodic table process applied to physical literacy using a metacognitive template to predict what progression in existing and new elements of physical literacy may look like. We identified 32 elements of physical literacy in our review across four discreet learning domains. There were 14 physical, 7 social, 6 affective, and 5 cognitive elements identified across these domains. Conclusions: Using Mendeleev's approach to visually represent physical literacy provided the capacity to break a stalemate in modelling physical literacy to both key stakeholders and researchers. It forms the basis for discussion in assessing physical literacy [Abstract 3 of symposium]. A revised version of this approach underpins a standards modelling of physical literacy.

S.15.3 ASSESSING PHYSICAL LITERACY: DECIDING WHAT METHOD TO USE

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SIG: Policies and environments

Purpose: Very few research groups have recommended ways to measure physical literacy. Arguably, physical literacy is an important construct and likely to relate to children's health, thus it is important to be able to assess it. The purpose of this paper is to provide a guide to physical literacy assessment using the definition of physical literacy agreed upon in Australia in 2017, which includes the four constructs of physical, psychological, cognitive and social capacities. Methods: We propose a decision-making heuristic to guide and inform the assessment of physical literacy. Results: Nine guidelines to assist decision-making were identified. These included: 1. Domains of importance (i.e. cognitive, social, psychological, physical); 2. Subdomains (e.g., gross motor skill - subdomain of physical); 3. Context (e.g., physical environment); 4. Purpose (e.g., monitor class levels of motor skill); 5. Age group (e.g., primary school); 6. Structured Observation of Learning Outcomes (SOLO) level (i.e., acquisition and accumulation) 7. Method (e.g., objective-vs-subjective); 8. Number of participants; and 9. Cost. Example assessment scenarios will be presented, which highlight the complexities of assessment across the constructs. Discussion/Conclusions: Researchers, practitioners and policy makers who are interested in measuring physical literacy need a process to be able to select the methods that best fit their intention, needs and resources. The examples
demonstrate that deciding on an assessment approach for physical literacy is not easy because it is an umbrella term for an enormous number of interrelated elements. Nevertheless, it is not feasible (or arguably appropriate) to be prescriptive about measurement tools because of this very complexity of the construct. Considering that our ability to measure is also always evolving, the other advantage is that this system is effectively independent of whatever measures exist at any given point in time.

S.16: 13115: Addressing methodological challenges in research on upstream determinants of lifestyle behaviours (Convenor: Dr. Jeroen Lakerveld) (CES 2-3)

S.16.1

ABSOLUTE AND RELATIVE EXPOSURE TO FOOD ENVIRONMENTS IN RELATION TO DIETARY PATTERNS AMONG EUROPEAN ADULTS

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SIG: Policies and environments

Purpose: To test the association of different absolute and relative measures of exposure to the food environment with dietary patterns. We hypothesized that relative measures would better capture the complexity of food environment and thus would be stronger related to dietary patterns. Methods: Cross-sectional study with 4,942 European adults. Objective food environment data was collected using a validated tool in 57 residential neighbourhoods across 5 European countries. Supermarkets and local food shops were classified as 'food retailers providing more healthy options' and restaurants, fast food/take-away restaurants, café/bars and convenience/liquor stores as 'food retailers providing less healthy options'. We created six different exposure measures to the food environment including absolute (density or distance) and relative (a ratio reflecting density and variety, and a ratio reflecting density, variety and distance) measures. Outcome measures were a healthy and less healthy dietary pattern obtained from a principal component analysis (based on frequency of consumption of fruit, vegetable, fish, fast food, sweets and sweetened beverages). We performed linear models using generalized estimating equation (GEE) adjusted for key covariates. Results: Higher absolute density of more healthy and less healthy food retailers were both positively and significantly associated with higher adherence to the healthier dietary pattern: ßa;=3.80; 95%CI=0.20; 7.41 and ßa;=2.12; 95%CI=0.10; 4.15, respectively. Higher absolute spatial access to less healthy food retailers was positively and significantly associated with higher adherence to both the healthy and the less healthy dietary pattern ßa;=64.7; 95%CI=48.6; 80.9 and ßa;=31.3; 95%CI=17.4; 45.2, respectively. The relative measures of exposure were not associated with dietary patterns. Conclusions: In contrast to our hypothesis, we only found significant associations with dietary patterns when using absolute measures of exposure to the food environment. Our findings may indicate that higher availability of food retailers of any type may provide more opportunities for healthier dietary choices. Yet, these results reinforce the heterogeneity found in the literature, and confirm that defining and measuring exposure is complex and needs to be subject of future research.

S.16.2

ASSOCIATIONS BETWEEN THE PHYSICAL ENVIRONMENT AND CHANGE IN OBESITY: A LONGITUDINAL STUDY AND LATENT CLASS ANALYSIS APPROACH

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SIG: Policies and environments

Purpose: To investigate associations between the physical environment and change in obesity by using latent class analysis (LCA) to develop a combined measure of the food and physical activity (PA) environment. Methods: Individual-level data (n=8864, age 21-89 years) were used from wave one [2010-2012] and wave two [2013-2015] of the Yorkshire Health Study (YHS). Body mass index (BMI) was
calculated using self-reported height and weight; obesity=\(\text{BMI}=30\). Age, gender, ethnicity, population density, education-level, and area-level deprivation were identified as confounders. Neighbourhood was defined as a 2km radial buffer (sensitivity analyses; 1.6km radial buffer, administratively defined lower super output areas (LSOAs)). Data on food outlets and PA facilities were sourced from Ordnance Survey Points of Interest and categorised into 'fast-food', 'large supermarkets', 'convenience and other food retail outlets' and 'PA facilities'. Parks were sourced from Open Street Map. LCA was conducted and availability was defined by quartiles of exposure and multi-level (measurement occasion nested within individuals) multinomial logistic regression (OR, 95% CI) was used to investigate associations with change in obesity. Results: Of those who were classified as obese (n=1748), 1379 stayed obese, 351 moved to overweight and 18 moved to healthy weight. Using LCA, a five-class solution demonstrated best fit (defined by the Bayesian Information Criterion) and was interpretable. Neighbourhood typologies were defined as: 'low availability', 'moderate availability', 'moderate PA, limited food', 'saturated' and 'moderate PA, ample food'. Those neighbourhoods with high or saturated availability of foods were mostly 'fast-food' and 'convenience or other food outlets'. Despite more promising cross-sectional associations at wave one only, relative to 'low availability' neighbourhoods, the combined environment did not predict change in obesity prevalence. Those lost to follow up were younger, of non-white ethnicity and obese. Conclusions: Neighbourhoods contained features that are health-promoting and -constraining. Although latent class analysis offers an alternative approach to defining availability of neighbourhood PA and food resources, this did not predict change in obesity over time.

S.16.3 SELF-SELECTION EFFECTS AND OTHER EXPLANATORY MECHANISMS IN THE ASSOCIATION BETWEEN THE BUILT ENVIRONMENT AND PHYSICAL ACTIVITY

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SIG: Policies and environments

Purpose: Other than a causal relation, it might be that the association between the built environment and PA partly reflects individuals' residential self-selection, i.e., residents choose neighbourhoods that support their activity preferences. Our purpose is to discuss the role of (direct and indirect) self-selection effects and other explanatory mechanisms in studies on the influence of the built environment on physical activity (PA). We illustrate the topic with an example in which we used cross-sectional data on the availability of outdoor recreational facilities and leisure-time PA, and discuss the findings in the light of the broader evidence base. Methods: Cross-sectional study, N=5199 European adults. Outcome: total leisure-time PA, leisure-time walking and leisure-time MVPA. Determinant: subjective and objective availability of outdoor recreational facilities in the residential neighbourhood. Self-selection variables: preference for neighbourhoods with recreational facilities (direct) and educational level (indirect). Explanatory variable: perceived availability and use of recreational facilities. Covariates: age, gender, self-rated health, urban region. Statistical analysis: negative binomial GEE. Results: Subjective availability of outdoor recreational facilities was associated with higher levels of total leisure-time PA (RR=1.30, 95%CI=1.17; 1.48), leisure-time walking (RR=1.38, 95%CI=1.19; 1.60) and leisure-time MPVA (RR=1.20, 95%CI=1.01; 1.44). Direct self-selection explained around 20% of these associations. Objective availability of recreational facilities was also associated with leisure-time walking (RR=1.19, 95%CI=1.03; 1.38), but this association was barely affected by self-selection. The reported use of recreational facilities seemed an important underlying mechanism, and proximity was the main motivator for using recreational facilities. Conclusions: Not adjusting for direct self-selection resulted in an overestimation of the association, but we mainly found evidence that outdoor recreational facilities influenced PA rather than the other way around. We found little evidence of indirect self-selection. Future observational studies may want to include a measure of direct self-selection and/or use objective measures of the environment. In addition, measures of 'exposure' to the built environment may be improved by taking into account awareness and use of facilities. Better understanding why some individuals use the facilities in their neighbourhoods whereas others do not may be important input for built environmental policies that aim to stimulate PA.

S.17: 13088: Toward a better understanding of the relationship between physical activity (PA) and
child development: A multidimensional analysis of factors that may mediate the relationship between PA and c (Concord 1)

S.17.1
UNDERSTANDING THE RELATIONSHIPS BETWEEN PHYSICAL ACTIVITY, SLEEP, EXECUTIVE FUNCTION, ATTENTION AND SELF-REGULATION IN PRESCHOOL CHILDREN IN SOUTH AFRICA
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SIG: Early care and education

Objective: Previous research on health and developmental outcomes in preschool children from various income settings in South Africa has shown little association between physical activity and cognitive outcomes, as has been seen in other research. The relationship between physical activity and sleep has not been investigated in this age group of South African children, nor has the relationship been examined between sleep and other cognitive and mental health outcomes. More specifically, these relationships have not been compared between low- and high-income settings in South Africa. The aim of this study was therefore to investigate these relationships in preschool children from low- and high-income South African settings. Methods: Physical activity and sleep have been objectively measured using hip-worn Actigraph GT3X+ accelerometers, and height and weight were measured. Parents completed a brief questionnaire on their child's sleep times and sleeping conditions in the home. The iPad-based Early Years Toolbox was used to assess executive function (working memory, inhibition control, and cognitive flexibility), self-regulation, sociability, prosocial behaviour and internalising/externalising behaviour. Selective attention was assessed using a tablet-based battery of visual-search tasks. Results: Preliminary results indicate different sleep patterns between preschool children from low- and high-income settings, with children from the low-income setting going to bed later and having a less consistent bedtime routine. Volume of total daily physical activity appears similar between income settings, but patterns of physical activity differ. Children from high-income settings performed better on only some of the cognitive assessments, which supports previous findings in low-income preschool children (in South Africa) which showed better than expected scores compared to the EYT norms. Children from low-income settings in this study were also reported to display more prosocial traits, compared to children in high-income settings. Conclusions: This research helps to contribute to a growing body of research that is exploring relationships between movement behaviours, cognitive and mental health outcomes in early childhood, within a low- and middle-income country context. Importantly, this research aims to better understand how these relationships might differ across different income settings in South Africa.

S.17.2
IMPROVING EXECUTIVE FUNCTIONS AND SLEEP QUALITY IN CHILDREN WITH AUTISM VIA PHYSICAL ACTIVITY INTERVENTION
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SIG: Children and families

Purpose: Prior research has demonstrated a positive impact of physical activity (PA) on executive functions (EF) and sleep quality in typically developing children. However, similar studies in children with Autism Spectrum Disorder (ASD) are scarce. The benefits of PA may help ameliorate symptoms in children with neurodevelopmental challenges, such as Autism Spectrum Disorder (ASD), who often have EF impairments as well as sleep disturbances. The purpose of this study was to examine the impact of a 12-week PA intervention (basketball training) on EF (inhibition and working memory) and sleep quality in children with ASD. Methods: This study was conducted in Hong Kong. 20 children with ASD were recruited and randomly assigned into two groups: intervention or control. The intervention group participated in a 12-week basketball training intervention (2 sessions per week, 30 minutes per session, for 24 total sessions), while those in the control group attended 24 story-telling sessions (2 sessions per week, 30 minutes per session) to control for the potential effects of participant-staff social interaction. Neuropsychological
assessments (Go/No-go task and digit memory tasks) and actigraphy assessment (wearing ActiGraph for seven days) were used to assess the EF and sleep quality before and after the intervention. Results: For executive functions, significant improvement in inhibitory control was revealed in the intervention group (p < .001, d = .54) but not in the control group (p > .05). No significant improvement in working memory capacity was documented in either group (p > .05). For sleep quality, a significant reduction in average sleep onset latency (p < .05, d = .42) and average wake after sleep onset (p < .05, d = .44) were found in the intervention group but not in the control group (p > .05). Conclusions: The results highlight the value of PA in improving EF and sleep quality in children with ASD. In subsequent research, we plan to examine the exercise-cognition relation via a self-regulation model and to investigate the underlying mechanisms of exercise-sleep relationships using a melatonin-mediated model in children with ASD.

S.17.3 ASSOCIATIONS BETWEEN PARTICIPATION IN SPORT AND PHYSICAL ACTIVITY AND SOCIAL, EMOTIONAL AND BEHAVIOURAL OUTCOMES IN EARLY CHILDHOOD – FINDINGS FROM A NATIONALLY REPRESENTATIVE INFANT COHORT STUDY IN IRELAND

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SIG: Early care and education

Purpose Studies examining the effects of regular physical activity in young children indicate a range of beneficial outcomes in relation to physical and mental health. This presentation explores associations between participation in sport and physical activity and social, emotional and behavioural outcomes in this population, emphasising the possible moderating effect of early years child development. Methods Prospective cohort data from 11,134 children who participated in the nationally representative Growing Up in Ireland study were analysed. Children were followed from birth to 12 months (W1), at age 3 (W2) and age 5 (W3), and data were collected using parent-report measures. Parents reported children's time spent attending sports clubs (as participant) and events (as spectator), as well as children's time spent playing in non-sports contexts (W3). Parents completed the Strengths and Difficulties Questionnaire (SDQ) as an indicator of social, emotional and behavioural outcomes in children (W3), as well as the Ages and Stages Questionnaire (ASQ) as an indicator of early development (W1). Data were divided into three discrete ASQ groups based on whether the child had shown clear (Group 1), some (Group 2) or no (Group 3) evidence of early developmental delay (W1). Estimates of effect were calculated according to the assumptions of a mixed (fixed and random effects) model. Differences between groups were thereafter assessed via standardization. Non-clinical magnitude-based inferences (MBI) were derived mechanistically and used to make meaningful conclusions about the association between PA and SDQ outcomes and differences between ASQ groups. Results The odds of participation in sport or of being physically active did not substantially differ across ASQ groups (Value of Effect= 2.2; 90%Confidence Limits= ±smn;1.4). For children with clear developmental delay (at W1), participation in sport and physical activity (at W2 and W3) was associated with lower rates of parent-reported psychological difficulties (Effect Size= 0.3; 90%CL= ±smn;0.2), fewer internalising (0.3; +0.3) and externalising (0.2; +0.2) problems, and higher levels of prosocial behaviour (0.2; +0.3) (W2, W3). Conclusions For children with early years developmental delay, participation in sport and physical activity appears to attenuate social, emotional and behavioural difficulties which are experienced later in childhood at pre-school ages.

S.18: 13149: Building Blocks for early care and education settings: the utility of developing techniques to assess diet and meals, both behaviorally and environmentally (Convenor: Dr. Amy Yaroch) (Concord 2-3)

S.18.1 MEASURING IMPLEMENTATION BEHAVIOUR OF MENU GUIDELINES IN THE CHILDCARE SETTING: CONFIRMATORY FACTOR ANALYSIS OF A THEORETICAL DOMAINS FRAMEWORK QUESTIONNAIRE (TDFQ).

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SIG: Early care and education

Objective: There are a large number of available theories and frameworks examining constructs of behaviour change which creates a significant impediment to the application of theory in implementation research. The Theoretical Domains Framework (TDF) is an integrative framework that combines a multitude of behaviour change theories, allowing for comprehensive assessment and explanation of barriers and enablers to behaviour change. The aim of this study is to describe the development, psychometric properties and application of a measure of each domain of the TDF developed to assess the implementation of dietary guidelines within the early childhood education and care setting (ECEC)

Methods: The research team developed a theoretical domain framework questionnaire (TDFQ) (14 domains and 75 items). Development involved adapting two previously published TDF questionnaires that had both shown to have sound construct validity and internal consistency in the clinical setting. To test the psychometric properties, the survey was administered via a computer assisted telephone interview (CATI) over a 3 month period to a random sample of long day care service cooks, located in New South Wales Australia, followed by a confirmatory factor analysis (CFA). The research team has also since applied the TDFQ to support the planning and evaluation of implementation trials in the ECEC sector. Results: Of the 342 eligible service cooks 202 completed the CATI. For the CFA, five iterative processes of adjustment resulted in the removal of 14 items. Only one of the three indices support goodness of fit of the measurement model tested, the final 14-domain model with 61 items showed good discriminant validity and internally consistent items. High ceiling effects were observed across the domains. Specific applications of the TDFQ undertaken by the research team will also be discussed. Conclusions: There has been no previous validation of a TDFQ for ECEC settings. The TDFQ provides significant opportunities for public health researchers who wish to apply the TDF to support the implementation of evidence-based practices in early childhood and education centres. Future attempts to refine and validate the TDFQ in other community-based settings is likely to increase the utility of this measure.

S.18.2
ADAPTING THE QUANTITATIVE MENU ANALYSIS TECHNIQUE FOR THE EARLY CARE AND EDUCATION SETTING
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SIG: Early care and education

Purpose: Recent data show that national childhood obesity rates have climbed to 18.5%, warranting the need for innovative intervention and measurement strategies across multiple settings. The Quantitative Menu Analysis (QMA) technique was first developed to measure pre-post intervention meal improvements in K-12 schools, by calculating the percent of ingredients classified as fresh/whole, transitional/clean label, or highly processed. This technique has proven effective in measuring change in meal quality, however it can be time-consuming for data collection and entry, as well as requiring expertise in statistical analysis. The purpose of this study is to describe the transition of using the QMA in schools to early care and education (ECE) using a new self-report method, the QMA-self report (QMA-SR). Method: The QMA is currently being adapted into a QMA-SR for the ECE setting. The self-report component will maximize ease of data collection, entry, and analysis for pre-post-intervention menu data. Specifically, the QMA-SR will lead the administrator (e.g., researcher or practitioner) through a series of steps to quickly categorize and score ingredients of menu items, including the level of processing, such as fresh/whole, transitional/clean label, or highly processed and by the key components: protein, dairy, grains, fruits, and vegetables. The percentage of items in each level of processing will be calculated using an algorithm which will be
embedded into a program that will be made publically available. Results: The final version of the QMA-SR will be demonstrated with attention given to the adaptation of the QMA to the ECE setting, including barriers and facilitators identified during pilot testing. In addition, the algorithms used in development and applications of the QMA-SR, including dissemination will be discussed. Conclusions: The QMA is a comprehensive technique used to assess levels of healthfulness and processing (e.g., scratch cooking versus processed) in the school setting. The QMA-SR is a user-friendly version, which is ultimately less time-consuming and relevant for both the K-12 and ECE settings. There are few affordable techniques to assess meal quality in the ECE setting, therefore this is a needed resource which fills a gap in the field of childhood dietary assessment.


SIG: Early care and education

Purpose: The assessment of child dietary intake while attending childcare centres has largely relied on direct observations. While this method represents gold standard for dietary assessments in such settings, the cost of undertaking this is prohibitive for large numbers of children and those dispersed across rural and regional locations. The aim of this study was to describe the development of a child food record (CFR) for assessing child dietary intake while attending childcare centres, and to determine the relative validity of the CFR. Methods: The CFR was adapted from a previously validated 38-item short food survey to assess child dietary intake in line with the Australian Guide to Healthy Eating (AGHE), while attending care. The modified CFR consisted of 47 items, and was completed by childcare educators. Trained research staff observed child food consumption using a standardised data collection tool ("direct observation"). Relative validity will be assessed by comparing mean serves of core food groups (fruit, vegetables, breads and cereals, meat/meat alternatives, and dairy) consumed with those obtained by direct observation. Intra-class correlations, percentage agreement, Bland–Altman plots and mean differences (with 2SD limits of agreements) will also be calculated to assess validity. Cohen’s kappa was used to determine the level of agreement between meeting and not meeting the dietary guidelines (AGHE recommended serves of each core food group). Results: Preliminary results are presented. A total of 210 completed CFRs and ‘direct observations’ were available for comparison. Percentage agreement between the CFR and direct observations for each core food group ranged from 56-91%. In regards to meeting the dietary guidelines, Cohens kappa ranged from 0.2 –sh; 0.4 for each of the core food groups. Results for the Intra-class correlations and Bland-Altman plots will be presented. Conclusions: To our knowledge, this is the first attempt to validate a quantitative tool for assessing child dietary intake in care. This provides an opportunity for the application of such tools to the evaluation of nutrition-based interventions conducted in this setting, overcoming feasibility restrictions encountered by the current gold standard method of assessing child dietary intake whilst attending care.

S.19: 13007: Chinese College Students’ Physical Activity Correlates and Behavior (Convenor: Dr. Zan Gao) (Oasis)

S.19.1 APPLICATION OF THE TRANSTHEORETICAL MODEL OF CHANGE TO CHINESE COLLEGE STUDENTS’ PHYSICAL ACTIVITY BEHAVIOR Xiong Shanying, Li Xianxiong, Tao Kun, Zeng Nan, Ayyub Mohammad, Yan Xiaoni, Wang Junli, Wu Yizhong, Lei Mingzhi.

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Purpose: Understanding the associations among individuals' physical activity, sedentary behavior, body mass index (BMI) and health is vital to the implementation of physical activity interventions. However, no known studies have investigated such associations among Chinese college students thus far. Therefore, the purpose of this study was to discern the relationships among college students' physical activity, sedentary behavior, BMI and health in China. Methods: Participants were 887 college students (522 females, 365 males; age from 16-25; Mage = 20.51, SD= ±1.67) recruited from four universities in the South and South-center China. Participants' physical activity behavior was assessed by validated International Physical Activity Questionnaires for Chinese (Macfarlane et al., 2007). Students' weekday and weekend sedentary behavior as well as health status were measured via established questionnaires (Neumark-Sztainer et al., 2008). Additionally, their height and weight were assessed in private rooms to calculate BMI. All data collection were conducted by the end of school years in 2016 and 2017. Results: Correlation analysis suggested students' physical activity was positively correlated with their BMI (r = 0.11; p = 0.003) and health (r = 0.18; p < 0.001). No other significant correlation was identified. Regression analyses further revealed students' physical activity was the only positive predictor of health (βa = 0.18, p < 0.001). One-way (2 genders) ANOVAs indicated that males reported significantly higher levels of physical activity (Mean METs 448 vs. 3349), BMI (22.23 vs. 19.96), and health (Mean value 2.68 vs. 2.48) as compared to females (p < .01). In regards to sedentary behavior, males reported significantly higher time in sedentary during weekdays and weekends than females did (p < 0.05). Conclusion: Findings
suggested that only physical activity behavior positively predicted health status in Chinese college students. Also, males reported higher levels of physical activity, sedentary, BMI and health than girls. This study supports the previous studies indicating physical activity, BMI and sedentary behavior are separate and independent factors in influencing health.

S.19.3
CHINESE COLLEGE STUDENTS SELF-DETERMINED MOTIVATION, OBJECTIVE-BASED PHYSICAL ACTIVITY AND QUALITY OF LIFE: GENDER DIFFERENCES
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SIG: Theories of motivation

Purpose: To better promote college students' physical activity (PA) and quality of life (QoL), it is imperative in understanding this population's PA correlates such as self-determined motivation and perceived competence. However, few studies existed in this area of inquiry among Chinese college students. Thus, this study's purpose was to examine the relationships among Chinese college students' motivation, PA and QoL, as well as discern gender differences of these outcomes. Method: A total of 220 college students (115 females; age from 17-25; Mage = 20.29) were recruited from one university in South-center China. Participants' self-determined motivation (autonomous, controlled and amotivation), perceived competence and QoL (physical function, stress, depression, fatigue, sleep, social issues) were assessed by a battery of validated surveys in June 2017. Their 7-day PA behavior and energy expenditure (EE) were measured with ActiGraph Link accelerometers (ActiGraph, Pensacola, FL), with moderate-to-vigorous PA (MVPA) and calories per day as the outcomes. Results: Participants reported moderate-high levels of PA correlates and QoL. They also spent averages of 357.82 calories and 123.55 minutes in MVPA per day. Regression analyses for physical function, stress, depression and social issues suggested that the whole models explained 4%-8% of the variances. In detail, perceived competence was the negative predictor for physical function (βa = -0.17, p < 0.05) and depression (βa = -0.18, p < 0.01), while amotivation was the positive predictor for depression and stress (ps < 0.05). Additionally, controlled motivation was the positive predictor for social issues (βa = 0.22, p < 0.05). No significant predictors emerged for fatigue nor sleep. MANOVAs further suggested that males had higher controlled motivation, perceived competence and EE (ps < 0.01), yet lower MVPA (p < 0.01), than females did. There were no gender differences for QoL indices. Conclusions: Findings suggest Chinese college students' perceived competence were very vital in improving QoL in this population. Males and females also differed on PA behavior and correlates. Educators are recommended to help students successfully complete the tasks to foster perceived competence for different genders.

Jun 05, 11:35 - 12:50: Symposia

S.20: 13050: Approaching intervention development in young adults: understanding life-course context, intervention preferences and the characteristics of a successful intervention. (Convenor: Prof. Clare Co (Grand Ballroom))

S.20.1
ASSOCIATIONS BETWEEN LIFE-COURSE TRANSITIONS AND LONGITUDINAL CHANGE IN DIET IN EARLY ADULTHOOD: LEAVING HOME, LEAVING EDUCATION, ENTERING EMPLOYMENT AND BEGINNING COHABITATION.
Winpenny E.M1, van Sluijs E.M.F.1, White M1, Klepp K.I.2, Wold B3, Lien N2.1UKCRC Centre for Diet and Activity Research (CEDAR), MRC Epidemiology Unit, School of Clinical Medicine University of Cambridge,Cambridge; 2Department of Nutrition, Faculty of Medicine, University of Oslo, Oslo; 3Department of Health Promotion and Development, Faculty of Psychology, University of Bergen, Bergen.
Objective: Early adulthood is a period of poor diet and rapid weight gain. This is also a period of transition, including environmental, social and lifestyle changes which may be associated with changes in diet. We assess longitudinal associations between four early adulthood life transitions (leaving home, leaving education, entering employment, and cohabitation) and changes in consumption of fruit, vegetables, confectionary and sugar-sweetened beverages (SSBs). Methods: Longitudinal data on 1100 participants from the Norwegian Longitudinal Health Behaviour Study, 1990-2007, were used to develop growth models describing intake of fruit, vegetables, confectionary and sugar-sweetened beverages from age 14 to age 30. Fixed-effects regression models assessed associations between four life transitions and within-individual change in diet indicators, with adjustment for the remaining transitions and parenthood. Results: Diet indices showed quadratic trajectories with age: fruit and vegetable intakes declined from age 14 to ages 23 and 21 respectively, before increasing to age 30. SSB and confectionary intakes increased to age 18, before subsequently decreasing. Leaving the parental home was associated with a decrease in fruit intake of -0.54 times/week (95%CI -0.87;-0.22) and vegetable intake of -0.43 times/week (95%CI -0.70;-0.15). Leaving education was associated with increases in confectionary (0.33 times/week (95%CI 0.04;0.62)) and SSB intakes (0.49 times/week (95%CI 0.10;0.87)). Conclusions: The life transitions of leaving home and leaving education may present opportunities for effective diet and obesity intervention. Further study of these transitions is needed to understand the mechanisms mediating associations between life transitions and changes in diet.

S.20.2
PROCESS EVALUATION OF TWO TARGETED HEALTHY LIFESTYLE PROGRAMS FOR EITHER YOUNG MEN (THE HEYMAN STUDY) OR YOUNG WOMEN (BE POSITIVE BE HEALTHE) – WHAT WORKS AND WHAT DOESN'T?
Ashton L.M.¹, Whatnall M.C.¹, Morgan P.J.², Rollo M.E.¹, Collins C.E.¹, Hutchesson M.J.¹,¹Priority Research Centre for Physical Activity and Nutrition, 1School of Health Sciences, University of Newcastle, Callaghan; ²Priority Research Centre for Physical Activity and Nutrition, 1School of Education, University of Newcastle, Callaghan.

SIG: E- & m-health

Objective: Heterogeneity in psychological, social, and physical differences between sexes and age groups, highlight the need for gender and age-specific health programs. This study assessed the feasibility of intervention components from targeted healthy lifestyle programs in young men and young women. Methods: Two pilot RCT’s in Australian young men (n=50) and women (n=57), informed by formative research. For young men, the 3-month HEYMAN (Harnessing Ehealth to enhance Young men’s Mental health, Activity and Nutrition) program included eHealth support (website, wearable device, social media), face-to-face sessions, a food and nutrient report, home-based resistance training equipment and a portion control tool. For young women, the 6-month Be Positive Be Healthe program was delivered using eHealth technologies only (website, app, email, text messages and social media). Usage data was assessed and intervention participants completed a process evaluation and asked to rank overall acceptability/satisfaction on a Likert scale, from strongly agree ( =5) to strongly disagree ( =1), as well as comprehension and ability to persuade/engage of the individual program components. Results: HEYMAN: 88% reported to be very satisfied/satisfied with the program and participants were most satisfied with the one-to-one session (4.3±smn;0.8). This delivery mode had 96% attendance and ranked highest for providing useful information about healthy eating (4.5±smn;0.7) and physical activity (4.2±smn;0.8). The personalized food and nutrient report ranked highest for helping to attain goals (4.1±smn;1.0) and although the weekly group face-to-face sessions had low attendance (average 31%), this ranked highest for ability to motivate (4.3±smn;0.7). The home-based resistance training equipment, Facebook and portion control tool had lower usage and consistently ranked lower for acceptability. Be Positive Be Healthe: mean satisfaction with the program was 3.2±smn;0.9. Participants were most satisfied with goal setting (3.8±smn;0.7) and self-monitoring app (3.8±smn;0.8). For these components, 72% set goals, while 59% used the app. The app also ranked highest for motivation (3.6±smn;1.0) and helping to attain goals (3.4±smn;0.9). Social media posts ranked highest for providing useful information about healthy eating.
(3.8±smn;0.7), exercise (3.8±smn;0.6) and weight loss (3.7±smn;0.7). Text messages were often ranked lowest for acceptability items. Conclusion: Findings provide important insights for shaping program refinements in the future.

S.20.3
WHAT ARE THE CHARACTERISTICS OF A SUCCESSFUL INTERVENTION IN YOUNG ADULTS? - RESULTS FROM A SYSTEMATIC REVIEW.
Aguiar E.J.¹, Ashton L.M.², Collins C.E.², Whatnall M.C.², Pezdirk K², Williams R.², Hutchesson M.J².¹ Department of Kinesiology, University of Massachusetts, Amherst; ²Priority Research Centre for Physical Activity and Nutrition, School of Health Sciences, University of Newcastle, Callaghan.

SIG: Theories of motivation

Objective: Unhealthy lifestyle behaviours are common during young adulthood and can influence chronic disease morbidity in later life. Although there has been an upward trajectory of research in this area, there is a lack of understanding of which specific components of these interventions are contributing to positive effects on health. Therefore, this systematic review aimed to identify behaviour change techniques (BCT's) used in Nutrition, Physical activity or Overweight/obesity interventions in young adults and examine which BCT's are most effective. Methods: A search of six major electronic databases, from the date of inception to September 2017 was conducted. Inclusion criteria were: English language and human participants. All behavioural randomized controlled trials with the primary aim of improving: nutrition, Physical activity or treating or preventing obesity in young adults (aged 17-35 years) were included. Results: After removal of duplicates, 18,826 manuscripts were identified. The next phases include title/abstract screening, full-text screening and data extraction. This work is currently in progress and will be completed in time for the conference. Effectiveness of BCT's on nutrition, Physical activity or Overweight/obesity outcomes will be presented at the meeting. Conclusion: Results will help to guide development of effective nutrition, Physical activity or Overweight/obesity interventions among young adults.

S.21: 13122: Building Bridges: How can we induce synergetic environment - behavior processes to promote healthy food choices? (Convenor: Dr. Roel Hermans) (Salon 1-2)

S.21.1
NORMAL BUT SMALLER: EXPERIMENTAL EVIDENCE ON THE ‘NORMALISING’ EFFECT OF REDUCING FOOD PORTION SIZES
Robinson E¹.¹University of Liverpool, Liverpool.

SIG: Policies and environments

Background: Supersized portions have now become normal and historical increases in the size of commercially available food products have been linked to the obesity crisis. Although portion size has been identified as a potential target to improve public health, the downstream consequences of reducing food portion sizes are unclear. Aims: We hypothesise that reducing food portion size may alter perceptions of what constitutes a normal amount of food to eat and in doing so nudge people towards selecting and consuming smaller portions of food in future. Our aim was to test this across three experiments. Method: In three experiments participants were served and ate a large or smaller portion of food during a laboratory session. Experiment 1 (75 adult women), experiment 2 (78 adult men) and experiment 3 (46 adult men and 78 women) were conducted with participants from Liverpool, UK. In experiments 1-2, twenty four hours after eating the small or large portion size participants selected and consumed a serving of the same food. In experiment 3, one week later participants reported on their preferred portion size of the same food. Results: Participants that ate a smaller portion size altered their perceptions of what constitutes a 'normal' sized serving and this resulted in them freely choosing to eat less of that food in future. Conclusions: This particular finding demonstrates that physical environmental influences, such as portion size, might interact with social normative influences. Further, this suggests that the downsizing of food product portion sizes would result in consumers eating less and smaller portion sizes 'normalising'.
S.21.2
THE ROLE OF NEIGHBOURHOOD DESIGN IN DETERMINING FOOD PURCHASING LOCATIONS
Thornton L.1, Deakin University, Melbourne.

SIG: Policies and environments

Purpose: This recently funded study aims to assess the projected lifestyle benefits associated with the 20-minute neighbourhood design. A 20-minute neighbourhood is one where important destinations are easily accessible. Urban renewal and liveability policies advocate for 20-minute neighbourhoods under the assumption these encourage more localised and healthier lifestyles. However, this has not been formally tested. This presentation will discuss some important limitations in built environment (and specifically food environment) research that was the motivation for this study and what will be learnt through the proposed methodology. Methods: Using online surveys and the VERITAS tool, this study will collect data on the locations of key food behaviours and examine these relative to neighbourhood location, neighbourhood design (including provision of food outlets), individual and household characteristics, and social networks. Comparisons will be made between the location and type of food behaviours undertaken by residents of existing 20-minute neighbourhoods with the type and location of behaviours undertaken by residents living outside 20-minute neighbourhoods. Results: In previously conducted pilot work it was found that for all food purchases the median distance from participants’ homes was 3.6 km (IQR 1.8, 7.2) whilst it was shorter for purchases made within supermarkets (median 2.8 km; IQR 1.6, 5.6). These distances far exceed what is considered within a 20-minute walk (1.5km) as part of the 20MN design. This presentation will demonstrate the methodology employed to capture food purchasing locations, discuss factors explored to determine why these locations were chosen including social influences, and highlight the key knowledge gaps to be filled. Conclusions: This study will provide important evidence to help us better understand the role of neighbourhoods on food purchasing behaviours and to inform the development of more appropriate food environment exposure measures. As urban renewal policies are prolific in many of Australia's major urban centres, the evidence from this study is timely.

S.21.3
THE ROLE OF SOCIAL AND PHYSICAL ENVIRONMENTAL INFLUENCES ON FOOD INTAKE OF CHILDREN AND ADOLESCENTS
Kremers S1, NUTRIM, Maastricht University, Maastricht.

SIG: Children and families

Purpose: This presentation will combine data from multiple studies that have addressed the impact of social and physical environmental influences on food intake in children and adolescents. We assume that environmental influences do not influence behavior in an isolated fashion, but that they interact. Methods: Data have been gathered in cross-sectional, longitudinal and experimental studies in the home and school environment. Physical environmental factors that have been assessed relate to availability, accessibility and visibility of food. Social environmental factors relate to parent/teacher encouragement, support and modelling. Multivariate models include main effects of environmental factors as well as interaction terms of social and physical factors. Results: There is a consistent pattern in the results from the various studies in that (changes in) both social and physical environmental factors predict (changes in) behavior. However, in addition to these main effects, we have found interactive effects of social and physical environmental influences. Inspection of the interactive nature often shows that the effect of specific encouragements, norms or support on child or adolescent behaviour is strengthened by favourable physical environmental features. On the other hand, results indicate that the effectiveness of supportive social influences may also fade out in non-supportive physical environments. Conclusions: Children and adolescents are exposed to multiple types of environmental influences that interact in determining food intake. Favourable social and physical environments are likely to induce synergetic environment–sh; behaviour processes, whereas detrimental physical environments may diminish potential effects of social environmental endeavours to promote healthy eating.
S.22: 13033: Reflections from process evaluations of school-based physical activity interventions targeting adolescents (Convenor: Dr. Stephanie Jong) (Salon 3-4)

S.22.1
UNPACKING THE ‘PHYSICAL ACTIVITY 4 EVERYONE’ INTERVENTION TARGETING DISADVANTAGED SECONDARY SCHOOLS: INTERVENTION IMPACT ON MVPA WITHIN SEGMENTS OF THE DAY AND PROCESS EVALUATION RESULTS.

Sutherland R\textsuperscript{1,2,3}, Campbell L\textsuperscript{1,2,3}, Lubans D.R\textsuperscript{4}, Morgan P\textsuperscript{4}, Nathan N\textsuperscript{1,2,3}, Wolfenden L\textsuperscript{1,2,3}, Okely A.D\textsuperscript{5}, Gillham K\textsuperscript{1}, Hollis J\textsuperscript{1,3}, Oldmadow C\textsuperscript{3}, Williams A\textsuperscript{1,2,3}, Davies L\textsuperscript{1,3}, Wiggers J\textsuperscript{1,3}Hunter New England Population Health, Wallsend, New South Wales; \textsuperscript{2}School of Medicine and Public Health, University of Newcastle, Newcastle, New South Wales; \textsuperscript{3}Hunter Medical Research Institute, Newcastle, New South Wales; \textsuperscript{4}Priority Research Centre in Physical Activity and Nutrition, School of Education, University of Newcastle, Newcastle, New South Wales; \textsuperscript{5}Early Start Research Institute and School of Education, University of Wollongong, Wollongong, New South Wales.

SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Physical Activity 4 Everyone (PA4E1) was a successful 2-year multi-component physical activity intervention conducted in disadvantaged secondary schools in Australia, resulting in a mean difference between groups of 7 minutes of MVPA/day (2.7, 11.4; \textit{p}<0.01), equivalent to 50 minutes more MVPA per week (n=1150, mean age 14 years). Contextualising barriers and facilities to implementation, via process evaluation is essential to advance the field of implementation science and identify if interventions are appropriate to implement at-scale. This study unpacks the PA4E1 intervention to contextualise aspects of the multi-component intervention which led to a successful intervention outcome. Specifically, the study will present an impact of PA4E1 on daily MVPA within segments of the day (school hours, recess and lunch, outside of school hours) together with process evaluation results focused on intervention fidelity, reach and acceptability from a school and student perspective.

Methods: PA4E1 was an RCT conducted in ten secondary schools (five intervention, five control), and evaluated via objectively measured physical activity (mean minutes of MVPA/day) using Actigraph GT3x accelerometers. The intervention consisted of seven school physical activity practices, and was supported by six implementation strategies. Outcome and process evaluation measures were collected at baseline, 12 and 24-months. Surveys were conducted with Head PE teachers, class PE teachers and students to measure intervention fidelity, reach and acceptability. Qualitative evaluation was also conducted to further explore intervention acceptability and guide planning for potential scale-up via interviews and focus groups. Results: PA4E1 resulted in a significant effect on school day (4.96 min (1.78, 8.13); \textit{p}<0.01), recess and lunchtime (3.82 min (1.88, 5.76); \textit{p}<0.01) and outside of school hours (5.88 min (2.38, 9.37); \textit{p}<.01) physical activity segments at 24-months. Process evaluation identified high intervention fidelity, ranging from 62-100% of teachers implementing practices at 24-month follow-up. Intervention reach at the student level was highly mixed ranging from 28-90% and acceptability was consistently high. Qualitative evaluation confirmed six of the seven physical activity practices were well implemented and further identified strategies to strengthen the intervention for implementation at-scale. Conclusions: PA4E1 was implemented with high intervention fidelity and acceptability, and modest reach, resulting in significant intervention effects on segmented daily MVPA.

S.22.2
RESULTS FROM THE PROCESS EVALUATION OF AN INTERVENTION TO INCREASE HONG KONG STUDENTS’ PHYSICAL ACTIVITY DURING SCHOOL PHYSICAL EDUCATION

Ha A S\textsuperscript{1}, Ng J Y\textsuperscript{1}, Sam Cecilia\textsuperscript{1}.\textsuperscript{1}The Chinese University of Hong Kong, Hong Kong.

SIG: Theories of motivation

Purpose: The activity levels of Hong Kong students during school physical education is low. Further, previous research conducted in Hong Kong has shown that the transition from primary to secondary school may have a negative impact on students' physical activity participation. Intervention targeting adolescents at this pivotal aging point is important. To this end, we designed a school-based intervention
to increase Year 8 students' activity levels during physical education classes. The SELF-FIT intervention was designed based on tenets of self-determination theory. The intervention incorporated teaching training workshops, an in-class fitness dice activity, and playing music to increase students' participation. Process evaluation was conducted to examine the theoretical fidelity and feasibility of the trial. Methods: 75 students and 11 teachers who took part in the SELF-FIT trial were invited to focus group or one-to-one interviews. Thematic data analysis was conducted on interview transcriptions. Themes derived from self-determination theory were used to explore the theoretical fidelity of the intervention. Other emerging themes were defined to examine the feasibility of the intervention. Results: Students’ interview responses suggested the intervention enhanced their psychological need satisfaction of competence, autonomy, and relatedness. They also explained how the intervention enhanced their motivation or increased their actual activity behaviours. Teachers suggested the workshops provided a platform for them to reflect on their own teaching methods and ideals. They also reported that resources provided were also helpful for their teaching outside the intervention. Conclusions: Results from focus group interviews supported the theoretical fidelity of the trial and its potential to be employed to physical education. Respondents also found the intervention to be feasible, and in particular, the fitness dice activity appeared to be fun and engaging to many students. Importantly, results of the study provide support regarding the importance of ongoing teacher development. Teacher re-education should be considered as a critical component to school-based interventions.

S.22.3
GOACTIVE

Jong ST1, Brown HE1, Croxson C2, Guell-Unwin C2, Corder K1, van Sluijs E1.1UKCRC Centre for Diet and Activity Research (CEDAR), University of Cambridge; Cambridge; 2Nuffield Department of Primary Care Health Sciences, University of Oxford, Oxford; 3University of Exeter, Exeter.

SIG: No, this does not fit in any of the above mentioned special interest groups

Background: GoActive is a multicomponent school-based physical activity intervention targeting Year 9 students (13-14yrs). The impact of the 12-week intervention on objectively measured MVPA at 10-month follow-up is being tested in an ongoing cluster randomised controlled trial with 16 schools. A mixed-methods process evaluation investigated variations in the implementation across schools and evaluated process indicators including reach, recruitment, dose, intervention fidelity, context and sustainability. Methods: This mixed-methods process evaluation was guided by the MRC guidance for conducting process evaluations of complex interventions. Participants’ experiences and process indicators were assessed through direct observation, purposively sampled semi-structured individual and focus group interviews, website analytics, and questionnaires (delivered to all key groups within the intervention: students, teachers, older adolescent mentors, and local authority-funded funded facilitators). Quantitative data were collected by questionnaire in both the control and intervention arms of the study. Data was analysed thematically, integrating results through a matrix, leading to overall mixed methods synthesis of findings. Results: All eligible Year 9 students were exposed to the intervention (reach); 88% consented to the evaluation. Preliminary results show variations in implementation between schools, and within schools. For example, engagement with mentor-ship components of the intervention, and form teacher engagement with the intervention varied. Students expressed positive associations with the intervention, but modifications to the mentor component, and teacher engagement had a significant impact on student experience and receptiveness of the intervention. Barriers expressed by all participants included the timing of implementation within the school year, lack of school resourcing, and delegation of organising GoActive sessions. Further mixed-methods analyses will explore dose, implementation quality, and fidelity of the intervention, with careful attention to the school context. Conclusion: This approach to process evaluation demonstrates a comprehensive, integrated assessment of the implementation and processes of a complex physical activity intervention within a cluster randomised controlled trial. Our results will allow us to re-appraise the program’s conceptual base, understand trial results, as well as inform and optimise the program for post-trial sustainability and potential roll out. Furthermore, the mixed-methods approach can be applied to, and adapted for use in other complex intervention trials.

S.23: 13075: Development, effectiveness and evaluation of e- and mHealth interventions to...
promote physical activity among healthy and diseased risk groups. (Convenor: Miss Dorien Simons) (Drawing Room)

S.23.1

EFFECT AND PROCESS EVALUATION OF A MOBILE APP TO PROMOTE AN ACTIVE LIFESTYLE IN LOWER EDUCATED WORKING YOUNG ADULTS: A RANDOMIZED CONTROLLED TRIAL

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SIG: E- & m-health

Objective: Young adulthood comprises many life changes which have been associated with decreases in physical activity (PA). Young adults (18-30yrs) who are employed and who did not complete higher education have an even higher risk for inactive lifestyles. Because of their popularity among young adults, smartphones applications have great potential as a health promotion delivery strategy. An evidence- and theory-based mobile app, 'Active Coach' was developed and aimed to promote an active lifestyle among lower educated working young adults. The aim of this study was to report the effect and process evaluation. Methods: Lower educated working young adults (n=130, 25.0±smn;3.0 yrs, 48.5% men) participated in a 2-group RCT that assessed outcomes at baseline, posttest (baseline+9weeks) and follow-up test (post+3 months). The intervention group (n=60) used the Active Coach app (9 weeks) in combination with a wearable activity tracker. Personal goals, practical tips and scientific facts were given to encourage PA. The control group received written generic information on PA. At all three time points, participants from both groups wore an accelerometer (Actigraph GT3X+) for seven days to objectively measure PA and steps per day and individual interviews were conducted to assess psychosocial variables and context-specific PA (IPAQ). Participants from the intervention group were asked process evaluation questions during the posttest interview. Generalized linear mixed models were conducted to assess intervention effects. Process evaluation was based on descriptive statistics. Results: No significant intervention effects were found for light PA, moderate PA, vigorous PA, MVPA total PA, steps and psychosocial variables (all p>0.05). The majority of the intervention group found the app easy to use (78.4%), clear (70.6%) and interesting (66.7%). Half of them (53.1%) found the app motivating. About 66.6% found the personal goals motivating, while a minority found the tips and facts motivating to be physically active (24.4%) and tailored to their lifestyle (17.1%). Conclusions: The Active Coach app had no overall effect on lower educated working young adults' active lifestyle. Although the app was positively evaluated in general, some features were not tailored or motivating enough, which may explain why it was insufficient in increasing PA.

S.23.2

DEVELOPMENT OF AN MHEALTH INTERVENTION TO PROMOTE PHYSICAL ACTIVITY IN YOUNG ADULT CANCER SURVIVORS

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SIG: E- & m-health

Purpose: While physical activity (PA) improves health and quality of life in cancer survivors, nearly 60% of young adult cancer survivors (YACS), ages 18-39, are physically inactive. Few PA interventions have been designed specifically for YACS, and little is known about effective strategies to help them adopt and maintain PA over time. The purpose of this study is to develop the IMPACT mobile PA intervention to meet the unique needs of YACS. Methods: Building on our pilot Facebook-delivered PA intervention for YACS, we designed the IMPACT intervention to capitalize on wearable activity trackers to deliver a more precisely tailored intervention. The 6-month intervention focuses on increasing total PA min/week and addresses unique concerns of YACS (e.g., peer support). The intervention dynamically adapts goals and messages
in response to an individual’s changing activity patterns over time, so as to provide more relevant and timely support. Theory- and evidence-based intervention enhancements, based on social cognitive theory, self-regulation strategies, and behavior change techniques (BCTs), target improvements in behavioral capability, self-regulation, self-efficacy, and social support. Two coders used the 93-item BCT Taxonomy to code intervention components for the presence of BCTs, which guide intervention content. Results: The IMPACT intervention provides an activity tracker and companion mobile app, smart scale, individual videochat session, access to a Facebook group, and tailored text messages. Additional intervention components delivered through a responsive website include: lessons on PA and behavior change strategies; adaptive goal-setting; and tailored feedback summaries based on objective PA data and self-report measures. The activity tracker and companion app alone employ 28 different BCTs. Other intervention components target 4 additional BCTs and enhance 17 of the same BCTs delivered by the activity tracker. BCTs were used to guide the development of lesson content and tailored feedback. During usability testing among YACS (n=4; 18-39y at diagnosis), the mobile website was well-received; participants felt it was straightforward, intuitive, and personable. Additional YACS (n=11) are completing 6-week pilot testing of the intervention protocol. Conclusions: Findings from usability and pilot testing will inform refinements to the IMPACT intervention. The revised intervention will be evaluated in a large-scale randomized controlled trial.

S.23.3 TOWARD A DIGITAL PLATFORM FOR THE PREVENTION AND MANAGEMENT OF CHRONIC DISEASE
Maddison R1, Ball K1, Rawstorn J1, Tighe S1, Crawford D1, Daly R1.1 Deakin University, Melbourne, Victoria.

SIG: E- & m-health

Purpose: To develop a proof-of-concept digital platform to support self-management and behaviour change for cardiac prevention support services, with a view to expansion of other chronic diseases. The platform will utilise E-decision support tools to assist consumers and health providers to identify and customise their program from a suite of services, including mobile health (mHealth) interventions.

Methods: A prospective study design and evaluation framework utilising mixed methods (involving focus group and interviews with consumers and key informants in design and evaluation phases) was used. Formative work involved reviewing previous mHealth interventions and web-based portals. Four focus groups with end users (people who have cardiovascular disease) and 6 key informant interviews (clinicians, allied health professionals, IT specialists) were conducted. Discussions focused on potential key features of the platform, how to incorporate the platform within their daily lifestyle, and how to maintain engagement with such a program. Findings: Key results suggested that participants were familiar with mobile technology but were concerned about the potential usability of a larger platform, how to choose features and cost. Key informants highlighted the need for a governance structure to decide on key features, interoperability, linkage with clinical staff, including referral approaches. Based on findings we have developed a proof-of-concept web-portal, which will be further developed with an end-user panel. Conclusions: Mobile health intervention offer promise for improving cardiovascular risk-factors, however these tend to be disparate programmes with no central platform bringing these together. Building on previous mobile health research and formative work we have developed a proof-of-concept platform to address this need.

S.24: 13077: Active Healthy Kids Report Card on Physical Activity for Children and Youth in Asian: Existing Evidence and the Way Forward (Convenor: Prof. Stephen H. Wong) (Lounge)

S.24.1 RESULTS FROM CHINA REPORT CARD ON PHYSICAL ACTIVITY FOR CHILDREN AND YOUTH
Liu Yang1,2, Tang Yan1,2, Cao Zhen-Bo1,3, Zhuang Jie1,3, Zhu Zheng1,2, Wu Xue-Ping2, Cai Yu-Jun2, Wang Li-Juan2, Chen Pei-Jie1,3,1 Shanghai Research Center for Physical Fitness and Health of Children and Adolescents, Shanghai University of Sport, Shanghai; 2School of Physical Education and Sport Training, Shanghai University of Sport, Shanghai; 3School of Kinesiology, Shanghai University of Sport, Shanghai.
Background: Physical activity (PA) is beneficial to young people’s health and development. For over 116 million Chinese school children, yet few study has provided national representative and international comparable evidence on their PA. Thus, the aim of this study is to present the inaugural China Report Card on Physical Activity for Children and Youth. Methods: The data was derived from the 2016 Physical Activity and Fitness in China –sh; the Youth Study (PAFCTYS), which was conducted in all Chinese provinces with involved a stratified three-stage cluster sample design to select a representative sample of the Chinese school-aged children population (n = 125281, grades 4-12). Self-report questionnaires were completed by the sampled students, their parents/guardians, and PE teacher (n=1398) from each sampled school respectively. The grades of 9 report card indicators were assigned in accordance with the survey results against a defined benchmark: A is 81% to 100%; B is 61% to 80%; C is 41% to 60%, D is 21% to 40%; F is 0% to 20%. Results: The 9 indicators were graded as follows: Overall Physical Activity Levels (F), Organized Sport Participation (D-), Active Play (D+), Active Transportation (C+), Sedentary Behavior (F), Family and Peers (D+), School (D+), Community and the Built Environment (F), and Government (F). Conclusions: Levels of PA and sedentary behavior were low and below the respective recommended guidelines. Interventions and policies at the community and built environment level should be encouraged to promote physical activity and reduce sedentary behavior. In addition, national policies on young people’s PA should be advocated widely to ensure the policies can be transferred to actions.

S.24.2
ACTIVE HEALTHY KIDS REPORT CARD ON PHYSICAL ACTIVITY FOR CHILDREN AND YOUTH IN ASIAN: THE PRELIMINARY RESULTS OF CHINESE TAIPEI (TAIWAN)
Chang Chen-Kang1, Wu Ching-Lin2, 1National Taiwan University of Sport, Taichung; 2National Chung Hsing University, Taichung.

SIG: Children and families

Objective: This study aims to present the preliminary results of Active Healthy Kids Report Cards on the Physical Activity and Youth in Chinese Taipei (Taiwan). Methods: Chinese Taipei is developing its first Active Healthy Kids Report Card for children and Youth in 2018. The process follows the standardized grading system developed by Global Matrix for nine common indicators (Overall Physical Activity, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behavior, Family and Peers, School, Community and the Built Environment, and Government Strategies and Investments) based on the best available evidence. The data include publications and surveys from Taiwan, Kinman, Matsu, and Penghu, as well as official documents from the government of Republic of China. The grading is decided by a panel of experts mainly according to the data between 2013 and 2018, while the earlier information is used as additional references. Results: As of October 2016, we are still at the stage of gathering and analysing the data. The preliminary grades will be presented in the symposium. The results will be compared to those from other countries and regions in Asian and around the world. The authors will also share the insights on challenges and opportunities for the development. Conclusions: Although the final grading has not been reached, based on the growing prevalence of obesity and hyperglycemia in children, significant actions should be taken to increase physical activity in Taiwan. The Report Card will serve as a valuable advocacy tool for this purpose.

S.24.3
EXPERIENCE FROM GLOBAL MATRIX 2.0 AND PROGRESS OF THE 2018 SOUTH KOREA'S REPORT CARD ON PHYSICAL ACTIVITY FOR CHILDREN AND YOUTH
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: The purposes of this abstract were to revisit the experience gained from participating in Global Matrix 2.0 and to provide the nation's progress for Global Matrix 3.0. Methods: The development and outcome of the 2016 South Korea's Report Card on Physical Activity for Children and Youth (Report Card thereafter) was discussed amongst six core members of the leadership committee (JY Jeon, YS Kim, HJ Kang, EY Lee, W Song, SH Suh) in Victoria, Canada during the 2017 International Society for Behavioral Nutrition and Physical Activity conference. Future agenda (e.g., funding availability, leadership, membership) for Global Matrix 3.0 was also briefly discussed. All conversations were recorded by one member (EY Lee) and circulated to all leadership members for verification which no revisions were required. Followed by the initial meeting, the new lead investigator (YS Kim) invited approximately 30 individuals who are experts or key stakeholders in physical activity and health within and outside of the country to a meeting to continue the collective effort towards Global Matrix 3.0. Results are based on dialogues and documents derived from a series of meetings. Results: Though the participation of South Korea in Global Matrix 2.0 was a huge success, the results were not with continuing physical inactivity epidemic and sedentariness among young people in the country. Specifically, as for 2016 South Korea's Report Card, six indicators (i.e., overall physical activity, organized sport participation, active transportation, sedentary behavior, school, government strategies/investments) were graded well below C+ while three indicators (i.e., active play, family/peers, community/built environment) could not be graded due to the lack of evidence. In an effort to produce more complete Report Card for Global Matrix 3.0, Children's Activity Policy Evaluation Network (CAPE-Network) was formed by the leadership committee in collaboration with Korea Health Promotion Institute. Expert advisory panel and research working group were determined and pragmatic strategies for future research and policy were developed. Conclusions: With the collaborative effort between CAPE-Network and Korea Health Promotion Institute, 2018 South Korea's Report Card will be based on more comprehensive evaluation of physical activity and sources of influence.

S.25: 13039: Changing restaurant and supermarket environments for healthier food purchasing: significant potential, significant challenges (Convenor: Dr. Gareth Hollands) (CES 2-3)

S.25.1
FIELD STUDIES IN WORKSITE CAFETERIAS: INSIGHTS FROM THREE STEPPED WEDGE RANDOMISED CONTROLLED PILOT TRIALS OF ENVIRONMENTAL INTERVENTIONS
Pechey Rachel1, Cartwright Emma1, Pilling Mark1, Hollands G J1, Vasiljevic Milica1, Jebb S A2, Marteau T M1.1 University of Cambridge, Cambridge; 2 University of Oxford, Oxford.

SIG: Policies and environments

Objective. Altering environmental cues within restaurants could encourage healthier food purchasing and consumption, but few robust field studies have been conducted to test this, in part due to the challenges of implementing interventions in these settings. This set of three pilot trials in worksite cafeterias aimed to: (a) examine the feasibility and acceptability and (b) estimate the effectiveness of: (1) introducing energy (kcal) labelling, (2) increasing the proportion of healthier foods available, and (3) reducing portion size. Methods. Eighteen worksite cafeterias in England were randomized to one of the three interventions (each n=6). Each intervention was tested using a stepped wedge randomised controlled pilot trial (Trial Registration: ISRCTN52923504). Within each pilot trial, each site was randomised to an implementation date, staggered fortnightly following a baseline period. After implementation, sites maintained changes until the study end. Feasibility and acceptability were assessed through worksite visits, interviews with cafeteria managers and customer surveys. Study logs were kept detailing additional barriers to intervention implementation. To assess the impact of the interventions, generalised linear mixed models analysed daily energy (kcal) purchased pre- and post-intervention. Results: Feasibility: Several barriers to implementing or evaluating environmental interventions in these settings were identified during each pilot trial, including some sites
only engaging to a limited extent with the proposed changes, sales only being recorded at a broader
category level for some items, other food being freely available at the worksites (and unable to be tracked),
and other changes (e.g. price increases) occurring during the study period. Impact: Results were mixed by
intervention, and effects also differed across sites. Conclusions. Implementing changes to environmental
cues in these settings required substantial input from the research team, with mixed success across sites,
and several barriers identified to optimal implementation and assessment. Replication of intervention
effects has generally proved unreliable in these settings, requiring future research focused on
understanding variation by site to identify the most effective ways of implementing and evaluating these
interventions.

S.25.2
EVALUATING A PRODUCT PLACEMENT INTERVENTION IN A DISCOUNT SUPERMARKET CHAIN:
SERENDIPITY, FORESIGHT AND COMPROMISE
Vogel C¹, Crozier S¹, Penn-Newman D¹, Baird J¹.¹MRC Lifecourse Epidemiology Unit, University of
Southampton, Southampton.

SIG: Policies and environments

Objective There is increasing evidence that exposure to unhealthy food environments exacerbates dietary
inequalities. Our research from the UK found that women who shopped at supermarkets with poorer
availability and placement of healthy products had poor dietary quality if they left school aged 16 years, but
those with a degree had diets of good quality. We also found that discount supermarkets have the least
healthy in-store environments. As a result of these findings, we sought a relationship with a discount
supermarket chain with the aim of developing a study to test whether creating a healthier store layout
influences customers' dietary quality. Methods An approach was made to the chief executive of a discount
supermarket chain in the UK that is frequently used by disadvantaged families. The methods involved
sending a cold-call letter, follow-up phone calls and a presentation pitch. A natural experiment research
design was proposed, building on a store refurbishment programme the research team had identified the
company was rolling out. The intervention components and pilot study timeframe were negotiated to meet
the needs and resources of the academic team and the company. Results From initial correspondence, it
took 8 months to develop the contract and commence pilot study data collection. It was not possible to
randomize stores due to the schedule of the company's refurbishment programme. A prospective cluster
matched-controlled study was designed. Research funding opportunities were limited due to the tight time
frame; pump-priming grants and existing resources were relied upon to conduct a pilot study. Several
intervention fidelity assessment methods including in-store surveys and photos were used, some methods
were more successful than others in assessing fidelity. Conclusion This research study resulted from a
combination of good timing, foresight and compromise. The timing of approach was fortuitous in its
alignment with personal opinions among executive staff and strategic through its recognition of the
retailer's refurbishment activities. Compromise in study design and maintenance of research independence
enabled a robust scientific study to be piloted. Research groups hoping to work with retailers can apply
learnings from this study to build empirical evidence to support future policy action.

S.25.3
AN EXTENSIVE PILOT STUDY ON THE HEALTHY CHECKOUT COUNTERS IN DUTCH
SUPERMARKETS IN LOW SOCIOECONOMIC URBAN NEIGHBOURHOODS: LESSONS LEARNED
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Amsterdam, Amsterdam ;²Utrecht University, Utrecht.

SIG: Policies and environments

An extensive pilot study on the healthy checkout counters in Dutch supermarkets in low socioeconomic
urban neighbourhoods: lessons learned Purpose: Impulsive unhealthy food choices in supermarkets are
common at the checkout. Therefore, we are preparing a study on the placement of displays with healthy
products at the checkout and the effects on food purchases in supermarkets. To find out the key
challenges in conducting such a study, we had the opportunity to perform an extensive pilot study as part
of a pre-existing intervention programme of the supermarket chain. Methods: We used a quasi-experimental design and selected 17 intervention supermarkets where displays containing healthy products were placed at the checkout. The traditional unhealthy products at the checkout were left in place. Ten control supermarkets without healthy displays were matched based on store profile. The supermarkets were dispersed throughout low socioeconomic urban areas in the Netherlands. Weekly sales data of products offered at the checkout were provided by the supermarket chain for 2 periods of 8 weeks (baseline and follow up). We monitored intervention implementation and performed exit interviews on consumer’s perception of the intervention. Results: Based on this real life pilot study, the following lessons were learned. We experienced a lack of operational support from the supermarkets which resulted in an imperfect implementation of the intervention. For example, control supermarkets also sold the healthy products at the checkout, or the healthy checkout products were also positioned somewhere else in the supermarket. In addition, it was a challenge to have perishable products (like fruits and vegetables) placed at the checkout, due to inflexible procedures in the supermarkets. Furthermore, we suffered from missing and unreliable data. Conclusions: Our results show that evaluating a real-life intervention in the supermarket is challenging. However, these experiences provided us with many new insights on how to best perform real-life supermarket intervention studies. Using these insights, we improved our design and methods. In this symposium we will discuss our most important learnings and our upcoming study. Other researchers interested in supermarket research can apply these learnings to strengthen their research.

S.26: 13017: Feasibility and effectiveness of eHealth interventions promoting physical activity in older adults (Convenor: Prof. Corneel Vandelanotte) (Concord 1)

S.26.1
OLDER ADULTS’ PERCEPTIONS AND PREFERENCES TOWARDS WEB-BASED PHYSICAL ACTIVITY INTERVENTIONS
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SIG: E- & m-health

Objective: The majority of older Australians are inactive, which contributes to high chronic disease rates and reduced quality of life in this age group. Web-based physical activity interventions have the potential to reach large numbers of older adults at low cost. To date, however, we have little understanding of older adults’ perceptions of web-based physical activity interventions and their preferences for intervention delivery, components and support. Such knowledge is needed to develop engaging and effective web-based interventions for this age group. The aim of this study was to explore older adults' perceptions and preferences for web-based physical activity interventions. Methods: Australians over 65 years of age and living in Central Queensland were invited by telephone to participate in one of six focus groups, that each lasted between 1.5-2 hours. Discussions were facilitated by 2 researchers and audiotaped. An independent transcribing service transcribed recordings verbatim. Content analysis was used to analyse the data; themes and sub-themes were identified by two coders and resulted in a high inter-rater reliability (Kappa=0.86). Results: The sample included 46 adults aged 72.28±smn:4.52 years; 73.9% were female, 89.3% retired, and 73.3% wanted to become more active. Participants liked websites that have links to information and included instructional videos and disliked websites that were hard to navigate. Many participants did not express an initial interest in web-based physical activity programs. When asked about preferences for web-based physical activity programs, this group preferred them to be simple and not cluttered, to include personalised advice, to include reminder check-ins and the ability to review goals after illness or injury. The most common preference for personalised advice in web-based interventions was that the information needs to be tailored to their existing injuries and illnesses. Conclusion: Web-based physical activity interventions for older adults should be simple and not cluttered, include reminder check-ins, offer the ability to review goals after illness or injury, include clear and colourful physical activity graphs, self-monitoring and personalised advice taking into account their health conditions. The findings from this study will inform the design of future web-based interventions specifically tailored to the needs of older people.
S.26.2  
MYPLAN 2.0.: EFFECTIVENESS OF A SELF-REGULATION EHEALTH INTERVENTION TO INCREASE PHYSICAL ACTIVITY AND COGNITIVE FUNCTIONING IN FLEMISH OLDER ADULTS  
Van Dyck Delfien¹,², Herman Kare¹, Van der Mispel Celien¹, Poppe Louise¹,², Gheysen Freja¹, Ghent University, Department of Movement and Sport Sciences, Faculty of Medicine and Health Sciences, Ghent; ²Research Foundation Flanders (FWO), Brussels.

SIG: E- & m-health

Purpose: In order to tackle the ageing-related decreases in physical activity (PA), physical and cognitive functioning, effective health interventions should be developed. Previous research demonstrated strong variations in the PA trajectory of older adults, so interventions should be individual and personalized to maximize the potential effects. Furthermore, eHealth interventions can be suitable for older adults. Nonetheless, the effectiveness of eHealth interventions in older adults have been studied rarely, and if examined, only self-reported PA measures and short-term follow-up have been included. Consequently, we tested the effectiveness of the self-regulation eHealth intervention 'MyPlan 2.0.' to increase objective PA, self-reported PA and cognitive functioning in Belgian older adults. Methods: Design: Randomized controlled trial with three measurement moments (baseline –sh; one-month follow-up –sh; three-month follow-up). Participants: In total, 72 older adults (51.4% men, 70.9 ±smn; 4.1 years) confirmed participation (intervention group: n=38; control group: n=34). Sixty-five participants completed all measurement moments. Measures: The intervention group received 'MyPlan 2.0.' between baseline and one-month follow-up. MyPlan 2.0. is a self-regulation intervention focusing on pre- and post-intentional processes for behavior change. Between one-month and three-month follow-up, no intervention was provided. Both intervention and control groups completed the IPAQ questionnaire and wore an accelerometer (GT3X+) for seven days at all measurement moments. Both groups completed the CANTAB cognitive tests (Cambridge Cognition Ltd) at baseline and three-month follow-up. Analyses: Repeated measures ANOVA tests in SPSS 23.0. Results: For accelerometer-based PA, a significant (p=0.05) intervention effect was found on moderate-to-vigorous PA. Furthermore the intervention was (marginally) effective to increase self-reported PA in different domains: moderate PA in garden (p=0.009) and household (p=0.07) and vigorous leisure-time PA (p=0.06). All effects were found both on the short and intermediate term. No intervention effects were found on the different outcomes of cognitive functioning. Conclusions: The current results add evidence for the effectiveness of eHealth interventions in older adults and show that PA effects can persist over a longer period. The intervention may have been insufficiently challenging or follow-up may have been too short to reach effects on cognitive functioning. Future studies with larger samples and longer follow-up should bring more clarity.

S.26.3  
THE ACTIVE PLUS65 EHEALTH INTERVENTION: CHANGES IN PHYSICAL ACTIVITY AND LONELINESS AMONG SINGLE OLDER ADULTS WITH A CHRONIC DISEASE  
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SIG: E- & m-health

Objective: An e-health intervention aiming to increase physical activity (PA) among people aged over fifty was adapted specifically for single adults aged over 65 with a chronic disease, adding intervention components to better enable PA for this target group, and to decrease loneliness. This study explores the effectiveness of the ActivePlus65 intervention in terms of PA and loneliness, both important determinants of physical and mental health in this vulnerable, so far often overlooked, sub-population. Methods: 411 Participants (mean age = 76.7; ±smn; 7.6) were included in the intervention group of an implementation study with a quasi-experimental pretest, posttest design. The reference group consisted of 87 participants (mean age = 74.4; ±smn; 6.3) who followed the not-adapted version of the intervention. All participants received a computer tailored advice on three occasions within a period of four months. Self-report measurements of PA and loneliness were performed at baseline, after three months and a follow-up
measurement at six months. Outcome measures were days per week with sufficient PA (using the Short Questionnaire to Assess Health Enhancing Physical Activity - SQUASH) and experienced feelings of loneliness by using a 6-point scale, ranging from 1 (not lonely) to 6 (extremely lonely) (using the De Jong-Gierveld-6-item loneliness-scale). Comparisons between the intervention and reference group were only made for PA as loneliness data was not available for the latter group. Results: Preliminary analyses showed that PA increased with 1.2 days (±smn; 0.17) after three months (p < 0.001), and 0.67 days (±smn; 0.20) after six months (p < 0.001) compared to baseline. ActivePlus65 did not show a significant higher increase in PA than the reference group (p = 0.46). Within the intervention group a decrease of 0.5 points (±smn; 2.2) in loneliness was observed at three months (p <0.001), decreasing further with 0.2 points (±smn; 2.1) at six months (p <0.001). Conclusions: Positive changes in PA and loneliness in participants of ActivePlus65 were observed, which were maintained at follow-up. Although not outperforming the not-adapted version, ActivePlus65 thus has the potential to contribute to the health of the vulnerable population of single older adults with a chronic disease.

S.27: 13124: Integrated research-practice partnerships to advance physical activity intervention implementation and scale-up (Convenor: Dr. Lauren Sherar) (Concord 2-3)

S.27.1
INTEGRATED RESEARCH PRACTICE PARTNERSHIPS TO PROMOTE SUSTAINED PHYSICAL ACTIVITY BEHAVIOUR AND PROGRAMS
Estabrooks P1, Harden S2, Almeida F1, Hill J1, Johnson S3, University of Nebraska Medical Center, Omaha; 2Virginia Tech, Virginia; 3Carilion Clinic, Virginia.

SIG: Implementation and Scalability

Purpose: This presentation will describe a process used in our program of research based on the hypothesis is that integrated research-practice partnerships may lead to interventions that are practical, effective, reach more participants, and are more likely to be sustained in practice. A series of 3 case studies that each use evidence-based group dynamics principles to address physical activity promotion across different settings and populations will be used to focus on intervention adaptation and co-creation to meet the needs of the respective participant populations and delivery organizations. Methods: Each case study uses a systems-based approach that includes the engagement of personnel who would ultimately deliver an intervention and organizational decision makers. Stakeholders were at every stage of the research process including: (1) intervention development using the underlying group dynamics principles of interventions that had demonstrated efficacy in increasing physical activity, (2) research design and outcome assessment, (3) intervention implementation, (4) analysis and interpretation of data, and (5) decision making on intervention sustainability or further adaptation. Results: Interventions developed for community centre-delivered PA promotion, clinical PA promotion for healthy adults, and scalable community PA promotion varied greatly in structure and duration despite being developed using the same underlying principles. In each situation, organizational partners were satisfied with intervention reach and effectiveness. However, the reach across programs was also highly variable, ranging from 9 participants per intervention session to over 400 per session and a total reach of 30 participants to 25,000 participants. Effectiveness and maintenance of effects were demonstrated at approximately the same magnitude of effect. Finally, all programs were sustained beyond the life of the research project, though adaptations to the interventions continued. Conclusions: The case studies suggest that integrated research practice partnerships that focus on physical activity promotion for public health have high potential for sustained clinical and community programs to promote physical activity.

S.27.2
GETTING RESEARCH ON MOVEMENT INTEGRATION INTO PRACTICE (GRIP): A CASE STUDY OF A UK-BASED PHYSICALLY ACTIVE LEARNING INTERVENTION IN PRIMARY SCHOOLS
Routen A1, Chalkley A1, Sherar L1. 1Loughborough University, Leicestershire.

SIG: Implementation and Scalability
Purpose: Within the school environment children may accrue high amounts of sitting time, particularly in the classroom where it is often normal to sit quietly to receive academic instruction. As such a wide variety of strategies to integrate movement (termed movement integration; MI) into normal classroom time have been trialled - these include 'active breaks' and 'active lessons'. Despite the growing evidence base for the positive effects (both physical and academic) for movement integration, there is currently no published information on how to get this research into practice i.e. sustainable implementation. This presentation will present a case study of a MI research project (CLASS PAL) focused on understanding factors that influence implementation, and the learning accrued from this process. Methods: CLASS PAL (Physically Active Learning) is a three-year research project to co-produce (alongside school stakeholders) an intervention to train UK primary school teachers to deliver MI. To develop this intervention three stages were undertaken: 1) a formative qualitative study with teachers and head teachers to examine barriers and facilitators to implementation; 2) a co-production pilot phase involving 6 primary school teachers in co-production meetings; and 3) the co-production of a training workshop and website alongside a national youth sport and physical activity charity. The intervention was evaluated in a one school year mixed methods evaluation. Results: An analysis of the key phases of the intervention development process, and the learning from these phases will be presented as a case study of one approach to get research on classroom movement integration into routine teaching practice. Key GRIP key principles derived from reflection on this process will be presented e.g. ensuring Co-production is end-user drive, utilising the social influence of local leaders etc. Conclusions: Through a case study of a MI research project, the potential of physical activity programmes that are co-produced and consider context specific intricacies and needs of schools and teachers is highlighted.

S.27.3
DEVELOPING PHYSICAL ACTIVITY INTERVENTIONS FOR CLINICAL AND COMMUNITY SETTINGS: THE PRACTICAL PLANNING FOR IMPLEMENTATION AND SCALE-UP (PRACTIS) GUIDE
Koorts H1, Eakin E2, Estabrooks P3, Timperio A1, Salmon J1, Bauman A4, Deakin University, Geelong; 2University of Queensland, Queensland; 3University of Nebraska Medical Center, Omaha; 4University of Sydney, Sydney.

SIG: Implementation and Scalability

Purpose: In this presentation we propose a practical 'how to' guide for the development or adaptation of physical activity interventions to increase the likelihood of implementation and sustainability at scale. The guide is based on two principles: (i) differences between the research and practice context, at multiple levels, can be addressed during intervention planning by focusing on system, delivery personnel, and intervention characteristics; and (ii) early anticipation and planning for implementation barriers and facilitators can improve the translation of evidence into practice. Methods: From the published literature, evidence of strategies to improve research-practice translation, along with narrative descriptions of different approaches to addressing translational challenges were identified. These, along with constructs taken from widely cited implementation outcome, process, and mechanistic models were collated and inform a guide for those adapting or developing PA interventions that can be tested, scaled, and sustained within practice contexts. Results: The resultant PRACTIS guide (PRACTical planning for Implementation and Scale-up) comprised the following four steps: Step 1) Characterize the parameters of the implementation setting; Step 2) Identify and engage key stakeholders across multiple levels within the delivery system(s); Step 3) Identify contextual barriers and facilitators to implementation, and; Step 4) Address/assess barriers to implementation. Conclusions: A lack of practical guidance how to effectively develop or adapt physical activity interventions to maximize wide-scale uptake, impact and sustainability prevents us moving quickly from evidence to action. We recommend that intervention development and adaptation for broad and sustained implementation, with active engagement from delivery organizations and stakeholders, be prioritized early in intervention planning—and we propose a systematic and generalizable guide to achieve this. Those who are interested in translating physical activity promotion research into sustained practice are encouraged to use, and may benefit from, the PRACTIS guide to inform and operationalize their work.
S.28: 13123: Childhood obesity prevention in low- and middle-income countries: harmonising global evidence and contextual factors in interventions (Convenor: Dr. Catherine Draper) (Oasis)

S.28.1
SYSTEMATIC REVIEW OF CHILDHOOD OBESITY PREVENTION INTERVENTIONS IN AFRICAN COUNTRIES
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SIG: Children and families

PURPOSE: Childhood obesity is a growing public health concern in Africa, and there is a need for evidence-based prevention interventions. The aim of this systematic review was to assess the effectiveness of childhood obesity prevention interventions in African countries on anthropometric and behavioural outcomes.

METHODS: We conducted a systematic review of published literature on childhood obesity prevention interventions in Africa targeting 2-18-year-olds. Behavioural interventions aiming to prevent childhood obesity, or address behaviours related to childhood obesity, carried out in any setting, for any length of time, in any African country were considered eligible for inclusion. A systematic search was conducted in seven databases (Embase, Scopus, Medline, Web of Science, SciELO, PsycINFO, Cochrane Library), and unindexed African journals were screened. Peer-reviewed articles published from 1990 describing experimental or quasi-experimental studies were included without language limitations. The selection process, data extraction, and quality assessment were all either duplicated or checked.

RESULTS: The search yielded 9713 articles, of which 17 were included. The studies were conducted in three countries: South Africa (n=12), Tunisia (n=4), and Uganda (n=1). Four papers described randomised controlled trials, while the remaining 13 described pre-test post-test designs with or without a comparison. The methodological quality of the majority of studies (n=13) was considered weak. Most interventions were school-based (n=13), and studies reported on physical activity (n=7), nutrition (n=5), or both (n=5). One intervention targeted preschool-age children (age 4-5), while all others targeted older children and adolescents (age 6-18). Improvements in behavioural outcomes were reported for dietary behaviour (n=4/10), physical activity or fitness (n=8/13), and determinants of these behaviours (n=6/8). Other effects included a reduction in the proportion of overweight children (n=2/4), and improvements in anthropometric measurements or body composition (n=1/9).

CONCLUSIONS: There is a dearth of high quality evidence of childhood obesity prevention interventions across Africa. Studies targeting family or community settings, and in children below school-age are particularly lacking. Based on current evidence, school- and kindergarten-based interventions have demonstrated some potential for childhood obesity prevention in South Africa and Tunisia.

S.28.2
DEVELOPMENT AND IMPLEMENTATION OF THE MOVEMENT PROGRAM – SCHOOL-BASED INTERVENTION TO PROMOTE PHYSICAL ACTIVITY IN A MIDDLE-INCOME CONTEXT
Silva JAS1, Santos PCS1, Bandeira ASB1, Costa BGGC1, Silveira PMS1, Silva KSS1.1Federal University of Santa Catarina, Florianopolis, SC.

SIG: Implementation and Scalability

PURPOSE: Evidence is emerging regarding effectiveness of physical activity (PA) school-based interventions but little is known about implementation in low- and middle-income countries (LMIC). We aimed to describe the development and implementation of a school-based intervention to promote physical activity (PA) in Brazil.

METHODS: The Movement Program is a cluster randomized controlled trial carried out in six elementary public schools (three intervention groups; three control groups; (baseline data=1273 students from 7th to 9th grade) from Florianopolis, southern Brazil (2017). The main purpose is to increase PA and reduce time spent in sedentary behaviour, alongside with improvement on potential mediators of
both outcomes. Secondary aims are to improve general health factors (e.g. nutritional status) and academic performance. The development of the program was grounded on several theories and the Health Promoting Schools Framework. The three main components are: changes on the school environment; teacher training sessions; educational actions. The evaluation of the program implementation, at post-intervention, will be based on the perceptions of the school community: a) quantitative data: it will explore the perceptions of parents, students and teachers regarding the implemented strategies; b) qualitative data: school principals and teachers’ interviews. The present study describes the perceived barriers by the staff team since the development of the program. RESULTS: During the development and implementation of the Movement Program, staff team had faced several "real world barriers". Firstly, lack of funding reflected on materials and instruments. Accelerometers, for instance, were available only for a small subsample of students. Scholar community is dealing with political conflicts, being engaged in strikes over the year. This led to a cut in intervention length. Despite most teachers being interested in the program, few attended the training sessions (mainly because of lack of time). The principals’ engagement with the research schedule was impaired due to other organizational and social problems. CONCLUSIONS: Notwithstanding, even all these issues did not prevent implementation. This reinforces the need for a whole community research effort on overcoming practical barriers. The exchange of knowledge between researchers of high and LMIC might contribute to more successful interventions in both contexts.

S.28.3
REFLECTIONS ON HEALTHY LIFESTYLE SCHOOL-BASED INTERVENTIONS IN LOW-RESOURCE COMMUNITIES IN SOUTH AFRICA: THE HEALTHKICK EXPERIENCE

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SIG: Children and families

PURPOSE: In South Africa there is a co-existence of under- and over- nutrition often within families and populations across all ages. The most recent national survey showed that 15.4 % children < 14 years were stunted and 23.6% of girls were either overweight or obese. The HealthKick intervention in low-income settings in the Western Cape Province, South Africa, aimed to promote healthy lifestyles among learners, their families and school staff. METHODS: A cluster randomised controlled trial with eight intervention- and eight control schools was carried out. The Action Planning Process (APP) guided school staff through a process that enabled them to assess areas for action; identify priorities; and set goals regarding nutrition and physical activity at their schools. The APP included four action areas, the school nutrition environment; physical activity and sport environment; staff health; and diabetes awareness. Intervention schools received a toolkit comprising an educator’s manual containing planning guides, printed resource materials and a container with physical activity equipment. To facilitate the APP, a champion was identified at each school. Records were kept of activities planned and those accomplished. RESULTS: The HealthKick intervention was based on an identified public health concern, a "what works" systematic review and initiatives successfully implemented elsewhere. It furthermore used an intervention planning framework, included a situational analysis and attempted to integrate the intervention into the curriculum and school program. A few years on from the completion of the program, with the process and mostly insignificant findings reported and published, it is worthwhile to reflect on lessons learned. Implementation science principles could aid these reflections, namely social significant outcomes are achieved through selecting an effective intervention, effective implementation methods and provision of an enabling context. CONCLUSIONS: The HealthKick study shows us that while global evidence can guide program implementers to select an appropriate intervention and implementation methods, the provision of an enabling context is essential. An assumption was made that the school environment will provide this enabling context for the HealthKick intervention, because of interested staff and existing physical structures. However, in these low-resource settings, there were many contextual barriers to implementation and effectiveness.
S.29: The latest evidence on sedentary behaviour and physical activity analysis – epochs and patterns (Convenor: Dr. Teatske Altenburg) (Grand Ballroom)

S.29.1
BE AWARE OF THE CONSEQUENCES OF CUTTING YOUR CUT-POINT WHEN ANALYSING SEDENTARY BEHAVIOUR AND PHYSICAL ACTIVITY IN YOUTH.

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: To examine the influence of cutting cut-points to 15- and 60-second epochs on (1) laboratory-controlled and (2) free-living sedentary behaviour (SB) and moderate-to-vigorous (MVPA) activity in youth.

Methods: For the first objective, data from a controlled laboratory study in children was used (n=80). Children performed eight sedentary and one physical activity for 10 minutes. For the second objective, data from the CHAMPS-study was used (n=902). Children wore an accelerometer at their right hip. We calculated mean differences in total time and time accumulated in bouts of SB, LPA and MVPA based on 15- and 60-second epochs. Results: In the laboratory study, classification accuracy for SB was 88-99% and 97-100% for the 15- and 60-second epoch, respectively. Applying the 15-second epoch, 20-33% of dancing time was accurately classified as MVPA versus 0% for the 60-second epoch. Applying the 15-second epoch on free-living data resulted in 156 minutes more SB and 54 minutes more MVPA than the 60-second epoch. Time accumulated in SB bouts =10 minutes was lower when applying the 15-second than the 60-second epoch. No differences were found for MVPA bouts =10 minutes. Conclusions: We recommend using a 15-second epoch when analysing both SB and MVPA as (1) misclassification was lower for assessing SB in 15-second epochs than MVPA in 60-second epochs, and (2) mean differences between applying 15- and 60-second epochs in free-living accelerometer data were relatively smaller for SB than MVPA. We recommend future controlled studies to examine the accuracy of classifying SB, light PA and MVPA.

S.29.2
AGREEMENT BETWEEN ACTIVPAL AND HIP-MOUNTED ACTIGRAPH FOR ASSESSING SEDENTARY TIME PATTERNS IN CHILDREN

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SIG: Children and families

Purpose: In recent years, there has been increasing interest in the assessment of sedentary patterns (e.g., prolonged vs. interrupted periods) using objective monitors. However, little is known about whether accelerometer-derived sedentary patterns reflect children's patterns of sitting time. The aim of this study was to assess the agreement between activPAL and ActiGraph-derived sedentary patterns. Methods: Cross-sectional data were collected from 195 children aged 8-12 years from 8 primary schools in Melbourne, Australia. Children wore a hip-mounted ActiGraph accelerometer and a thigh-mounted activPAL for up to 8 consecutive days. Sedentary time from the ActiGraph was defined as 25 counts per 15-second epoch (AG25) and 100 counts per 60-second epoch (AG100). Only days with =10 hours of wear time from both monitors concurrently were analysed. Eight sedentary patterns were derived from each monitor: time spent in bouts lasting =10, =20, =30, and =60 minutes, number of breaks per day and per hour of sedentary time, usual bout duration (minutes/day), and alpha (relative proportion of longer to shorter bouts). Means differences (bias) and ICCs were computed between monitors. Results: All of the
ActiGraph-derived sedentary time patterns showed measurement bias when compared to activPAL sitting time patterns. The hip-worn ActiGraph overestimated breaks by 16% (AG100) and 265% (AG25) and alpha by 41% (AG25) and 55% (AG100). Usual bout duration and prolonged sedentary time were underestimated by 54-78% and 64-196%. Biases in prolonged sedentary time estimates between methods were greater for longer compared to shorter bout thresholds (e.g., greater bias for time spent in 60 vs. 10 minute bouts). ICCs were poor, ranging from 0.026 to 0.357. AG60 generally had better agreement with activPAL than AG25. Conclusions: Sedentary time patterns derived using hip-mounted accelerometers have poor agreement with sitting time patterns derived using thigh-mounted monitors. Epochs <60 seconds are not recommended when scoring sedentary time from hip-mounted accelerometers. Hip accelerometer-derived sedentary time patterns may be measuring patterns of low movement rather than sitting time. Better consideration of these differences in measurement methods could support improved understanding of the impact of sedentary patterns on health.

S.29.3
FROM TOTAL VOLUME TO PATTERNS - SOPHISTICATED ACCELEROMETER DATA ANALYSIS CONSIDERING HOW PA AND SB ARE ACCUMULATED AND ALTERNATED THROUGHOUT THE DAY
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: To date, epidemiological studies have focused on the potential health effects of total volume of physical activity (PA) or sedentary behaviour (SB). However, two persons may have the same volume of PA or SB but accumulated in a completely different sequence. The pattern of accumulating PA and SB may be far more important for health effects than the total volume. We therefore aimed to develop a sophisticated algorithm translating raw accelerometer data into detailed sequence maps considering how PA and SB are accumulated throughout the day. Methods: This presentation will present and discuss a novel algorithm to convert accelerometer data into a sequence map based on behaviour states defined by a combination of intensity (SB, light, moderate, and vigorous intensity PA) and duration (sporadic accumulation or in bouts of different duration). Additionally, hierarchical cluster analysis was applied to identify clusters of children with similar behavioural sequence maps. Results: Clustering resulted in seven groups of children with similar PA and SB sequence maps: 3 larger clusters (2, 1 and 4) with 33%, 31% and 26% of the children respectively, and four very small clusters (3, 5, 6 and 7) with 7% of the children or less. Clusters 3, 4, and 7 consisted of relatively more girls (68-83%), clusters 6 and 7 relatively more overweight children (33%). Clusters 5 and 6 and 7 stood out with relatively few high fit children (0-33%). Conclusion: This novel algorithm is a next step in more sophisticated analyses of accelerometer data considering how PA and SB are accumulated throughout the day. The next step is identifying which specific patterns of accumulating PA and SB are optimal and which patterns are detrimental for health.

S.30: 13012: Parental engagement in obesity prevention interventions in early life: Key lessons and future research directions (Convenor: Prof. K Hesketh) (Salon 1-2)

S.30.1
OBESITY PREVENTION IN EARLY LIFE: WHAT DO PARENTS THINK AND HOW CAN WE MAXIMISE THEIR ENGAGEMENT IN INTERVENTIONS?
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SIG: Children and families

Objective: Childhood obesity is a global public health challenge. Early intervention is advocated, however,
there is an absence of published research on the views of parents towards obesity prevention in very young children, their experiences of engaging in such interventions, and their views on how these should be developed. The views of fathers are also under-represented in the literature. This study examines parents' views on obesity prevention and associated behaviours, and specifically health professional-delivered obesity prevention interventions which target children during the first 1,000 days, i.e. from conception to a child's second birthday. This study has been developed with the input of a parent advisory group. Methods: Qualitative, semi-structured interviews are being conducted with parents/primary caregivers of children aged under two years, in three different geographical regions across Ireland. Parents are being recruited through purposive sampling ensuring a mix of mothers/fathers, socio-economic backgrounds, prima/multi-parous mothers, and BMI categories, amongst other variables. Approximately 20-25 interviews will be conducted, guided by data saturation. Interviews are being recorded, transcribed and analysed thematically following Braun and Clarke (2013), using NVivo for data management. Results: Findings from the interviews will be presented; data collection is ongoing at the time of this submission. Results will focus on parents' perceptions and understanding of healthy growth and associated behaviours; the perceived importance of weight in young children, how parents gauge infant's weight and if and how they think it should be managed. Parents' views about interventions to prevent childhood obesity / promote healthy growth, and interventions delivered by health professionals during routine contacts in particular will also be explored. Differences in the views of mothers and fathers, and parents from different socio-economic backgrounds will be investigated. Conclusions: This study will contribute to our understanding of what mothers and fathers think about obesity prevention in children under the age of two, and what they think are acceptable foci and modes of delivery of interventions. The findings will provide much needed evidence to support efforts, nationally and internationally, to develop interventions to promote obesity prevention in early life, particularly those involving health professionals, and which maximise parental engagement and responsiveness.

S.30.2
PARENTAL ENGAGEMENT IN REAL WORLD CHILDHOOD OBESITY PREVENTION INTERVENTION: THE INFANT PROGRAM

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SIG: Early care and education

Purpose: Childhood overweight/obesity is widely acknowledged as an important public health concern. Just over a quarter (25.8%) of Australian children aged 2-17 years are overweight/obese, affecting all age groups, particularly socioeconomically disadvantaged families. The critical role that parents play in establishing healthy behaviours from the earliest stages of a child's development are well described. There is little published research however on how best to engage parents in early childhood obesity prevention programs, with much of the focus on "at risk" infants and weight management of school-age children. This study examined factors influencing parental engagement in The Infant Program, a low dose, low cost intervention with high utility, uptake and impact on key health behaviours, when implemented in the community. Methods: Three program sites were selected via purposive sampling, representative of metropolitan, regional and rural localities. Program participants (attending between 2015-2017) were recruited using an online survey. Thirty-two parent interviews were conducted, guided by data saturation, representative of non, low and high program attendees. Program implementers (n=9) were interviewed across all sites. Audio-recorded interviews were transcribed and coded using thematic analysis via NVivo software. Results: Findings from participant interviews confirm there is a heightened awareness amongst first-time mothers of the importance of healthy behaviours in early life, and that Maternal Child Health nurses are valued sources of this information. Main barriers to continued program attendance were returning to work and changes in baby's routine. Non-attendees described being overwhelmed with a new baby; low-attendees highlighted issues of geographical distance (rural areas) and returning to employment; high-attendees valued the networking, reassurance provided and automatic reminder notifications. Program implementers described engagement challenges in reaching young mothers, refugee and non-English-speaking families, and fathers, with organisational partnerships viewed as a key enabler to deliver the program through existing groups. Conclusions: Study findings will inform necessary adaptations of The Infant Program to address barriers to program engagement and implementation at the
community level, such as the use of mobile technology to complement face-to-face delivery; accessible program training and implementation guidance; and local automated registration and evaluation systems.

S.30.3

ENGAGING DISADVANTAGED PARENTS: THE PREGNANCY AND EARLY CHILDHOOD NUTRITION TRIAL (ECAIL)

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SIG: Children and families

Purpose: There are great social inequalities in health in France, starting early in life. The community-based MALIN Program has been implemented in six pilot sites based on an innovative and sustainable partnership between NGOs and players from the public and private sectors, to promote healthy feeding practices in young children from disadvantaged families. The ECAIL study aims to test the hypothesis that this Program, delivered in the home, has an impact on diet and growth of young children from disadvantaged families. Methods: ECAIL is an ongoing randomized controlled trial, implemented since March 2017 at the Lille University Hospital Center (France). Pregnant women from disadvantaged backgrounds are being identified at the maternity ward by medical staff during their prenatal care, then recruited and followed up by dieticians at home, until the toddler is aged 24 months. Mothers/parents in the intervention arm (n=400) are offered the three components of the MALIN Program: 1) nutrition education which seeks to build knowledge, skills and social support regarding feeding practices; 2) fresh fruit and vegetable baskets made available at a reduced price; and 3) provision of baby food/follow-on formula vouchers from 6 to 24 months. Those in the control arm (n=400) receive usual care. Primary and secondary outcomes include various aspects of feeding practices, diet and growth. Data are being collected using face-to-face questionnaires, medical records, interviews and anthropometric measurements. Intention-to-treat analyses will be used to assess differences in outcomes between trial arms. Preliminary results: 34% of the families screened have been deemed eligible so far, of whom 33% accepted to participate in the trial. The latter seem to experience budgetary constraints more often than their non-participating counterparts, as informed by a questionnaire completed at enrollment. Attrition has so far been negligible (<1%). Process evaluation will allow qualitative/quantitative preliminary insights into fidelity and adherence to both the trial and the Program. Conclusions: The ECAIL study, co-designed with the various partners of the MALIN Programme, aims to validate its hypotheses, prior to its scaling up. It will also increase knowledge on the determinants and mechanisms involved in early behavioural and growth trajectories, in at-risk populations.

S.31: 13129: The use of sit-to-stand desks in the classroom environment to reduce children’s sedentary behaviour: Evidence from primary and secondary school interventions (Convenor: Dr. Stacy Clemes) (Salon 3-4 )

S.31.1

STAND OUT IN CLASS: RESTRUCTURING THE CLASSROOM ENVIRONMENT TO REDUCE SEDENTARY BEHAVIOUR – A PILOT CLUSTER RANDOMISED CONTROLLED TRIAL

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SIG: Children and families
Purpose: The purpose of this study was to conduct a pilot cluster randomised controlled trial (RCT) of a 4.5-month sit-stand desk intervention in primary school classrooms, the results of which will inform a definitive trial. The primary objective was to describe a series of trial feasibility-related outcomes, whilst a secondary objective was to provide preliminary evidence of the impact of the intervention on children's sitting time. Methods: A two-arm pilot cluster RCT was conducted in 8 primary schools (4 intervention, 4 control) with Year 5 (9-10 year-old) children. A minimum recruitment target of 120 children was set. Following baseline measurements, schools were randomised into one of two study arms. Sit-stand desks replaced 6 standard desks in the intervention classrooms and teachers received support from researchers in devising a rotation plan to ensure all children were exposed to the sit-stand desks for >1 hour/day on average across the week. Control schools continued with their usual practice. Follow-up measurements were taken 6-months after baseline. Primary outcomes included school and participant recruitment and attrition rates, acceptability of the intervention and outcome measures (assessed via a process evaluation and completion rates), and compliance to the proposed definitive trial primary outcome (activPAL-measured sitting). A secondary outcome included generating preliminary evidence on the impact of the intervention on children's sitting time. Results: Across the 8 schools, 178 children provided parental consent for the evaluation; of which 176 (98.9%) attended baseline measurements. 174 (97.8% of the consenting sample) attended follow-up measurements. Of those attending the evaluation measurements, 161 and 134 children agreed to wear the activPAL at baseline and follow-up respectively. 133 children provided valid activPAL data at baseline and 123 provided valid data at follow-up. Preliminary estimates of the impact of the intervention on children's sitting time will be presented. The process evaluation suggested the intervention was well received by head-teachers, teachers and children. Conclusions: Incorporating sit-stand desks in primary school classrooms appears to be an acceptable strategy for targeting children's sedentary behaviour. School and participant recruitment and retention rates suggest a definitive trial to determine the impact of this intervention would be feasible.

S.31.2
EFFECT AND PROCESS EVALUATION OF IMPLEMENTING STANDING DESKS IN PRIMARY AND SECONDARY SCHOOLS IN BELGIUM
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SIG: Children and families

Purpose: Children and adolescents spend a lot of time sitting at school. Implementing standing desks in the classroom can be a potential strategy to reduce and break up that sedentary time. This study aimed to evaluate the effect and process of implementing standing desks in classrooms. Methods: A cluster randomized controlled trial was used with a pre-, mid-, post-test design including one class from 10 intervention schools (5 primary, 5 secondary schools) and 9 control schools (5 primary, 4 secondary schools) across Flanders, Belgium. Three standing desks were placed in each intervention class for six months. A rotation system was suggested to provide the opportunity for every pupil to regularly use the desk. Pupils (n=311; 54.5% girls) completed a questionnaire at the three measurement points, including questions on sedentary time and number of breaks at school and determinants of breaking up sedentary time. A process evaluation was conducted using focus groups with pupils and interviews with teachers at the mid-test, and adding questions to the mid- and post-test questionnaire for the intervention group. Qualitative data were analyzed using NVivo 11. Multilevel regression analyses were conducted in MLwiN 2.31. Results: There were no significant intervention effects on self-reported sedentary time and number of breaks at school, and determinants of breaking up sedentary time. Focus groups and interviews indicated a generally positive attitude towards using standing desks from both teachers and pupils. Although primary schoolchildren scored significantly higher on process evaluation data than secondary schoolchildren, they reported a significant decrease from mid- to post-test in the amount of time per week standing at the desk (-27 min/week), and in preference, self-efficacy, and habit to stand at the desk during lessons (-0.2, -0.4 and -0.6 on a 5-point-scale, respectively), compared to no significant changes among secondary schoolchildren. Conclusions: More standing desks might be needed to induce intervention effects. Although pupils and teachers were generally positive about the desks, more efforts are needed to promote the (continuous) use of standing desks and to encourage less sitting in general throughout the school year. Additional intervention strategies and supporting teachers and school staff may be required.
S.31.3
A THREE YEAR RANDOMIZED CONTROLLED TRIAL OF A STANDING DESK INTERVENTION IN A HIGH SCHOOL OF 450 STUDENTS TO EVALUATE THE IMPACT ON SEDENTARY BEHAVIOUR, COGNITION AND TEST SCORES
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SIG: Children and families

Purpose: A three year randomized controlled trial in a High School where all 450 workstations were converted from seated tables and chairs to standing desks for the purpose of understanding whether this age group could experience a reduction in sedentary behaviour and improvement in cognition and standardized test scores was conducted from 2013-2016. Methods: This project utilized a pre/post intervention within-subjects study design. 100 of the high school students were recruited as part of a larger study using informative handouts, explicitly detailing all requirements of participating in the study and distributed by teachers. This group were randomly assigned to be evaluated using SenseWear and activPal wearable monitors to determine pre and post movement patterns with another randomly selected group tested with fNIRS as part of a cognitive test battery over 2 semesters and finally all students in their Junior year were evaluated using annual college entrance exams (PSAT) which were taken using the standing desks with comparison data two years pre and three years post desk intervention. Results: Student improvements in standing time and steps/day along with reductions in group means for seated time will be presented. PSAT scores improved on a pre/post intervention basis and continued to stay at elevated levels over subsequent school years as each Junior class took the annual exams with the standing desks. Conclusions: Reductions in sedentary behaviour are possible with large scale standing desk installations in traditional High School settings. Test taking focus evidenced by improvement in annual pre-college entrance exam scores was also observed along with cognitive improvements noted in fNIRS and cognitive testing. While these test score improvements are at best correlational to the physical classroom environments contribution, they are at least an indication that no harm was done to student test performance. Given notable improvements in physical activity and cognitive outcomes for this same cohort, these are important findings for the efficacy of this approach.

S.32: 13095: Research Translation of an effective obesity prevention program in the first years of life: the Healthy Beginnings Program (Convenor: Prof. Li Ming Wen) (Drawing Room)

S.32.1
TRANSLATING AN EVIDENCE-BASED OBESITY PREVENTION PROGRAM INTO EXISTING HOME VISITING SERVICES: THE HEALTHY BEGINNINGS PROGRAM
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SIG: Implementation and Scalability

Purpose: Effective and sustainable programs to promote healthy weight gain in the first years of life are a public health priority. Healthy Beginnings (HB) was a world-first randomised control trial to demonstrate the effectiveness of an intensive (8 sessions), home-based early obesity prevention intervention delivered by nurses from the third trimester until 2 years of age. The intervention effectively improved infant feeding practices and child body mass index (BMI) at 2 years although it was expensive and not sustainable. The aim of this study is to explore the barriers and facilitators with translating the HB program into existing ongoing home-visiting services within the Sydney Local Health District (SLHD), New South Wales, Australia. Methods: A four phased action research model and the Consolidated Framework for Implementation Research (CFIR) were used to evaluate the facilitators and barriers involved in integrating HB into existing services. Phase 1 (Plan) involved exploring and planning the integration. Phase 2 (action) involved staff
training and implementation of the HB program in the service. Phase 3 (Observation) included observing the HB sessions implemented in the service. Phase 4 (Reflection) included interviewing managers involved in the integration process, conducting focus groups with the nurses delivering the HB sessions and clients’ experiences and satisfaction with the sessions. Results: Healthy Beginnings was integrated in 4 sustained home-visiting services targeting vulnerable families in SLHD. Factors which contributed to the integration process include the district’s Chief Executive’s support, collaboration of teams and alignment with key performance indicators to address the NSW Premiers Priority to reduce childhood obesity. A developed addendum illustrated the integration of HB as a module in the service, the program schedule (integrated the 8 HB sessions over 2 years) and data collected (expected HB outcomes). Findings from phase 3 and 4 will be presented; data collection is ongoing at the time of this submission. Conclusions: The findings of this study will inform the integration of HB across other home-visiting services in New South Wales, Australia. This study provides insights into the process and recommendations in translating evidence-based programs into real-world setting for nutrition and physical activity researchers.

S.32.2
TRANSLATIONAL RESEARCH IN PRACTICE: THE STORIES FROM SYDNEY AND SHANGHAI

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SIG: Implementation and Scalability

Purpose: Building on the Healthy Beginnings evidence two translational research studies were conducted in Sydney and Shanghai. The Sydney study aimed to test whether the Healthy Beginnings program can be effectively delivered by telephone or Short Message Service (SMS). The Shanghai study aimed to explore whether the Healthy Beginnings program can be translated into the Chinese context. Methods: The Sydney study involved a three-arm randomised controlled trial with 1,155 women recruited from third trimester. The intervention included either telephone support or SMS with mailed information booklets. The Shanghai study was a Quasi-experimental study with 582 women recruited during the first trimester at 4 community health centers in Shanghai, China. Women in the intervention group received weekly SMS messages about infant feeding from the third trimester to 12 months post-partum. The main outcomes of both studies were infant feeding practices (i.e. breastfeeding) at 6 and 12 months of age. Results: The Sydney study has been well received by the participants through the process evaluation. Its 6-month-assessment will be completed by February 2018. The Shanghai study produced significant positive results. Compared with the control group, the intervention group had a significantly longer median duration of exclusive breastfeeding (EBF) at 6 months (11.41, 95%CI 10.25-12.57 vs. 8.87, 95%CI 7.84-9.89 weeks). The hazard ratio for stopping EBF in the intervention group was 0.80 (95%CI 0.66-0.97). The intervention resulted in a significantly higher rate of EBF at 6 months (adjusted odds ratio 2.67, 95%CI 1.45-4.91) and a significantly lower rate of the introduction of solid foods before 4 months (adjusted odds ratio 0.27, 95%CI 0.08-0.94). Conclusions: The process of translating successful research outcomes into practical programs that have the potential for scalability is demonstrated by Sydney and Shanghai studies. Both studies have been conducted through effective project setup, stakeholder engagement, recruitment strategies and ongoing participant engagement. In particular, the shanghai study demonstrated that a Chinese version of the Healthy Beginnings program via staged SMS intervention was feasible and effective for promoting healthy infant feeding practices. Findings from both studies will assist other translational research studies to effectively translate research findings into evidence-based practice.

S.32.3
USING DATA TO INFORM TRANSLATIONAL RESEARCH IN OUTDOOR PLAY AND SCREEN-TIME OF YOUNG CHILDREN: FINDINGS FROM THE HEALTHY BEGINNINGS TRIAL

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Sydney, Sydney, NSW.

SIG: Implementation and Scalability

Purpose: Insufficient physical activity and excessive screen-time are important risk factors contributing to the early onset of childhood overweight and obesity. The aim of this study was to use the data from Healthy Beginnings Trial to inform translational research for intervention development. More specifically, it aimed to investigate factors associated with and predictors of outdoor play (a proxy of physical activity) and screen-time in 2- to 5-year-olds. Methods: Cross-sectional and longitudinal analyses were conducted using 5-year follow-up data from the Healthy Beginnings Trial undertaken in Sydney, Australia from 2007 to 2013. A total of 667 pregnant women were recruited. For this study, 497, 415, and 369 mother-child dyads retained at ages 2, 3.5, and 5 years were included in the analyses. Data were collected at baseline (30–sh;36 weeks of pregnancy) and when children were 6 months, 1, 2, 3.5, and 5 years old. Multivariable regression models and mixed models were built. Results: Children's outdoor play was linked to child gender, sleep behaviour, formal child-care attendance, mother’s country of birth (Australia vs. other) and perception of neighbourhood environment; children's screen-time was associated with children's sleep behaviour, formal child-care attendance, mother's country of birth, employment status, screen-time, and parenting practices around screen viewing. Factors associated with children's outdoor play were not consistent across ages 2 to 5 years, whilst factors associated with children's screen-time were much more consistent over time. Predictors of outdoor play included practising tummy time, mothers' physical activity level before pregnancy, and having been informed about playing with child at baseline. Predictors of children's screen-time included mothers' screen-time during pregnancy and children's screen-time at age 1 year. Conclusions: The findings illustrated that mothers play an important role in establishing and shaping children's physical activity and sedentary behaviours. Early intervention needs to focus on improving mothers' knowledge of child development, parenting practices and role-modelling, as well as improving the social and physical environment to support active life style. These findings can inform the development of health promotion programs and policy recommendations for promoting physical activity in children.

S.33: 13153: The technology paradox: The role of technology in youth’s physical activity and sedentary behaviours (Convenor: Dr. Melitta McNarry) (Lounge)

S.33.1 USING TANGIBLE, 3D-PRINTED, OBJECTS TO ENHANCE CHILDREN'S UNDERSTANDING OF PHYSICAL ACTIVITY

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SIG: E- & m-health

Purpose: Current UK physical activity (PA) guidelines recommend youth to engage in at least 60 minutes moderate-to-vigorous physical activity (MVPA) daily. However, the majority of children fail to meet these guidelines, with a frequently cited barrier being that guidelines are difficult to measure and interpret by children. This is unsurprising given the sporadic nature of children's movement and the lack of consensus as to what constitutes MVPA. Technology, in the form of 3D printing, enables the creation of novel, tangible outputs to conceptualise youth's physical activity levels (PAL). Therefore, the purpose of this study was to investigate the efficacy of 3D PA models in enhancing children's understanding of PAL and intensities, as well as a motivational tool. Methods: Thirty-nine primary school (22 boys; 7.9±smn;0.3 years) and 60 secondary school-children (39 boys; 13.8±smn;0.3 years), participated in a three-month fading intervention in which participants were given 3D printed models of their previous week's PAL. Following receipt of their models, each participant completed regular, short semi-structured video interviews to assess their understanding of PAL, intensities and motivation. Data were transcribed verbatim and analysed deductively, then inductively to enable emergent themes to be further explored. Pen profiles were constructed representing analysis outcomes via a diagram of key emergent themes. Results: Analyses revealed enthusiasm for the concept of visualising PA through a tangible object.
Participants reported that the models improved their understanding of PA and awareness of the recommended levels. For the first model they received, children identified with the definition for PA, but few could accurately define or distinguish between intensities, irrespective of age or sex. Following the fourth model, the majority of secondary school children accurately distinguished between moderate and vigorous intensities. Participants highlighted the utility of such models as a motivational tool to promote PA through goal-setting. Conclusions: Results suggest that 3D printing may offer a unique strategy for enhancing children’s knowledge and awareness of PAL. Future studies should consider the novelty effect of such models and scalability of interventions aimed to promote engagement in PA through 3D printing. This strategy may be better aligned as an educational rather than motivational tool.

S.33.2
ECOLOGICAL MOMENTARY ASSESSMENT TO IDENTIFY REAL-TIME INFLUENCES ON ADOLESCENTS’ PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR

SIG: E- & m-health

Purpose: Most adolescents are insufficiently physically active but engage in extensive sedentary behavior. Ecological momentary assessment (EMA) enables real-time self-report data collection and can be used to contextualize the facilitators and barriers of adolescents’ physical activity. The purpose of this analysis was to use EMA to examine the associations of adolescents’ moderate-to-vigorous physical activity (MVPA) and sedentary behavior with affect, social context, EMA response rate, and demographic characteristics.

Methods: One hundred thirty-eight U.S. adolescents ages 10 to 16 years received 22 surveys over 7 days electronically delivered over a smartphone application. Surveys were randomly sent within 2 time periods each weekday evening and 5 time periods each weekend day. Each survey included a series of closed questions on social context and positive/negative affect. Adolescents concurrently wore an accelerometer at the hip, and the 30-min bout of accelerometry data prior to each EMA survey was used in analyses. Adolescents’ height and weight were measured to calculate BMI z-score. Mixed effect models were used to examine the association of adolescents’ MVPA with positive and negative affect, social context (with or without peers), age, sex, race (White vs. non-White), BMI z-score, and EMA response rate, while taking into account the clustering of responses within individual. Models were repeated using sedentary behavior as the dependent variable. Results: Adolescents were 12.6 ±1.9 years of age, with a BMI z-score of 0.9 ±0.2. The sample was 56% girls and 65% White, 30% African American, and 5% mixed/other race. Average EMA response rate was 56% (range 5% to 100%). Adolescents who engaged in higher amounts of MVPA prior to the EMA survey reported higher positive affect (p=0.009), were with peers (p=0.006), were younger (p=0.01), and had a higher EMA response rate (p=0.03). Adolescents who engaged in higher amounts of sedentary behavior reported lower positive affect (p=0.001), were alone or not with peers (p<0.0001), were older (p<0.0001), and had a lower response rate (p=0.03). Conclusions: Peer involvement and eliciting positive affect may be intervention targets to promote adolescents’ physical activity. EMA data should be interpreted with caution when response rate varies by physical activity level.

S.33.3
THE DEVELOPMENT AND APPLICATION OF TECHNOLOGY TO BUILD FOUNDATIONS FOR YOUTH’S PHYSICAL ACTIVITY LEVELS
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SIG: E- & m-health

Purpose: Advances in mobile technology have enabled the development of real-time biofeedback systems that facilitate movement proficiency. Specifically, wireless Bluetooth sensors, such as accelerometers, can now be linked to mobile phones and applications to provide real-time feedback based upon the movement
of the accelerometer or other sensors. Using feedback through sound, vision and haptic responses, individually tailored feedback can be provided for a range of movement actions. The ability to provide feedback in real-time as people perform actions creates opportunities for independent learning across a wide range of movements. The purpose of this study was to investigate the role of real-time biofeedback systems in promoting movement proficiency. Methods: Two pilot studies were conducted to develop the real-time biofeedback system. The first involved normal functioning adults performing rhythmic attending tasks using an entrainment system and measured changes in brain plasticity using Transcranial Magnetic Imaging. Subsequently, this system was applied to 10 stroke rehabilitation patients who completed three weekly sessions of music-based entrainment to ascertain the influence on clinical movement proficiency and intervention compliance. The findings from these studies where then incorporated into a four-week intervention in fifty 10-11-year-old children to investigate the effect of the Techno-Disc system on movement proficiency, engagement, self-efficacy and enjoyment of movement. Results: Normal functioning adults were able to quickly adapt to the music entrainment and biofeedback system, with high levels of compliance with the assigned tasks. Brain excitability was positively associated with completion of the music entrainment task. Stroke patients demonstrated improvements in movement proficiency, although determining specific task completion and time in task proved problematic. Preliminary results from the child-based intervention show high levels of engagement and compliance with completion of tasks. The Techno-Disc system appears to be associated with increased enjoyment and self-efficacy. Conclusions: Although the use of portable real-time biofeedback systems remains in its infancy, they hold promise for developing proficient movements in children. Given the fundamental role of physical literacy and movement proficiency in the health, physical activity and wider development of youth, bio-feedback systems may offer a novel mechanism to enhance children’s capacity for physical activity from an early stage.

S.34: 13089: Policy relevant tools to measure obesity-related behaviours in young children: methodological advances guiding short tool development and validation (Convenor: Associate Professor Rebecca Golle (CES 2-3)

S.34.1 DEVELOPMENT OF A BRIEF ASSESSMENT TOOL TAILORED TO LOW-INCOME, ETHNICALLY DIVERSE PARENTS OF YOUNG CHILDREN USING COGNITIVE INTERVIEWING & PHOTO CUSTOMIZATION

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SIG: Children and families

Purpose: To reduce pediatric obesity risk, valid assessment tools are needed. Economically disadvantaged audiences are at particular risk for obesity and development of assessment tools need to be customized to this audience to ensure relevance, understanding, readability, and validity. The purpose of this study was to produce a valid vegetable behavior assessment tool for low-income parents of young children relying on cognitive testing and photographic customization to ensure target audience relevance. Methods: Three cognitive interviewing strategies were used ensure client understanding and reduce unnecessary content: concurrent think-aloud technique, paraphrasing strategy, and probing question strategy. To further assist in readability, photographs were added to each item. These photographs were customized to the target audience by conducting photographic sessions depicting item behaviors (i.e., Parent eating vegetables in front of child) with families in their homes, parks and grocery stores. Readability of the text component was assessed by the Flesch-Kincaid Reading Index. Lastly, the tool was validated using 24-hr recalls, anthropometrics and blood samples. Results: Based on the cognitive interviewing sessions, parents (n=77) suggested word substitutions using familiar vocabulary and fewer syllables, word deletions and visuals to substitute for text in the 10-item tool. Readability was determined to be 1.2 grade level. Fifty-four families participated in the photographic sessions. The final version of the vegetable tool was shown to be positively associated to vegetable cup equivalents (p<.05), serum
carotenoids (p<.05) and inversely associated with child BMI (p<.05) and inflammatory markers (p<.05). These customization strategies were also used to develop five additional risk assessment tools on snacking, sweetened beverage, physical activity, energy density and BMI. Conclusion: This brief vegetable assessment tool tailored to low-income, ethnically diverse parents could be used for program evaluation in nutrition education programs and as a screener for risky dietary behaviors to target in counseling appointments. A parent summed up the purpose of customizing the tool to reading level, SES and race/ethnicity by stating after she completed the assessment tool, "This looks like it was made for me." In addition, these cognitive testing and photo customization strategies could be used by others when developing tools for other disadvantaged audiences.

S.34.2
EVALUATION OF ITEMS TO MEASURE MOVEMENT BEHAVIOURS IN INFANTS. APPLICATION OF ITEM RESPONSE THEORY (IRT)
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SIG: Children and families

Purpose: This study used IRT to evaluate the measurement properties of previously developed items for assessing movement behaviours in infants. Our objective was to identify items suitable for inclusion in a short-form tool to assess movement behaviours in infants. Methods: We conducted a secondary analysis of data collected on 9-month olds in the Melbourne InFANT Program RCT. Specifically, we analysed the responses of 441 parents to 8 items assessing the amount of time in the previous week their infants spent: playing games (e.g., pat-a-cake), being active with adults, tummy time, bouncer/swing, in a play pen, on the floor, playing alone (supervised but no interaction), and being outside. Open-ended responses (hrs/week) were converted into a 5-pt scale based on the response categories used in Burdette's outdoor play instrument (0 = 0 min/day, 1 = 1 - 15 min/day, 2=16 - 30 min/day, 3=31 -60 min/day, 4 = > 60 min/day). Data were initially screened for missing responses and floor/ceiling effects. Unidimensionality was assessed using an unrotated PCA of the standardized residuals. Infit and Outfit mean squares assessed the fit between items and the rasch model (Masters Partial Credit Model). Item performance was assessed using item characteristic curves, item information curves, category response curves, and item-person maps. IRT analyses were performed using Winsteps (4.0.1). Results: The play pen and floor items exhibited ceiling/floor effects and were excluded from rasch analysis. Factor analysis of the residuals supported the unidimensionality assumption, with the rasch model accounting for > 50% of the total variance and eigenvalues for residual contrasts 1.7 or lower. Item fit statistics fell within the suggested cutoffs of 0.70 and 1.30. Category response curves indicated problems with the 5-pt scale for the items assessing playing games, tummy time, and bouncer/swing. Responses were recoded to a 3-pt scale and the analysis repeated. The resultant model performed acceptably; however, the swing/bouncer item exhibited evidence of misfit. The remaining items performed acceptably. Conclusions: Parent reports of time being active with infants, tummy time, and being outside using a fixed checklist format are potentially useful items for short-form measures of movement behaviours in infants.

S.34.3
IMPROVING THE MEASUREMENT OF YOUNG CHILDREN’S FOOD INTAKE USING COGNITIVE INTERVIEWING
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SIG: Children and families

Purpose: Short food questionnaires allow for rapid reporting of food intake across a variety of settings and study designs, but are limited by poor validity and reliability. Question design would be improved by gaining better understanding of parents’ thought processes and question comprehension when answering short food questions. This would enhance tool validity and reliability. The purpose of this study was to
understand the recall strategies and cognitive processes employed by parents when answering questions about their child's food intake. Methods: Cognitive interviews using a combination of 'think-aloud' and retrospective probing approaches were conducted with 20 Australian parents of 3-7 year old children via face-to-face or Skype. Parents were asked to 'think-aloud' while completing short questions about their child's intake of discretionary (unhealthy) foods, meat and alternatives, grains and vegetables. Parents were asked to vocalize everything that came to mind when answering questions, including recall strategies, difficulties answering questions and understanding of questions. Probing questions were used to elicit further insights into comments made during the 'think-aloud'. Interviews were audio-recorded, transcribed and thematic analysis was conducted, using a deductive and inductive approach, to identify themes relating to question comprehension and recall strategies utilised by parents. Results: Strategies employed for recalling discretionary food intake differed from strategies used for recalling core (healthy) food intake. Recall of special occasions, locations and people who provided food were used to report discretionary food intake, whereas recall of meal times and family routine primarily informed reporting of core food intake. Time spent in child care or with other people were identified by parents as the primary factor affecting the accuracy of their responses. Question comprehension and accuracy of responses were affected by the specificity of terminology used in the wording of the question. Conclusions: Understanding parents' thought processes and question comprehension when completing questions about their child's food intake informs question wording, inclusion of prompts and visual aids to assist with accurate recall and overall question design. Designing more valid and reliable short food questions will improve acceptability of questionnaires for parents and accuracy in the measurement of food intake using short tools.

S.35: 13002: Using Ecological Momentary Assessment to Examine Within-Subject Associations of Affective States with Physical Activity and Eating Behaviors (Convenor: Dr. Genevieve Dunton) (Concord 1)

S.35.1 WITHIN- AND BETWEEN-PERSON ASSOCIATIONS OF FOOD CHOICES AND EMOTION AMONG DIVERSE FIRST-YEAR UNIVERSITY STUDENTS
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SIG: E- & m-health

Objective: Studies have examined the associations between emotions and overeating, but have only rarely considered the relationship between emotions and food choices. This study determined the associations among emotions and food choices in first-year university students living in residence halls using mobile ecological momentary assessment (mEMA) surveys. Methods: Using an intensive repeated-measures design, mEMAs were used to assess concurrent emotions and food choices of first-year university students (n=663). Under a signal-contingent prompting schedule, prompts were sent to participants twice at randomly selected times during each of the following time windows: 9:00-11:59, 12:00-14:59, 15:00-18:59, and 19:00-22:00. Participants received prompts via SMS to complete the surveys during four quasi-randomly selected days, eight times per day, totaling 32 prompts per week. Emotions were categorized as negative (sad, stressed, tired), positive (happy, relaxed, energized), and apathetic (bored, meh). Generalized estimating equations (GEE) were used to examine between- and within-person associations of emotional status with momentary food choices (sweets, salty snacks/fried foods, fruits/vegetables, pizza/fast food, sandwiches/wraps, meats/proteins, pasta/rice, cereals), adjusting for sociodemographics, time variables, accounting for within-person dependencies among repeated measurements of eating behavior. Results: At the within-person level, on occasions when negative emotions were reported (versus no negative emotion reported) participants were significantly more likely to consume meats/proteins (OR=1.5) and pasta/rice (OR=1.4); on occasions when positive emotions were reported versus no positive emotions reported, participants were more likely to consume sweets (OR=1.7), salty snacks/fried foods (OR=1.5), fruits/vegetables (OR=1.4), but less likely to consume pizza/fast food (OR=0.6). At the between-person level, participants who reported negative emotions more frequently as compared to others consumed meats/proteins (OR=1.6) more often; those who reported positive emotions relatively more
frequently as compared to others consumed sweets (OR=1.5), fruits/vegetables (OR=1.5), meats/proteins (OR=1.8), pasta/rice (OR=1.6), and cereals (OR=1.9) more often; and those who reported apathetic emotions relatively more frequently as compared to others consumed salty snacks/fried foods (OR=1.8) and pizza/fast food (OR=1.9) more often. Conclusions: Emotions were significantly associated with food choices for both within and between-subject analyses. The within-subject findings can be used to develop interventions that encourage positive emotions in first-year university students to better promote healthy food choices.

S.35.2
AFFECTIVE STATES ARE ASSOCIATED WITH DAILY ACTIVITY TRAJECTORIES (VOLUME, TRENDS, AND FLUCTUATION)
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SIG: E- & m-health

Purpose: Several interventions aiming to enhance physical activity in everyday life showed mixed effects. Affective constructs are thought to support health behavior change. However, little is known about within-subject associations between momentary affect and subsequent physical activity in everyday life. This study analyzed the extent to which three dimensions of affective states (valence, calmness, and energetic arousal) were associated with different components of daily activity trajectories. Methods: Sixty-five students (Age: M = 24.6; SD = 3.2; females: 57%) participated in this study. Physical activity was assessed objectively through accelerometers during 24 hours. Affective states assessments were conducted randomly every 45min using an e-diary with a six-item mood scale that was especially designed for ambulatory assessment. Three-level multi-level analyses were conducted to investigate the extent to which momentary affect accounted for momentary volume, prospective trends, and stability vs. fluctuation of physical activity in everyday life. Results: All three affect dimensions were significantly associated with momentary activity volumes and prospective trends over 45 minute periods. Physical activity didn't fluctuate freely, but featured significant autocorrelation across repeated measurements, suggesting some stability of physical activity across 5-minute assessments. After adjusting for the autoregressive structure in physical activity assessments, only energetic arousal remained significant. Feeling energized and awake was associated with an increased momentary volume of activity, and initially smaller but gradually growing decreases in subsequent activity within the subsequent 45 minutes. Although not related to trends in physical activity, higher valence predicted lower stability in physical activity across subsequent 45 minutes, suggesting more short-term fluctuations in daily activity the more participants reported positive affective valence. Conclusions: The current analyses afford interesting insight into within-subject associations between momentary affect and activity-trajectories in everyday life. Energetic arousal emerged as the only meaningful predictor of physical activity in daily life after adjusting for autoregression. A significant effect of valence on short-term activity fluctuations might indicate that activity interventions would benefit from taking into account enhancement of positive affective valence in everyday life. Moments of enhanced valence may scaffold attempts bring inactive people to get started with daily activities and overcome periods of inactivity in everyday life.

S.35.3
AFFECTIVE RESPONSE DURING PHYSICAL ACTIVITY: DIFFERENCES BY STAGE OF BEHAVIOR CHANGE
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SIG: E- & m-health

Purpose: Higher positive and lower negative affective response during physical activity may reinforce motivation to engage in future activity. However, affective response during physical activity is typically examined under controlled laboratory conditions, and little is known about whether affective response during physical activity differs depending upon an individual's stage on the behavior change continuum. The current study used Ecological Momentary Assessment (EMA) to examine whether affective response...
during physical activity in everyday life differed by stage of behavior change. Methods: Participants included 115 adults (M=41.0 years, 74% female) who completed eight randomly-prompted EMA surveys per day for four days across three semi-annual waves. EMA surveys assessed current activity type (i.e., physical activity, non-physical activity), and positive and negative affect. Questionnaires measured stage of behavior change (e.g., pre-action, action, maintenance) at each wave. Multilevel models (level 1=occasion, level 2=wave, level 3=person) assessed whether stage of behavior change (at any given wave) moderated momentary associations between physical activity (vs. non-physical activity) and affective response controlling for day of the week, time of day, and sex. Results: The stage of change ×es; physical activity interaction was significant for predicting positive affect (ßa=0.64, SE=0.29, p=.028). Positive affective response during physical activity (vs. non-physical activity) was higher when individuals were in pre-action stages (vs. action). The stage of change ×es; physical activity interaction was also significant for predicting negative affect (ßa=-0.27, SE=0.13, p=.037). Negative affective response during physical activity (vs. non-physical activity) was lower when individuals were in the maintenance stage (vs. action). Conclusions: Affective responses during physical activity differed across the stages of behavior change. When people were in the action stage (i.e., achieving recommended levels of physical activity for less than 6 months), they experienced fewer positive affective consequences during physical activity than earlier stages and more negative affective consequences during physical activity than later stages. These results suggest that the action stage of change may be particularly vulnerable to relapse. Interventions strategies could be developed to boost positive affective responses and dampen negative affective responses during physical activity to support maintenance after individuals have recently adopted the behavior.

S.36: 13019: Healthy In, Healthy Out: The Role of Exercise and Nutrition in Prehabilitation for Cancer Surgery (Convenor: Assistant Professor Daniel Santa Mina) (Concord 2-3)

S.36.1
THE RATIONALE FOR MULTIMODAL PREHABILITATION IN SURGICAL ONCOLOGY
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SIG: Cancer prevention and management

Purpose: Prehabilitation can enhance patients’ functional capacity thereby hastening recovery and improving health related quality of life (HRQoL). The time before surgery is short, mandating a multimodal and high-intensity approach. Since up to 50% of surgical patients develop one or several postoperative complications, and those are closely related to patients’ functional capacity, there is vast room for improvement. Two studies will be highlighted within this presentation: 1) a recently completed feasibility study on multimodal prehabilitation for cancer patients undergoing colorectal surgery; and 2) methodology of an ongoing international randomized controlled trial (RCT) (NTR5947) on multimodal prehabilitation prior to colorectal cancer surgery. Methods: Study 1: We conducted a pilot study to test safety, feasibility and preliminary effectiveness of a multimodal prehabilitation program versus control for 50 patients undergoing colorectal cancer surgery in the Netherlands. Intervention participants received an individualized, hospital-based exercise program that included high intensity endurance and resistance training 3 days per week plus daily home exercises. Protein supplements were given after training and daily before sleep, aiming for a total intake of 1.5-1.8 g/kg/day. Nutritional optimisation, a smoke cessation program and mental coaching were also included in the program. Control participants received normal care according to the enhanced recovery after surgery (ERAS) program. Study 2: An international multicenter RCT on multimodal prehabilitation versus control for patients undergoing surgery for colorectal cancer has been recently launched. Results: Study 1: The trial was feasible and program evaluation revealed a high level of patient’s satisfaction. Adherence to PREHAB was 88% and there were no serious adverse events associated with trial protocol. After prehabilitation, significant improvements were observed for both 6MWT and 1RM. Eighty-six percent of patients in the intervention group recovered to baseline functional capacity within four weeks after surgery, versus 40 percent in the control group (p<0.01). Study 2: highlighting a study protocol of a comprehensive multimodal and multidisciplinary prehabilitation program using high intensity training in current colorectal care. Conclusions: For people with cancer, multimodal prehabilitation enhances functional capacity prior to surgery. It may therefore result in
increased survival and improved HRQoL. Ongoing research continues to explore the value of prehabilitation.

S.36.2
NUTRITION IS A KEY COMPONENT OF PREHABILITATION
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SIG: Cancer prevention and management

Purpose: A limitation in the interpretation of the available prehabilitation literature is the absence of a well-defined and standardized definition. Randomized controlled trials (RCT) support the use of multimodal prehabilitation, involving nutrition and exercise, as a means of promoting an earlier return of physical function post-abdominal surgery. Yet, to date, available systematic reviews and meta-analyses on prehabilitation have focused on exercise-only interventions and have produced conflicting results. Nutrition is a key aspect of prehabilitation that works in synergy with the exercise intervention. This presentation will highlight the results of a systematic review and meta-analysis on the impact of nutrition, with or without exercise, on clinical and functional outcomes post-colorectal resection. The findings delineate the contribution of nutrition and multimodal prehabilitation to surgical recovery, and provide valuable evidence for establishing the definition for prehabilitation. Methods: A systematic review was conducted examining MEDLINE, EMBASE, CINAHL, CENTRAL and ProQuest databases. Original cohorts or RCTs of colorectal surgery patients with a minimum of 7 days of non-invasive nutrition prehabilitation, with or without exercise, were included. A stratified meta-analysis was used to estimate the pooled risk ratio (RR) for categorical data and the weighted mean difference (WMD) for continuous variables. Primary outcome was length of hospital stay (LOS) and secondary outcome was recovery of functional capacity (six-minute walk test, 6MWT). Results: Nine studies of 914 patients undergoing colorectal surgery (intervention: 438, control: 476) were included. Nutrition prehabilitated patients with or without exercise experienced a significant reduction in the days spent in hospital (WMD of LOS: -2.2; 95%Confidence Interval, -3.5 to -0.9) and a reduced risk of total complications (RR: 0.79, 95%CI: 0.64 to 0.98) compared to control. These benefits were observed independent of exercise and surgical care provided (enhanced recovery protocol vs. traditional surgical protocol). However, multimodal prehabilitation consisting of nutrition and exercise were required to significantly improve 6MWT at 4 and 8 weeks after surgery. Conclusions: Multimodal prehabilitation interventions comprised of both nutrition and exercise promote a better quality of recovery after colorectal surgery compared to unimodal interventions.

S.36.3
EXERCISE-BASED PREHABILITATION IN ONCOLOGY
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SIG: Cancer prevention and management

Purpose: The role of exercise prior to surgery has become of significant interest to researchers and clinicians given growing evidence describing the better surgical outcomes for those that are physically fit entering the operating room. Capitalizing on the preoperative waiting period to invest in peri- and postoperative outcomes via health behaviours, such as exercise, is known as prehabilitation. Prehabilitation research has grown significantly over the past decade with exercise as a cornerstone in comprehensive programming. Two studies will be highlighted within this presentation: 1) a recently completed RCT of prehabilitation prior to radical prostatectomy for prostate cancer; and 2) methodology of ongoing cohort study of prehabilitation prior to breast cancer surgery. Methods: Study 1: A multi-centre, RCT was conducted to compare prehabilitation versus control for n=86 men with prostate cancer undergoing radical prostatectomy at two academic hospitals in Canada. Intervention participants received an individualized home-based exercise prescription that included moderate intensity aerobic and resistance training 3-4 days per week and pelvic floor muscle exercises. Control participants received the same pelvic floor training regimen as the intervention group plus a healthy lifestyle booklet for men with prostate cancer. Study 2: A single-arm pre-post study is currently being conducted to assess the effects of
systemic and loco-regional exercise programming for women undergoing breast cancer surgery. Results: Study 1: The trial was feasible and comparable to similar literature in from a recruitment and attrition perspective (46% and 29%, respectively). Adherence to PREHAB was 69% and there were no serious adverse events associated with trial protocol. Prior to surgery, PREHAB participants demonstrated less anxiety and body fat percentage and had significantly greater six-minute walk test scores four weeks after surgery. Study 2: Insights regarding recruitment and appropriate adaptation for women with breast cancer and planned adjuvant chemotherapy will be presented. Conclusions: For people with cancer, exercise prehabilitation needs to be contextualized among neoadjuvant treatments (i.e. prior to primary/curative therapy) and the potential value of prehabilitation for non-surgical therapies, such as radiation and chemotherapy.

S.37: 13046: Movement Behaviours for the Prevention and Management of Chronic Conditions in Older Adults (Convenor: Dr. Shilpa Dogra) (Oasis)

S.37.1

MOVEMENT BEHAVIOURS AND THE AGE ASSOCIATED DECLINE IN LUNG FUNCTION

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SIG: Ageing

Purpose: The purpose of this analysis was to investigate associations of sitting time, walking, different intensities of physical activity, and strengthening activities, with lung function in healthy middle-aged and older adults, according to their smoking history. We also sought to determine whether replacing sedentary time with physical activity was associated with better lung function. Methods: The Canadian Longitudinal Study on Aging, a nationally representative, stratified, random sample of Canadians 45 to 85 years (at baseline) was used for analysis. Lung function was assessed using spirometry; sex and age-specific formulas developed on the Canadian population were used to determine percent of predicted Forced Expiratory Volume in 1 second (FEV1%pred). A modified version of the Physical Activity Scale for Elderly was used to collect information on sitting time and physical activity. Smoking related variables from the questionnaire were used to categorize participants as never smoked, <10 pack years, and 10 or more pack years. Hierarchical models were used to generate adjusted associations; block 1 contained all of the covariates while block 2 included each of the movement behaviours. Linear regressions were also used to conduct the isotemporal substitution analysis using FEV1%pred as the outcome; these models also included self-reported sleep. Valid data for measures of interest were available on 16,841 respondents. Results: All movement behaviours were associated with FEV1%pred in crude and adjusted models, regardless of smoking status. Sitting time was negatively associated with FEV1%pred (βa: -0.059, CI: -0.094, -0.024) while walking (βa: 0.092, CI: 0.045, 0.140), light PA (βa: 0.112, CI: 0.026, 0.198), moderate PA (βa: 0.091, CI: 0.009, 0.172), strenuous PA (βa: 0.202, CI: -0.135, 0.270), and strengthening activity (βa: 0.158, CI: 0.030, 0.286) were positively associated with FEV1%pred. Isotemporal substitution analysis indicated that replacing sitting time with physical activity was associated with better FEV1%pred. Conclusions: These data are the first to demonstrate an association between strengthening activity and lung function, and highlight the importance of different movement behaviours for the prevention of age-associated declines in lung function. Given the deconditioning associated with declining lung function, longitudinal data are needed to determine a temporal association between movement behaviours and lung function.

S.37.2

DETERMINANTS OF PHYSICAL ACTIVITY IN OBSTRUCTIVE AIRWAY DISEASES

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SIG: Ageing

Introduction/Aim: Severe asthma (SA), chronic obstructive pulmonary disease (COPD) and bronchiectasis are obstructive airway diseases (OAD) that share clinical characteristics that are likely to impair patients’ physical activity level. However, physical activity has not been extensively studied in OAD, outside of COPD. We aimed to describe the prevalence of physical activity impairment in different OAD compared to controls, and to test whether in the OAD group, physical activity is associated with shared clinical characteristics of these diseases, independent of diagnosis. Method: A cross-sectional study of adults with OAD (SA=62, COPD=67, bronchiectasis=60) and controls (n=63) was conducted. Participants underwent a multidimensional assessment involving measurement of body mass index (BMI), lung function, exercise capacity (6MWD), health status (SGRQ) and systemic inflammation (hs-CRP). Physical activity (steps/day) was measured using the ActiGraph wGT3X-BT accelerometer for 14 consecutive days. Associations of physical activity with clinical characteristics in the OAD group were examined using multivariable linear regression models, adjusted for confounders. Results: The OAD group included 189 participants (58.7% female), median [IQR] age 67 [58-72] years and mean FEV1% predicted 69.4%. The control group included 63 participants (52.4% female), aged 55 [34-64] years. Compared to controls, those with OAD accumulated less steps/day: median difference -4630 (COPD), -2289 (bronchiectasis), and -2255 (SA) (p=0.001 all results). Compared to COPD, both SA and bronchiectasis accumulated more steps/day: median difference 2375 and 2341, respectively (p=0.0001). No statistically significant differences were found in physical activity between the SA and bronchiectasis groups. In separate adjusted regression models, 6MWD had the strongest associating with physical activity in OAD, followed by FEV1% predicted, and health status. In the full multivariable regression model, 6MWD, FEV1% predicted and BMI remained significantly associated, explaining 47.4% of the adjusted variance of physical activity in people with OAD (p<0.0001). Conclusion: People with OAD engage in lower levels of physical activity compared to controls. The degree of activity impairment differs by disease. Despite this, the level of activity is associated with shared clinical characteristics of these diseases. Interventions to improve physical activity should be multifactorial, and target the OAD population, irrespective of diagnosis.

S.37.3
TIME USE IN PEOPLE WITH CARDIOVASCULAR DISEASE BEFORE AND AFTER A CARDIAC REHABILITATION PROGRAM

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SIG: Ageing

Objective: This study aimed to determine how people use their time, before and after a cardiac rehabilitation program. The research question was: how does time use change in people with cardiovascular disease after undergoing cardiac rehabilitation? Methods: Design: Pilot pre-post study. Participants: Fifty adults were recruited from a major metropolitan hospital prior to commencement of a cardiac rehabilitation program. Intervention: All participants underwent a 6-week outpatient cardiac rehabilitation program, consisting of weekly education and exercise. Measures: Activity was objectively measured pre- and post-rehabilitation with GeneActiv wrist-worn accelerometers (24 hours/d, 7d). Participants completed a two-day use of time recall instrument, administered by phone interview pre- and post-rehabilitation. Analysis: Time flux analyses and repeated measures ANOVA (aha: =0.05) were completed to evaluate changes in time use. Results: Forty-one participants were included in the analysis (64.3±smn:10.0 years, 88% male). Based on the objective activity data, post-rehabilitation, there was a 42 minute reduction in sleep, a 35 minute increase in MVPA, and smaller changes in light physical activity (↑19 minutes) and sedentary time (↓11 minutes). The major time flows were from sleep to sedentary time (↓11 minutes). The major time flows were from sleep to sedentary time (↓11 minutes). The major time flows were from sleep to sedentary time (↓11 minutes). The major time flows were from sleep to sedentary time (↓11 minutes). The major time flows were from sleep to sedentary time (↓11 minutes).
doing chores (p=0.04), 21 minute increase in transport (p=0.05), 24 minute increase in quiet time, 24 minute decrease in the time spent socialising, and a nine minute decrease in screen time. The largest time flow was from sleep to quiet time (36 minutes), followed by a flow from occupational-related activities to chores (14 minutes). Conclusions: This study provides preliminary evidence of positive time use changes following cardiac rehabilitation. Post-rehabilitation, people slept less, and engaged in more light physical activity and MVPA. The increased time spent in chores, work and transport were compensated by reductions in screen time, and the time spent socialising and sleeping. This study provides novel time use data before and after cardiac rehabilitation. The findings may have implications for the development of interventions to maintain and increase activity following cardiac rehabilitation.

Jun 06, 11:50 - 13:05: Symposia

S.38: 13078 Long Term Follow-up of Physical Activity in Young People: Lessons Learned from Cohort Studies and Intervention Evaluations (Convenor: H Brown) (Grand Ballroom)

S.38.1 MAINTAINING A COHORT OVER THE LONG TERM: BENEFITS AND LESSONS LEARNED FROM THE HAPPY STUDY
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SIG: Children and families

Purpose: Greater insights into the development of physical activity behaviour, its determinants and outcomes can be gained from studies that provide longer term follow up. Prospective cohort studies provide Level II evidence, however the quality of evidence is largely dependent on retention rates. The aim of this presentation is to provide insight into the benefits that can be gained from the conduct of prospective cohort studies and some strategies used to maintain cohorts. The Healthy Active Preschool and Primary Years (HAPPY) study will be used as a case study. Methods: The HAPPY study was initially designed to investigate the prevalence and correlates of physical activity and sedentary behaviour in preschool-aged children. Children aged 3-5 years were recruited from childcare centres and preschools across metropolitan Melbourne in 2008-2009. Children were followed up 3 and 6 years later at the age of 6-8 and 9-11 years, respectively. Results: Of the 1002 children initially recruited into the HAPPY study at age 3-5 years, 766 (76.3%) agreed to future contact. Retention at the 3 and 6 year follow-ups were 567 (74.0%) and 571 (76.7%), respectively. Only 22 children withdrew at each time point, with the remaining non-responders agreeing to future contact. Examples of benefits include ability to investigate behaviour change and its determinants, and the expansion of outcomes of interest (e.g. fundamental movement skills, bone health, psychosocial wellbeing, school achievement). Strategies to maintain the cohort included regular contact between follow-ups (e.g. birthday and season's greetings cards, small annual gift, annual newsletter), and catering to family data collection preferences (e.g. moving from paper to online surveys, allowing family choice in data collection location). Conclusions: The HAPPY study provides insights into the benefits and complications of maintaining a cohort over the longer term. Lessons learned may assist others in the successful conduct of prospective cohort studies.

S.38.2 LONG TERM FOLLOW-UP OF PHYSICAL ACTIVITY OUTCOMES: METHODS, RETENTION RATES, AND LESSONS LEARNED FROM THE GOACTIVE CLUSTER RANDOMISED CONTROLLED TRIAL
Brown HE1, Jong ST1, Croxson C2, Sharp SJ1, Wilkinson P1, Wilson ECF1, van Sluijs EMF1, Vignoles A1, Corder k1.1University of Cambridge, Cambridge; 2Oxford University, Oxford.

SIG: Children and families

Purpose: Encouraging sustained physical activity in young people is a public health priority, and is often identified as a key objective of physical activity interventions. However, very few studies assess outcomes
over the longer-term and are therefore unable to establish whether the intervention has had a maintained effect on behaviour. This presentation will describe the methods used, retention rates achieved, and lessons learned during the conduct of the GoActive cluster randomised controlled trial (CRCT). Methods: The GoActive CRCT is an ongoing evaluation of a physical activity promotion programme. Year 9 students, aged 13-14 years, were recruited in September 2016 from 16 secondary schools across Cambridgeshire and Essex, UK. Outcomes were assessed at baseline (T1), interim (week 6: T2), and post-intervention (week 14-16: T3), and will be repeated at 10-12-month follow-up (main outcome: T4). The protocol for future follow-up of students beyond T4 (i.e. T5, T6) is currently under review. Results: Parental opt-out consent was used; as such, 86% of all eligible students were recruited into the CRCT (n=2880). Retention rates of students at T2 and T3 were 88% (n=2529) and 91% (n=2454) respectively. T4 retention rates will be available in May 2017. All schools have been retained. Strategies to retain students have included measurement incentives, regular assemblies at schools, update newsletters, and rapport-building during sessions. School retention strategies have centred on continued engagement with the assigned contact teacher (e.g. regular emails and face-to-face meetings) and offering flexibility with measurement scheduling. A school-level sports equipment voucher is also provided once all 4 assessments have been completed. Conclusions: The GoActive CRCT demonstrates how both schools and students can be successfully retained in a large-scale evaluation of a physical activity promotion programme, providing an assessment of long term behaviour change. Practical examples of the retention strategies used may help those conducting similar trials.

S.38.3
KISS: AN EXAMPLE OF A SCHOOL-BASED PHYSICAL ACTIVITY INTERVENTION WITH LONG-TERM FOLLOW-UP – LESSONS LEARNED
Kriemler S1.
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SIG: Children and families

Purpose: Long-term follow-ups of lifestyle intervention studies at school are a challenge in many respects including funding, the proof of feasibility, where to measure, and especially to convince participants to take part again. Methods: KISS is a school-based cluster-randomized controlled trial (CRCT) with a PA intervention in primary school with children in 1st and 5th grade (6- to 13-year old, n=502) that participated at baseline (T0), 1 year later post-intervention (T1) and finally 3 years later at follow-up (T2) at ages 10 to 17 years. Primary outcomes were a composite cardiovascular risk score, aerobic fitness, physical activity, body composition, quality of life, secondary outcome was bone health. Results: The initial participation rate at T0 was excellent with 502/540. Retention rates at T1 and T2 were 94 and 64% for INT and 94 and 57% for CON, respectively. However, participation was considerably lower for blood and bone measures. Retention rates decreased more in controls, were lower during adolescence and varied according to type of outcome. Major efforts were taken to keep participants in the study including organisation of a rock band event or parties, assessment during school time, and incentives. Conclusion: Although many valuable results have been published in peer-reviewed journals, and data are precious in pooled international databases (e.g. International Children’s Accelerometry Database, NCD) or included in reviews, one should question the external validity of the long-term results of the CRCT. Careful thoughts about the value and challenges of long-term follow-ups by recognizing the urgent need on one side, but also the many pitfalls affecting retention rates that may nourish thoughts for and procedures in future studies.

S.39: 13131: Novel methods for dietary assessment with socially-disadvantaged populations (Convenor: Dr. Marilyn S Townsend) (Salon 1-2)

S.39.1
DEVELOPMENT AND VALIDATION OF A VEGETABLE VARIETY PICTORIAL TOOL FOR ESTIMATION OF DIET QUALITY IN COMMUNITY SETTINGS
Diaz Rios LK1, Keim N2, Shilts MK3, Townsend MS4.
1University of California, Merced, Merced, CA; 2Western Human Nutrition Research Center, USDA, Davis, CA; 3California State University, Sacramento, Sacramento, CA; 4University of California, Davis, Davis, CA.
Background: Community nutrition practitioners consistently report challenges with utilizing burdensome conventional tools to collect dietary data. Simple and convenient evaluation tools can streamline data collection; linguistically and culturally appropriate tools are necessary to obtain valid and reliable data from target respondents with low literacy and/or limited proficiency in the mainstream language. Purpose: To describe the process for creating and validating a short pictorial diet quality tool to be used as a convenient alternative to the 24-hour diet recall with English and Spanish speakers in community settings. Methods: A preliminary tool comprising 21 vegetable categories from well-known food frequency questionnaires, was first criterion-validated against 24-hour recalls for its performance estimating diet quality according to the Healthy Eating Index 2005. Content and face validity were, then, established following a multi-step, iterative, respondent-centered approach, consisting of cognitive interviewing with target respondents and conceptual consistency verification by nutrition experts. Results: A convenience sample of English- (n=13) and Spanish-speaking (n=16) parents of preschool children underwent cognitive interviewing to evaluate the clarity, relevance, and appropriateness of text identifiers and visual representations of each vegetable. After each interview round, changes were proposed and verified by experts for nutrition consistency and relevance. The process was iterated until no further changes were required (English version: 8 iterations; Spanish version: 5 iterations). An initial round of cognitive interviewing revealed the need for having distinctive items in each language version to ensure cultural relevance. Both English and Spanish final versions have 28 vegetable categories. There are five unique vegetables to each version. Five previously validated items were added to obtain behavioral information on: vegetables not included but usually consumed; correspondence of reported vs. habitual intake; and frequency of cooking from scratch, eating out, and fast food consumption. Conclusions: Content and face validity was achieved for a short pictorial diet quality assessment tool after applying a respondent-centered process rooted in linguistic and cultural considerations. The simplicity and respondent-oriented qualities of this tool can ease data collection in community settings. Funding: This material is based upon work that is supported by the National Institute of Food and Agriculture, USDA, under award number 2015-68001-23280.

S.39.2 
FEASIBILITY OF UTILIZING FOOD PHOTOGRAPHY TO CAPTURE PARENT-CHILD MEAL INTAKES FOR PARTICIPANTS FROM RURAL AREAS OF THE UNITED STATES
Bellows LL1, McCloskey M1, Bekelman T2, Martin CK3, Johnson SL2.1 Colorado State University, Fort Collins, CO; 2University of Colorado, Medical Campus, Aurora, CO; 3Pennington Biomedical Research Center, Baton Rouge, LA.

Purpose: Test the feasibility (parent engagement, data collection, and staffing) of using the Remote Food Photography Method (RFPM) to capture data on dinner meals of parent-child dyads in a low-income, rural audience. Methods: Participants were recruited from five Head Start/preschool centers in rural Colorado. Participants attended a training and were given iPad mini 2's to capture their preschoolers' and their own dinner meals for seven consecutive days. Data were electronically uploaded into the Smart-Intake mBaton Rough, obile app and information was analyzed for photo quality and description completeness. Results: Ultimately, out of 77 parents contacted, 31 dyads participated. Impressively, 100% followed protocol and returned iPads on time (day 8). 45% identified as Hispanic; 77% were low-income. Of 217 possible meals (n=31; 7 days), data were collected on 190 child meals (88%) and 191 parent meals (88%). However, electronic data transmission was inconsistent for a large proportion of participants and required post hoc follow-up as monitoring could not take place in real time. Of 381 meals with at least one photo received, 368 (97%) were of sufficient quality for analyses. Photos also contributed additional qualitative information for confirmation of amounts consumed and plausibility of data received. The staff time required to modify training materials for low-literate audiences, set up mobile devices for data capture, conduct participant trainings, and monitor real time data, including participant follow-up, was significant. Conclusions: It is operationally feasible to utilize RFPM to collect data on dinner meals from parent-child dyads in a low-income, rural audience. However, alternative protocols should be developed for monitoring incoming data which could offset heavy financial and staff resources. Quantitative nutrient data combined with qualitative

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aspects of the RFPM have the potential to lend critical insights into multiple aspects of family mealtimes. Using the RFPM to capture timing and consistency of meal times, concordance of foods occurring in parent-child meals, and the portion sizes served represent exciting opportunities to conduct a more comprehensive dietary assessment in this audience. Funding: This project is supported by Agriculture and Food Research Initiative Grant number 2015-68001-23240 from the USDA, National Institute of Food and Agriculture.

S.39.3
ASSESSING OBESITY RISK IN SOCIALLY-DISADVANTAGED PRESCHOOL CHILDREN
Lanoue L1, Drake C1, Shilts MK2, Woodhouse L3, Allen LH3, Styne DM1, Townsend MS1.1University of California at Davis, Davis, CA; 2California State University, Sacramento, CA; 3Western Human Nutrition Research Center, USDA,Davis, CA.

S.40: 13056: Changing behavior to sit less and move more: A multi-level perspective for reducing sedentary time in older adults across the accommodation spectrum. (Convenor: Dr. Jennifer Copeland) (Salon 3-4)

S.40.1
BEYOND MORBIDITY AND MORTALITY: SEDENTARY TIME, FUNCTIONAL CAPACITY, AND QUALITY OF LIFE AMONG OLDER ADULTS
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SIG: Ageing

Objective: Time spent sedentary has emerged in the past decade as a novel risk factor for poor health across the lifespan. The purpose of this presentation is to examine the association of sedentary behaviour...
and health, with a focus on outcomes that are of particular importance to an older adult population.

Methods: We recently completed a literature review on the consequences of prolonged sedentary time (ST) for health outcomes among older adults, and the effectiveness of interventions to reduce ST in older adults. A trained librarian created a search strategy that was peer-reviewed for completeness. The analysis and synthesis of the review helped to inform an international consensus statement on sedentary behaviour and older adults. Gaps were identified to inform future research priorities on ST and healthy ageing. Results: Among older adults, ST is associated with risk of mortality and cardiometabolic disease, as with younger adults. However, beyond the typical mortality and disease outcomes, a clear association was observed between total ST and physical function, risk of falls, frailty, and quality of life. Studies have also shown that more frequent breaks in ST are positively associated with physical function and cardiorespiratory fitness among older adults. The type and context of ST may be important; some cognitively engaging sedentary behaviours appear to benefit health, while time spent in more passive activities may be detrimental. A notable gap in the literature was a lack of research on sedentary time and interventions in older adults who are no longer living independently. Conclusion: Sedentary behaviour may pose a unique problem for older adults by increasing the risk for disability in activities of daily living that ultimately leads to dependence. These issues may be more relevant than conventional morbidity and mortality outcomes, as they have been shown to more strongly impact the quality of life of older adults. More longitudinal and experimental research is needed to explore these relationships and to understand the influence of the type and context of sedentary behaviour. Current research is limited by an exclusive focus on community-dwelling older adults.

S.40.2
INDIVIDUAL BEHAVIOUR CHANGE STRATEGIES FOR REDUCING SEDENTARY TIME IN OLDER ADULTS
Takemoto Michelle¹, Talavera Gregory², Villa Nicole², Allison Matthew¹, Kerr Jacqueline¹. ¹University of California, San Diego, La Jolla, CA; ²San Diego State University, San Diego, CA.

SIG: Ageing

Purpose: Older adults are the most sedentary segment of the population and struggle to meet physical activity guidelines. Sedentary behaviour (SB) interventions in workplace settings with environmental changes such as standing desks have shown promise, but these strategies may not be salient for older adults who may be transitioning into retirement and no longer working. The purpose of this presentation is to discuss current interventions targeting individual behaviour change strategies and how these interventions could be tailored to new settings for older adults such as retirement communities. Methods: A number of SB interventions targeting individual behavior change techniques have been successful in reducing sitting time in older adults. The constructs that show the most promise include self-monitoring, problem solving, and modifying the social and physical environments. We designed a randomized controlled trial focusing on individual behaviour change strategies targeting post-menopausal Latinas. Arriba por la Vida Estudio (AVE) is a 12-week intervention to reduce sitting time through standing. Participants receive three weekly in-person health education sessions followed by biweekly counseling telephone calls. The first two in-person sessions take place at the clinic and the third in-person visit is a home visit. The health coach works with participants using a motivational interviewing approach to focus on specific strategies to increase their standing time. Results: Based on the ubiquitous and habitual nature of SB, intervening effectively may require even more cues and prompts than physical activity interventions. In AVE, participants choose from an array of tools such as timers, prompts, standing tables, and wearable devices to work towards the goal of sitting less by standing more. These tailoring strategies could be applied to design an appropriate intervention to reduce sitting time in older adults residing in various environments including retirement communities or assisted living facilities. Conclusions: For many older adults, reducing sedentary time may be a more palatable and feasible behaviour change than increasing moderate to vigorous physical activity. More research is needed to explore how technology and individually-tailored interventions can be used to reduce sitting time among older adults across the accommodation spectrum.

S.40.3
SUPPORTING OLDER ADULTS TO MOVE MORE AND SIT LESS: CONSIDERING THE INDOOR BUILT
ENVIRONMENT
Ashe M C¹, Gardiner P¹,¹University of British Columbia, Vancouver, British Columbia.

SIG: Ageing

Objective: Although adults aged 65 years+ represent a diverse population, overall, this age group is at risk for prolonged sedentary behaviour. Supporting older adults to reduce their sitting and engage in physical activity requires the consideration of the person, their social networks, and the built environment. There is accumulating evidence for associations between the outdoor built environment and older adults' physical activity. However, many older adults spend approximately 90% of their day inside; few studies consider the indoor built environment as a possible opportunity to remain active each day. This is especially important for those older adults with limited mobility, who are at greatest risk for "too much sitting". The goal of this presentation is to review current evidence in this emerging area, and use audience participation to generate potential indoor opportunities to reduce prolonged sitting and encourage more physical activity.

Methods: This presentation will review the evidence to date, and use personas of older adults, to highlight examples of indoor physical activity challenges and opportunities, across housing options, from single homes to collective dwellings. We will also include group participation to identify and rank elements from the social and built environment that could encourage indoor physical activity, and reduce overall sitting time. Results: Older adults spend prolonged periods of time indoors and sitting: the indoor environment may support older adults to be more active. Within collective dwellings, such as retirement homes and/or assisted living sites, strategically placed lighting and benches in long corridors can support older adults to walk more within their daily life routines. Just as in the outdoor built environment, destinations within buildings (or in close proximity), such as centralized mailboxes, coffee shops, etc. can also encourage older adults to break up prolonged daily sitting, and provide potential social opportunities. Conclusion: Although many older adults spend their days inside, few studies have addressed everyday opportunities to encourage less sitting and more movement indoors. Now is the time to address this important practice area with feasible and acceptable solutions to support older adults to change their behaviour, and avoid prolonged periods of sitting.

S.41: 13025: What theoretical developments are needed to improve physical activity research? (Convenor: Prof. Aleksandra Luszczynska) (Drawing Room)

Rhodes R E¹, Gray S M¹, Husband Cassandra¹.¹University of Victoria, Victoria, BC.

SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Affective judgments (AJ; i.e., thoughts about the overall pleasure/displeasure, enjoyment, and feeling states expected from enacting a behavior) have been linked reliably to physical activity in observational research and feature prominently in various forms across key theoretical frameworks. Despite this evidence base, there is a limited understanding of the effectiveness of changing AJ through intervention and the best techniques to impart change. Thus, the purpose of this meta-analysis was to examine the current effectiveness of interventions to change AJ about physical activity and subsequent behavior and explore potential demographic, methodological, and intervention content moderators across the studies. Methods: Eligible studies were published in a peer-reviewed journal in the English language, included an experimental design in the physical activity domain with a measure of AJ as the dependent variable, and were conducted with an adult (>17 yrs.) sample. Literature searches were concluded in July 2017 using 11 common data-bases. A random effects meta-analysis model was employed using Hedge's g. Results: The electronic database search yielded 2655 hits initially, which was reduced to 37 independent studies after screening for eligibility criteria. Results showed positive changes in AJ favoring intervention over control groups g = 0.62 (95% CI = 0.47 - 0.88). These changes were associated (r = .31) with positive changes in physical activity g = 1.12 (95% CI = 0.74 –sh; 1.50) among a sub-sample (k = 17)
of studies that also provided physical activity data. Still, there was considerable heterogeneity in the findings and moderator analyses showed the effects were inflated by studies with short follow-up (< 2 months) compared to longer follow-up. Only one (review behavioral goals) of 20 behavior change techniques showed significantly higher changes in AJ with its presence compared to absence across the studies. Conclusions: In summary, AJ show change from experimental intervention and meaningful links to behavior change in the physical activity domain. These changes may wane over longer durations. Unfortunately, few studies have employed behavior change techniques that would align with the theoretical reasons for changes in AJ so our evidence for practical intervention content is limited.

S.41.2
ENRICHING THEORIES EXPLAINING CHILD PHYSICAL ACTIVITY WITH DYADIC PREDICTORS: PARENTAL AND CHILD PERCEPTIONS OF PHYSICAL AND SOCIAL ENVIRONMENT
Horodyska Karolina¹, Kruk Małgorzata¹, Boberska Monika¹, Radtke Theda², Scholz Urte², Luszczynska Aleksandra¹,³, SWPS University of Social Sciences and Humanities, Warsaw; ²University of Zurich, Zurich; ³University of Colorado, Colorado Springs, CO.

SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: This paper provides arguments for enriching traditional behavior change theories with dyadic perspective and constructs highlighted in social-ecological frameworks, such as physical and social environment. Our two studies explored the roles of parental and child perceptions of social and physical environment in predicting physical activity (PA) and obesity indices in children. In particular, we tested direct effects of child and parental perceptions of accessibility and availability of health-promoting environmental factors on child's PA and body fat (Study 1) and indirect effects parental and child perceptions of parental support for child PA (transportation provision) on child body weight, with child PA acting as a mediator (Study 2). Methods: Two original longitudinal studies included 922 parent-child dyads (Study 1) and 879 dyads (Study 2). Time 2 [T2] data were collected at 7-8 months after Time 1 [T1]). Children (age 5-11) and parents provided their self-report data. Body composition, weight and height were measured objectively with bioimpedance method and certified body weight scale. Results: Path analysis showed that parental perceptions of accessibility of PA facilities for children (T1) predicted child body fat and PA (T2) (Study 1). Parental perception of PA promotion and transportation provision (T1) indirectly – through child PA – predicted child body weight (T2) (Study 2). In both studies, child perceptions did not predict PA or obesity indices in children. Conclusions: Parental, not child perceptions mattered. Dyadic perspective, accounting for perceptions of physical and social environment should be considered when revising and upgrading theoretical models explaining child PA and obesity indicators.

S.41.3
ROLES OF SIGNIFICANT OTHERS IN YOUTH PHYSICAL ACTIVITY: A TRADITIONAL VIEW BEYOND PSYCHOSOCIAL THEORIES
Chan D K¹,², the University of Hong Kong, Hong Kong.

SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: This study aims to examine a novel framework of sport and exercise psychology, i.e. the perception of social influence model, that offers a unique, but traditional, perspective on how significant others may exert their influences on young people experience in sport participation. Specifically, we examined the propositions of the model that positive influence (i.e., conditional or unconditional positive response) of significant others would be related positively to young athletes' effort, competence, and enjoyment, and negatively to their trait anxiety. Punishment (i.e., negative conditional response) and dysfunction (i.e., negative unconditional response) of significant others were expected to have the corresponding predictions in the opposite directions. Methods: Participants were 904 young athletes in China (mean age = 14.59, SD = 4.13, range = 9-18; 57.5% male) who completed the Perceived Social Influence in Sport Scale-2 for measuring the three social influences of significant others (i.e., coach, parents, and teammates) the model, and other established scales for the assessment of athletes' effort, competence, and enjoyment in sport. Structural equation modeling with robust weighted least squares
estimation were employed to examine the relationships between perceived social influence and outcome variables for each significant other, and the goodness of fit of the models. Results: Goodness of fit of the model fitted the data acceptably well (CFI = .947, TLI = .925, and RMSEA = .081). The parameter estimates were consistent with the tenets of the model, apart from a few non-significant pathways in certain social agents/ outcome variables. In general, it was found that positive influence was associated positively with effort, competence, and trait anxiety, and the prediction of punishment and dysfunction on these variables were in the opposite directions. Conclusions: The perceived social influence model has shed lights into the understanding of the role of significant others in youth sport. The model may offer a unique perspective of social influence, alternative to existing theories in sport and exercise psychology (e.g., achievement goal theory, self-determination theory, 3+1C model etc.).

S.42: 13172: Responding to the Call for Action to Address Health Disparities with Strong Evaluation Designs and Surveillance in Early Care Settings (Convenor: Dr. Susie Nanney) (Lounge)

S.42.1 FAMILY CHILD CARE HOME PROVIDER ATTITUDES, PRACTICES AND HOME ENVIRONMENTS RELATED TO FEEDING, PHYSICAL ACTIVITY AND SCREEN TIME OF 2-5 YEAR OLD CHILDREN IN THEIR CARE
Gans Kim1, Tovar Alison2, Dionne Laura3, Gettens Katelyn1, Mena Noereem3, Risica Patricia1,3,1University of Connecticut, Storrs, CT; 2University of Rhode Island, Kingston, RI; 3Brown University, Providence, RI.

SIG: Early care and education

Background: Family child care homes (FCCHs) are the second-most utilized form of non-relative child care. One study reported that FCCHs may be more obesogenic environments than childcare centers, yet little research has been done in the FCCH setting. Methods: Healthy Start/Comienzos Sanos is a cluster randomized trial in 132 FCCH to help family child care providers (FCCP) change their environments and improve the diet and physical activity (PA) of children aged 2-5 years in their care. FCCP complete two surveys and undergo two days of FCCH observation at three time-points to measure the environment and children's eating, PA and screen-time. Psychosocial variables are also assessed. The current analysis examines baseline data from this study. Participants: 91 FCCP are enrolled to date: 100% female, 82% Hispanic, 15.4% Black, mean age 50.5 years, 14% no high school education, 82.5% accept CACFP subsidies. Results/findings: Many providers report attitudes inconsistent with current recommendations, i.e. exceeding serving recommendations for fruit (71%), fried foods (50%), fatty meats (36%), and sweets (61%); allowing children to watch too much TV (69%); and over-controlling the amounts that children eat (60-83%). Many providers report attitudes inconsistent with current recommendations, i.e. beliefs that children watching educational TV is appropriate; children shouldn't serve themselves because they make a mess, waste food and won't eat enough; if juice is limited, children won't get enough vitamins; if only water is offered, children won't drink enough; and that children's eating habits in childcare have little effect on their overall food habits. Important barriers to meeting guidelines include: worry about children playing outside; fresh fruits and vegetables spoil quickly and are expensive; it's hard to serve healthy foods because children are picky; parents don't want children playing outside in cold/rainy weather; and at home children eat unhealthy foods and are not physically active. We will also present data from the objective FCCH observations including the nutrition and PA social and physical environment. Conclusions: Findings clearly demonstrate the need for nutrition and PA interventions in FCCH to change the knowledge, attitudes and practices of FCCP. Implications of these findings will be discussed.

S.42.2 INCREASING PHYSICAL ACTIVITY AMONG YOUNG CHILDREN FROM DISADVANTAGED COMMUNITIES: MID-INTERVENTION RESULTS FROM THE JUMP START CLUSTER RCT
Okely Anthony1, Stanley Rebecca1, Jones Rachel1, Cliff Dylan1, Trost Stewart2, Berthelsen Donna2, Salmon Jo3, Batterham Marijka1, Eckermann Simon1, Reilly John4, Brown Ngiare1, Mickel Karen3, Howard Steven1, Hinkley Trina1, Janssen Xanne4, Chandler Paul1, Cross Penny1, Gowers Fay1. 1University of Wollongong, New South Wales; 2Queensland University of...
Purpose: Determine the efficacy of a multi-component intervention on promoting physical activity (PA) in early childhood education and care (ECEC) settings in vulnerable children in New South Wales Australia. This presentation will report on the mid-intervention (9-month) results from the study. Methods: Jump Start is a PA and gross motor skill intervention for young children aged 3–5 years. It is currently being evaluated using a two-arm, parallel group, randomised cluster trial. Jump Start was based on Social Cognitive Theory and included five components: a structured gross motor skill lesson (Jump In); unstructured outdoor PA and gross motor skill time (Jump Out); energy breaks (Jump Up); activities connecting movement to learning experiences (Jump Through); and a home-based family component to promote PA and gross motor skill (Jump Home). ECEC centres were demographically matched and randomised to Jump Start or usual practice group. The intervention group received Jump Start professional development, program resources, monthly newsletters and ongoing intervention support. The primary outcome was changes in total PA (LMVPA) within centre hours measured using accelerometry. To be included in the analyses, children needed to wear the accelerometer for at least three hours on one day. Analysis of the primary outcome was conducted using a generalized linear mixed model which contained a random effect for time and ECEC centre nested within group. Results: 43 ECEC Centres were randomized to intervention or comparison condition. A total of 558 children (52% boys; mean age 3.38y) had useable accelerometry data at baseline with 508 (91%) of these having useable data at mid-intervention follow-up. Differences between intervention and comparison groups in the changes in LMVPA from baseline to mid-intervention are currently being analysed and will be presented at the meeting. The updated abstract will contain these results. Conclusions: Jump Start is a unique program to address low levels of PA in ECEC centres. It aims to provide a comprehensive approach to promoting PA that can be embedded into an ECEC Centre's routine. An intensive professional development program was implemented, which needed considerable support to ensure an acceptable level of integration. Challenges of implementation and integration will be discussed.

S.42.3
CHANGE IN THE IMPLEMENTATION OF HEALTHY NUTRITION AND PHYSICAL ACTIVITY BEST PRACTICES IN MINNESOTA EARLY CARE SETTINGS: A LONGITUDINAL COHORT STUDY (2010-2016)
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Purpose: The goal of the 'Healthy Start, Healthy State' study was to describe changes that occurred in the implementation of healthy nutrition and physical activity (PA) best practices in early child care and education (ECE) settings from 2010-2016. Methods: A cohort of 215 Minnesota licensed center- and family-home based providers completed a survey describing 15 nutrition and 8 PA best practices that they "already do" in 2010 and again in 2016 were analyzed in 2016. Results: Center-based programs had a significant increase from 2010 to 2016 in implementation of best practices with a mean (SE) increase of 1.9 (0.4) nutrition and 1.2 (0.2) PA practices (p < 0.01 for both). Family-home based programs had similar increases in implementation with a mean (SE) increase of 1.8 (0.3) nutrition and 1.0 (0.3) PA practices (p < 0.01 for both). A net implementation rate increase of approximately 25% for a total of 5 best practices for family-homes and 3 best practices for centers (p < 0.01 for all) was achieved. There were no significant implementation rate changes for either ECE program type to the following best practices: serve low sodium meals or snacks every day, serve only 4-6 ounces of 100% fruit juice per day or less, attend nutrition training at least once per year, and write and implement a PA policy. Conclusions: State-level surveillance of implemented best practices in ECE settings is useful. Findings identify opportunities for stakeholders to respond with targeted technical support and training and to consider potential future policy
levers.

S.43: 13152: Taking a Vacation from Health? Innovative and International Perspectives on Preventing Accelerated Weight Gain during School Breaks (Convenor: Dr. Michael Beets) (CES 2-3)

S.43.1 SCHOOL BREAKS ARE DETRIMENTAL TO BODY WEIGHT AMONG EARLY ELEMENTARY SCHOOL CHILDREN IN BRAZIL

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SIG: Policies and environments

Background: Among US youth, breaks from school, most notably during summertime, are high-risk periods for weight gain. To date, few studies have examined trends in out-of-school weight gain and obesogenic behaviors utilizing international samples. The current study will examine zBMI and obesogenic behaviors in a sample of Brazilian early elementary school children across a school break. Method: Participants included 136 children (50% female) enrolled in grades K-2nd at public (n=68) or private (n=68) schools from Sao Paulo State, Brazil. Data were collected in June 2016 (T1; in school) and August 2016 (T2; after a 3-week winter break). Anthropometric measurements of height and weight captured BMI, and zBMI was calculated according to CDC growth charts (Kaczmarski et al., 2000). Parent-reported survey data captured obesogenic behaviors, including physical activity (PA), sedentary time (adapted Pre-PAQ—Home Version; Dwyer, Hardy, Peat, & Baur, 2011), dietary intake (Block Screening Questionnaire; Block, 1994), and sleep (Children's Sleep Habits Questionnaire; Owens, Wilson, & Spirito, 2000). Results: Overall, 41% of participants were overweight or obese at T1. Repeated measures ANOVAs determined that zBMI increased significantly from T1 to T2 (F(1, 130)=7.20, p<.01). There was an interaction of time and grade zBMI (F(2, 130) = 3.76, p < .05), such that winter break was associated with increases in zBMI for kindergarten and first grade children (p<.05), but not second grade children. Additionally, there was an interaction of time and gender on zBMI (F(1, 130)=5.10, p<.05), such that winter break brought about increases in zBMI for girls (p<.01), but not boys. Examinations of obesogenic behaviors indicated that participants accrued 121 min/day of PA and 934 min/day of sedentary time at T1, and ate 21.96 g/day of fat and 17.45 g/day of fiber. These behaviors did not change significantly over time. Sleeping behavior changed from T1 to T2 (t(57)=2.20, p<.05), such that participants woke later on weekends during winter break than during school. Conclusions: Breaks from school may be a high-risk period for weight gain among early elementary school children in Brazil, particularly younger children and females. More work is needed to clarify mechanisms underlying weight gain during school breaks.

S.43.2 TESTS OF THE DISRUPTED BEHAVIORAL RHYTHMS HYPOTHESIS FOR ACCELERATED SUMMER WEIGHT GAIN: INTRAINDIVIDUAL VARIABILITY OF CHILDREN'S SLEEP DURATION DURING THE SCHOOL YEAR AND SUMMER BREAK

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SIG: Policies and environments

Purpose: The school-summer paradigm offers an opportunity to explore school-summer differences in children's behavioral rhythms and their association with seasonal changes in BMI. In the absence of the demands of the school year, children's behavioral rhythms (e.g., sleep/wake patterns) may be more variable day-to-day, resulting in greater day-to-day variability of sleep duration and contributing to children's accelerated summer weight gain. The purpose of the current study was to examine intraindividual variability (IIV) of children's sleep duration during the school year and summer. Methods: A
longitudinal observational study involving 119, 5-8 year olds was conducted during the 2016-2017 school year and summer. Actigraph GT3x-BT monitors were worn on the wrist of their non-dominant hand, 24 hours a day, for 8 days during the fall semester and again during the summer break. The IIV of sleep duration was assessed using the coefficient of variation (CV). School-summer differences in the CV of overall, weekday, and weekend sleep duration were examined using paired samples t-tests. Effect sizes were assessed by Cohen's d and was interpreted as large, medium, or small, if d was greater than 0.8, between 0.5 and 0.8, or less than 0.2, respectively. Significance level was set at p<0.05. Results: A total of 99 participants completed both the school year and summer actigraphy assessments (6.9±smn; 85 years, 52% female, 34% overweight). Compared to the school year, during summer children demonstrated greater IIV of overall sleep duration (CVsch=.111, CVsummer=.113; -0.02, 95%CI -0.35- -.005, p=.01; d=.37) and weekday sleep duration (CVsch=.098, CVsummer=.124; -.03, 95%CI -.04- -.01; d=.45, respectively). There were no school-summer differences in the IIV of weekend sleep duration (CVsch=.116, CVsummer=.108; .01, 95%CI -.01- .03; d=.12). Conclusions: During summer when children were theoretically allowed to sleep under fewer time constraints, they exhibited greater IIV of sleep duration, especially on weekdays. These results suggest that in the absence of the structure of the school environment, children exhibited greater day-to-day variability of sleep duration, suggesting greater variability in day-to-day behavioral rhythms, possibly contributing to children's accelerated summer weight gain. Future analyses should examine associations between the IIV of children's sleep duration and seasonal changes in BMI.

S.43.3 EXAMINING DIFFERENCES IN BMI AND FITNESS TRAJECTORY OVER THE SUMMER OF CHILDREN ATTENDING YEAR-ROUND VERSUS TRADITIONAL SCHOOLS
Weaver R.G.1, Beets M.1, Brazendale K.1, Mealing B.1, Hunt E.1, Whitfield M.1, Burrell E.1.1 University of South Carolina, Columbia, South Carolina.

SIG: Policies and environments

Purpose: Unhealthy weight gain and fitness loss accelerates during the summer (i.e., June-August when children are not attending school) compared to the school year (i.e., August-May when children are attending school) in elementary aged children (5-12 years) in the United States. Preliminary evidence suggests that children attending a structured program during the summer (e.g., summer school) do not experience unhealthy weight gain and fitness loss. This study examined the impact of a year-round school on unhealthy weight gain and fitness loss over the traditional summer vacation. We hypothesized that children attending year-round school would experience relatively less weight gain and fitness loss during the traditional summer break period than children attending a traditional school. Methods: Height, seated height, weight, and cardiorespiratory fitness (i.e., FITNESSGRAM PACER) was measured in children (5-12yrs) in 3 elementary schools (two traditional, one year-round. N=285 students, age=8.5 years, 42.8% female, 68.3% African American) that were matched on enrollment size, race/ethnicity, and socioeconomic status of children attending. Measurements were conducted prior to (May) and immediately following (August) summer for all children attending the participating schools. Change in BMI z-scores (zBMI) and laps completed on the PACER test were calculated. Separate regression models with change in zBMI and PACER laps as the dependent variable and school calendar (traditional vs. year-round) as the independent variable estimated differences between groups. All models controlled for race, gender, and peak height velocity. Results: Children attending the traditional school experienced increases in zBMI of 0.11 while children at the year-round school experienced increases of 0.04 during the summer, a statistically significant difference in favor of the year-round school of -0.08 (95CI -0.14, -0.03). While not statistically significant, children attending the traditional school experienced a 1.15 (95CI -0.09, 2.40) greater decrease in PACER laps completed following summer than children attending the year-round school (3.95 vs. 2.80 PACER lap decrease). Conclusions: Year round school calendars are promising for decreasing unhealthy weight gain during the summer, while these findings are preliminary this study supports the premise that structured programming during the summer can mitigate unhealthy weight gain.

S.44: 13082: Multi-level multi-component (MLMC) interventions to prevent and reduce child obesity: State of the art, gaps and future directions (Convenor: Dr. Joel Gittelsohn) (Concord 1)
STUDY DESIGN, MEASUREMENT AND COMMUNITY ENGAGEMENT IN THREE MLMC TRIALS

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SIG: Implementation and Scalability

Purpose: To compare study design, measurement, recruitment and community engagement in ML-MC trials and to assess community and stakeholder readiness to change, in order to maximize the impact of ML-MC approaches. Methods: The three MLMC principal investigators completed a template on how their study was designed, evaluated and what kind of provisions that were made for creating and sustaining community engagement. In addition, a review of planning models used for developing ML-MC interventions were carried out. Results: Central to all three trials was that they combined the strengths of controlled trials, with the specific needs and capacities of each community. Because interventions took place at multiple levels in each trial, some form of group randomized study design was used in all cases. Design considerations and evaluation strategies were balanced against the needs of community stakeholders. The analysis of the programs suggests that the enrollment of communities should take advantage of resources and the needs of the local community and that the design of the interventions should respect the places, culture and traditions of communities. Conclusions: The findings can be used in the planning of future MLMC interventions and to make provisions for the most effective ways to engage communities at multiple levels in order to sustain the impact of these types of interventions. The findings can be used to develop and strengthen a ML-MC methodology and in policy efforts to increase the use of a ML-MC approach in the promotion of healthier communities.

INTERVENTION STRATEGIES, INTEGRATION AND INTENSITY IN MULTILEVEL, MULTI-COMPONENT TRIALS FOR OBESITY PREVENTION

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SIG: Policies and environments

Objective: To use the combined experience of the three MLMC studies and a review of the literature to understand the range of intervention strategies useful for MLMC intervention trials, and the strategies for selecting some strategies alone or in combination with each other. A key question is: which intervention strategies are best combined in MLMC interventions, and have sufficient intensity, to lead to meaningful and sustained behavior changes and improved health outcomes? Methods: Study investigators completed matrices providing detailed information regarding their MLMC interventions, including how they selected those strategies, how they were combined/linked to each other, challenges in implementation, and how sufficient intensity was achieved and maintained. A multiple case study analysis was conducted. Results: Multiple lessons were learned through the cross-case analysis. In terms of selection of intervention strategies, complementarity of intervention components and with existing efforts was emphasized. Most interactions between levels in MLMC trials involve some variation of a supply-demand scenario, where one party (e.g., food stores) recognize demand for healthier foods (e.g., customers), before they will provide supply. Creating consistent linkages between intervention strategies both on the same level and across levels of the social ecologic framework was also an important means of achieving intensity. Social media (Facebook, Instagram, text, and print) was used to support and build awareness of key messages, behaviors and community events. Measurement of adequate intensity was based on process evaluation assessment at different stages of intervention delivery, and was set according to the literature in some cases, but modified through ongoing monitoring and feedback. Conclusions: The findings of this cross-case study of MLMC trials can be used in the design, implementation and evaluation of future similar trials.
COALITION BUILDING, TRAINING AND SUSTAINABILITY IN MULTILEVEL MULTICOMPONENT TRIALS

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SIG: Implementation and Scalability

Purpose: To describe the key strategies for building capacity and sustaining collaborations through coalitions that were needed for success in three MLMC intervention trials. Methods: Methods were compared and case studies were provided for the three MLMC intervention trials, by the PIs and other study team members. Particular attention was given to the themes of capacity building, collaboration building, and coalition building. Results: Each MLMC trial emphasized capacity building, collaboration building and coalition building, but pursued a different strategy to achieve these objectives. In Baltimore, a policy working group was formed to support entities working to improve the city food system in their initiatives, and to devise approaches to sustain BHCK program activities. In addition, community and city agency partners participated in a series of trainings for recreation center staff. In CHL formal degree training, staff training, and community workshops were part of sustainable capacity building. Collaboration in CHL was built through coordinating center, jurisdiction and community meetings and coalitions were supported by the core CHL team (backbone organization) as a central organizer at the same three levels (central, jurisdiction and community). An ongoing USDA multisite (multistate) project (CHL network) leverages the US land grant college system to continue to maintain the collaborative regional CHL coalition and to foster continued capacity building. For SoL, coalition building followed 2 types: 1) municipal level, including both elected representatives and civil servants; and 2) non-public actors: the civil society, the media and the food retailers. Capacity building aimed at developing the knowledge, skills and competencies for all involved actors. Conclusions: Future MLMC intervention trials can show effectiveness and sustainability if sufficient attention is given to building capacity, collaboration and coalitions.


S.45.1
THE CUP AND THE UPDATED CANCER PREVENTION RECOMMENDATIONS
Powers H¹.¹University of Sheffield and World Cancer Research Fund International, Sheffield.

SIG: Cancer prevention and management

Presentation Description: Since 1997 World Cancer Research Fund (WCRF) International and the American Institute for Cancer Research (AICR) have been at the forefront of synthesising and interpreting the accumulated scientific literature on the link between diet, nutrition, physical activity and cancer, and deriving evidence-based Cancer Prevention Recommendations. The 2007 WCRF/AICR Second Expert Report was a landmark in the analysis of evidence linking diet, body weight and physical activity to cancer and led to the establishment of the Continuous Update Project (CUP). In May 2018, as part of the CUP, WCRF/AICR will publish a new synthesis of the current evidence and update the Cancer Prevention Recommendations. This will ensure that everyone - from policymakers and health professionals to members of the public - has access to the most up-to-date information on how to reduce the risk of developing cancer. This presentation will present the findings of the Third Expert Report and the revised recommendations highlighting any changes since the 2007 Report.
SIG: Early care and education

Presentation Description: Following the Cancer Prevention Recommendations throughout the lifecourse is crucial. A growing body of research shows the body fatness tends to track into adult life with the majority of obese children becoming obese adults increasing their cancer risk. Increased physical activity and a balanced dietary pattern can help children to control their weight. Additionally, breastfeeding seems to reduce the risk of overweight and obesity in childhood and adult life acting as a protective factor against cancer. This session will focus on early life factors, starting from the beginning of life even from preconception, in relation to cancer. Evidence regarding the factors that contribute to greater adult attained height, greater birth weight and greater growth in general will be discussed.

SIG: Policies and environments

Presentation Description: With the global cancer burden constantly rising, it is urgently needed to take action against it. Although people have responsibility to develop healthy diet and physical activity habits to reduce their cancer risk, many factors that influence behaviour are outside of their control. The environmental, economic and social dimensions are important upstream determinants of cancer risk and need to be taken into account. This session will present examples based on Asian experience showing how policy actions can help people follow a healthy dietary and lifestyle pattern. General policy implications will also be discussed highlighting the importance of creating an environment for individuals and communities that is conducive to following the Cancer Prevention Recommendations.

Objective To assess the quality of Chinese infant feeding apps using comprehensive quality assessment criteria; To explore Chinese mothers' perceptions on apps quality and usability. Methods We searched for free-to-download Chinese infant feeding apps in the iTunes and Android app stores. A comprehensive assessment of the accountability, scientific basis and accuracy of information relevant to infant feeding, advertising policy, functionality, and a preliminary screening of infant formula advertisements in the apps were carried out. We also carried out exploratory qualitative research through semi-structured interviews with Chinese mothers in Shanghai to elicit their views about the quality of the apps. Results 4,925 apps were screened, and 26 apps that met selection criteria were evaluated. All 26 apps were developed by commercial entities and the majority of them were rated poorly. The highest total score was 62.2 (from possible 100) and the lowest was 16.7. In the four quality domains assessed, none of them fulfilled all the accountability criteria. Only 3 out of 26 apps provided information covering the three practices from the WHO's infant feeding recommendations. Only one app described its advertising policy in its Terms of Usage. The most common app functionality was a built-in social forum (19/26). Provision of a website link was the least common functionality (2/26). 20 of the 26 apps promoted infant formula.
advertisements in their homepages. 12 apps included both e-commerce stores and featured infant formula advertisements. 21 mothers were interviewed face-to-face. Mothers highly valued immediate access to parenting information and multi-functionality provided by apps. However, concerns of incredible information and commercial activities in apps, and desire for information and support offered by healthcare professionals were expressed. Conclusions The findings provide valuable information to the understanding of Chinese infant feeding apps. The results are concerning, particularly with the relative absence of scientific basis and credibility, along with a large amount of commercial advertisements. Ongoing app research and development should focus on implementation of a standard framework which would drive the development of high-quality apps to support healthy infant feeding, through cooperation among academics, health professionals, app users, app developers and government bodies

S.46.2
PLANNING, IMPLEMENTATION AND EVALUATION OF A SHORT MESSAGE SERVICE INTERVENTION FOR IMPROVING INFANT FEEDING PRACTICES IN SHANGHAI, CHINA
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SIG: E- & m-health

Objective: To describe the development, implementation and evaluation processes of a community-based Short Message Service (SMS) intervention for improving infant feeding practice and preventing childhood obesity in Shanghai, China. Methods: A three-phase development process was adopted: a formative study to explore the barriers of appropriate infant feeding practices; a baseline survey to understand potential intervention approaches. SMS messages were delivered via computer-based platforms to women in intervention group from 28 weeks gestation to 12 months postpartum. Process and final evaluation included fieldwork records, qualitative interviews and questionnaire survey. Results: SMS messages were tailored and timed for mothers’ pregnancy, and different stages of child development in the first 12 months. During pregnancy in the third trimester, the focus of the messages was on the benefits of breastfeeding for both babies and mothers; and advice for mothers to be prepared for childbirth and breastfeeding. Within the first week of giving birth, the messages aimed to help mothers with different delivery modes to initiate breastfeeding. After child was born, there were three sets of messages according to mothers' feeding practices and work status. From the third month specific messages were sent to those mothers who planned to or had gone back to work, encouraging them continuing with breastfeeding. At the fourth and fifth months postpartum, mothers were advised how to introduce complimentary foods and what to give from the sixth month, and how to establish appropriate feeding practices for preventing childhood obesity. The reflections on SMS intervention included 1) acceptable and appropriate intervention frequency and intensity; 2) anticipatory and appropriate SMS contents; 3) replying to questions being helpful in dealing with problems of infant feeding; 4) convenient to save, read, repeatedly review share with others; 5) timely support and anticipatory guiding; 6) easy to build the trust; 7) high expectation on timely response to inquiries; 8) limited information due to the word limit of messages; 9) messages could have been more ‘personalized’. Conclusions: The study demonstrated practical steps of a SMS health promotion intervention which has potential filling gaps in delivering healthcare services in settings where personal contact is limited.

S.46.3
IMPACT OF SMS TEXT MESSAGES TO IMPROVE EXCLUSIVE BREASTFEEDING AND REDUCE OTHER ADVERSE INFANT FEEDING PRACTICES IN YANGON, MYANMAR: A RANDOMIZED CONTROLLED TRIAL
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SIG: E- & m-health
Background and Objectives Myanmar has a low exclusive breastfeeding (EBF) rate at 24% and 15% for children under six and at six months. Objective is to implement and evaluate the impact of a SMS intervention on the breastfeeding practices as a first time in Myanmar. Methods A two-arm parallel randomized controlled trial with monthly follow-up phone calls between 1-6 months post-delivery was conducted in January-December 2015 at Central Women's Hospital, Yangon, Myanmar. A total of 353 pregnant women, who were 24-38 weeks of gestation with singleton uncomplicated pregnancy, literate and owned a mobile phone, were recruited and randomly assigned to intervention or control groups. The intervention group received breastfeeding promotion SMS and the control group received other maternal and child health care SMS from recruitment to six months postpartum. We hypothesized that the EBF rate in the intervention infants would be double that of the control infants at six months. We defined EBF as giving only breastmilk, not even water except medicines. Data was analyzed by intention to treat principle. Poisson regression analysis with generalized estimation equations (GEE) was used to adjust for within person correlation and the effect of time, group and group by time interaction as covariates. Results The intervention significantly improved the EBF rate (43% vs 15%; Relative Risk (RR), 2.83; 95% confidence interval (CI), 1.35-4.33), current breastfeeding rate (RR 1.17; CI, 1.08-1.26) and reduced bottle feeding (RR 0.30; CI, 0.17-0.54) and complementary feeding (RR 0.72; CI, 0.52-0.99) among infants at six months and predominant breastfeeding (RR 0.90; CI, 0.60-1.36) at four months. For the overall follow-up period, the SMS intervention significantly reduced acute lower respiratory illness (RR 0.95; 95% CI, 0.91-0.98; P<0.005) and diarrhea (RR 0.95; 95% CI, 0.91-0.99; P<0.008) compared to the control group. Subgroup analysis showed the intervention had a higher effect on women with low breastfeeding knowledge, low self-efficacy to breastfeed and no intention to EBF at recruitment. Conclusion Use of SMS text messages was effective in promoting EBF and reducing other adverse infant feeding practices in Myanmar. Further research is recommended to assess this intervention model in other settings including rural areas.
Orals

Jun 04, 11:35 - 12:50: Oral Presentations

O.01: Parenting and Child Physical Activity (Grand Ballroom)

O.01.1 GROWTH TRAJECTORY OF YOUNG CHILDREN’S OBJECTIVE-DETERMINED PHYSICAL ACTIVITY, SEDENTARY BEHAVIOR AND BODY MASS INDEX
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SIG: E- & m-health

Purpose: Despite increasing research evidence over the past decades to the tracking of physical activity (PA) behavior, little is known regarding the dynamic relationships among trends in children's PA, sedentary behavior and BMI. Therefore, this study was designed to help fill the knowledge gap in this area of inquiry. Specifically, the study examined trends in PA, sedentary behavior and weight status, and relationships among these trends, from childhood through early adolescence. Methods: A total of 261 second and third grade children (135 girls; Mean age =7.81; 73% White) from two U.S. elementary schools participated in this study. Their weekly PA, sedentary behavior and BMI were measured four times in 2012 through 2015. Children's BMI was calculated by height in meter divided by weight in kilogram squared. The dependent variables were children's average time in moderate-to-vigorous PA (MVPA) and sedentary behavior per day determined by ActiGraph GT3X+ accelerometers, and BMI. A series of latent growth curve model (LGCM) were employed to analyze the trends in the outcomes and relationships over time through AMOS version 23. Results/findings: Data from the four time points were used to construct a normative growth trajectory for MVPA for the overall sample and both genders. Similarly, six more models for sedentary behavior and BMI were constructed. Over the study period, children's MVPA increased in the end of first year and then declined during follow-ups, with boys having more MVPA time. Sedentary hours increased at 2-year follow-up but decreased at 3-year follow-up in both genders. BMI increased gradually for boys and girls (p < 0.05), with boys having higher BMI. Trends in MVPA were negatively related to BMI trends (p < 0.05), and trends in MVPA and sedentary behavior did not interact to affect BMI trends. Conclusions: Maintaining or increasing MVPA and limiting sedentary behavior should be components of efforts to prevent excess weight gain during the transition from childhood to early adolescence. Children's MVPA and sedentary behavior are independent determinants of BMI changes, and thus they should be considered as separate constructs in behavioral change interventions.

O.01.2 ROLE OF PARENTAL AND ENVIRONMENTAL CHARACTERISTICS IN TODDLERS’ PHYSICAL ACTIVITY AND SCREEN TIME: BAYESIAN ANALYSIS OF STRUCTURAL EQUATION MODELS
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SIG: Children and families

Purpose: Guided by the Socialization Model of Child's Behavior (SMCB), this cross-sectional study examined direct and indirect associations of parental cognitions and behavior, the home and neighborhood environment, and toddlers' personal attributes with toddlers' physical activity and screen time. Methods:
Participants included 193 toddlers (1.6 ±smn; 0.2 years) from the Parents' Role in Establishing healthy Physical activity and Sedentary behavior habits (PREPS) project. Toddlers' screen time and personal attributes, physical activity- or screen time-specific parental cognitions and behaviors, and the home and neighborhood environment were measured via parental-report using the PREPS questionnaire. Accelerometry-measured physical activity was available in 123 toddlers. Bayesian estimation in structural equation modeling (SEM) using the Markov Chain Monte Carlo algorithm was performed to test an SMCB hypothesized model. Covariates included toddlers' age, sex, race/ethnicity, main type of childcare, and family household income. Results: In the SMCB hypothesized screen time model, higher parental barrier self-efficacy for limiting toddlers' screen time was associated with higher parental screen time limiting practices (βa; = 0.451), while higher parental negative outcome expectations for limiting toddlers' screen time was associated with lower parental screen time limiting practices (βa; = -0.147). In turn, higher parental screen time limiting practices was associated with lower screen time among toddlers (βa; = -0.179). Parental modeling of higher screen time was associated with higher screen time among toddlers directly (βa; = 0.212) and indirectly through the home environment. Specifically, higher screen time among parents was associated with having at least one electronic device in toddlers' bedrooms (βa; = 0.146) and, in turn, having electronics in the bedroom, compared to none, was associated with higher screen time among toddlers (βa; = 0.250). Neighborhood safety was not associated with toddlers' screen time in the SEM analysis. No significant correlations were observed between the SMCB variables and toddlers' physical activity; thus, no further analyses were performed for physical activity. Conclusions: Parents and their interactions with the home environment may play an important role in shaping toddlers' screen time. Findings can inform family-based interventions aiming to minimize toddlers' screen time. Future research is needed to identify correlates of toddlers' physical activity.

O.01.3 MEASUREMENT EQUIVALENCE OF PHYSICAL ACTIVITY PARENTING PRACTICES BY GENDER AND INCOME OF PARENTS Mâsse LC1, Carbert NS1, Baranowski T2, Beauchamp M1, Hughes SO2, O'Connor TM2,1University of British Columbia, Vancouver, BC; 2 Baylor College of Medicine, Houston, TX.

Objective: Reliable and valid assessment of parenting practices across different groups of people is critical to the evaluation of parenting practices in family-based interventions. A physical activity (PA) parenting practices item bank was developed to understand the influence of the family on children's physical activity. Meaningful group comparisons on parenting practices, however, can only be made if one establishes that the psychometric properties of current measures are equivalent across groups. Thus, the purpose of this study is to examine whether the psychometric properties of the PA parenting practices item bank are equivalent by gender and income of parents. Methods: Parents (n=602) were recruited from a web-based panel, using a quota sampling approach to ensure representation by gender of parent and family and were used to test measurement equivalence [Mean age=42; 51% mothers; 51% White; 44% income below median]. The PA parenting item bank measured 12 constructs (permissive/pressure, 2 encouragement scales, guided choice, involvement/praise, rewards, co-participation, expectations, facilitation, modeling, and 2 restrictions scales). Measurement equivalence was assessed with Item Response Modeling using Rasch Differential Item Functioning (DIF) methodology and tested for both uniform and non-uniform DIF. Analyses were conducted with RUMM 2030 using Bonferroni adjusted p-value. Results: Overall, the psychometric properties of the PA parenting item bank were fairly robust as it demonstrated minor evidence of DIF. In particular, 2 co-participation items ("Participate in any PA with your child" and "Go for walks with your child" had significant gender DIF (p<.01) while 1 encouragement item ("Tell your child you like it when they are active") had significant income DIF (p<.01). Mean group comparisons with or without the inclusion of these DIF items did not alter the group comparisons by gender or income which further indicated that the DIF is minor and poses little threat into group comparison analyses. Conclusions: Findings suggest that the measurement properties of the PA parenting practices item bank are stable. The bank can be used to make valid group comparisons by gender and income of parent—an aspect which is important to evaluate in interventions since we know that parenting practices can differ by both gender and income.
O.01.4
PARENTAL DEPRESSION AND PHYSICAL ACTIVITY IN CHILDREN: DIRECT AND MEDIATED DYADIC EFFECTS

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SIG: Children and families

Purpose: This paper investigates longitudinal dyadic predictors of child moderate-to-vigorous physical activity (MVPA). It was hypothesized that intensity of depression symptoms among parents would predict child MVPA at 7-8 month follow-up, with parental support provision and child's perceptions of parental PA support provision mediating the effect of depression symptoms on MVPA. Methods: Parent-child dyads (N = 879) were enrolled and provided their data at the baseline (Time 1) and at Time 2 (7-8 month-follow up). The sample was recruited from the general population. Children (age 5-11) were interviewed, whereas parents provided their self-report data. CES-D and Godin Leisure Time Exercise Questionnaire were applied. Body weight and high were measured objectively. The associations were tested controlling for age, gender, body mass among children, as well as parental and child MVPA. Results: Overall, the level of depressive symptoms in parents was low. There were no direct effects of parental depression symptoms (Time 1) on child or parental MVPA at Time 2. However, path analysis showed that intensity of depression symptoms among parents (Time 1) indirectly predicted child MVPA (Time 2): higher depression predicted lower parental support provision (Time 1), which in turn explained lower MVPA in children (Time 2). Child's perceptions of parental support provision (Time 1) were unrelated to parental depression and child MVPA (Time 2). Conclusions: Parental provision of social support mattered. In a general population, depression symptoms in parents may translate to lower support provision by parents, which in turn explains lower levels of MVPA among their children.

O.01.5
UNDERSTANDING ENGAGEMENT IN A FAMILY-FOCUSED, MULTI-COMPONENT PAEDIATRIC WEIGHT MANAGEMENT PROGRAMME DELIVERED IN THE COMMUNITY

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SIG: Children and families

Purpose: Engaging families in paediatric weight management is difficult and time consuming. With the majority of families declining referral and up to 75% of families discontinuing care, poor engagement is one of the greatest challenges facing teams tasked with implementation and yet, is often underestimated. This paper explores public health nurses (PHNs) experiences of referring to, and families’ feelings of being referred to, a multi-component, community-based, paediatric weight management programme and provides insight into family’s motivation to participate in and complete treatment. Methods: Qualitative study using semi-structured interviews and the draw and write technique. Semi-structured interviews were conducted with a sample of ten PHNs involved in the referral process and ten parents whose children were referred, participated and completed the weight management programme. The draw and write technique, a child-friendly method of collecting data from young children, was used with nine children aged 5-7 years who completed the programme. Transcripts from both the interviews and the drawing exercise were transcribed verbatim and thematic analysis was conducted to identify emerging themes. Findings: PHNs and parents reported a number of fears relating to the referral process. For PHNs, these fears included misclassifying children as obese and approaching the subject of weight with parents. The development of a standardized body mass index app, peer support as well as training in how best to talk about weight with parents were potential strategies suggested to alleviate these fears. Parents recalled the anxiety they felt as result of the medical terminology used during the referral, their inability to interpret it and what it meant for the health of their child. Despite initial fears, a concern for their children’s future was a major driver behind their participation. Children’s enjoyment of the programme fostered the desire to continue and complete treatment. Conclusion: This study provides evidence of the difficulties of referring families to community-based paediatric weight management programmes and provides practical suggestions on how
to support referrers. Motivations driving programme uptake and completion should be maximised by staff and policy-makers when developing similar programmes.

O.01.6
PARENTAL PREDICTORS OF CHILDREN'S PHYSICAL ACTIVITY GUIDELINE COMPLIANCE OVER THREE YEARS
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SIG: Children and families

Purpose: The physical activity declines observed in childhood are well evidenced, yet some children manage to defy this trend. Little is understood about what influences these children to maintain physical activity (PA) across the primary school years. This study investigated parental predictors of children maintaining compliance with PA guidelines, across 3-years, in a cohort of primary school-aged children.

Methods: Data were from the Healthy Active Preschool and Primary Years (HAPPY) Study. Children (n=337; 56.7% male) were aged 6-8 years and 9-11 years at baseline and follow-up, respectively. ActiGraph accelerometers, worn for 8 days, assessed moderate- to vigorous-intensity PA (MVPA). Children were considered PA 'maintainers' if they met PA guidelines (=1h/day MVPA) at both time points and PA 'decreasers' if they met guidelines at baseline but not at follow-up. Nine potential parental predictors were assessed at baseline by parent survey. Associations between predictors and PA category were examined using logistic regression models, stratified by sex and adjusted for maternal education, child age and the cluster-based sampling design.

Results: Accelerometer data showed 49% of children were PA maintainers; more boys than girls (61.8% versus 32.2%; p<0.001). Individual regression models indicated three significant associations with PA maintenance for girls: parental practical support for PA (OR=1.61, 95%CI 1.02, 2.52), parental reinforcement of PA (OR=1.43, 95%CI 1.04, 1.96), and parental barriers to promoting PA (OR=0.90, 95%CI 0.82, 0.98). No associations were seen for parental concerns about their child's PA, self-efficacy to promote PA, PA rules, PA co-participation or modelling of PA. No associations were observed when the three parental predictors significant in the individual analyses for girls were analysed together in a single model. There were no associations for boys. Conclusions: Given parental predictors investigated in this study were not, after adjustment, associated with children's PA, investigation into other predictors of managing to maintain PA across the primary school years is warranted. Understanding influences on PA levels across the primary school years is important for informing promotion initiatives to improve health and wellbeing.

O.02: Labelling and Nutrient Profiling (Salon 1-2)

O.02.1
GUIDING PRODUCT REFORMULATION FOR SUGAR REDUCTION - NUTRIENT PROFILING APPROACH
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SIG: Policies and environments

Purpose: To implement reformulation, manufacturers need guidance. Nutrient profiling (NP), the science of categorizing foods based on their nutrient composition, can be used to guide reformulation. The principles and the validation process of the Nestlé Nutritional Profiling System (NNPS) that has been specifically designed for reformulation will be presented; in particular the assessment of the potential impact of reformulations following NNPS standards on sugar intake in the US and France. Methods: Dietary intakes of US and French adults were retrieved from the national dietary surveys (NHANES 2011–sh;12 and INCA2, respectively). In a first step, all foods declared to be consumed were tested against the criteria of the NNPS, with three outcomes: Pass (i.e. all criteria were met), Fail, and 'Out-of-scope' for reformulation (e.g. pure frozen fruit); and agreement with the UK Ofcom nutrient profiling system was assessed. Second, the individuals' energy contribution of NNPS Pass, Fail, and Out-of-scope foods and beverages was associated with indices of diet quality (HEI-2010 in the US, PNNS-GS in France). Third, in a modelling
scenario assessed the potential impact of reformulating the whole food supply to NNPS standards.

Results: At the food level, the overall percentage of agreement between NNPS and UK Ofcom was 68.8 % and 75.7 % in the US and France, respectively. In both countries, a high contribution of NNPS Pass was positively associated with diet healthiness. The modeling study highlighted that potential industry-wide reformulations following NNPS standards could improve nutritional intakes of the US and French populations –sh; with up to 46% reduction in added sugar intake in the US. In addition, modeled reformulations led to an attenuation of the socio-economic gradient of sugar intake in the US. These studies also identified some potential limitations of the NNPS to address nutrition gaps. To address such gaps new approaches currently tested for NNPS evolution will be discussed.

Conclusions: In order to achieve its maximum potential, reformulation should be implemented by the entire food sector. Further, reformulation per se cannot address the whole nutrition gap that exists in many countries, and there is a need to combine reformulation with other public health initiatives.

O.02.2
CONSUMER RESPONSES TO DIFFERENT FRONT-OF-PACKAGE (FOP) LABELLING FORMATS: AN EXPERIMENTAL STUDY OF PERCEPTIONS AND UNDERSTANDING FOR ‘HIGH-IN' NUTRIENT SYMBOLS AND HEALTH STAR RATINGS (HSR)
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SIG: Policies and environments

PURPOSE: Countries such as Chile have mandated FOP nutrition symbols signifying ‘high' levels of sugar, sodium, and saturated fat on prepackaged foods and beverages. Canada and other countries are developing regulations for 'high-in' FOP symbols, with a need for evidence to inform their design, and how they compare to alternative systems implemented in other countries, such as HSRs. The current study examined the influence of contradictory nutrient claims and different symbol formats on perceptions and understanding of FOP nutrition labels.

METHODS: Respondents aged 16 to 32 completed two between-group experimental tasks in an online survey (n=1,011). First, participants were randomly assigned to see 'high-in' labelled products with a nutrient claim positioned next to the warning, away from the warning, or absent, and were asked to identify whether the products were high in the indicated nutrient. Second, participants viewed either a text-only, octagon, triangle, or HSR symbol, and rated the label on its 'harshness' and whether it made them feel 'in control' of their healthy eating decisions. Logistic regression models were used to compare responses between conditions.

RESULTS: Respondents were less likely to perceive a product as 'high in sodium' when packages also featured a sodium claim, with a stronger effect when the claim was positioned closer to the FOP symbol (p<.0001). There were no differences in correct responses when the contradictory nutrient claim was for a different nutrient. Across all FOP conditions, at least 88% felt that the symbols were either 'about right' or 'not harsh enough'; participants viewing the HSR were more likely to rate the symbol as 'not harsh enough', and less likely to state that the symbol made them feel 'more in control' (p<.01). The HSR also generated more ratings of 'too harsh' compared to the text-only label.

CONCLUSIONS: The findings provide evidence to inform FOP nutrition label design and regulation. There was no evidence to support industry claims that 'high-in' FOP symbols 'harass' consumers or reduce their 'control' over eating decisions. Indeed, the vast majority of participants reported that the symbols increased their control, including for 'stop sign' FOP symbols implemented in Chile.

O.02.3 - SHORT-LISTED FOR THE BEST ORAL PRESENTATION AWARD BY A STUDENT
PROTEIN-DENSITY AND POOR DIET QUALITY OF AUSTRALIAN YOUNG ADULTS: EVIDENCE FROM THE NATIONAL NUTRITION AND PHYSICAL ACTIVITY SURVEY 2011/12.
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SIG: Ageing

OBJECTIVE: Internationally, young adulthood has been shown to be a period of rapid weight gain, with the most weight gain compared to any other group. The protein leverage hypothesis states that dietary protein
is tightly regulated and drives food consumption until protein requirements are met in adults. Diets rich in fat and carbohydrate are protein dilute and may contribute to higher energy intakes, weight gain and obesity. Consumption of discretionary foods, high in fat and added sugars, potentially dilute dietary protein. However, it is unknown whether young adults have more protein dilute diets. METHODS: Analysis of the National Nutrition and Physical Activity Survey 2011/12 was conducted for adults aged 18 years and over (N=9435). Diet was assessed with 24-hour recalls. Diet quality was assessed with the validated diet-quality tool, the Healthy-Eating-Index-for-Australians. Maximum scores of 100 indicate closer adherence to the Australian Dietary Guidelines. Mean differences in protein-density (grams protein/1000 kJ from carbohydrates, fat and protein) between age groups for those reporting plausible energy intakes (energy intake: basal metabolic ratio = 0.87) were assessed. Regression determined if protein-density increased with diet quality, adjusted for age, gender, energy-reporting status and socio-economic status. RESULTS: Protein-density increased with age from 10.3 g/1000kJ for 18-24 year olds to 11.9 g/1000kJ for those 70 years and over. Diet quality increased with age (βa = 0.1, t(9430)=10.58, P<0.0001) and protein-density (βa = 1.3, t(9430)=32.62, P<0.0001). Higher protein-density was associated with lower consumption of discretionary foods, added sugars and alcohol, and greater intake of lean meats, poultry and alternatives, dairy products and alternatives, vegetables and more water relative to other beverages. However, intake of fruit and grains was poorer and sodium intake was higher for those with higher protein-density.

CONCLUSIONS: This analysis provides evidence that young adults have the lowest protein-density of adults, although not low at 90 g for the average 8700 kJ diet. Some aspects of diet quality are poorer for those with higher protein-density, including lower intake of fruit, which is known to be protective against weight-gain. Randomized controlled behavior change trials are therefore needed to test the advantage of further increases in protein-density in preventing weight-gain.

O.02.4
IMPROVING DESIGN FEATURES OF BRAZILIAN NUTRITION LABELS TO ENHANCE CONSUMER USE: RESULTS FROM QUALITATIVE RESEARCH

SIG: Implementation and Scalability

Purpose: To evaluate communication effectiveness of the design features of the existing nutritional facts panel, and list of ingredients, and a new proposal for a front-of-package warning label. The warning label, a black triangle against a white background, displaying the nutrients that are above recommended levels in food products, was developed according to information design principles, in response to the proposed revision of the Brazilian labeling regulation. Our assumption was that this design would better communicate relevant nutritional information than the current labels. Methods: We conducted 13 focus group discussions (FGDs) with 101 adult participants (male/female, of different SES) in 4 Brazilian capital cities, followed by one expert panel discussion (EPD) with ten professionals from communication, information design, law, education, pharmacology, medicine, nutrition and psychology fields. Printed cards presenting fictional food products were used in FGDs and EPD. Content analysis (using deductive and inductive approaches) identified themes related to attention, visibility, readability, perception of risk to health. Results/findings: The current labeling system was criticized for lacking information clarity on preventing diseases, being hard to read, and having poor visibility (small letter size, poor color contrast, inconsistent location of information). Participants demanded greater visual emphasis to call attention to food restrictions related to specific health conditions. Regarding the nutritional facts panel and the list of ingredients, the participants preferred having key nutrients/ingredients highlighted (bold and yellow highlight) to make their identification easier. Also, the use of bullets to separate the ingredients and the grouping of similar ingredients, such as sugar and food additives, was better liked and understood than the current list of ingredients. In addition, the triangular warning label was positively assessed on the design aspects of attention, visibility, readability and perception of risk to health. The triangle warning label stimulated curiosity, and generated participant interest in acquiring further nutrition information, and encouraged reflection on food choices. Conclusions: This study highlighted design limitations of the current labeling system and underscored the need for a new warning label model. The proposed warning
label captured participants' attention, promoted understanding and awareness in food purchases.

O.02.5
WARNING LABELS ARE EASIER TO INTERPRET THAN THE COLOURED, TRAFFIC-LIGHT LABELS BASED ON REFERENCE INTAKES: RESULTS FROM A RANDOMIZED, CONTROLLED, CROSSOVER EXPERIMENT IN BRAZIL

SIG: Implementation and Scalability

Purpose: The potential of warning labels to alert consumers to food products high in fat, sugar and sodium is currently being evaluated across several South American countries, Canada and a few states in the U.S. To inform these political discussions, and to add to the sparse evidence base on this topic, our study aimed to evaluate the effectiveness of a black-and-white, triangular, warning label (WL) in improving consumer understanding, perceptions, and purchase intent, compared to the coloured, traffic-light labels based on Reference Intakes (TL). Methods: A representative sample of 1607 Brazilian adults recruited from an online panel, was randomized to a WL group or a TL group. Participants evaluated images of 10 different food products at two points in time –sh; once without labels (control condition, T1) and then again with labels (WL or TL - label condition, T2). An objective understanding score was calculated based on correctly identifying elevated quantities of nutrients in products. A 7-point Likert scale was used to assess perceived healthfulness of the products and consumer purchase intentions. Differences in the responses between label groups and between control and label conditions (T2 –sh; T1) were compared using one-way ANOVAs and chi-square tests. Results/findings: Participants in the WL group (n=803) consistently performed better than participants in the TL label group (n=804), on all study outcomes. Participants in the TL group had fewer correct responses in the presence of a label compared to the no-label control condition while those in the WL group performed significantly better (-0.74% vs. 38.19%, p <0.001). Valuations of product healthiness decreased by 1.07 points for participants in the WL group compared to 0.18 points in the TL group (p <0.001). Similarly, larger decreases in intentions to purchase were seen in the WL group compared to the TL group (2.04 vs. 0.73, p <0.001). Conclusions: Our results suggest that the triangular warning labels are easier to interpret by Brazilian consumers and show promise of improving consumer understanding and purchase intentions at points-of-purchase than the coloured, traffic-light labels.

O.02.6
CARBOHYDRATE-ELECTROLYTE DRINK PLUS WHEY PROTEIN INCREASE POST-EXERCISE REHYDRATION
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: The addition of proteins into traditional carbohydrate–electrolyte (CE) sports drinks were more effective for post-exercise rehydration, however, inconsistent findings were also reported currently. By comparison of previous findings, the protein concentration in drinks would be an important factor affecting the effectiveness of rehydration. The purpose of this study was to examine the effects of different amounts of whey protein in CE drinks on post-exercise rehydration. Methods: Ten males completed four trials in a randomized cross-over design, a 4-h recovery was applied after a 60-min run at 65% VO2peak in each trial. During recovery, participants ingested either CE drink (66 g/L carbohydrate (CHO), CE trial), CE with high whey protein drink (33 g/L CHO & 33 g/L whey, CWH trial), CE with medium whey protein drink (44 g/L CHO & 22 g/L whey, CWM trial), or CE with low whey protein drink (51 g/L CHO & 15 g/L whey, CWL trial) in a volume equivalent to 150% of their body mass (BM) loss. The drinks were provided in six aliquots
of equal volume every 30 min during recovery. The nude BM, urine and blood samples were measured before and after exercise, and during recovery. Data were analyzed using two-way ANOVA with repeated measures, the significant differences were determined using Bonferroni-adjusted Student’s t test. Results: After exercise, participants achieved a BM loss of 2.17%±smn;0.06% in all trials. Urine production was less in CWM and CWH trials during recovery, which induced a greater fluid retention in CWM (51.0%±smn;5.7%) and CWH (55.4%±smn;3.8%) trials than any other trial (p<0.05). The plasma albumin content was increased in CWH trial and higher than CE trial at 2 (p<0.05) and 3 h (p<0.01) during recovery. The aldosterone concentration was lower in CE trial than CW-M and CW-H trials after recovery (p<0.05). Conclusions: The rehydration was better when whey protein was co-ingested with CE drink during a 4-h recovery after 60 min run. However, this additive effect was only occurred when the amount of whey protein was at least 22 g/L, and the increased albumin and aldosterone content would be the potential mechanism for the greater fluid retention.

O.03: Physical Activity and Sedentary Behavior Interventions and Correlates in Early Childhood (Salon 3-4)

O.03.1 ETHNIC AND SEX DIFFERENCES IN OBJECTIVELY MEASURED MODERATE AND VIGOROUS PHYSICAL ACTIVITY IN SINGAPOREAN PRESCHOOL CHILDREN

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SIG: Children and families

Purpose: Achieving 60 min/day of moderate-to-vigorous physical activity (MVPA) is recommended by the World Health Organization to improve children’s health outcomes. However, few studies have investigated detailed patterns of objectively measured MVPA in preschool-aged children, and even fewer in Asian populations. Methods: As part of the Growing Up in Singapore Towards healthy Outcomes (GUSTO) cohort study, physical activity of 685 children aged 5.5 years was measured continuously over 7 days using wrist-worn accelerometers. Children with accelerometer data for ≥3 days of ≥12 hours/day were considered to provide valid MVPA data. Daily and hourly time spent in MVPA and frequency of duration-specific MVPA bouts were calculated and compared by sex, ethnicity and day of the week. Results: Of the 580 children who provided valid data, 52% were boys; 58% were Chinese, 24% Malay and 18% Indian. Nearly 55% of children failed to average 60 min/day over the week, and only 16% reached the recommended 60 min every day. Boys accumulated greater MVPA than girls (62.2 ±smn; 28.3 vs 55.2 ±smn; 24.5 min/day, p-value = 0.002), which was consistent throughout the day. More than 53% of MVPA time occurred in bouts <3 minutes. More MVPA bouts were accumulated by boys than girls (2-min bouts: 11.8 ±smn; 5.6 vs 10.5 ±smn; 5.0 bouts per day, p-value = 0.004; 10-min bouts: 0.46 ±smn; 0.50 vs 0.33 ±smn; 0.38 bouts per day, p-value = 0.0008). Chinese girls were consistently less active than their Malay and Indian counterparts (52.0 ±smn; 22.8 vs 61.1 ±smn; 22.8 and 56.9 ±smn; 25.2 min/day of MVPA, respectively, p-value = 0.03), while no ethnic differences were seen in boys. Children accumulated less MVPA on weekdays, largely owing to lower MVPA in the early afternoon. Conclusions: Children
accumulated MVPA in bouts of short duration. Most children fell short of recommended activity levels. Girls were less active than boys, and Chinese girls were even less active than Malay and Indian girls. Tailored programs are required to promote physical activity among young children in Singapore.

O.03.2
DESCRIBING OBJECTIVELY MEASURED PHYSICAL ACTIVITY LEVELS, PATTERNS, AND CORRELATES IN A CROSS SECTIONAL SAMPLE OF INFANTS AND TODDLERS FROM SOUTH AFRICA

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Physical activity has health benefits across the lifespan but levels, patterns, and correlates have not been well described in infants and toddlers under the age of two years. Methods: This study aimed to describe objectively and subjectively measured physical activity in a group of South African infants aged 3- to 24-months (n=140), and to investigate individual and maternal correlates of physical activity in this sample. Infants' physical activity was measured using an Axivity AX3 wrist-worn accelerometer for one week and the mean vector magnitude was calculated. In addition, mothers reported the average amount of time their infant spent in various types of activities (including in front of the TV), their beliefs about infants' physical activity, access to equipment in the home environment, and ages of motor development milestone attainment. Analysis of variance (ANOVA) and pair-wise correlations were used to test age and sex differences and associations with potential correlates. Results: There were significant age and sex effects on the distribution of time spent at different physical activity intensities (Wilks' lambda=0.06, p<0.01). In all cases, the trend was for boys to spend more time in higher intensity physical activity and less time in lower intensity activity than girls; and for time spent in higher intensity activities to be higher in older children. Time spent outside was higher in boys, and this reached significance at 18-months (F=3.84, p=0.02). Less concern around floor play was associated with higher physical activity at 12-months in females only (p=0.03, r=0.54), and no other maternal beliefs were correlated with physical activity. The majority (94%) of children were exceeding TV time recommendations. When controlling for age and sex, overall TV time was positively associated with BMI z-score (b=0.01, p=0.05). Conclusion: This study is the first to show sex and age differences in the patterns of physical activity, and to report on objectively measured and maternal reported physical activity and sedentary behaviour in the first two years of life in South Africa infants. Infants and toddlers should be provided with as many opportunities to be active through play as possible, and TV time should be limited.

O.03.3
PHYSICAL ACTIVITY POLICY AND PRACTICES IN LICENSED CHILD CARE CENTRES FOR THE EARLY YEARS (3-5) IN BRITISH COLUMBIA

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SIG: Policies and environments

Purpose: Physical activity (PA) is critical to early child development and child care is a key setting to promote supportive policies, practices, and environments. We examined associations between a range of daily practices in child care centres to support their PA, and the existence of supportive PA policies and PA environment. Methods: Managers of licensed child care centers for children 3-5 years old completed a survey about their facility's fundamental movement skills (FMS), active play, outdoor play, screen time, and sedentary behaviour policies and practices (n=581). Centres were considered to have a policy only if it was written; practices were assessed comparing daily vs. less than daily, and PA environment was
assessed as space for group activities (indoor and outdoor) and outdoor features. Results were analyzed using logistic regression methods. Results: The prevalence of having PA policies ranged from 41% for the amount of time children spend outdoors each day to 8.5% for activities targeting coordination skills. Policies related to coordination, locomotor, balance, and staff-led activities were not associated with engaging in daily FMS activities. Engaging in at least 120 minutes of active play/PA daily and 60 minutes of outdoor play was more likely in centres with policies (OR 2.2; 95% CI 1.37-3.53 and OR 2.0; 95% CI 1.22-3.31 respectively). Daily screen time of less than 30 minutes (OR 1.8; 95% CI 1.20-2.83) and daily limited prolonged sitting (OR 2.2; 95% CI 1.05-4.63) was more likely in centres with prolonged sitting and screen time policies. Engaging in at least 120 minutes of daily active play/PA and daily MVPA was more likely in centres with prolonged sitting and screen time policies. Engaging in at least 120 minutes of daily active play/PA and daily MVPA was more likely in centres with more outdoor features (p<.05). Conclusions: Having a written policy, more outdoor features, and more PA space were all associated with meeting recommended daily PA and sedentary practices. The PA environment was influential even when there was no supportive policy. Fewer than half of centres had PA related policies indicating the potential of interventions targeting policy development.

O.03.4
LONGITUDINAL ASSOCIATIONS OF SCREEN VIEWING IN EARLY CHILDHOOD WITH OBJECTIVELY MEASURED MODERATE-TO-VIGOROUS PHYSICAL ACTIVITY IN SINGAPOREAN PRESCHOOL CHILDREN
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SIG: Children and families

Objective: Screen viewing (SV) in early childhood has become increasingly common and may have important population health implications. Despite international recommendations to avoid or limit SV, few longitudinal studies have provided evidence of the detrimental consequences of early childhood SV. We investigated the associations of SV at ages 2 and 3 years with objectively measured physical activity (PA) in 5.5-year-old Singaporean children. Methods: As part of the Growing Up in Singapore Towards healthy Outcomes (GUSTO) cohort study, SV was assessed via proxy reports at ages 2 and 3. PA of children at 5.5 years was measured continuously over 7 days using wrist-worn accelerometers. Children with accelerometer data for ≥3 days of at least 12 hours/day were considered to provide valid data on PA. Moderate-to-vigorous PA (MVPA) was derived using validated cut-offs. We analysed overall and sex-specific associations between SV and MVPA, using multivariable linear regressions adjusted for main confounders. Results: Of 864 participants attending the GUSTO visit at 5.5 years, 545 (63%) and 557 (64%) had valid information on MVPA and SV at ages 2 and 3, respectively. The average time spent on MVPA at age 5.5 was 58.7 min/d overall, 62.0 min/d in boys and 55.2 mins/d in girls (p-value: 0.002). In both sexes combined, MVPA was lower in children with higher SV at 2 years [<1 h: 64.3 (59.6, 69), 1-2 h: 57.3 (52.2, 62.3), 2-4 h: 60.5 (56.1, 64.9), >4 h: 52.2 (46.7, 57.8); p-trend: 0.005] and 3 years [<1 h: 67.3 (61.7, 72.9), 1-2 h: 60.5 (55.5, 65.4), 2-4 h: 59.8 (55.6, 64.1), >4 h: 55.7 (50.7, 60.6); p-trend: 0.003]. Stratified analysis revealed stronger associations in boys as compared to girls. Conclusions: Preschool children in Singapore engage in low levels of MVPA. Higher SV at age 2 and 3 years was strongly
associated with lower levels of objectively measured MVPA at age 5.5 years. To our knowledge, these longitudinal findings are the first from an Asian country. They confirm the associations between early childhood SV and later PA and support the development of evidence-based strategies to reduce SV early in life.

O.03.5
PATTERNS OF OBJECTIVELY MEASURED PHYSICAL ACTIVITY AND SEDENTARY TIME AMONG TODDLERS
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SIG: Early care and education

Objective: Toddlerhood (1-2 years) provides an opportunity to establish healthy behaviours. Evidence is limited on objectively-measured physical activity and sedentary time among toddlers. The objective of the study was to examine the patterns of physical activity and sedentary time throughout the week in a sample of toddlers from Edmonton, Canada. Methods: Participants were 153 toddlers (1.6±smn;0.2 years; 48% female) from the Parents' Role in Establishing healthy Physical activity and Sedentary behavior habits (PREPS) project. Sedentary time (ST; =25 counts/15sec), light-intensity physical activity (LPA; 26-419 counts/15sec), and moderate- to vigorous-intensity physical activity (MVPA; =420/15sec) were objectively measured with wGT3X-BT Actigraph accelerometers. Patterns of ST, LPA, MVPA, including bouts (1-2, 3-4, 5-9, =10 mins, median bout length for bouts =1 min) on total days, weekdays, weekend days were calculated. For participants with 7 valid days (n=90), ST, LPA, MVPA for each day of the week was also calculated. All variables were standardized for wear time. Descriptive statistics, signed rank tests or paired t-tests, and repeated measures ANOVAs were conducted. Results: Toddlers had significantly higher ST on weekdays (318.4±smn;44.7 min/day) compared to weekend days (311.7±smn;43.3 min/day). No significant differences were observed for LPA (weekday: 238.1±smn;31.5; weekend: 234.6±smn;31.2 min/day) and MVPA (weekday: 59.0±smn;20.7; weekend: 58.0±smn;22.3 min/day). ST and LPA significantly differed by day of week (p<0.05) but MVPA did not. Of the total daily LPA and MVPA, 44.3±smn;3.2% and 20.9±smn;5.2% were in 1-2 min bouts, whereas 38.0±smn;8.4% of daily ST was in 5-9 and =10min bouts. Toddlers spent significantly less time in 3-4 min MVPA bouts on weekdays (1.2±smn;1.7 min/day) than weekend days (1.8±smn;2.8 min/day). The opposite pattern was seen for =10 min LPA bouts (weekdays: 0.3±smn;1.0; weekend: 0.1±smn;1.3min/day). Conclusions: This study highlights the sporadic movement patterns of toddlers. However, for ST approximately 40% was accumulated in longer bout lengths, possibly due to time restrained (e.g., in a high chair, stroller). Future research is needed to understand how these patterns in toddlers impact a range of health indicators to inform future interventions and guideline updates.

O.03.6
IMPACT OF A FREE-PLAY SCHEDULING INTERVENTION ON THE PHYSICAL ACTIVITY OF CHILDREN AGED THREE TO SIX YEARS ATTENDING CHILDCARE: A CLUSTER RANDOMISED TRIAL
Abdul Razak L1,2,3, Yoong S1,2,3, Wiggers J1,2,3, Morgan P1,3, Jones J1,2,3, Finch M1,2,3, Sutherland R1,2,3, Lecathelains C1, Gilham K1, Clinton-Mcharg T1,3, Wolfenden L1,2,3.1University of Newcastle, Newcastle, New South Wales; 2Hunter New England Population Health, Newcastle, New South Wales; 3Hunter Medical Research Institute, Newcastle, New South Wales.

SIG: Early care and education

Purpose: Physical inactivity in childhood track into adulthood, hence identification of effective interventions for increasing physical activity in the early years are greatly needed. This study aimed to test the efficacy of scheduling multiple opportunities for physical activity in childcare settings; without changing the total amount of time provided, in increasing the amount of time children spend engaged in moderate-to vigorous activity (MVPA) in care. Methods: A cluster randomised controlled trial involving ten centre-based childcare
services in the Hunter New England region of New South Wales, Australia was carried out in May to November 2016. An inclusion criteria is that services were to have only a single period of outdoor free-play from the core hours of 9 am to 3 pm, at baseline. Five services were randomly allocated to receive the intervention and five services the control condition. Intervention services then scheduled three separate periods (of at least 15 minutes in duration each) of outdoor free-play. Control services were asked not to make any changes to their usual outdoor free-play period. Research staff were on site for five days at baseline and three-month follow-up to place accelerometers on consenting children. The primary outcome measure is mean daily moderate to vigorous physical activity (MVPA) difference (minutes) from baseline to three months follow-up. Analysis was facilitated through a mixed model (LMM). Results 317 children (72.2%) from ten services had valid accelerometer data at both time points. Relative to children in the control services, the mean difference between groups of MVPA while in care was significantly greater at follow-up among children attending intervention services (5.88 minutes, 95% CI 1.65-10.10; p<0.01), adjusted for age, sex, and outdoor free play duration. Conclusions: The ecological intervention increased average daily minutes of MVPA in children aged three to six years attending childcare by almost six minutes. Scheduling multiple periods of outdoor free play in childcare services may be a scalable intervention to increase population levels of physical activity in the early years.

Jun 04, 14:50 - 15:50: Oral Presentation

O.04: Interventions for Adult's Physical Activity (Grand Ballroom)

O.04.1

PHYSICAL ACTIVITY INTERVENTIONS FOR OVERWEIGHT AND OBESITY DURING PREGNANCY: A SYSTEMATIC REVIEW OF BEHAVIOUR CHANGE INTERVENTIONS.

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Physical activity (PA) reduces the risk of gestational diabetes (GDM) and other complications of pregnancy. Many multidimensional interventions incorporating a combination of diet and PA promote lifestyle changes during pregnancy. Reviews of lifestyle interventions frequently ignore the underlying behaviour change techniques (BCTs) employed. While a number of BCTs have been identified for increasing PA, the effectiveness of these BCTs may differ for overweight and obese pregnant woman compared to normal weight pregnant woman. This review aims to evaluate the effectiveness of PA interventions for overweight and obese pregnant women with a specific emphasis on the behaviour change techniques employed to elicit behaviour change. Methods: MEDLINE, EMBASE, PsychInfo, CINAHL, Cochrane Library, PEDro, SportDiscus and PubMed databases were searched from inception. The searches were undertaken in June 2016 and a second search, updating the existing review is currently underway. Databases and journals were searched for randomised controlled trials of behavioural interventions designed to increase physical activity levels for overweight and obese pregnant women (=25kg/m²). Two reviewers independently evaluated each intervention using the behaviour change techniques (BCT) taxonomy to identify the specific behaviour change techniques employed. Two reviewers independently assessed the risk of bias using the Cochrane Collaboration's tool. Results: A total of 6842 potentially eligible papers were identified from which 15 studies were included (PA only interventions n=7; PA and dietary interventions n=8). Interventions included supervised or unsupervised exercise programs (n=7), behavioural counselling (n=4) and lifestyle education and advice (n=4). A small number of interventions were developed based on theory, including Trans theoretical model, social cognitive theory, stage theories and behavioural modification (n=4). Common behaviour change techniques employed in these studies were: goals and planning, feedback and monitoring, shaping knowledge, social support, natural consequences and antecedents. Conclusion: This review identifies a range of individual BCTs that can be used to help improve PA levels for overweight and obese women during pregnancy, including goals
and planning, shaping knowledge and social support. These results will be used to inform the development of an intervention to increase PA levels among overweight and obese pregnant women.

O.04.2
EFFECTS OF ADDING AN ACTIVITY TRACKER TO AN ONGOING COMMUNITY-BASED WEIGHT-LOSS PROGRAM
Porter G1, Wilson K1, Harden S2, Almeida F1, McGuire T3, Kleppe L3, Estabrooks P1, 1University of Nebraska Medical Center, Omaha, NE; 2Virginia Polytechnic Institute and State University, Blacksburg, VA; 3IncentaHEALTH, LLC, Denver, CO.

SIG: Implementation and Scalability

Purpose: Community- and web-based lifestyle interventions are appealing for obesity treatment due to their broad reach, low cost, and capability to synchronize with commercially available physical activity (PA) trackers. The degree to which the provision of a PA tracker impacts participant engagement and outcomes in these interventions is understudied. We tested the added benefit of offering a PA tracker to newly-enrolled (within the last 30 days) female participants in an existing weight loss program. Methods: A sample of 508 obese (37.4±smn;6.2 kg/m2) females (44.5±smn;12.6 years) were randomly assigned to a control (n=252) or experimental (n=256) group. Those in the experimental group were offered a PA tracker free of charge. Program engagement was monitored, and weight was measured quarterly for 12 months. Evaluation used intention to treat and actual treatment analyses. Results: There were no statistically significant differences in weight outcomes between control and experimental participants at 6 or 12 months. Fifty percent of participants in the experimental group accepted the offer and 23% synced the tracker to the program website. When compared to control participants at 6 months, those that accepted the PA tracker lost significantly more weight [-5.78 vs -4.04lbs;p<.05;t=1.51(378)], and were more likely to achieve 3% [OR 1.97, 95%CI:1.22-3.19;p<.01] and 5% weight loss [OR 1.77, CI:1.01-3.11;p<.05]. These differences remained significant at 12 months. Additionally, those that accepted the PA tracker lowered their BMI significantly more than controls over 12 months [-1.14 vs -0.80kg/m2;p<.01;t=1.34(378)]. Those who accepted a PA tracker also demonstrated greater program engagement reflected by more (a) program logins [21.94 vs 8.56;p<.01;t=3.69(378)], (b) quiz completions [3.75 vs 1.27;p<.01;t=2.91(378)], (c) social media referrals [0.93 vs 0.13;p<.01;t=1.82(378)], (d) email open rate [21.8 vs 16.83%;p<.05;t=1.55(346)], and (e) motivational text-message opt-ins [OR 1.62, CI:1.05-2.51;p<.05] Conclusions: Although individuals that accepted the PA tracker lost significantly more weight than controls, there were no differences when intention to treat analyses were conducted—suggesting those who agree to use a free tracker may simply be more motivated than other participants at program initiation.

O.04.3
THE EFFECTIVENESS OF A WEB-BASED COMPUTER-TAILORED PHYSICAL ACTIVITY INTERVENTION USING FITBIT ACTIVITY TRACKERS: A RANDOMISED TRIAL
Vandelanotte C1, Duncan MJ2, Maher CA3, Schoeppe S1, Rebar AL1, Power DA1, Short CE4, Doran CM1, Hayman MJ1, Alley SJ1, 1Central Queensland University, Rockhampton Queensland; 2University of Newcastle, Newcastle, New South Wales; 3University of South Australia, Adelaide, South Australia; 4University of Adelaide, Adelaide, South Australia.

SIG: E- & m-health

Abstract Purpose: Regular physical activity reduces CVD risk, but more than half of the population is inactive. Web-based interventions that provide personalised physical activity advice have demonstrated effectiveness, but rely on self-reported measures of physical activity which are prone to over-reporting, potentially reducing the accuracy and effectiveness of the advice provided. Advanced activity trackers (e.g., Fitbit) can enhance traditionally tailored interventions, as they conveniently and accurately assess physical activity and their data can automatically be integrated into web- and app-based interventions. Therefore, this study examined whether the effectiveness of a web-based computer-tailored intervention could be improved by integrating Fitbit activity trackers. Method A 2-group randomised trial was conducted in 243 overweight or obese participants. Participants were exposed to the three-month TaylorActive
intervention, which included eight modules of theory-based, personally-tailored physical activity advice and action planning. Participants were randomised to the same intervention, but delivered with or without Fitbit tracker integration. In one group the personal activity advice was based on a self-reported physical activity measure (adapted Godin exercise questionnaire), in the other group the advice was based on data automatically extracted ('synced') from a Fitbit Flex activity tracker. Changes in physical activity (Active Australia Survey), sitting time (Workforce Sitting Questionnaire) and BMI were assessed one and three-months post-baseline. Advice acceptability, website usability and module completion were also assessed. Linear mixed models were used to analyse the data. Results: A significant increase in total weekly physical activity (adjusted mean increase = 163.2;95%CI=52.0-274.5;p=0.004) and moderate-to-vigorous physical activity (adjusted mean increase = 78.6;95%CI=24.4-131.9;p=0.004) in the Fitbit-group compared to the non-Fitbit-group at the 3-month follow-up. Sitting time and BMI decreased more in the Fitbit-group, but no significant group×es;time interaction effects were found. The physical activity advice acceptability and the website usability were consistently rated higher by participants in the Fitbit-group. Non-Fitbit-group participants completed 2.9±smn:2.5 modules and Fitbit-group participants completed 4.4±smn:3.1 modules. Participants indicated that it was easy to sync Fitbit data with the computer-tailored website (85.9%) and that it improved the personal relevance of the advice (76.9%). Conclusion: Integrating physical activity trackers into a web-based computer-tailored intervention significantly increased intervention effectiveness.

O.04.4
HIGH FITNESS AND LOW FATNESS PHYSICAL ACTIVITY PATTERNS IN MALAYSIAN ADOLESCENTS: A NOVEL APPLICATION OF REDUCED RANK REGRESSION.

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Physical activity (PA) is important for improving cardiorespiratory fitness and preventing fatness, which represent two independent pathways from PA to cardiometabolic health. The pattern of activities that simultaneously maximises fitness and reduces fatness is unknown but could be identified using reduced rank regression (RRR), a data-driven technique previously used to identify disease-specific dietary patterns. We apply RRR to PA for the first time to identify cardioprotective patterns in the type, location and timing of PA predicting fitness and body mass index (BMI), and explore pattern generalisability and tracking over time. Methods: Prospective cohort data included 1828 healthy adolescents (13±smn:0.3 years at baseline) participating in the Malaysian Health and Adolescent Longitudinal Research Team study (MyHeARTs) in 2012-2016. Adolescents self-reported PA (validated PAQ-C) and the modified Harvard step test assessed fitness. Height and weight were measured, and BMI was standardised (International Obesity Task Force growth references). Demographics were collected in questionnaires. RRR derived a PA pattern in 2012, 2014 and 2016 using fitness and BMI as response variables. Tucker's coefficient of congruence assessed generalisability of the 2012 pattern over time and across gender, ethnicity, and urbanicity sub-groups. Intraclass correlation coefficients (ICC) assessed tracking. Results: In 2012 a high-fitness pattern of PA emerged as indicated by associations with higher CR fitness (r=0.4, p<0.001), but not BMI (r=-0.04, p=0.2) and 13% vs. 0.1% variation explained in fitness and BMI respectively. Higher frequencies of football, cycling, being very active in the evening, after school and at the weekend, were associated with an increased high-fitness pattern score (pattern loadings (PL) = 0.46, 0.36, 0.37, 0.33, 0.32 respectively). Activities explaining fitness varied by sex, with jogging for boys (PL=0.47) and cycling for girls (PL=0.54) ranked highest. Tracking of scores from 13-17 years was moderate (ICC=0.6, p<0.001). A higher pattern score was associated with being male, Malay, in rural schools, non-smokers, and having a higher parental education. Conclusions: In Malaysian adolescents, a pattern of frequently playing football, cycling and being active outside of school is associated with higher fitness. These specific types, timing and location of activities provide priority targets for intervention development to reduce cardiometabolic risk.
HARNESSING GAMIFICATION FOR POPULATION LEVEL CHANGES IN PHYSICAL ACTIVITY - FINDINGS FROM 18 UK INTERVENTIONS.

Harris MA1.1 Cardiff Metropolitan University, Cardiff.

SIG: Implementation and Scalability

Purpose: A recent systematic review concluded insufficient evidence for current population physical activity (PA) interventions, citing scalability as a major contributory factor2. Beat the Street aims to address this key implementation issue by turning a town/city into a game. Method Players register their walking and cycling journeys by tapping a smartcard on RFID readers called 'Beat Boxes' placed on lampposts around the town or city. Residents compete to see which schools; community groups and individuals can achieve the greatest physical activity over the course of the game period and highest scorers are rewarded with prizes. Players monitor their progress via a website where they can see their own and their team's progress, and the overall city/town target. During registration, participants complete a questionnaire which includes a validated PA measure3. Follow up surveys take place at the end of the game and 6 months later. Results: In 2016, 18 community-wide interventions were delivered throughout the UK. N=300,053 people played the game, N=64,512 registered online, N=6,767 completed a follow-up survey immediately following the game period and N=3,103 people completed a follow-up survey 6 months post-intervention. Across all interventions delivered in 2016, 62% of participants were living in the highest 4 deciles of multiple deprivation and 10% had a long-term medical condition. Pre-test/post-test analyses revealed a 9% increase in the proportion of people meeting the WHO PA guidelines and a 5% decrease in the proportion of people reporting being inactive (p <.05). Further analysis revealed a 8% increase in the proportion of people meeting the CMO PA guidelines and a 4% decrease in the proportion of people reporting being inactive, six-months post-intervention (p <.05). Conclusion: The findings from 18 Beat the Street interventions delivered across the UK in 2016 suggests that gamification is a promising approach to changing population levels of PA. The demographic characteristics of participants implies gamification may be particularly effective for reaching typically 'hard-to-reach' groups such as those living with a long-term medical condition and those living in areas of high deprivation.

O.05: Environments and SES in Nutrition and Physical Activity (Salon 1-2)

O.05.1 SOCIOECONOMIC INEQUALITIES IN DIET AND PHYSICAL ACTIVITY: A MATTER OF SOCIAL DISTINCTION?
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SIG: Socio-economic inequalities

Objective: Lack of knowledge or budget cannot fully explain the socioeconomic gradient in healthy diet, physical activity and obesity. We propose an alternative explanation, namely that higher socioeconomic groups may increasingly adopt a healthy lifestyle as an instrument of social distinction. If this is the case, we would expect a well-established indicator of distinction, cultural participation, to be associated with health-related behaviours. The aim of this study is to test whether cultural participation is associated with health-related behaviours, while adjusting for education and income. Methods: Data from participants (25-75 years) of the 2014 cross-sectional survey of the Dutch GLOBE study were used (N=2812). Multivariable regression models were used to analyse the association between cultural participation (e.g. annual frequency of visits to museums, ballet, concerts, theatre) and health-related behaviours (sports participation, walking and cycling in leisure time, fruit and vegetable intake and obesity), adjusting for education, income and other confounders. Results: Both cultural participation and healthy behaviours were more prevalent among high educational and high income groups. Cultural participation was strongly associated with all health-related behaviours, even when adjusted for education and income. Those in the
highest quintile of cultural participation were most likely to participate in sports (OR=2.19, 95%CI=1.53;3.12), walk and cycle in leisure time (OR=3.36, 95%CI=2.25;5.04), had the highest level of fruit and vegetable intake (ßa;=5.16, 95%CI=3.68;6.63) and were least likely to be obese (OR=2.06, 95%CI=1.21;3.52). Conclusion: Cultural participation was strongly related to health-related behaviours, also when education and income were controlled for. Since there is no obvious causal explanation for this strong link, it is likely that both cultural participation and health behaviours are affected by the same underlying determinant, namely social distinction. This distinction mechanism may be an important underlying determinant of health behaviour inequalities, which requires further investigation.

O.05.2
ARE BLOOD LIPID PROFILES ASSOCIATED WITH URBANIZATION LEVEL IN THE NETHERLANDS?
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SIG: Policies and environments

PURPOSE Emerging evidence suggest that adults living in urban areas have higher blood lipid levels than those living in rural areas. These urban-rural differences could be explained by socio-demographic characters and lifestyle behaviours (physical activity, sedentary behaviour and diet), but this has not yet been studied in high-income countries. We aimed to study whether blood lipid profiles of Dutch blood donors vary across different levels of urbanization, and to investigate to whether any difference could be explained by socio-demographic characteristics and lifestyle behaviours. METHODS A cross-sectional analysis was performed on data of 2,768 Dutch blood donors participating in observational cohort study Donor InSight-III. For each participant the urbanization level 'rural/ semi-urban/ urban' was derived from the Dutch Central Bureau of Statistics based on their postal code. Intake, consumption frequency and amount of fish, nuts, eggs and meat was assessed using a food frequency questionnaire. GT3X Actigraph accelerometers were used to objectively measure minutes spent per day on moderate to vigorous physical activity and on sedentary behaviour. Non-fasting venous blood samples were collected and total cholesterol, HDL cholesterol and triglycerides were assessed with a clinical chemical analyser using an enzymatic colorimetric method. LDL cholesterol was calculated using the Friedewald formula. Linear regression analysis was performed to investigate the association of urbanization levels and blood lipid levels. RESULTS No significant associations were found between urbanization level and blood lipid levels. As a consequence, potential explanation by socio-demographic characteristics and/or lifestyle was not further analysed. CONCLUSION Using a large and representative sample of the Dutch donor population we did not find any evidence that urbanization level was associated with blood lipid levels.

O.05.3
THE NATURE OF UK SUPERMARKETS' COMMITMENTS ON CHECKOUT FOOD AND ASSOCIATIONS WITH HEALTHFULNESS AND TYPE OF FOOD DISPLAYED: A CROSS-SECTIONAL STUDY
Ejlerskov Katrine1, Stead Martine2, Adamson Ashley3, White Martin1, Adams Jean1,1Centre for Diet & Activity Research, University of Cambridge, Cambridge; 2Institute of Social Marketing, University of Stirling, Stirling; 3Institute of Health & Society, Newcastle University, Newcastle.

SIG: Policies and environments

Background: Food at supermarket checkouts may encourage impulse purchases. A number of UK supermarkets have recently committed to providing healthier checkout food. Purpose: To document the nature of current UK supermarket checkout food commitments; determine whether there are differences in the healthfulness and type of food displayed at supermarket checkouts according to the presence or nature of commitments; and determine whether supermarkets are adhering to their commitments. Methods: We conducted a desk-based survey of checkout food commitments in nine supermarket groups covering 14 store formats and representing around 90% of the UK grocery market. Checkout food commitments were categorised as clear, vague, or absent. We then conducted in-store observations in 69
supermarkets in the East of England. Checkouts foods were categorised as less healthy or healthier using the UK Nutrient Profiling Model, and into food groups. Results: Checkout food commitments were clear in six store formats, vague in six, and absent in two. Overall, customers were exposed to a median of 17 foods as they passed through the checkout area, of which 49% were less healthy. The most commonly represented food groups were sugar-free confectionery, sugar confectionery, and nuts & seeds. In supermarkets with clear commitments customers were exposed to a median of 13 products, of which 35% were less healthy. Comparable figures for supermarkets with vague, and absent commitments were 15 (57%) and 39 (90%) respectively (ps for trend <0.001) Whilst all supermarkets with clear checkout food commitments were fully adherent to their commitments, those with vague commitments were not. Conclusions: Most UK supermarkets have checkout food commitments, but not all are clear. Customers shopping in supermarkets with clear commitments are exposed to fewer checkout foods and a lower proportion of these are less healthy than customers in other supermarkets. Supermarkets with clear commitments adhere well to these. The adherence of supermarkets with vague commitments is less consistent. It is possible for supermarkets to have and apply clear checkout food commitments and these can have a positive impact on customers' exposure to less healthy foods. However, such clear commitments were not universal. Further regulatory action may be required.

O.05.4
COMPARING DIFFERENT RESIDENTIAL NEIGHBOURHOOD DEFINITIONS IN THE ASSOCIATION BETWEEN DENSITY OF RESTAURANTS AND HOME-COOKING AMONG DUTCH ADULTS
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Objective: To compare the association of density of restaurants and home-cooking according to different definitions of residential neighbourhoods. Methods: Cross-sectional study conducted in the Netherlands (N=1,245 adults). The outcome was self-reported consumption of home-cooked meals, measured with a single-item 9-point Likert scale and split into two categories: 6-7 times per week or less. Objective food environment data was obtained from a commercial database (Locatus). Densities of restaurants (including sit-down and fast-food restaurants, cafés/bars, take-away and others such as kebab or pancake outlets) were calculated according to different definitions of respondents' neighbourhoods: administrative boundaries; a 1,600 metre buffer around the respondents' homes; and respondent self-defined boundaries (drawn by the respondents based on a provided map of the area they lived in). The calculated densities were split into tertiles representing low, medium and high density of restaurants. We used mixed models logistic regression to test associations of density of restaurants with frequency of home-cooking using the three different definitions of a residential neighbourhood. Model 1 was adjusted for age, sex, education, household composition, employment status, and neighbourhood density and socioeconomic status. Model 2 was additionally adjusted for neighbourhood self-selection. Results: Among those cooking 6-7 times per week (74.2%), the majority were women (56.2%), highly educated (64.2%) and employed (60.2%). The size of self-defined as well as administrative neighbourhoods differed greatly, ranging respectively, from 0.02 to 443.3 and 0.25 to 4.14 squared-metres. Irrespective of the neighbourhood definition, the majority of participants who cooked less frequently lived in neighbourhoods with the highest density of restaurants: 36.7% for administrative boundaries; 40.5% for self-defined boundaries; and 41.2% for 1600m buffer. A higher density of restaurants was statistically significantly associated with lower frequency of home-cooking using the 1600m buffer with an Odds Ratio (OR) of 0.64 (95% confidence interval (95%CI)=0.44-0.93). The association, although attenuated, remained significant after adjustment for neighbourhood self-selection. When using the other neighbourhood definitions, the association was of a similar magnitude but not statistically significant: administrative boundaries (OR=0.69; 95%CI=0.45-1.05); self-defined neighbourhoods (OR=0.76; 95%CI=0.52-1.11). Conclusions: The association between neighbourhood density of restaurants and frequency of home-cooking appears to be weak but similar across different definitions of neighbourhoods.

O.05.5 - SHORT-LISTED FOR THE BEST ORAL PRESENTATION AWARD BY A STUDENT
DO NEIGHBOURHOOD ATTRIBUTES ACT TOGETHER TO INFLUENCE BMI? EXPLORING THE MODERATING ROLES OF GREENSPACE AND FAST-FOOD OUTLETS ON THE INFLUENCE OF
Objective: Neighbourhoods are complex systems, yet studies examining relationships between the
neighbourhood built environment and obesity often ignore potential interactions between different aspects
of the built environment. This likely limits our understanding of neighbourhood-level processes influencing
local residents' health. We investigated whether associations between formal physical activity (PA)
facilities and BMI are modified by neighbourhood greenspace –sh; because greener neighbourhoods may
encourage/facilitate PA - and by how close someone lives to a fast-food outlet –sh; because unhealthy
food environments may undermine healthy PA environments. Insights into the potential interplay between
neighbourhood attributes may help identify settings where interventions targeting neighbourhood PA
environments might be most successful.

Methods: We used data from the UK Biobank cohort and linked
Urban Morphometric Platform for 241,941 urban-
dwelling adults aged 40-69 from across England. We
examined cross-sectional associations between objectively measured BMI and the number of formal PA
facilities (gyms, pools, etc.) within 1km of people's homes, testing separately for
interactions with
neighbourhood greenness (based on mean Normalised Difference Vegetation Index (NDVI)), number of
local parks, and distance to the nearest fast-food outlet. Multilevel models accounted for a clustered
sampling design, and after testing for
interactions using likelihood ratio tests we stratified the analyses.

Results: Neighbourhood greenspace and fast-food proximity modified associations between the number of
local PA facilities and BMI. The inverse association between PA facilities and BMI
was stronger in less
green areas. This was true across both measures of greenspace, although evidence of interaction with
park access (p=0.226) was weaker than for mean NDVI (p=0.004). An association between PA facilities
and BMI was absent among people living <500m from a fast-food outlet, but present among people living
further away (p-for-interaction<0.001). Conclusions: Formal PA facilities close to residential areas may
buffer against a lack of greenspace when the latter is scarce, but potential benefits may be undermined by
the presence of fast-food outlets nearby. When considering built environment interventions to combat
obesity, the broader neighbourhood context may influence success. Locating formal PA facilities in places
with fewer green resources and away from fast-food outlets may maximise their potential to reduce
population BMI.
adherence to 24-hour movement guidelines for the early years. Due to the lack of data, Australian guidelines were used for this population. Method: This cross-sectional study recruited parent-child dyads from six preschools in Singapore. Parents reported their children's SV time. PA and sleep were objectively measured using wrist-worn accelerometers for seven consecutive days. Valid accelerometer data included -3 days (including =1 weekend day) with =480 minutes/day (excluding sleep period). Means (±smn;SD) were calculated for daily total PA, moderate to vigorous PA (MVPA), SV time and sleep duration. Recommendations were met for each and overall movement behaviors based on: 1) =180 minutes of total PA including =60 minutes of MVPA, 2) =1 hour of SV, 3) 10-13 hours of sleep duration. Results: Of the 85 participating children, 73 had parent-reported data and 53 had valid data from accelerometers. On average, children were 4.4 (±smn;1.1) years old, 61.6% were girls and 63.0% Chinese. The average number of valid accelerometer wear days was 6.7 (±smn;0.9) days. Children averaged 374.6 (±smn;83.4) min/day of total PA, of which 37.7 (±smn;21.5) min/day was MVPA, 132.6 (±smn;122.8) min /day of SV and 530.2 (±smn;134.4) min/day of sleep. In terms of adherence to the guidelines, 84.9%, and 77.4% of children did not meet the PA and sleep recommendations, respectively, and 64.4% exceeded the recommended SV limit. None of the children included in our study met the integrated 24-hour movement guidelines. Conclusions: The proportion of children meeting recommendations for any of the targeted behaviours was low and not a single child met the Australian integrated 24-hour movement guidelines. Public health programs and policy should consider these behaviours in preschool children. Future research is needed to generalise the findings, but results suggest the need for an integrated approach to promote 24-hour movement guidelines in Singapore.

O.06.2
PROPORTION OF CHILDREN MEETING THE NEW AUSTRALIAN 24-HOUR MOVEMENT GUIDELINES FOR THE EARLY YEARS
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SIG: Children and families
The recently released Australian 24-hour movement guidelines for the early years acknowledges that the whole day matters and that individual movement behaviours such as physical activity (PA), leisure screen time (SED), and sleep (SP) need to be considered concurrently. The proportion of preschool-aged children meeting the new overall guideline and the guidelines for constituent behaviours has not been previously reported. PURPOSE: To evaluate adherence to the newly released Australian 24-hour movement guidelines for the early years in a population-based sample of Australian pre-schoolers aged between 2 and 5 years. METHODS: Data were collected from 1490 children aged 2-5 years from 122 long day care centres in metropolitan Perth, Australia. Centres were recruited based on size (small and large) and across low, medium and high socio-economic status. The sample included equal proportions of boy and girls with an 8% higher proportion of parents with a tertiary or higher education, compared with 2011 ABS census data (57% vs. 49%). PA was assessed using the ActiGraph GT3X+ accelerometers. Devices were worn on the right hip during waking hours for 7 days. Data were analysed in 15 sec epochs and Pate cut-points were used to determine daily time in total PA. Screen time was assessed by summing parented reported time watching TV/DVD, videogames, computer/internet, smartphone/tablet. Sleep duration was parent reported using items for the Australian Longitudinal Study of Australian Children (LSAC) Survey. RESULTS: Only 6.9% met the new 24-hour movement guideline (all three behaviours). The proportion of children meeting constituent guidelines for PA, SED, and SP was 29.9%, 30.8%, and 84.1%, respectively. The proportion meeting guidelines for 2 movement behaviours was 8.1% (PA + SED), 25.6% (PA + SP), and 25.5% (SED + SP). 7.5% of children met none of the recommendations. Conclusions: Less than 7% of Australian children aged 2-5 years meet the newly released 24-hour movement guidelines. With the exception of sleep duration, the vast majority of pre-schoolers fail to meet specific guidelines for daily PA and screen time. These findings suggest that effective and highly scalable integrated interventions that target multiple movement behaviours in preschool-aged children are urgently needed.

O.06.3
MEETING 24-HOUR MOVEMENT GUIDELINES FOR CHILDREN AND YOUTH AND ASSOCIATIONS
WITH PSYCHOLOGICAL WELL-BEING AMONG SOUTH KOREAN ADOLESCENTS

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: 1) To examine associations between meeting various individual and combinations of the Canadian 24-Hour Movement Guidelines for Children and Youth and psychological well-being in a representative sample of South Korean adolescents; and 2) to examine associations between different doses of movement behaviors and psychological well-being. Methods: Results are based on 50,987 adolescents (12-17 years) who participated in the 2016 Korea Youth Risk Behavior web-based cross-sectional survey. Moderate-to-vigorous-intensity physical activity (MVPA), vigorous-intensity physical activity (VPA), muscular strengthening exercises (MSE), screen time for academic and recreational purposes, sleep duration, happiness, and stressed feeling were self-reported. Meeting the overall guidelines was defined as: =60 minute/day of MVPA, =2 hour/day of recreational screen time, and 9–sh;11 hour/day (5-13 years) or 8–sh;10 hour/day (14-17 years) of sleep. Multiple logistic regressions were performed that adjusted for age, sex, family economic status, and academic performance. Results: Overall, 1.6% of adolescents met the guidelines, while 18.1% did not meet any recommendations within the guidelines. Meeting more recommendations, compared to none, was significantly associated with being happy (one: Odd ratio [OR]=1.07, 95% Confidence Interval [95%CI]=1.01-1.13; two: OR=1.11, 95%CI=1.05-1.18; three: OR=1.38, 95%CI=1.16-1.64). In addition, meeting two (OR=1.12, 95%CI=1.05-1.20) or three (OR=1.54, 95%CI=1.30-1.82) recommendations, compared to none, was significantly associated with not feeling stressed. When different doses of movement behaviors were considered, engaging in a higher frequency of physical activity, regardless of its type, was consistently associated with higher odds of being happy (p-trend <0.001). Additionally, spending >2 hours/day on either academic-related (OR=0.72, 95%CI=0.65-0.79) or recreational (OR=0.82, 95%CI=0.71-0.96) screen time, compared to none, was associated with lower odds of not feeling stressed, while longer sleep duration was associated with lower odds of feeling happy (p-trend <0.001). Conclusions: Meeting multiple recommendations, compared to none, was significantly and favorably associated with indicators of psychological well-being. Though associations were small, findings support the integrated movement behavior approach for health. Increasing physical activity, reducing overall screen time, and obtaining age-appropriate adequate sleep should be considered as a public health priority for adolescents in South Korea. The development or adoption of integrated 24-hour movement guidelines for South Korea is recommended.

O.06.4
PROSPECTIVE ASSOCIATIONS WITH PHYSIOLOGICAL, PSYCHOSOCIAL AND EDUCATIONAL OUTCOMES OF MEETING AUSTRALIAN 24-HOUR MOVEMENT GUIDELINES FOR THE EARLY YEARS

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SIG: Early care and education

Purpose: With the release of Australian/Canadian 24-hour movement guidelines for the early years, there have been calls for additional evidence linking these behaviours with later outcomes. This study examines Australian preschool children's compliance with guidelines, and prospective associations with physiological, psychosocial and educational outcomes. Methods: Preschool children (n=471; 3-5 years at baseline; 2008/9; T1) from the prospective HAPPY Study (Melbourne, Australia) were followed-up three (T2), six (T3) and seven (T3.5; subsample) years post-baseline. At baseline, children's compliance with the physical activity guideline was assessed using accelerometry; compliance with screen time and sleep guidelines were determined from parental report. Outcomes included: emotional skills (T2); waist circumference, BMI (T2/T3); health-related quality of life, scholastic, social and athletic competence, global
self-worth, prosocial behaviours, problem behaviours (T3); bone health (T3.5); literacy, numeracy and language (data linkage of Year 3 school results from nationally administered standardised tests). Multiple regression models assessed associations with outcomes for children's compliance with all 3 guidelines and each guideline (independently and adjusting for compliance with other guidelines). Results: Children were 4.6 years at baseline (53% boys; 62% high socio-economic families). Most met physical activity (89%) and sleep (93%) guidelines; 23% met screen-time guidelines; 20% met all guidelines. Meeting all guidelines was associated with lower BMI z-scores at T3 (b=-0.26, 95%CI -0.47, -0.05). Meeting physical activity guidelines was associated with greater total body bone mineral density (b=0.63, 95%CI 0.15, 1.12) and greater total body bone mineral content (b=178.89, 95%CI 67.25, 290.54). Associations persisted when adjusting for compliance with other guidelines. Meeting sleep guidelines was associated with reading (b=37.60, 95%CI 6.74, 68.46), spelling (b=34.95, 95%CI 6.65, 63.25), numeracy (b=39.09, 95%CI 11.75, 66.44) and language (b=44.31, 95%CI 11.77, 76.85), and again persisted in adjusted analyses. Meeting sleep guidelines was also associated with writing (b=25.93, 95%CI 0.30, 51.57) in adjusted analyses only. No associations were evident for compliance with screen-time guidelines or psychosocial outcomes. Conclusions: Different movement behaviours were associated with different outcomes; compliance with screen-time guidelines was not associated with any of the outcomes investigated. Future research should investigate associations between continuous measures of behaviours and outcomes to determine dose-response associations.

O.06.5

PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR IN THE AUSTRALIAN OUT OF SCHOOL HOURS CARE SETTING: A SCOPING STUDY.

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SIG: Children and families

Purpose: Physical activity is fundamentally important to children's health and wellbeing. The period after school and before dinner is referred to as the "critical window" due to its important contribution to children's daily physical activity. Over 300,000 Australian children attend Out of School Hours Care (OSHC) each week, and at present, there are no policies regarding children's physical activity and screen behaviours in OSHC. This scoping study aimed to describe the physical activity and screen time behaviours of children in after school care. Methods: 23 randomly selected OSHC services in Adelaide, South Australia, participated in this observational, cross-sectional study. Moderate-to-vigorous physical activity (MVPA), light physical activity and sedentary behaviours were captured during a full afternoon OSHC session using the System for Observing Play and Leisure Activity in Youth (SOPLAY). Staff behaviours related to promotion of physical activity were recorded using the System for Observing Staff Promotion of Activity and Nutrition (SOSPAN). OSHC service directors completed an interview regarding their knowledge, attitudes, and their services' policies and practices relating to physical activity (PA) and sedentary behaviour. Results were analysed descriptively, with t-tests, Mann Whitney U and chi square tests used to detect relationships between percentage of time in MVPA and potential barriers/facilitators. Results: A total of 1068 children attended the 23 participating OSHC services. On average, children spent 18% of their time in MVPA (range 4-49%), 21% in LPA (range 11-42%) and 61% in sedentary behaviour (range 31-79%). Screen-based activities constituted 18% of total sedentary time (including seated video games 6%; ipads 3%; television 3%). MVPA was positively associated with enabling staff behaviours (e.g. promoting/instructing PA, p=0.01) and level of staffs' PA training (p=0.04). Most directors reported imposing time restrictions on outside play, uncertainty around optimal physical activity and screen practices in OSHC, and an interest in improving practices. Conclusion: To our knowledge, this is the first study to describe physical activity and screen time practices in Australian OSHC settings. Findings highlight wide variability in physical activity and sedentary behaviour practices between OSHC services, at present. Interventions to improve physical activity and sedentary behaviour, and standardise practice and policies, are warranted.

O.07: Type 2 Diabetes, Obesity and Physical Activity in Children and Adults (Drawing Room)
O.07.1
TARGETING FAMILIES AT RISK FOR TYPE 2 DIABETES: EFFECTS ON OBJECTIVELY MEASURED SEDENTARY BEHAVIOURS IN BELGIAN ELEMENTARY SCHOOL CHILDREN: THE FEEL4DIABETES-STUDY.
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SIG: Children and families

PURPOSE The Feel4Diabetes-study (F4D) developed a school- and community-based, family-involved intervention to enhance energy balance-related behaviours in elementary school children and their families, to be tested in 6 European countries. School teachers were instructed to promote physical activity, less sedentary time, healthy snacking and drinking water. Highly accessible activities in the communities were promoted. Furthermore parents with an increased risk for the development of Type 2 diabetes (T2D) were invited to 6 counseling sessions (1 individual and 5 group sessions) to promote a healthy lifestyle in the family. The present study aimed to evaluate the effect of the F4D intervention in Belgium on sedentary behaviors in children from parents at increased risk.

METHODS Children and their parents were recruited through elementary schools, located in 11 low income neighbourhoods (parental respons rate: 34%). The FINDRISC questionnaire was used to select the families (n=461) with an increased risk for T2D. For the present cluster randomized trial total data were obtained from 148 children (mean age: 7,27 ± smn; 0.99 years; 50.7% boys: 79 intervention) from 58 schools (25 intervention school).

The main outcome variables was total sedentary time measured by ActiGraph accelerometers. Measurements were performed at baseline (March-June 2016) and after one intervention year (March-June 2017). Repeated Measures Manova, in SPSS statistics 22 were used for the analyses.

RESULTS In both groups sedentary behaviours significantly increased but no significant intervention effects were found for total sedentary time (intervention: from 393 min/day to 406 min/day; control: from 394 min/day to 409 min/day; p<0.01) in the total sample. When stratifying according to number of sessions attended, it was found that even in those who attended 5-6 sessions (n=29) no significant intervention effects were found.

CONCLUSIONS At mid-intervention the F4D project appeared not effective in tackling sedentary time in children from parents with an increased risk to develop T2D. The intervention dose for sedentary behaviours may not have been sufficient since other behaviours were also targeted. Furthermore the counseling sessions might have impacted more on the parents' own behavior than on the children's. Further investigation is warranted.

O.07.2
IDENTIFYING STRATEGIES TO ADDRESS DIABETES AND CARDIOVASCULAR DISEASE PREVENTION IN HISPANIC OBESE YOUNG ADULT MALES IN THE RIO GRANDE VALLEY
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SIG: No, this does not fit in any of the above mentioned special interest groups

OBJECTIVE: Hidalgo County, located on the Texas-Mexico border, has one of the highest rates of obesity and type 2 diabetes nationwide. Within this population, Hispanic young adult (18-26 years) males are a medically high risk and underserved group. Successfully identifying and engaging this high-risk group in an intervention that is socially and culturally adapted in preventive healthcare remains a problem.

METHODS: We conducted a two-phase mixed-methods study to characterize the health of Hispanic young adult males in Hidalgo county and elicit barriers and facilitators to the adoption of a weight and health management intervention. In Phase 1, participants completed a survey in one of five community settings. Survey metrics
assessed participants' physical activity levels, smoking and alcohol history, insurance status, health care access, perceptions of weight and health, and health management resources. Anthropometrics were also measured. Phase 2 consisted of recruiting Phase 1 participants who were classified as either overweight (BMI 25.0-29.9 kg/m²) or obese (BMI = 30.0 kg/m²). Semi-structured interviews were conducted with a total of 28 participants. Additionally, surveys assessing obesity perceptions and understanding the risks of obesity were captured. RESULTS: A total of 244 participants completed the survey and measurements in Phase 1. The mean respondent age was 21.4 (0.1y) years. A total of 107 (43.9%) respondents were overweight (BMI 25.0-29.9 kg/m²) and 66 (27.0%) were obese (BMI = 30.0 kg/m²). Approximately 55% (n=136) of respondents had no form of health insurance. Phase II preliminary analysis points to common themes which male participants perceived as facilitators to weight loss, including: having a buddy or partner to help promote physical activity, physician intervention with medical advice, and need for electronic forms of receiving/viewing nutritional and physical activity promotion information.

CONCLUSIONS: The prevalence of overweight and obesity was found to be higher in this population in comparison to the national average (25.2% overweight and 16.7% obese). The interviews showed what barriers Hispanic young adult males believe negatively influence their weight and health, and provided information which identifies the tools and strategies for design of a successful intervention tailored to address the needs of this population.

O.07.3

MAPPING BEHAVIOUR CHANGE TECHNIQUES TO CHARACTERIZE AN EXERCISE INTERVENTION FOR ADULTS AT RISK OF TYPE 2 DIABETES

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Theoretically-derived behavioural interventions have the potential to impact volitional behaviour. To replicate effective interventions, researchers should clearly specify the intervention behaviour change techniques and demonstrate how theoretical constructs link with these techniques. However, this information is rarely reported. Small Steps for Big Changes (SSBC) is a 2-week supervised, exercise-based intervention, which includes behavioural counselling grounded in social cognitive theory. It is designed to increase physical activity in individuals at risk of type-2-diabetes. While this intervention has been reported to be successful at increasing physical activity behaviour 1- and 6-months post-intervention, the specific links between intervention behaviour change techniques and the underlying mechanisms of action have not been outlined. The aim of this study was to document the process of characterising the content and theoretical mechanisms of action of SSBC using the Behaviour Change Technique (BCT) Taxonomy, the Theoretical Domains Framework (TDF) and Social Cognitive Theory (SCT). Methods: A three-step process was utilized. First, all the content from SSBC was coded using the BCT taxonomy(v1): daily intervention scripts, take home sheets, follow-up material, and eight standardised follow-up messages. Second, all BCTs were mapped onto the TDF and SCT. Third, the theoretical mechanisms of action for SSBC were specified using the TDF and SCT. Results: Seventy nine percent of SSBC content utilized at least one BCT. The intervention consisted of 42 BCTs, with the most frequently used including; feedback on behaviour; instruction on behaviour; self-monitoring; social support; social reward; verbal persuasion; focus on past success and monitoring of emotional consequences. Fifty eight percent of the BCTs used targeted SCT constructs, with self-efficacy being the most frequently targeted construct, while 76% of BCTs used targeted at least one of the 14 TDF domains. Five BCTs used did not map onto either SCT or TDF. Conclusion: The intervention consists of a wide range of BCTs targeting each of the TDF domains and SCT constructs. This study demonstrates the process of characterising an intervention using the BCT taxonomy and mapping BCTs onto theoretical mechanisms of action. Characterising interventions using this process can help to guide the development of future theory-based physical activity interventions.

O.07.4

THE EFFECTS OF INTERMITTENT COMPARED TO CONTINUOUS ENERGY RESTRICTION ON GLYCAEMIC CONTROL IN TYPE 2 DIABETES; A PILOT TRIAL.

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Purpose: Weight loss improves glycaemic control in type 2 diabetes mellitus (T2DM) but the use of intermittent energy restriction (IER) has not been tested in this population. The primary aim of our pilot trial was to investigate the effects of IER compared to continuous energy restriction (CER) on glycaemic control, with a secondary aim of assessing weight loss. We also set out to develop medication change guidelines for the safe use of this strategy. Methods: Sixty-three overweight or obese participants (BMI 35.2±smn;5kg/m2) with T2DM (HbA1c 7.4±smn;1.3%;) (57mmol/mol) were randomised to a 2-day very low calorie diet (VLCD) (500-600kcal) with 5 days of usual eating compared to a moderate CER diet (1200-1500kcal/day) for 12 weeks. Forty-three participants were on oral hypoglycaemic agents, 13 were on insulin. Sulphonylurea oral medications and insulin were discontinued or reduced at the start of the trial based on baseline HbA1c and modified during the trial in response to reported hyperglycaemia (>10mmol/L) or hypoglycaemia (<4mmol/L). Results: HbA1c decreased significantly in both groups (-0.7±smn;0.9%; P<0.001) with no difference between groups (-0.8±smn;1 CER, -0.6±smn;0.8% IER; P=0.3). Baseline HbA1c was the major predictor of HbA1c change (r=-0.8; P<0.001). Medication usage decreased as measured by a medication effect score (-0.4±smn;0.5; P<0.001). Weight decreased (-6.1±smn;3.9kg; P<0.001) with no difference between groups (-6.1±smn;4.2kg CER, -6.0±smn;3.6kg IER; P=0.9). All measures of body composition also decreased significantly (P<0.001). Step count, measured using a pedometer, increased over time (1021±smn;2450 steps; P=0.005) with no difference between groups at 12 weeks (7472±smn;3855 steps CER, 8876±smn;3957 steps IER; P=0.2) and was associated with weight loss (r=-0.3; P=0.02). There was also a significant decrease in appetite (-0.9±smn;2.1; P=0.002) with no difference between treatment groups (-0.6±smn;1.8 CER, -1.3±smn;2.3 IER; P=0.3).

Conclusions: In this pilot trial IER compared with CER resulted in comparable improvements in glycaemic control and weight, reducing the need for medication. There were no negative impacts on appetite or exercise and this strategy is safe with regular monitoring.

O.07.5
ASSOCIATIONS OF CONTEXT-SPECIFIC SITTING TIME WITH CARDIO-METABOLIC RISK AND GLUCOSE TOLERANCE IN AUSTRALIAN ADULTS

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Higher volumes of sitting time are associated with an elevated risk of type 2 diabetes and cardiovascular disease, and with adverse cardio-metabolic profiles. Previous studies assessing associations with health risk factors have predominately used total sitting or TV viewing as exposures. We examined associations of sitting time in four contexts (occupational, transportation, TV/video viewing and computer use) with a clustered cardio-metabolic risk score and with 2-h post-challenge plasma glucose. Methods: Data were from 1,474 men and 1,955 women (mean age 58 years) without clinically diagnosed diabetes or cardiovascular disease who participated in the 2011/12 Australian Diabetes, Obesity and Lifestyle (AusDiab) study. Self-reported sitting time in the four contexts for the previous 7 days was averaged (h/day). A clustered cardio-metabolic risk score was calculated from waist circumference; blood pressure (average of systolic and diastolic); fasting triglycerides, HDL-cholesterol and plasma glucose. 2-h plasma glucose was assessed by an oral glucose tolerance test. Multiple linear regression models examined associations of context-specific sitting with the clustered risk score and 2-h plasma glucose, adjusting for each other context, potential confounding variables (socio-demographic, health behaviour factors) and waist circumference (for 2-h glucose only). Results: In adjusted models, each hour/day of sitting was associated with statistically significant increases in cardio-metabolic risk, for transport (0.03, 95% CI: 0.00 to 0.05), TV viewing (0.04, 95% CI: 0.03 to 0.06) and computer use (0.04, 95% CI: 0.02 to 0.06) contexts. There were no significant associations observed with occupational sitting. Significant associations of each context-specific sitting measure with 2-h plasma glucose were observed in models adjusting for other sitting contexts and confounding variables, ranging from 0.04 mmol.L-1 (95% CI: 0.01 to
0.08) for occupation, to 0.13 mmol.L⁻¹ (0.06 to 0.21) for transport; however associations were generally attenuated after adjusting for waist circumference. Conclusions: Greater volumes of sitting time in the transport and leisure contexts are associated with statistically significant, but modestly higher cardio-metabolic risk scores and 2-h plasma glucose; and, with higher 2-h plasma glucose for occupational sitting. These findings may assist in identifying the contexts that sitting reduction initiatives might target, in order to achieve cardio-metabolic health benefits.

O.08: Correlates and Interventions in Young People’s Nutrition (Lounge)

O.08.1
WITH A LITTLE HELP FROM MY IMPLICIT PREFERENCES: THE EFFECT OF IMPLICIT PREFERENCES FOR HIGH-CALORIC FOODS ON THE INFLUENCE OF GOAL-PRIMING ON HEALTHY DIETARY CHOICES
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SIG: Theories of motivation

Objective: Although health goal priming has been shown to be an effective way to promote healthy dietary choices, little is known as to how pre-existing associations with high-caloric products affect goal priming effects. In the present study, we investigated if and how implicit associations with high-caloric foods moderated the effects of diet-goal priming on dietary choices in a choice-task. Methods: Participants were 119 undergraduate students (27.7% male; Mage = 24.5, MBMI = 21.9) who were randomly exposed to one of two sets of supermarket flyers consisting of a variation of high-caloric food, low-caloric food, and neutral non-food filler products. In the control condition, the header of each flyer read 'New Products', whereas in the experimental condition the header read 'Low in calories' to activate the dieting goal. Prior to experimental exposure, participants completed two implicit attitude tests (IAT). In both IATs, targets were high-and low-caloric food pictures. In one IAT, attribute labels reflected hedonic properties of food (i.e. delicious), whereas the other IAT had health-goal properties of food (i.e. healthy) as attributes. IAT order was randomized and tertile splits categorized participants as low, medium, or high preference for high-caloric products. After experimental exposure, participants engaged in a dichotomous choice task, where they had to pick one product out of two in less than 3 seconds. Twenty-five pairings presented a high-caloric vs low-caloric product, 25 pairings a high-caloric vs. neutral product, and 25 a low-caloric vs. neutral product. Results: A multivariate effect of implicit hedonic preference (p < .001) and an interaction of goal properties of food (i.e. goal = 2.4): when participants had a low (Mdifference goal-control = 2.1) or high (Mdifference goal-control = 0.7) hedonic preference, differences between conditions were smaller. No effects were found for goal-related implicit preferences (all ps > .196). Conclusion: Goal-priming effects on low-caloric choices are moderated by hedonic implicit preferences towards high-caloric products.

O.08.2
A CLUSTER RANDOMISED CONTROLLED TRIAL OF A CONSUMER BEHAVIOUR INTERVENTION TO IMPROVE HEALTHY FOOD PURCHASES FROM ONLINE CANTEENS
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SIG: E- & m-health

Purpose: School canteens represent an opportune setting in which to deliver public health nutrition
strategies given their wide reach, and frequent use by children. Online school canteen ordering systems, where students order and pay for their lunch online, provide an avenue to improve healthy canteen purchases through the application of consumer behaviour strategies that impact on purchasing decisions. The aim of this study was to assess the efficacy of a consumer behaviour intervention implemented in an online school canteen ordering system in reducing the kilojoule, saturated fat, sugar and sodium content of primary school student lunch orders. Methods: A cluster randomized controlled trial was conducted involving 2714 students (aged 5-12 years) from ten primary schools in New South Wales, Australia currently using an online canteen ordering system. Schools were randomised in a 1:1 ratio to receive either the intervention (enhanced system) or control (standard online ordering only). The 2 month intervention included consumer behaviour strategies integrated into the online ordering system (targeting menu labelling, healthy food availability, placement and prompting). The primary outcomes of the trial were the mean content per student online lunch order of (1) energy (kJ), (2) saturated fat (g), (3) sugar (g) and (4) sodium (mg). The impact of the intervention was determined by between-group assessment of the nutritional content of lunch purchases over a 2-month period post-intervention initiation. Results: Analysis of all available data showed that mean kilojoule (P<0.001), saturated fat (P<0.001) and sodium (P=0.005) content per student lunch order were significantly lower in the intervention group than in the control group at follow-up. No significant differences were observed for sugar (P=0.25). Conclusions: The study provides strong evidence supporting the effectiveness of a consumer behaviour intervention utilising existing online canteen infrastructure to improve purchasing behaviour from primary school canteens. Such an intervention may represent an appealing policy option as part of a broader government strategy to improve child public health nutrition.

O.08.3
THE IMPACT OF A GRADUAL HEALTHIER ASSORTMENT IN VOCATIONAL SCHOOL CANTEENS: EVIDENCE FROM SALES AND STUDENT SURVEY DATA
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SIG: Policies and environments

Objective The availability of healthier foods and drinks in school environments is generally seen as a valuable intervention to encourage healthy eating habits of students, but it is not always clear how this would work out in real practice. The aim of this study was to examine the effect of increasing the availability of healthier foods in school canteens on sales and student evaluation and self-reported behaviour. Methods A quasi-experimental study was carried out at two vocational schools in the Netherlands over a 10 month time period. In one canteen, the healthiness of the assortment was gradually increased from 60% visible share of healthy products (two months at baseline) to 70% (two months) and 80% (six months) while in the other canteen, the healthiness of the assortment was increased abruptly from 60% (two months at baseline) to 80% (eight months). Primary outcome measures were sales data for healthier and unhealthy products. Importantly, we also measured student satisfaction and assortment perceptions and the extent to which students purchased their foods from vending machines, canteens or outside of school (e.g. supermarkets) or take their food from home, using questionnaires at four time periods throughout the study period. Results Sales data findings indicated that across the entire year and both canteens, 32.8% of all sold products were healthy. The proportion of healthy products sold increased from 31.1% during baseline to 35.9% in the final period 4. The canteen that gradually increased the healthiness of the visible assortment had higher relative sales of healthy products (40% in period 4) compared to the canteen that abruptly changed its assortment (34.5% in period 4). Large differences between product groups were observed. Survey data showed that students’ initially moderate satisfaction and assortment perceptions and the extent to which students purchased their foods from vending machines, canteens or outside of school (e.g. supermarkets) or take their food from home, increased slightly over time. Conclusions Overall, results suggest that increasing the availability of healthier products in school canteens leads to small positive changes in sales of these products. The to-be-presented results will also point to the importance of understanding food group differences. Additional analyses will be presented on student evaluations and self-reported compensation effects.

O.08.4
CALIBRATION AND VALIDATION OF A GT9X ACCELEROMETER-BASED CUT-OFF POINTS AND
ENERGY EXPENDITURE PREDICTION EQUATION IN 5- TO 6-YEAR-OLD CHINESE CHILDREN
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective To establish accelerometer count cutoffs to categorize activity intensity and validate equation for predicting energy expenditure from accelerometer counts of 5- to 6-y old-children in China. Method Fifty-six children aged 5-6 years (6.1±0.6) completed activities of varying intensities (watching cartoons, slow walking, brisk walking, running and free activity) while wearing a ActiGraph GT9X accelerometer and a Cosmed K4b2 portable metabolic unit to measure accelerometer counts and VO2/VCO2 respectively. Receiver Operating Characteristic (ROC) curve analyses identified count cutoffs for four physical activity intensities and observation of videotapes verified the classification of four physical activity intensities. The energy expenditure prediction equation was calibrated using a stepwise multiple regression analysis and validated by calculating the limits of agreement for measured and predicted energy expenditure. Results The cut-off points of different intensity of physical activity level are 0-116, 117-780,781-1005 and >1006 counts/15s. The consistency test for the results of observation method is κ=0.71. Accelerometer counts significantly correlated with EE (r=0.81, p<0.01). The resulting EE prediction model was: EE (kcal/15s) = 5.96 ×es; 10-4 ×es; VM + 1.58 ×es; 10-2 ×es; weight + 7.88 ×es; 10-2 ×es; gender - 1.47 ×es; 10-1 (male=1, female=0).The Bland-Altman plot showed acceptable agreement between predicted and measured energy expenditure with a mean bias of 0.07 ±0.19 kcal/15s for the regression model and over 93% (2789/2979) of the values within the 95% confidence intervals (-0.31 kcal/15s,0.46 kcal/15s). The mean of the absolute predict error rate (MAPE) was 27.9±25.4%. Conclusion Accelerometers can be appropriately used as a measure of physical activity and energy expenditure in 5- to 6-y old-children in China.

O.08.5
THE IMPACT OF A CHILDCARE FOOD-SERVICE BASED INTERVENTION IN CHILDCARE SERVICES ON CHILD DIETARY INTAKE AND QUALITY IN CARE
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SIG: Early care and education

Purpose: Childcare services represent a promising setting to deliver interventions to improve child diet as they provide access to a large proportion of young children. While it is recommended that childcare services provide foods in line with dietary guidelines, childcare service cooks report a number of barriers to providing healthy foods on their menus. As such, interventions to support cooks planning and preparation of healthy foods represents a promising strategy to improve the diets of children while in care. This study aimed to assess the impact of a food service implementation intervention to increase provision of foods in line with childcare nutrition guidelines on child consumption of fruit, vegetables, breads/cereals, meat/meat alternatives and dairy and diet quality in care. Methods: A cluster randomized controlled trial was conducted involving children aged 2-5 years attending 25 long day care services in New South Wales, Australia. Childcare services were randomised to receive either a food service implementation intervention or control. Intervention development was guided by the Theoretical Domains Framework and included securing executive support, provision of group training, provision of resources, audit and feedback and one on one implementation support. Child dietary intake and diet quality was assessed by service educators at baseline and six months follow-up. Results: Children in the intervention group consumed significantly higher number of serves of vegetables (mean difference: 0.4; p<0.001); wholegrain cereals (mean difference: 0.7; p=0.02); and meat/meat alternative (mean difference: 0.5; p<0.001). The intervention group also had significantly higher diet quality scores (mean difference: 9.9; p<0.001) which consisted of changes in the fruit, vegetables, and healthy fats domains. Conclusions: A food service intervention in childcare services targeting the provision of food in line with nutrition guidelines was effective in improving child dietary intake in care. Further efforts to support the implementation of dietary guidelines in such
settings is warranted.

O.09: Social and Environmental Influences on Nutrition and Physical Activity Behavior (CES 2-3)

O.09.1 FACEBOOK FOR BETTER FOOD? – THE PSYCHOLOGY BEHIND THE INFLUENCE OF SOCIAL MEDIA ON EATING BEHAVIOR

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SIG: E- & m-health

Objective Communication about food in social media is highly prevalent. However, little is known about how social media influence eating behavior and if and how it could promote effective eating behavior change. In this study, we examine whether (1) social media communication with one's network members enhances the effectiveness of an established nutrition intervention, and (2) which potential mechanisms, such as perceived social support, underlie this relation. (3) We also investigated whether improved nutrition spills over to the social network members. This study is based on a theoretical framework that integrates ecological models and psychological-motivational theories. Methods In an intensive longitudinal smartphone study, young adults reported their Facebook usage, fruit and vegetable intake (FVI) and perceived social support for FVI up to eight times per day over one week. Participants were recruited as dyads (target + network member): Targets' FVI and Facebook communication were manipulated between individuals, resulting in a 2 (intervention to increase FVI: yes vs. no) x 2 (Facebook posting: daily posts about FVI vs. books/ movies) mixed design. The network member did not receive any intervention but was incentivized to react to the target's posts. Multilevel models were used to test the main and interaction effects of intervention, Facebook usage, and Facebook posting. Results For all targets who posted about their own FVI, a higher Facebook usage was associated with an increase in the intention to eat fruits with the next meal; targets who received the nutrition intervention additionally showed an increase in their fruit intake. Posting about one's own FVI increased perceived social support for FVI from the network member and the target's general Facebook network. Network members ate more vegetables when they interacted more intensely with FVI related posts of targets who had received the nutrition intervention. All p-values < .05. Conclusions Regularly posting about one’s FVI increased intentions to eat FVI above and beyond the effects of an established eating intervention. Perceived social support might be one mechanism underlying this relation. Improved nutrition spilled over to other network members. Social media could be used to promote a higher FVI among young adults.

O.09.2 PERCEPTIONS OF INFORMATION ABOUT HEART HEALTHY BEHAVIOURS IN WOMEN WITH AND WITHOUT HEART DISEASE: “IF I WANT A BURGER, I’M GONNA EAT A BURGER”

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: This research explored perceptions of women with and without heart disease, regarding the causes of heart disease and preventive behaviours including diet and physical activity. Methods: Focus groups were conducted with women (50 –sh; 90 years) with heart disease (N = 3; N = 6) and without heart disease (N = 8; N = 6; N = 7). The focus group data were analyzed using open coding in order to develop themes exploring participant's experiences with existing messages about heart disease that target women, what they do about heart health, and perceptions of general information about primary and secondary and tertiary heart disease prevention. Results: Participants, regardless of whether they had heart disease, cited internal and external causes of heart disease including genetics, stress, poor diet, and lack of exercise. These were often conceived and justified along a spectrum from appropriate heart healthy behaviours to a sense of fatalism. This reasoning shaped justifications, rationalizations, and understanding of heart
disease. For some, heart disease was viewed as an internal moral failing on the individuals' part. Some women with heart disease felt blamed for their disease. Although participants said positive things about diet and exercise, many also commented on how challenging these behaviours are to change. This perception often led to both self-reproach and fatalistic acceptance of heart disease. For example, participants noted that people develop heart disease even if they exercise and eat well, and many participants gave examples of people who did not develop heart disease despite a lifetime of inactivity and poor diet. External, prescriptive messages emanating from family, friends, or health promotion organizations to reduce stress were not well received. Conclusions: Although participants were conversant with messages about heart health, exercise and diet, messages were experienced as demonstrating individual failing for some women who have experienced heart disease leading to a sense of fatalism. These findings indicate that women are aware of preventive behaviours such as exercise and diet but that reconceptualising public health messages used to promote heart healthy behaviours in women is needed.

O.09.3
THE HEALTHFULNESS OF CONVENIENCE FOOD AT HOME AND AWAY: ARE WE ASKING THE APPROPRIATE QUESTIONS?
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SIG: Socio-economic inequalities

Purpose: Research and policy attention has focused on time-saving foods eaten out, such as fast food, that have been blamed for the poor diets and expanding waistlines of Americans. This is due, in part, to the rise in consumption of food eaten out relative to meals prepared at home since the 1970s. However, the majority of food Americans consume still comes from the store. Only one recent study examined the nutritional quality of convenience foods purchased at grocery stores. This research uses a new USDA dataset to address the question of whether the nutritional quality of convenience foods purchased at the store varies by convenience food type and household income. Methods: The National Household Acquisition and Purchase Survey, which includes about 5,000 households, was used to assess the healthfulness of different types of convenience foods purchased at the store. Convenience food types included ready-to-eat, packaged, canned, and frozen meals and salty snacks. Statistical tests were used to assess differences in dietary quality: a one-way analysis of variance to test for differences in the weighted average Healthy Eating Index (HEI-2010) score, energy density, and energy cost of convenience food types. T-tests were used to examine the difference in the quality measures between (1) SNAP households and low-income non-SNAP households and (2) SNAP households and higher income (ineligible) households. Results: Ready-to-eat and canned foods generally ranked healthier than frozen foods on all three measures whereas packaged foods and salty snacks were more inconsistent in their rankings across measures. Inconsistencies across measures for some food types suggests that the quality measure chosen makes a difference. The similarities in healthfulness between SNAP households and non-SNAP households (both low-income and higher income) was unexpected and, again, suggests the importance of selecting the appropriate measure for assessing food purchase healthfulness. Conclusion: Given that SNAP recipients eat meals out of the home less frequently than higher income individuals, researchers and policymakers might focus on efforts to understand and improve the healthfulness of convenience foods purchased at the store, with an emphasis on the least healthy food types that SNAP households purchase and consume most often.

O.09.4
FRUIT AND VEGETABLE QUALITY AND DESIRABILITY IS LOWER IN MORE RURAL FOOD ENVIRONMENTS
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SIG: Policies and environments

Purpose Worldwide, adults consume fewer fruits and vegetables (FVs) than recommended. One potential
Periods of passive sitting at home may be useful strategies to help them reduce their sedentary behaviour. Older adults to engage more with their daily routines, and may therefore be difficult to change. Our findings suggest that supporting sitting is associated with cognitive, social and/or restorative benefits, embedded within day. Conclusions: Sitting is associated with cognitive, social and/or restorative benefits, embedded within the behaviour. This distinction informed symbolic Meanings associated with high value (purposeful —sh; i.e., socially or cognitively active, or restorative) sitting, and low value (often passive) sitting. Other Materials, specifically declining body function, contributed to the formation of embodied temporal routines, often including sitting for long periods in the afternoon and evening, which did not vary much from day-to-day. Conclusions: Sitting is associated with cognitive, social and/or restorative benefits, embedded within older adults’ daily routines, and may therefore be difficult to change. Our findings suggest that supporting older adults to engage more with other people and local facilities outside the home, and to break up long periods of passive sitting at home may be useful strategies to help them reduce their sedentary behaviour.
O.10: Weight Management (Concord 1)

O.10.1
THE COMPLEXITY OF SELF-REGULATING FOOD INTAKE IN WEIGHT LOSS MAINTENANCE. A QUALITATIVE EXPLORATION AMONG SHORT- AND LONG-TERM WEIGHT LOSS MAINTAINERS

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: The aim of this study was to better understand whether self-regulation of food intake in WLM differs in the challenging transition from being a short-term maintainer (having maintained without regaining less than 12 months) to a long-term maintainer (having maintained without regaining more than 12 months) is under-researched. Food intake was viewed as an outcome of a complex set of food-related behaviours including planning, shopping/storing, preparing/cooking, eating and dealing with barriers. The Health Action Process Approach (HAPA) was used as a conceptual framework to help describe and understand the self-regulatory strategies related to food intake in WLM. Methods: Individual interviews (14 female/5 male) were conducted with 9 Danish short- and 10 long-term weight loss maintainers. Initial codes were based on five themes related to food intake: planning, shopping/storing, preparing/cooking, eating, and general barriers and resources in WLM. Post-hoc coding was applied based on self-regulation strategies and self-efficacy beliefs, and thematic analysis was also applied to identify additional themes. A content analysis approach using NVivo 11 highlighted the differences between short- and long-term weight loss maintainers. Results: Self-regulatory strategies and self-efficacy beliefs varied between the food-related behaviours and between short- and long-term maintainers. With repeated use of action and coping planning, long-term maintainers had formed habitual routines, allowing more flexibility and improvisation in the behaviours related to WLM such as buying and storing food, and eating at social gatherings. The short-term maintainers often displayed a weight loss mind-set, focusing on the avoidance of certain behaviours (e.g., buying specific foods), showed less self-regulatory flexibility, more detailed action planning, but their interviews also inferred having ambitions for building strong WLM-habits, maintenance and recovery self-efficacy. Conclusions: The contribution of the study is that by applying a more holistic view on food intake as an outcome of a set of complex behaviours, insights into the difficult individual transition required from short- to long-term weight loss maintenance can be revealed. The transition process is clearly not a "one size fits all"-process, but a learning process that needs to be tailored to fit each individual's life.

O.10.2
EXPLORING THE EFFICACY OF PERSONALISED WEIGHT CONTROL CUES FOR REDUCING SNACK INTAKE IN WOMEN WITH WEIGHT LOSS GOALS

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Exposure to cues associated with weight control can prompt reduced food intake in individuals with weight control goals. Yet, findings are mixed with some studies reporting no effects of cue exposure on food intake. According to The Goal Conflict Theory, cues most associated with weight control will have
the strongest effects on eating behaviour. The types of cues most associated with weight control will vary across individuals and therefore, for the first time, this study examined the impact of self-selected (personalised) cues on snack energy intake compared to general weight control and neutral control cues. Methods: Women (n=18; Age: M: 42.0 ±smn; 12.1 years; BMI: M: 30.4 ±smn; 4.0 kg/m2; employed n = 11) who were overweight or obese and indicated strong goals to lose weight were recruited. From a set of six weight control-related images (identified with a pre-study online survey, completed responses n = 913; M: 39.5 ±smn; 14.6 years; 66% females) participants individually selected an image that they most (personalised) and least (general) associated with weight control and education (neutral control). Under controlled laboratory conditions, participants were provided with a fixed-caloric lunch and after 2.5 hours, the impact of exposure to personalised, general and control cues on snack energy intake (two sweet and two savoury high fat snacks) were assessed using a repeated measures design. Subjective sensations of hunger and fullness were also examined pre- and post-lunch, pre- and post-cue exposure and post-snack. Results: Subjective sensations of appetite and total snack energy intake did not differ between personalised (M: 398.6 ±smn; 190.5 kcal), general (M: 399.6 ±smn; 211.1 kcal) and control (M: 378.9 ±smn; 205.9 kcal) conditions, p = ns, ?p²2; = 0.03. Conclusions: The current findings did not provide any support that personalised, self-selected weight control cues are more effective than general weight control cues for reducing snack intake in women with goals to lose weight. Further research is needed to explore which types of cues and under which conditions weight control cues reduce food intake. This study was funded by Cancer Research UK.

O.10.3
THE EFFECTIVENESS OF A BRIEF BEHAVIOURAL INTERVENTION DELIVERED BY LAY HEALTH WORKERS TO PREVENT WEIGHT REGAIN AFTER WEIGHT LOSS: THE LIMIT RANDOMISED CONTROLLED TRIAL
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Although weight loss programmes can be effective, most people will regain their weight loss over time. There are no effective programmes to prevent this except those that involve regular in-person contact, which are neither popular nor affordable. The aim of this study was to evaluate the effectiveness of a brief behavioural intervention delivered by lay workers from a community organisation to promote target setting and daily self-weighting to prevent weight regain after successful weight loss. Methods: We conducted a randomised controlled trial enrolling 583 adults who had lost at least 5% of their starting weight after attending a commercial weight loss programme. The intervention group received three brief support telephone calls delivered by lay workers that encouraged setting a target of regaining no more than 1kg from current weight. Participants were asked to weigh themselves every day and record this on a record card. Participants received reminder text messages. The comparator received healthy eating leaflets. The primary outcome was the difference between the groups in mean weight change (kg) from baseline to 12 months. Results 813 potential participants were screened and 583 were eligible and randomised, 291 to the intervention and 292 to usual care. 94% and 89% of participants completed follow up at three and 12 months respectively. At 12 months, 134 (45.9%) and 130 participants (44.7%) regained less than 1kg compared with baseline weight in the usual care and intervention groups respectively (odds ratio 0.96, 95% CI:0.69, 1.33). Conclusion: Brief behavioural support delivered by lay workers to promote target setting, daily self-weighting and recording of weight does not prevent weight regain after weight loss. While lay workers have been identified in the literature as an important vehicle for health care delivery, they may not be a sufficiently motivating and credible model of intervention delivery for weight management.

O.10.4
MEN’S PERSPECTIVES OF A GENDER-SENSITIZED HEALTH PROMOTION PROGRAM TARGETING HEALTHY EATING, ACTIVE LIVING AND SOCIAL CONNECTEDNESS
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SIG: Cancer prevention and management

Purpose: Many Canadian men are diagnosed with and die from cancer each year. Lifestyle factors including physical activity, diet and weight can influence men's lifetime risk of cancer. Despite the benefits associated with healthy lifestyles many men are inactive, sedentary, have poor dietary habits and are overweight. A central challenge with engaging men in health promoting programs is the perception that attention to one's health runs counter to traditional masculinities. The HAT TRICK program was designed to engage men with their health by collaborating with hockey teams to deliver a community-based intervention targeting physical activity, healthy eating and social connectedness. Gender-sensitized elements were reflected in the program design, setting, content, and delivery. The purpose of this research was to explore men's perspectives of their participation in a gender-sensitized intervention. Methods: Telephone interviews were conducted with 23 men who participated in the HAT TRICK program. Participants were purposefully selected to include men who attended at least 50% of the sessions (i.e., 6 of 12 weekly sessions). A semi-structured interview guide was used that included questions to gain insights to men's satisfaction and the acceptability of HAT TRICK with a focus on understanding the challenges/enablers associated with participating in the program. A thematic approach was taken to identify themes. Results: Participants were white (100%) with a mean age of 53 (SD±smn;9.9) years, Body Mass Index (BMI) of 37 (SD±smn;6.8) kg/m2, and waist circumference of 127 (SD±smn;14.5) cm. Three overarching themes were inductively derived through constant comparative analyses that reflect the effect of the gender-sensitized components on men's responses to the program: (1) Harnessing nostalgia for masculinities of the past: "Closet athletes from 30 years ago", (2) Offsetting resistance to change with sensible health advice: "Don't give up drinking beer, just have less", and (3) Gendered social spaces for doing health: "A night out with the guys". Conclusions: The evidence presented provides support for the value of gender-sensitizing approaches to men's health promotion. Further research is needed to identify which gender-sensitized elements are critical to engaging men in making healthy lifestyle changes.

O.10.5
TO WHAT EXTENT IS THE MEN'S WEIGHT MANAGEMENT PROGRAMME, FOOTBALL FANS IN TRAINING, TRANSFERABLE TO WOMEN?

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SIG: Implementation and Scalability

Purpose: Football Fans in Training (FFIT) is a gender-sensitised, weight management and healthy lifestyle group programme specifically designed for men, and delivered through professional football (soccer) clubs by trained community coaches. In 2011/12, a randomised controlled trial showed FFIT to be effective: at 12 months, the mean between-group difference in weight loss was 4.94kg (95% CI 3.95, 5.94) in favour of the intervention group. A recent long term follow-up demonstrated sustained weight loss of 2.90kg (1.78, 4.02) at 3.5 years. FFIT is now delivered through 42 football clubs across Scotland, and it has been extended to include deliveries to women at 29 clubs in 2017. However, the extent to which FFIT is transferable to this new target group is not well understood. Methods: Semi-structured telephone interviews conducted with coaches (N=4) and participants (N=17) following FFIT for Women deliveries at four clubs. Data were analysed thematically to identify to what extent FFIT is transferable to women and why. Findings: In contrast to men, the majority of women described long histories of weight loss attempts prior to enrolling on FFIT. However, like men they welcomed the fact, that instead of focusing on calorie restriction/dieting, FFIT for Women offered a holistic approach to weight loss, focusing on gradually
increasing physical activity and incorporating healthy eating into their daily lives. The group setting was seen as a 'safe place' to perform physical activity alongside like-bodied women, consistent with men who appreciated being with others 'like them'. These factors, in turn, supported behaviour change and subsequent weight loss. However, some women became less weight focused, whereas others struggled to overcome barriers, such as negative relationships with food. Coach interviews revealed that women established social bonds earlier than the men. However, they also suggested that women's relationships with food appeared more 'complex', and reported mixed weight loss success compared to the men.

Conclusion: These findings suggest that FFIT is transferable to women. However, they also demonstrate that contextual factors, including women's prior experiences of weight control may influence key programme mechanisms. These factors should be considered when optimising/tailoring FFIT for this new target group.

O.11: Motivation in Physical Activity (Concord 2-3)

O.11.1

PROCESS EVALUATION OF THE PLAN-A SECONDARY SCHOOL-BASED INTERVENTION (PEER-LED PHYSICAL ACTIVITY INTERVENTION FOR ADOLESCENT GIRLS)

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SIG: Children and families

Objective: The PLAN-A intervention aimed to train girls (Aged 12-13), who are nominated by their peers to become peer-supporters, to encourage and support their friends to be more active. The process evaluation sought to establish its feasibility and acceptability. Methods: PLAN-A was a cluster-randomised feasibility study in six schools (4 intervention, 2 control) with 427 girls aged 12-13 years in South West England with an embedded mixed-methods process evaluation. Peer-supporters and trainers completed quantitative post-training evaluations rating enjoyment, confidence, trainer delivery and autonomy support, achievement of training objectives and peer-supporter engagement. Training was observed to assess intervention and theoretical fidelity. Quantitative data were analysed descriptively. Interviews and focus groups were conducted with trainers, peer-supporters and their parents, non-peer-supporter pupils and teachers, and explored views on the peer-supporter training as well as methods of peer supporting and potential impact. The Framework Method was used to synthesis all qualitative data. Results: 96.5% of girls invited, became a peer-supporter and three-day training attendance was >92.0%. Intervention and theoretical fidelity was high (objective achievement across three days: Mean ±smn; SD = 2.69 ±smn; 0.46 out of 3; perceived trainer autonomy support score 3.14 ±smn; 0.33, scale 0-4). Peer-supporters enjoyed the training (3.81 ±smn; 0.42 out of 5), particularly elements that were active and involved working together. Trainers embraced the theoretical foundations of the intervention and peer-supporters reported that trainers used need-supportive techniques. Suggested improvements included less seated learning and less writing. The training was successful in preparing the girls to peer-support, however they reported needing more help with their confidence and how to start a conversation. Strategies used to provide support included knowledge sharing, co-participation and subtlety, this was challenged when the peer-supporters feared being misunderstood, were unsure how to start a conversation and did not have friends outside of the peer-supporter group. Parents and teachers valued the PLAN-A intervention and referred to enhanced confidence amongst peer-supporters. Conclusions: The PLAN-A intervention was feasible to deliver and was acceptable school teachers, trainers, peer-supporters, parents and pupils. Process evaluation revealed the ways in which peer-supporter training was successful and how peer-supporters may support their friends.

O.11.2

MOTIVATIONAL PERSPECTIVES OF A COMMUNITY BASED ELECTRIC BIKE PROJECT IN SWEDEN

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SIG: Policies and environments
Objective A community in Sweden runs a project aiming to stimulate citizens to choose active transport to reduce city car traffic, emissions and noise; and to promote residents' health by increased physical activity. Citizens can borrow an electric bike providing electric assistance when pedaling (pedelec) for free for three months to "try and feel", and are then offered to buy the bike after this period to a reduced price. The project has engaged approximately 500 participants over three years (2015-2017) distributed in three groups per year. Drawing from self-determination theory, the purpose of this study was to examine underlying motives for choosing to use the pedelec above passive transport (car, bus) during and after the three month period. Methods Semi-structured interviews were performed with eight informants who had participated in the project during 2014-2016. These will be complemented with another 8-10 interviews from the 2017 participant groups. Qualitative content analysis was used to explore and describe attitudes, behaviors, goals and barriers regarding informants' motives to physical activity in general, as well as specifically directed towards using pedelecs. The interviews were complemented with quantitative measures in two of the groups from 2017 before, during and after participation (N=19). Results Analyses revealed four main themes of motivation. The informants chose the pedelec as a means of transport for health reasons (regular exercise), for economic reasons (avoid having two cars, reducing gasoline and parking costs), for environmental reasons (to reduce environmental impact) and for personal values (related to exercise identity and/or environmental-friendly). Those who used the pedelec regularly felt that their fitness improved and that they had more energy in everyday life. Participants also felt that the pedelec facilitated cycling to a larger extent, and in addition to using it for transport for work or school, they also used it for shopping and leisure activities. Conclusions The step from passive to active transport might be challenging, but a pedelec might facilitate such a transition and reduce perceived behavioral barriers. This study could shed some light on how community interventions can be designed to facilitate autonomous motivation towards more sustainable transport behaviors.

O.11.3
A REVIEW OF FACTORS INFLUENCING ADHERENCE TO LIFESTYLE MODIFICATION PROGRAM AMONG OVERWEIGHT AND OBESE ADULTS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: The aim of this review is to provide an overview of factors associated with adherence to lifestyle modification programs among overweight and obese adults. Methods: An electronic search was conducted using PubMed, Medline, PsycINFO and PsycARTICLE to identify prospective studies that examined the factors of adherence to lifestyle modification program. We included studies with clearly defined adherence indicators, components of healthy diet, physical activity and behavioural strategies or theories, with weight management as one of the aims of the studies, explored the association between factors and adherence outcomes, included adults aged 18 –64 and written in English. We excluded studies that were pharmacological or surgical in nature, involved meal replacement, low calorie diet or very-low-calorie diet and included participants with existing chronic diseases, significant psychological comorbidities or any medical condition that limited the ability to perform PA. In total, we included 19 studies published between 2004 and 2016. Findings: Four adherence indicators were identified among the 19 studies. The most commonly used indicator was attrition, followed by attendance, self-monitoring and dietary adherence. A wide array of factors has been studied but only few studies exploring each factor. The identified factors were categorized into four groups (psychosocial factors, socio-demographic factors, behavioural factors and physical factors) and presented in descending order of popularity. Limited evidence suggested being in action or maintenance stage of change at baseline, older age, higher education, healthier eating and physical activity behaviours and higher initial weight loss may predict better adherence. However, having depression, stress, strong body shape concern, more previous weight loss attempts and being unemployed may predict poor adherence. Inconsistent findings were reported for self-efficacy, motivation and gender. Conclusions: Identification of the factors associated with adherence could provide direct implication for program improvement that facilitate and maintain health behavioural changes. In light of the
scare evidence on factors of adherence identified, more rigorous studies are warranted to enhance our knowledge in this area. In particular, further research should focus on the behavioural aspects of adherence such as dietary and physical activity adherence.

O.11.4
MOTIVATION AND SELF-REGULATORY STRATEGIES AMONG PHYSICAL ACTIVITY PROFILES OF WEIGHT LOSS MAINTAINERS
Santos Inês¹, Palmeira A L¹, Encantado Jorge¹, Scott Sarah², Larsen S C³, Teixeira P J¹, Stubbs James², Heitmann B L³.¹ Faculty of Human Kinetics, University of Lisbon, Lisbon; ²School of Psychology, Faculty of Medicine and Health, University of Leeds, Leeds; ³Research Unit for Dietary Studies at The Parker Institute Bispebjerg and Frederiksberg Hospital, part of the Copenhagen University Hospital, Copenhagen.

SIG: Theories of motivation

Background: Focusing on the identification of factors associated with optimal profiles in terms of weight loss (WL) maintenance may enhance guidelines for treatment in this challenging context. This study examined differences in exercise and weight-related motivation and self-regulatory strategies among distinct profiles of physical activity (PA) and WL in successful WL maintainers. Methods: Data from 513 WL maintainers (73.3% women; 44.4±smn;12.7y; initial BMI=25kg/m2; WL of at least 5% in the past 12 months) was collected at baseline as part of the NoHoW study. Through online questionnaires, participants across three centres (UK, Denmark, and Portugal) reported attained WL, their motivation for PA and weight management (e.g., motivational regulations and basic psychological needs), and the self-regulatory strategies used (e.g., goal setting). Additionally, objectively measured steps/day were obtained with a commercial activity tracker (FitBit Charge 2), which they used during the first week of the study. Participants were categorised in four groups according with the number of steps and the magnitude of their attained WL prior to entering the study: a) low PA low WL (<7499 steps/day and 5-9.9% WL, n=92); b) low PA high WL (<7499 steps/day and ≥10% WL, n=111); c) high PA low WL (≥10000 steps/day and 5-9.9% WL, n=134); d) high PA high WL (≥10000 steps/day and ≥10% WL, N=176). ANOVAs with Tukey HSD post hoc tests were used to compare motivations and self-regulatory strategies across profiles. Results: The high PA high WL group reported the highest levels of autonomy and competence (all p<0.05) and also higher use of self-regulatory strategies (self-monitoring and action planning) compared to the low PA low WL group (all p<0.05). The low PA low WL group was the most amotivated (p<0.05). The low PA high WL group reported the highest levels of effort and awareness (p<0.05) and higher use of self-monitoring strategies when compared with the low PA low WL group (p<0.001). Discussion: Better quality of motivation and higher use of self-regulatory strategies seem to characterise the individuals with a more positive profile in terms of PA and WL maintenance. Effort and awareness may be particularly important for WL when PA is low.

O.11.5
EMBARRASSMENT IN PHYSICAL ACTIVITY: THE OVERLOOKED EMOTION
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Body-related embarrassment may be a common barrier to physical activity yet it is arguably the most understudied emotion. Specifically, physical activity contexts provide the opportunity for social evaluation and public display of the body that likely perpetuate this negative self-conscious emotion. The purpose of this three-part study was to (i) examine the association between body-related embarrassment and physical activity motivation and behavior; (ii) explore body-related embarrassment experiences within physical activity; and (iii) test self-report items used to assess experiences of body-related embarrassment. Methods and Results: This study used adolescent and young adult samples. Body-related embarrassment was significantly (p<.05) associated with controlled (r=.23) and autonomous (r=-.21) motivation and physical activity (r=-.13) in a sample of 325 participants (37% male; Mage=19.00). These findings
demonstrate small direct relationships between embarrassment and physical activity, yet the measure was a single item used to assess embarrassment. To examine experiences of body-related embarrassment, participants (N=172, 33% male, Mage=18.97) completed a narrative writing task. The narratives were transcribed verbatim and an inductive content analysis was used. In total, 48% of the narratives took place in physical activity contexts such as swimming and gym class. Consistent with the definition of embarrassment, participants described feeling body-related embarrassment following a fear of or actual negative evaluation; body exposure; inadequacy compared to an internal standard; social comparison; and socially undesirable health behaviours. Embarrassment experiences led to emotional, cognitive, and behavioural outcomes. Based on these findings, body-related embarrassment was experienced frequently in physical activity contexts and was associated with avoidance strategies that can impact future physical activity perceptions (e.g., competence, enjoyment, motivation) and participation. A measure of body-related embarrassment is needed to further elucidate these trends. Following item generation and face validity evaluation, 218 individuals (49% male; Mage=15.53) completed a self-report measure of body-related embarrassment. A six-item factor tapping embarrassment about appearance and competence was the best-fitting measurement model (RMSEA=.04 (90% CI=.00-.09), CFI=.99, SRMR=.03). Conclusions: The use of this measure may help advance body-related embarrassment research in physical activity settings. Taken together, these efforts may aid in the development of intervention strategies targeting embarrassment to help increase physical activity participation.

O.12: Food Choices (Oasis)

O.12.1
APPLICATION OF THEORETICAL DOMAINS FRAMEWORK TO IDENTIFY BARRIERS TO THE IMPLEMENTATION OF FOOD SERVICE NUTRITION GUIDELINES BY CENTRE BASED CHILDCARE SERVICES: SYSTEMATIC REVIEW

Seward K1,2,3, Finch M1,2,3, Yoong S1,2,3,4, Wyse R1,2,3,4, Jones J1,2,3, Grady A1,2,3, Wiggers J1,2,3,4, Nathan N1,2,3, Conte K5, Wolfenden L1,2,3,4,1 Hunter New England Local Health District Population Health, Wallsend, NSW; 2School of Medicine and Public Health, University of Newcastle, Callaghan, NSW; 3Priority Research Centre for Health Behaviour, the University of Newcastle, New Lambton, NSW; 4 Hunter Medical Research Institute, New Lambton Heights, NSW; 5Menzies Centre for Health Policy, The University of Sydney, Camperdown, NSW.

SIG: Early care and education

Objective: The implementation of nutrition guidelines by childcare services is recommended to support the development of healthy eating behaviours in young children. Research suggests that sector nutrition guidelines are poorly implemented by childcare services. Developing strategies to improve childcare service adherence to menu dietary guidelines requires a comprehensive understanding of factors that may impede or promote implementation. To date there has been no systematic review or comprehensive investigation, utilizing a theoretical framework, of factors that may influence (enable or impede) the implementation of the sector nutrition guidelines. Methods: Over 7000 citations were identified from all sources (electronic databases; journal hand searches; government reports; grey literature; and contact with authors of included studies). Duplicate abstracts were removed and study selection criteria applied. Twelve studies (year 1994–sh;2015) were included in the review. Dual data extraction was conducted and the reported factors were synthesised using the theoretical domains framework (TDF). Results: Barriers and facilitators identified in qualitative studies were classified into 8 and 10 of the 14 TDF domains. Barriers and facilitators reported in quantitative studies covered 6 and 3 TDF domains respectively. The most common domains of which both barriers and facilitators to the implementation of sector nutrition guidelines identified were ‘environmental context and resources’ (barrier example = insufficient menu planning tools and resources; facilitator example = the service creating a supportive environment by enforcing nutrition policies and role modelling healthy eating behaviours) and ‘social influences’ (barrier example = staff perceptions of what foods children liked or disliked; facilitator example = staff communicating and collaborating). Conclusions: This research is the first attempt to systematically review literature that reports factors influencing the implementation of nutrition guidelines in the childcare setting. Also this is the first study to synthesise reported factors utilizing the theoretical domains framework.
Synthesising identified factors to the TDF enables researchers to map factors to potential behaviour change strategies. This research identified key gaps in the literature and will help to inform future interventions aiming to improve the implementation of nutrition guidelines in the childcare setting.

O.12.2
UNDERSTANDING THE MODERATING ROLE OF FOOD AVAILABILITY WITHIN THE THEORY OF PLANNED BEHAVIOUR IN INFLUENCING CHILDREN’S AND YOUTHS’ FRUIT AND VEGETABLE CONSUMPTION
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SIG: Children and families

Purpose: Building healthy consumption habits that includes adequate servings of fruits and vegetables (F&V) has been identified as a potential way to reduce obesity in children and youths. Studies have shown that food availability and accessibility are consistent determinants in influencing healthy food consumption. Nonetheless, research on the influence of food availability on behavioural theories remains scarce. This study attempted to evaluate the role of F&V availability at home in the associations between psychosocial factors, as outlined by Theory of Planned Behaviour (TPB), and children's and youths' F&V consumption behaviour using a unique methodology that combined self-reported psychosocial measures with an open inventory method of cataloguing actual F&V quantities present in participating households. Methods: Face-to-face interviews were conducted in 210 selected households (each comprising one parent-child pair; total N = 420) recruited via stratified cluster sampling. Child participants completed a survey examining F&V consumption behaviour, intention and TPB variables; child participants' ages ranged from 9-16 years (Mage = 13.08 years). The home food availability checklist was catalogued by the research team with the assistance of the parent participant using a set of five size-standardized zip-lock bags to estimate F&V quantities. Results/Findings: F&V availability was categorised into low and high levels based on median split. Structural equation modelling results revealed that in the high F&V availability group, attitude and subjective norm positively predicted F&V intention, which then directly influenced F&V consumption behaviour. Perceived behavioural control (PBC) was not a significant predictor. In the low F&V availability group, PBC positively predicted F&V intention and consumption behaviour. Attitude was marginally significant in influencing intention, but subjective norm was insignificant; intention did not significantly predict behaviour. Conclusions: Our findings suggest that external factors such as food availability at home could help explain mixed findings in how different TPB constructs assume different degrees of influence on intention and behaviour. Making F&V readily available in homes and other places where young people spend significant amounts of time (e.g. schools) may be a key strategy that parents and health authorities could implement in order to reinforce healthier consumption habits.

O.12.3
"TRYING TO HAVE IT ALL”: PARENTAL PURSUIT OF MULTIPLE AND CONFLICTING GOALS INFLUENCES THE FOOD CHOICES PROVIDED TO CHILDREN
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SIG: Theories of motivation

Purpose: Children rely on their caregivers for food provision and influence children's diet quality. School lunches equate to 20-30% of children's total dietary intake and contain on average >1.5 serves of discretionary (unhealthy) choices. In many countries, school lunches are packed from home. Children's lunchboxes are an important context to learn more about the factors influencing parent food provision. The study aim was to elicit the goal-driven preferences of parents that influence food provision to children, and identify the relative importance of parental goals and constraints guiding child food provision decisions. Methods: A randomly selected sample of 500 parents of 4-11-year-old children were recruited from TEGrewards online consumer research panel. The DCE was administered via a 20-minute online survey using Qualtrics. Parents were presented with lunch options that varied in nutritional value, effort and cost.
Econometric analysis determined parental lunchbox provision preferences (orthogonal main effects plan with 64 lunchboxes blocked in 8 days, participants randomised to 5/8 days). Explanatory variables examined the goals and trade-offs parents prioritised. Child's age, household income and postcode (metropolitan/non-metropolitan) suggest a broadly representative sample reflective of the Australian internet population. Results: Parents reported trying to accomplish a wide range of goals when making lunchbox food provision choices. "Providing a nutritious diet to my child" was the most pursued goal, followed by "Maximising food that is available" (e.g. convenience). Parents were trading off between multiple goals when making food provision choices. The average number of goals explaining meal choice was 1.32 (SD 1.25). In the multinomial logit model, all attributes significantly contributed to the model. Energy (βa=-0.28), discretionary content (βa=-0.13) and cost (βa=-0.12), were inversely associated with choice preferences. The goals parents were trying to achieve showed a degree of conflict. Conclusions: The finding supports the contention that lunchboxes are the expressions of goal accomplishment. This study provides evidence suggesting the potential to explore interventions to influence parent provision of foods to children by considering goal pursuit (e.g., goal (de)activation, goal prioritization). The association of goal and choice allows us to take a richer approach to suggesting interventions to enable/encourage behavioural change.

O.12.4
ARE FOODS AND BEVERAGES WITH EXCESS FREE SUGAR CONTENTS MORE LIKELY TO HAVE MARKETING TO CHILDREN ON THE FOOD LABEL?
Bernstein JT1, Mulligan C1, L'Abbe M1.1University of Toronto, Toronto, Ontario.

SIG: Policies and environments

Purpose: Guidelines from the World Health Organization recommend intakes of free sugars be limited to a maximum of 10% of calories to lower risk of several chronic diseases. Therefore, it is important that products with high levels of free sugars are not being disproportionately promoted, especially to children. The aim of this study was to evaluate the association between excess free sugar contents and child-directed marketing found on prepackaged food and beverage labels in Canada. Methods: This was a cross-sectional analysis of the University of Toronto's Food Label Information Program (FLIP) database 2013 (n=15,259). Products in FLIP were scanned to identify aspects of child-directed marketing (e.g. allusions to fun, unusual flavours or shapes, presence of toys, coupons, games). Odds ratios were used to determine the association between excess free sugar contents (=10% calories from free sugar) in foods and beverages and presence of child-directed marketing. Results: Products with excess free sugar contents had higher odds of carrying child-directed marketing overall (OR=5.63, 95% CI, 4.72-6.71). At the major food category level, the odds of products with excess free sugar contents having child-directed marketing were highest among 'nuts and seeds' (OR=48.50, 95% CI, 6.80-346.05) and 'cereal and grain products' (OR=43.00, 95% CI, 15.31-120.81). The odds were higher for all other categories except for 'desserts', 'fruits', and 'sugars and sweets'. Odds ratios were not determined for six categories that did not have either child-directed marketing or excess free sugar levels. Conclusion: This study is extremely timely as a recent proposal to restrict the marketing of unhealthy foods and beverages to children has emerged in Canada. Findings of this study are concerning given children are particularly susceptible to marketing strategies. Results of this study support the need for changes to marketing regulations to support population health efforts aimed at limiting intakes of free sugars and improving overall dietary quality.

O.12.5
NUDGING AND SOCIAL MARKETING TECHNIQUES ENCOURAGE EMPLOYEES TO MAKE HEALTHIER FOOD CHOICES: AN RCT IN 30 WORKSITE CAFETERIAS IN THE NETHERLANDS
Veelma E1,2, Vyth E.L.1,2, Hoekstra T1,2, Steenhuis I.H.M.1,2, 1Vrije Universiteit Amsterdam, Amsterdam; 2Amsterdam Public Health Research Institute, Amsterdam.

SIG: Policies and environments

Objective: Currently, many studies focus on how the environment can be changed to encourage healthier eating behavior, referred to as choice architecture or nudging. However, to date, these strategies are not
often investigated in real-life settings, such as worksite cafeterias, or are only done so on a short-term basis. The objective of this study is to examine the effects of a healthy worksite cafeteria ('the worksite cafeteria 2.0', hereafter WC 2.0) intervention on Dutch employees' purchase behavior over a 12 week period. The research question guiding this study is: Can nudging and social marketing techniques encourage healthier purchases in worksite cafeterias? Methods: We conducted a Randomized Controlled Trial (RCT) in 30 worksite cafeterias. Worksite cafeterias were randomly assigned to either the intervention or control group. The intervention aimed to encourage employees to make healthier food choices during their daily worksite cafeteria visits. The intervention consisted of 14 simultaneously executed strategies based on nudging and social marketing theories, involving product, price, placement, and promotion. To evaluate the intervention effect, we performed a multilevel regression analysis for each primary outcome measure, viz. sales of seven targeted product groups. Results: Adjusted multilevel models showed significant positive effects of the intervention on purchases for three of the seven studied product groups, viz. healthier sandwiches, healthier cheese as a sandwich filling and the inclusion of fruit. The elevated sales of these healthier meal options were constant throughout the 12 week intervention period. Conclusions: This study shows that the way worksite cafeterias offer products affects purchase behavior. Situated nudging and social marketing-based strategies are effective in promoting healthier choices and aim to remain effective over time. Some product groups only indicated an upward trend in purchases. Such an intervention could ultimately help prevent and reduce obesity in the Dutch working population.

**Jun 05, 13:45 - 14:45: Oral Presentations**

O.13: Interventions for Adult’s Physical Activity (Grand Ballroom)

O.13.1
THE SOCIAL EXPERIENCE OF EXERCISE IN PUBLIC PLACES: AN EXPLORATORY QUALITATIVE STUDY
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SIG: Policies and environments

Purpose Much exercise occurs in public places, such as a gym, pool, class, or park. Social psychology shows that the real or perceived presence of others influences behaviour and experience. However, this has been little studied with exercise except for specific constructs such as social physique anxiety, social anxiety and relatedness. We aimed to create a richer picture of the experience of exercise in public places and effects on motivation and exercise behaviour. Methods Semi-structured interviews with 27 exercisers (median age 34, range 20 to 55, 40% male), recruited at city exercise facilities and the campus sport centre. Settings discussed included gyms, pools, parks, classes and sports facilities. Using thematic analysis following Braun and Clarke (2006), from a critical realist epistemology, we analysed transcripts inductively to provide a rich description of the dataset. As a credibility check, one researcher double-coded five of the transcripts, with coding disagreements resolved by discussion. Findings We developed four themes (and associated subthemes) to account for the main threads of experience in the data. The Social Environment encompassed the culture of the exercise venue, relationships and perceived community, and their feelings of exclusion. Social Interactions encompassed communication, learning from others, sharing resources such as space and equipment, and the impact of others on enjoyment. Cognitive Processes encompassed awareness of others, concerns about being judged, defenses against judgment, social comparisons (usually downward comparisons) and how seeing others exercising influenced self-efficacy and feelings of inspiration. Behavioural Regulation encompassed direct effects on motivation and attendance, as well as help from others, social support and how others caused the exerciser to vary pace or intensity. Conclusions Exercise is not performed in a psychosocial vacuum, and the presence of others influences experience and behaviour. Exercise facilities vary by their culture, sense of community, and other dimensions for which measures could be developed. Social interactions, when present, may aid learning of skills and exercises, social support and sharing of resources. Even if no explicit interactions occur, being around other exercisers can allow learning by observation, changes in self-efficacy, increased intensity of exercise and enjoyment, and feelings of inspiration to succeed.
O.13.2
CULTURALLY ADAPTING HEALTHY DADS HEALTHY KIDS FOR HISPANIC FAMILIES: RESULTS FROM FOCUS GROUPS
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SIG: Children and families

Objective: Healthy Dads Healthy Kids (HDHK) is the first obesity prevention intervention designed for fathers and has had positive outcomes in Australia. Examine Hispanic parents perspectives regarding cultural adaptation of the HDHK program for Hispanic families in southwestern US. Methods: Three focus groups (FG) were conducted with Hispanic fathers and mothers of 5-11 year old children (n=17, 10 men and 7 women). Two FG were conducted in Spanish and one included only dads. The FG script assessed their perception about the HDHK content and material using the Ecological Validity Model, with a focus on goals, content, methods, persons, and metaphors. FG audio-recordings were transcribed and coded utilizing a thematic approach. Results: 82% of participating Hispanic parents were foreign-born and 47% spoke only Spanish at home. 35% had not graduated from high school. Most parents were interested in a program like HDHK and liked that it allowed fathers to spend time with their children. Some fathers noted a generational change of how they interacted with their children, compared to what their own fathers did. Parents resonated with the current objectives of the program and wanted to add emphasis on parenting and limiting children's screen time. They liked the physical activity concepts taught in HDHK and either already did some of the activities, or wanted to try them. A few mentioned gender differences when participating in rough-and-tumble play with daughters and suggested modifications may be needed. Several barriers to participation were mentioned including, busy work schedules, physically demanding jobs that result in exhaustion, concerns of caring for children without mom, father's current fitness/weight to participate, and neighborhood safety to allow children to play outside. Hispanic cultural values emerged, including that Familism and Collectivism should be strongly promoted. Staff should use Simpatia when interacting with fathers and families in the program. HDHK materials were difficult for some parents to read. Conclusion: HDHK appears to be an appropriate program to culturally adapt for Hispanic families. Cultural values need to be integrated and emphasized in the program and barriers for participation addressed. The literacy level should be simplified for English and Spanish versions.

O.13.3
MAINTAINING LIFESTYLE CHANGES SIX MONTHS AFTER THE ‘GET HEALTHY, STAY HEALTHY’ EXTENDED CONTACT INTERVENTION
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SIG: E- & m-health

Purpose: It's unclear whether extended intervention contact (following initial, intensive contact) mitigates weight regain and behavioral relapse in the longer-term, or simply delays decay until contact ceases. We evaluated maintenance following the ‘Get Healthy, Stay Healthy’ (GHS) extended contact intervention, which is a 6-month, text message-delivered lifestyle coaching program. We compared: the intervention and control group averages at 12 months (traditional comparison of maintenance); the group averages over the first six months of non-contact (comparison of relapse over the same duration of time); and, the individual changes over the first six months of non-contact. Methods: Clients completing the Get Healthy Service (GHS) telephone coaching were randomised to GHS (n=114) or standard care (no additional contact, n=114) and were assessed at baseline (completion of GHS), six months (completion of GHS) and 12 months (no-contact follow-up). At all assessments participants self-reported bodyweight, waist circumference, physical activity (walking, moderate and vigorous sessions/week) and dietary behaviours (fruit and vegetable serves/day, cups of sweetened drinks/day, takeaway meals/week; indices from the Fat and Fibre Behaviour Questionnaire). Moderate-vigorous physical activity (MVPA) was also assessed via
accelerometry. Results: Retention over the 12-month trial was high (98%). Participants had a mean (±SD; standard deviation) age of 53.4±12.3 years and baseline BMI of 29.2±5.9 kg/m2. The between-group differences detected at 6 months were still present and statistically significant at 12 months for bodyweight (-1.33kg (-2.61, -0.05)) and accelerometer-assessed MVPA (24.9 minutes/week (5.8, 44.0)). None of the other outcomes were significantly favoured compared to the control group at 12 months. Changes over their first six months of non-contact for the GHSH group were significantly better than the control group for accelerometer-measured MVPA and self-reported moderate activity. In addition, most intervention participants had maintained their behavioural outcomes during the first six months of non-contact. Conclusions: The GHSH participants were better off relative to baseline, and relative to the controls in terms of MVPA. However, based on the between group difference in bodyweight over the first six months of non-contact, GHSH does appear to be delaying weight regain. This delay in weight regain, coupled with sustained improvements in MVPA, has public health benefit.

O.13.4
EFFECTS OF A NATIONAL WORKPLACE PHYSICAL ACTIVITY INTERVENTION ON MEASURED STEP COUNTS, SELF-REPORTED OCCUPATIONAL SITTING TIME AND PERCEIVED HEALTH STATUS
Lau Erica1, Fender Lisa2, LeBlanc Allana2, FAulkner Guy1.1University of British Columbia, British Columbia; 2Participaction, Ontario.

SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: The workplace, where Canadian adults spend a significant portion of their week (36.6 hours/week), is an important setting for physical activity (PA) interventions. In response to this, a Canadian non-profit organization (ParticipACTION) has developed UPnGO with ParticipACTION, a worksite intervention to increase employees’ PA, decrease sitting, and improve the workplace social environment for wellness programming. Methods: UPnGO is designed to increase steps and reduce sitting time among employees. The 6-week program consists of 1) a Web/ mobile phone application for self-monitoring daily steps and action planning, 2) weekly activities organized by organizational champions, 3) leadership support in changing workplace PA social environment and 4) incentives. A quasi-experimental design was used. Participants were 1187 adults from 9 organizations located in British Columbia and Ontario. Participants recorded daily steps by using a wrist-worn activity monitor and completed a survey assessing self-reported occupational sitting time and perceived health status at baseline and post-intervention. Participants who provided valid step data (at least 4 days per week at baseline and week 6) and completed the pre- and post-intervention surveys were included in the analyses. Linear mixed-effect models were used to examine the intervention effects. A sub-group analysis was also performed by stratifying participants into 1) under-active group: <6000 steps/day at baseline and 2) active group: ≥6000 steps/day at baseline. All models treated time as an independent variable, with age and gender as covariates, and accounted for the clustering of participants within organizations. Results: Results from the mixed-effect models showed that there was a significant intervention effect on average daily steps (βa;=876.03±241.6, p=0.0004) and perceived physical health (βa;=1.65±1.08, p=0.13), but not for self-reported occupational sitting time (βa;=0.22±0.24, p=0.37) and perceived mental health (βa;=1.65±1.08, p=0.13). Results of the sub-group analysis showed that average daily step between baseline and post-intervention increased significantly among participants in the underactive group (βa;=3174.28±498.32, p<0.0001), but not in the active group (βa;=478.01±258.64, p=0.066). Conclusions: Current findings preliminary support for the efficacy of UPnGO although the effects were more pronounced in under-active employees. Future efforts are needed in developing strategies for implementing UPnGO at scale and to engage under-active individuals.

O.13.5
DANCING IN TIME: USING DANCE TO INCREASE PHYSICAL ACTIVITY IN OLDER COMMUNITY DWELLING WOMEN
Britten L1, Addington C A1, Astill S L1,1University of Leeds, Leeds.

SIG: Ageing
Objective: In the past 10 years dance-based studies involving older adults have increased in number, supporting the benefits of dance in improving a range of physical functions, including increasing physical activity patterns across a range of groups. This study outlines a project which involves a multiagency collaboration (The University of Leeds, Leeds Public Health, Yorkshire Dance, One Dance UK and the Neighbourhood networks of Leeds) which sought to examine the feasibility and acceptability of using contemporary dance to modify risk factors of falls in older adults, a City of Leeds health priority, with a focus on increasing physical activity. Methods: Three (N=38) groups of older (M=77.3 yrs) adults were recruited from local community groups to participate in a 3 separate, 8 week dance programmes. Each programme comprised two, 90 minute dance classes per week. Quantitative measures of physical activity, sedentary behaviour, depression, mobility and fear of falling were measured at baseline (T1) and after 8 weeks of dance (T2). Results: Mean adherence was 84.3% (±smn:17), and significant increases in moderate and vigorous physical activity were noted, with a significant decrease in sitting time over the weekdays (p<0.05). Statistically significant decreases in the mean Geriatric Depression Scale (p<0.05) and fear of falling (p<0.005) score were noted, and the time taken to complete the TUG test decreased significantly from 10.1s to 7.7s (p<0.005). Conclusion: The recruitment of older adults and good adherence across all three sites indicate that a dance programme can improve psychological health and has the potential to increase physical activity levels in older women. We are now extending our work across Yorkshire, both replicating and extending the 'Dancing in Time' project building a replicable, scalable dance programme funded by Sport England which offers inactive older adults an alternative way to engage in light physical activity.

O.14: Decision Making in Food Choices (Salon 1-2)

O.14.1
CUSTOMER ACCEPTABILITY AND CHANGES IN BEVERAGE SALES AND STAFF ENGAGEMENT IN THE IMPLEMENTATION OF A COMMUNITY HEALTHY FOOD RETAIL INITIATIVE
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SIG: Implementation and Scalability

Objective: To investigate customer acceptability, and changes in beverage sales, and staff commitment to and perceptions of the purpose, challenges and benefits of change during the implementation of a healthy beverage policy in community sports settings. Methods: Five sports and recreation centres owned by local city councils A and B in metropolitan Melbourne, Australia, undertook step-wise transition to healthy food and beverage provision according to state government guidelines. This included a 3-month implementation period to increase availability of “amber” (e.g. diet soft drinks) and “green” (e.g. water) beverages and decrease availability of “red” (e.g. regular soft drinks) beverages in vending machines and cafés. Convergent parallel mixed-methods design complemented sales data with semi-structured interviews and surveys of six management staff using the “Commitment to Organisational Change” scale survey. Interviews and surveys were conducted immediately prior to, and at 3, 9 (surveys only) and 12 months after implementation started. Customers exit surveys were conducted and analysed descriptively. Interviews were analysed using a block and segment thematic approach. Beverage volume and revenue sales were analysed using interrupted time series analysis to detect changes compared to predicted sales. Results: At Council A sites, volume sales of “red” beverages decreased by 65% by 12 months post-implementation. At Council B, “red” beverage sales decreased by 65% at 3 months post-implementation, however sales returned to pre-implementation levels by 12 months after re-introduction of popular “red” beverages. Revenue stayed steady at one site and increased at another Council A site, and decreased at Council B sites. 86% of surveyed Council A and 84% Council B customers supported initiative continuation. Five interview themes emerged: “Stakeholders’ involvement and responses”, “Customer experience”, “Resources and supply”, “Financial considerations”, and “Sustainability”. Staff surveys indicated desire for change remained moderate across participants and over time, and sense obligation to and perceived cost of change varied over time and participants. Conclusion: In this change to healthier
beverage provision all council sites experienced the intended policy effect of decreasing unhealthy beverage sales with variable impact on revenue. Combined with customer support, and general and increasing staff support, this indicates such policies should be trialled more broadly.

O.14.2
SNAP-AUTHORIZED RETAILERS’ PERCEPTIONS OF HEALTHY AND ABILITY TO USE BEHAVIORAL ECONOMIC STRATEGIES TO PROMOTE CONSUMER PURCHASES OF FOODS AND BEVERAGES ALIGNED WITH THE DIETARY GUIDELINES FOR AMERICANS IN RURAL APPALACHIA
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SIG: Policies and environments

Purpose: Supplemental Nutrition Assistance Program (SNAP) participants in the U.S. expend ~70 billion dollars annually at ~261,150 SNAP-authorized retailers. SNAP-authorized retailers are the main access point for food and beverages among SNAP participants. Behavioral economic strategies provide opportunities for low-cost interventions for food retailers to increase consumer purchases of healthier foods and beverages. This research explores the willingness and ability of SNAP-authorized retailers to implement choice architecture and marketing mix (behavioral economic) strategies to support purchases aligned with the Dietary Guidelines for Americans (DGAs). Methods: Cognitive anthropological methods were utilized to understand environmental and socio-cultural influencers of SNAP-retailers (n=29) located in a health disparate region of Appalachia. All SNAP-retailers (owners and/or managers) in two rural Virginia counties were purposefully sampled for in-person recruitment. Participants completed: a cost and corporate variability questionnaire; a 72-item card sort to determine willingness and ability to implement behavioral economic strategies; and a free list technique eliciting perceptions of healthy foods and beverages generally and those available in stores. An environmental audit specific to healthy product offerings was also conducted. Data analysis includes clustering for similarities by food store format and applying inferential statistics to determine significant (p<.05) inferences between perceived costs to implement and willingness to apply strategies and environmental parameters. Results: Retailers perceive changes to properties and placements of unhealthy products as less feasible, in part due to corporate policies and sales and revenue concerns. Introducing or incorporating healthy food promotion strategies is more favorable. Retailers’ perceptions of healthy foods and beverages are potentially influenced by their immediate store environment parameters. Prompting materials and changing proximity or location of healthy options are likely the most feasible strategies to draw attention to healthier products across corporate and non-corporate stores. Conclusions: These results can inform store-level interventions, with potential of reaching a broad population regardless of geographic location. They can also inform future studies testing the utility of applying behavioral economic strategies in food stores to benefit public health nutrition and business outcomes. Results also suggest measuring unhealthy food and beverage availability in food stores as outmoded due to these factors less likely to change.

O.14.3
UNDERSTANDING AND EXPLORING THE INFLUENCE OF AUSTRALIAN CONSUMERS’ KNOWLEDGE, ATTITUDES AND PERCEIVED EFFECTIVENESS ON SUSTAINABLE FOOD BEHAVIOURS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Food consumption contributes up to 28% of a person’s total ecological footprint; greater than any other contributing source. A diet that is sustainable (with a low environmental impact) has the potential to also be healthy. Targeting consumer knowledge of sustainable food behaviours could be an effective way to promote a sustainable diet. The purpose of this study was to quantitatively assess consumers’ attitudes, knowledge, perceived effectiveness (a person’s belief that their behaviour can contribute to environmental preservation) and food behaviours regarding a sustainable eating pattern. Methods: An online internet questionnaire completed by 384 participants (mean age=34 ±smn;14 years, range=18-76) assessed
participants' sustainable food: knowledge; attitudes; perceived effectiveness; and behaviours. Descriptive statistics were calculated; Poisson and multinomial logistic regression were used to assess the influence of variables on sustainable food behaviours performed by participants. Results: Environmental impact was reported to be of moderate importance to participants when deciding what food to buy. Participants believed the environmental impact of the food system (mean=4.19, 1-5 scale) to be less than other sectors (4.48; 4.42; 4.26), with high impact behaviours (the production of meat and dairy) underestimated. Participants reported engaging in a variety of sustainable food behaviours; however these were predominately undertaken for other reasons besides reducing environmental impacts. Older participants and females were more likely to have a more favourable attitude towards and greater knowledge about sustainable eating. Poisson regression analysis results indicated that participants having a positive attitude (p<0.01) and greater knowledge (p<0.05) about a sustainable eating pattern participate in a higher number of sustainable behaviours. Multinomial logistic regression results showed that believing a food behaviour to be better for the environment was associated with greater odds of participating in that specific behaviour. For example, participants had 3.36 greater odds (p<0.01) of eating less dairy for environmental reasons than not doing so, if they believed reducing dairy intake was better for the environment.

Conclusions: This study suggests consumers need further information about a sustainable eating pattern and the environmental impact of food choice. Future work is required to investigate how best to promote a sustainable eating pattern.

O.14.4
GETTING ‘BANG FOR BUCK’: A DIETARY SIMULATION STUDY TO IDENTIFY EFFECTIVE FOOD-BASED TARGETS FOR REDUCING CHILDREN’S INTAKE OF UNHEALTHY FOODS
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SIG: Children and families

Purpose: Around a third of children's energy intake is derived from nutrient poor 'discretionary choices'. While a reduction in total discretionary choices intake is desirable, targeting a few specific foods or beverages may aid the development of simple nutrition messages that deliver optimal improvements in dietary intake. The study aim was to compare the theoretical effectiveness of three dietary strategies to reducing children's discretionary choices intake targeting cakes and biscuits; takeaway-type foods and sugar-sweetened drinks –sh; key sources of energy, saturated fat (SFA), added sugars and/or sodium in children's diets. Methods: Single day, dietary intake data from 2718 2-18 year olds participating in the Australian National Nutrition and Physical Activity Survey 2011-12 were population weighted and aggregated at the food level. Dietary simulation modelling was used to compare the impact of reducing three discretionary choice targets on overall dietary profile. Scenarios compared were: moderation, a 50% reduction in intake of the targeted discretionary choices; substitution, replacing 25% of the targeted discretionary choices with equivalent intakes of healthy foods; reformulation, reducing added sugar by 25%, sodium by 20% and swapping 50% replacement of SFA for unsaturated fats. Results: Base case (reported) intake was 8031kJ (14% from SFA, 12% from added sugars) and 2312mg sodium per day. Compared to targeting total discretionary choices intake, targeting change in just three sub-groups accounted for >50% of the total improvement in dietary intake. Scenarios targeting sugar-sweetened drinks had biggest effect on added sugars (-8.7 to -17.4%) but minimal impact on energy intake (-1.1 to -2.3%). The moderation and substitution scenarios targeting selected discretionary foods reduced energy intake by -2.0 to -4.7% with reductions ranging from -0.2 to -9.8% observed across added sugars, sodium and SFA. Conclusions: Consumers are tasked with the challenge of integrating multiple, complex nutrition messages to guide healthy food choices. Three discrete messages to replace cakes and biscuits; takeaway-type foods and sugar-sweetened drinks with healthy choices would achieve meaningful improvements in energy intake and overall dietary profile. Moderate and swap to reduce discretionary choices intake may be equally effective, but swap messages may be more feasible for consumer adoption.

O.14.5
ASSESSMENT OF THE DIFFERENTIAL INFLUENCE OF FACTORS THAT INFLUENCE MEAL CHOICES IN WOMEN BY SOCIOECONOMIC STATUS (SES)
Objective: Increasingly, studies report geographic accessibility of supermarkets does not influence eating behaviors or body mass index. This suggests a better understanding is needed of the behavioral, economic, and geographic factors that influence eating decisions, particularly among low SES populations with a higher burden of obesity. A discrete choice experiment examined how these factors influence meal choices among 500 racially/ethnically diverse women aged 18-44 years living in Chicago, Illinois, USA.

Methods: Participants were given a series of 10 choice sets and were asked to choose among 4 meals, each rated based on a sample of all possible combinations with the following attributes: 1) taste (very good, good, OK); 2) healthiness (healthy, neutral, unhealthy); 3) preparation time (0, 15, 30, 45 minutes); 4) travel time to food outlet for meal/ingredients (5, 10, 20, 30 minutes); and 5) price ($2, $4, $6, $8 per person). SES was measured using education (=high school diploma, some college/associate's degree, =bachelor's degree) or self-reported difficulty paying for basics (hard/very hard, somewhat hard, not hard).

Data were analyzed using multinomial logistic regression models with attributes modeled continuously. Subgroup analyses were performed to determine whether the meal attributes influenced meal choices differentially by SES. Results: Over half of participants had =bachelor's degree (60.2%) and reported no difficulty paying for basics (57.8%). Healthiness and taste were the most influential attributes for all participants. Price was a more influential attribute among those in the lowest SES group (using either definition) compared with those in the higher groups. Travel time was a significant attribute in the high education (ßa;=-0.31 per level increase in time; standard error (SE)=0.02) and no difficulty paying for basics (ßa;=-0.26; SE=0.03) groups but not for those in the low education group (ßa;=-0.06; SE=0.03) or who reported difficulty paying for basics (ßa;=-0.07; SE=0.04). Conclusions: These findings support growing evidence suggesting policies directed at improving geographic access to food outlets, although relevant, may not be key for addressing the unequal burden of obesity facing low SES populations.

Discrete choice experiments as illustrated here may help pinpoint the relative influence of different factors on eating decisions.

**O.15.1: Physical Activity Interventions in Children and Adolescents (Salon 3-4)**

**A SCALABLE INTERVENTION FOCUSED ON IMPROVING MUSCULAR FITNESS IN ADOLESCENTS: FINDINGS FROM THE RESISTANCE TRAINING FOR TEENS CLUSTER RCT**

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**SIG: Policies and environments**

**O.15.1.1**

**A SCALABLE INTERVENTION FOCUSED ON IMPROVING MUSCULAR FITNESS IN ADOLESCENTS:**

**FINDINGS FROM THE RESISTANCE TRAINING FOR TEENS CLUSTER RCT**

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**SIG: Implementation and Scalability**

**Purpose:** Schools are ideally placed to provide youth with the knowledge, skills and confidence to participate resistance training (RT), but few existing interventions are available for implementation in
schools. The purpose of this study was to assess the efficacy and feasibility of the 'Resistance Training for Teens' school-based intervention. Methods: The 'Resistance Training for Teens' intervention was evaluated using a cluster randomized controlled trial with 607 adolescents (50.1% female; 14.1±smn;0.5 years) from 16 secondary schools. Teachers were trained to deliver the intervention, which included: (i) an interactive student seminar; (ii) a structured physical activity program, which focused on RT; (iii) lunchtime fitness sessions; and, (iv) web-based smartphone apps. The primary outcome was muscular fitness and secondary outcomes included body mass index (BMI), RT skill competency, flexibility, physical activity, self-efficacy and motivation. Assessments were conducted at baseline, 6- (post-program; primary endpoint) and 12-months (follow-up). Outcomes were assessed using linear mixed models and three potential moderators were tested using interaction terms (and sub-group analyses where appropriate). Results: Significant intervention effects were observed at 6-months for upper body MF (2.0 repetitions, 95% confidence interval [CI]: 0.8 to 3.2), RT skill competency (4.4 units, 95% CI: 3.2 to 5.5), and self-efficacy (0.2 units 95% CI: 0.1 to 0.3). Effects for upper body muscular fitness and RT skill competency were sustained at 12-months. There was a significant intervention effect for BMI at 12-months among students classified as overweight/obese at baseline (-0.55 kg/m2, 95% CI: -1.01 to -0.08). Conclusions: The school-based RT intervention resulted in both immediate and sustained improvements in upper body MF and RT skill competency. This study demonstrates an effective and scalable approach to delivering RT within secondary schools. Trial registration: Australian New Zealand Clinical Trials Registry No: ACTRN12615000360516.

O.15.2

EFFECT OF STRENGTH TRAINING ON BALANCE ABILITY IN MIDDLE-AGED AND ELDERLY WOMEN WITH REGULAR AEROBIC ACTIVITIES

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SIG: Ageing

Purpose: To find out whether strength training has a positive effect on the balance ability of middle-aged and elderly women who are accustomed to aerobic exercise. Methods: women (n=38) aged 50–69 years who are physically healthy and doing aerobic exercise 3 times a week regularly were recruited. The training was a 12 weeks' lower limbs and core strength training intervention; 2 sessions per week for 45 minutes every session, every Mondays and Thursdays, under the supervision of 2 S&C coaches and 2 sports instructors. Data was processed by SPSS22.0 and Excel2010. The indexes of balance ability and muscle strength before and after training were observed, including the duration of one-legged standing with eyes closed, closed eyes stepping, wall squat, 30 seconds repeated sitting. Meanwhile, fall index (the higher the index value, the worse the balance ability is), the risk of fall increase) and stability index (ST, the higher the ST value, the worse the stability is) of open-eyes standing in normal position (NO), closed-eyes standing in normal position (NC), padded open-eyes standing (PO), padded closed-eyes standing (PC) were measured by Sunlight Tetrax Balance System. Results: compared with the data before the training, results showed that there were no significant changes on the duration of one-legged standing with eyes closed (11.9±smn;8.6, to 11.5±smn;8.6, P=0.694) and wall squat (34.8±smn;16.3, to 38.7±smn;16.5, P=0.095); the duration of closed eyes stepping (6.7±smn;4.0, to 13.8±smn;8.6, P=0.00<0.05) and repeats of 30 seconds repeated sitting (25.8±smn;5.5, to 27.3±smn;4.5, P=0.039<0.05) were statistically significant increased. The value of fall index has improved as well, and the change was statistically significant (20.7±smn;14.9, to 16.9±smn;11.8, P=0.021<0.05). Therefore, the ST values in NO posture (13.8±smn;3.6, to 11.1±smn;3.3, P=0.000<0.05) and PO posture (18.3±smn;6.0, to 16.0±smn;5.1, P=0.009<0.05) were statistically significant decreased, and the ST values in NC posture (17.3±smn;4.2, to 17.7±smn;5.4, P=0.590) and PC posture (26.9±smn;9.5, to 27.9±smn;9.9, P=0.528) were increased slightly. Conclusions: to a certain extent, 12 weeks of lower limbs and core strength training can effectively improve muscle strength, balance ability and posture control ability of middle-aged and elderly women with regular aerobic activities.

O.15.3 - SHORT-LISTED FOR THE BEST ORAL PRESENTATION AWARD BY AN EARLY CAREER RESEARCHER

A NATURAL EXPERIMENT OF HOW SCHOOL START TIME CHANGES IMPACT YOUTH SLEEP
DURATION, PHYSICAL ACTIVITY, AND SEDENTARY BEHAVIOURS OVER TIME

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SIG: Policies and environments

Purpose: Cross-sectional studies support delayed school start times as a promising intervention to ameliorate the pervasive sleep debt among youth; however, to date, no longitudinal population-based studies have been conducted in Canada. Moreover, limited research has examined the impact on other health behaviours, including those occurring prior to school or associated with sleep. Scheduling changes among schools participating in the COMPASS study provided an opportune natural experiment to evaluate the impact of school start time changes on youth health behaviours over time. Methods: The COMPASS study uses a hierarchical longitudinal rolling cohort design to collect whole school samples of grade 9-12 students and the Canadian secondary schools they attend. Using Ontario COMPASS data from year 1 to 5 (2012-2017) of the study, regression models tested the impact of school start time changes on student-reported sleep duration, screen time, and physical activity (e.g., moderate-to-vigorous physical activity [MVPA], active travel to school, varsity sports, intramurals). Models controlled for student-level (grade, gender, ethnicity) and school-level covariates (school area median income, school size, location, urbanicity). Results: From 2012-2017, changes in school start times of 5-10 minutes earlier or later were reported by 11 of the 49 Ontario secondary schools, with one school changing their start time twice during the study period. Controlling for the previous year school start time and covariates, preliminary linear regression models indicated shorter sleep durations when schools changed to earlier start times (βa=- 5.02, 95% CI [-5.05, -4.99], p<.0001) and longer sleep durations when schools shifted to later start times (βa=5.03, 95% CI [4.99, 5.06], p<.0001). Students were estimated to sleep 5-10 minutes more or less when start school time was changed 5-10 minutes later or earlier, respectively, depending on the initial start time (8:00-9:30). Physical activity and sedentary time models will also be presented. Conclusions: Results support findings of cross-sectional studies, indicating later school start times are beneficial for youth sleep durations. Potential impacts on student health behaviours require consideration when deciding on school schedules. Delayed school start times may prove a valuable strategy to help youth meet sleep, physical activity, and sedentary behaviour guidelines.

O.15.4
INVESTIGATING CHILDREN’S SHORT-TERM RESPONSES TO IMPOSED OR RESTRICTED PHYSICAL ACTIVITY

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SIG: Children and families

Purpose: Little is known about whether physical activity compensation occurs. Few studies to date have used experimental designs to test whether children compensate their physical activity. This study explored the activitystas hypothesis by investigating children's short-term responses to imposed or restricted physical activity. Methods: Children (n=156, 46% boys, mean age = 11.3 years) from 9 schools wore a hip-mounted ActiGraph accelerometer for 5 days (Monday-Friday) across two consecutive weeks (a ‘usual’ week and an ‘experimental’ week). One hundred and forty-five children (49% boys) also wore a SenseWear Armband. Recruited schools were randomised to receive one of three experimental conditions that took place at school on one occasion: (a) additional light-intensity physical activity (LPA; standing lesson condition); (b) additional moderate- to vigorous-intensity physical activity (MVPA; sports condition); or (c) restricted LPA and MVPA (indoor play condition). Sedentary time, LPA, MVPA, counts/minute and energy expenditure (EE; kcal/day) were extracted for the experimental day and the following day. These data were also extracted for the matching days in the ‘usual’ week. Multilevel linear regression models were conducted to examine associations between the day the condition took place and the following day and week (‘usual’, ‘experimental’) for each condition separately. Results: Children’s activity levels (MVPA:...
25.8 min, 95%CI: 15.3, 36.2 min) and EE (119.7 kcal, 95%CI: 19.1, 220.4 kcal) were significantly higher on the day the additional MVPA condition took place compared to the comparison day in the previous week. Similarly, children’s activity levels (LPA: -20.2 min, 95%CI: -33.1, -7.2 min; MVPA: -25.8 min, 95%CI: -38.4, -13.3 min) and EE (-174.9 kcal, 95%CI: -281.0, -68.7 kcal) were significantly lower on the day the restricted LPA and MVPA condition took place compared to the comparison day in the previous week. There was no difference in activity levels on the day after the experiment condition compared to their usual activity for that day. Conclusions: The findings suggest that children did not decrease their physical activity to compensate for imposed physical activity, or increase their physical activity to compensate for restricted activity.

O.15.5
VALIDATION OF THE UPGRADED MONBABY MONITOR, ACTIGRAPH AND THE GENEACTIV DEVICES TO MEASURE THE AMOUNT OF TIME AN INFANT (0 – 6 MONTHS) SPENDS IN THE PRONE POSITION.
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SIG: Early care and education

Purpose The 2017 Australian 24-hour movement guidelines recommend infants receive 30 minutes of tummy time daily. The purpose of this study was to test the practicality and reliability of three devices to measure the amount of time an infant spends in the prone position (tummy time). Methods A convenience sample of 32 healthy infants aged 4 to 25 weeks (male, N = 19) completed a structured positioning protocol of 13 positions. Infants were placed in each position for 3 minutes whilst wearing a MonBaby (chest), GENEactiv (right hip) and ActiGraph (right hip). Direct observation via video recording served as the criterion measure. Data (video and devices) were synchronized. The accuracy of the devices to measure prone or not prone for the representative minute for each position and the total time of the positioning protocol were analysed using specific cut points from raw triaxial data and a formula independently designed for each device. Parents were also given a practicality questionnaire. Results For the representative minute, the MonBaby, GENEactiv and ActiGraph devices were 71.3%, 100% and 97.4% accurate at identifying tummy time (awake and supervised prone positioning on the floor) as prone and 98.9%, 97.6% and 99.7% defining non-prone positions as not prone, respectively. For the total time, the MonBaby, GENEactiv and ActiGraph devices were 75.8%, 99.9% and 95.2% accurate at defining tummy time as prone and 99.2%, 96.9% and 99.5% accurate at defining non-prone positions as not prone, respectively. 96%, 89% and 82% of parents agreed the MonBaby, GENEactiv and ActiGraph devices respectively were practical and feasible to use. The MonBaby was most preferred by 78% of parents. Conclusion GENEactiv and ActiGraph devices are of acceptable accuracy to objectively measure the amount of time an infant spends in tummy time. However, the placement of these devices on the hip may limit its practicality for use with infants. MonBaby was most preferred by parents due to its positioning on the chest and unobtrusive design. Improvements in signal strength would be required before recommending MonBaby for use in future studies. Future research could use sophisticated machine learning techniques to identify individual non-prone positions.

O.16: Children Interventions in Nutrition and Physical Activity (Drawing Room)

O.16.1
WHAT TO MEASURE IN YOUR NEXT TRIAL? A SYSTEMATIC REVIEW OF OUTCOMES REPORTED IN SCHOOL-BASED CHILDHOOD OVERWEIGHT/OBESITY PREVENTION STUDIES.
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Objective: In order to increase comparability between studies and thereby optimize evidence synthesis standardized measurement of outcomes in obesity prevention research is essential. The aim of this study was to summarize all reported outcomes in school-based interventions aimed at prevention of childhood overweight and obesity, as a first step in creating a core outcome set (COS) that should be measured in future studies. Methods: A systematic literature search in the databases MEDLINE, Embase, PsycInfo, and Cochrane Central register of controlled trials (CENTRAL) was conducted to identify all reported outcomes in randomized controlled trials (RCTs) and non-randomized studies. Identified outcomes were clustered in domains by all project members using an online program (Ariadne). Results: In total, 133 studies were included in the review, of which 77 RCTs. Together they reported 177 different outcomes. Outcomes were categorized in domains related to anthropometrics, physical activity, sedentary behaviour, diet, fitness, physiology, psychology, parent and environment. The most frequently reported outcome was BMI (in 81% of studies), followed by measures of body fat (in 23% of studies) and estimates of total physical activity (in 23% of studies). Conclusions: School-based overweight/obesity prevention studies reported a large variety of outcomes, mostly measured by different instruments. This limits the evidence synthesis of the effectiveness of interventions. Developing a COS would be an important step to progress the field of prevention of childhood overweight and obesity.

O.16.2
REDUCING SCREEN-TIME AND UNHEALTHY SNACKING IN 9-11 YEAR OLD CHILDREN: PRELIMINARY EVALUATION OF THE KIDS FIRST RANDOMISED CONTROLLED FEASIBILITY TRIAL

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SIG: Children and families

Purpose: Reducing children's screen viewing and unhealthy snacking behaviours is a public health priority. The aim of this study was to develop a family- and school-based intervention (Kids FIRST - Family-based Intervention to Reduce unhealthy Snacking and screen-Time) and to conduct preliminary evaluation of its effectiveness. Methods: The study was a 12-week four-arm cluster randomised controlled feasibility trial with assessments at pre- (baseline) and post-intervention. Four UK schools were randomised to a control group or one of three intervention groups: Group 1: targeting reductions in screen-time and unhealthy snacking (ST+Sn), Group 2: targeting reductions in screen-time (ST), Group 3: targeting reductions in unhealthy snacking (Sn). Intervention group parents received four online 'sessions' and four packages of resources which were tailored to each intervention group and focused on specific mediators of screen-time and/or unhealthy snacking. Children received four 30-minute lessons during school time, followed by homework activities/challenges. Children and parents reported their own screen-time behaviours, children reported on their snacking behaviours, and completed questionnaires on individual, behavioural, social and physical home environmental variables. Results: Children and their parents (n=75; mean age 9.8 years) were randomised to one of the four intervention conditions. A significant reduction of 47.2 minutes/day was seen in children's weekend TV/DVD viewing in the 'ST and Sn' group. No changes were found between baseline and post-intervention reports of the dietary variables assessed in any of the groups. Habit for eating fruit and vegetables increased significantly in the 'ST only' group. Self-efficacy for reducing time spent watching TV/DVDS or using a computer increased significantly in the 'ST only' group. Participants in the 'ST and snacking' group increased their reporting of parental rules for computer use. Significant reductions were seen in both weekday and weekend day computer games use among parents in the 'ST only' group. Conclusions: These preliminary findings show promise for a family- and school-based intervention aimed at reducing screen viewing and snacking. Reductions in TV viewing and changes in habits for eating healthy snack foods were seen. Further work is needed to optimise the intervention for a more diverse sample.

O.16.3
A RANDOMISED CONTROLLED PILOT STUDY OF A TAILORED WEB-BASED NUTRITION
**EVALUATING THE IMPACT OF ONTARIO’S HEALTHY KIDS COMMUNITY CHALLENGE (HKCC) ON PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR AMONG YOUTH: EVALUATION OF A NATURAL EXPERIMENT USING THE COMPASS DATA**

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**Purpose:** The Healthy Kids Community Challenge (HKCC) is a community-based intervention in 45 Ontario communities to support children in becoming more active. This natural experimental study evaluates the impact of the HKCC on physical activity (PA) and sedentary behaviour (SB) outcomes among youth over time. Methods: A quasi-experimental design was used to examine the impact of the HKCC on 3 PA and 5 SB outcomes among grade 9 to 12 students in the COMPASS study. COMPASS data from year 3 (T1 2014-15: baseline pre-HKCC), year 4 (T2 2015-16: HKCC intervention), and year 5 (T3 2016-17: post-HKCC follow-up) were used as both repeat cross-sectional (T1 n=31,548, T2 n=31,457, T3 n=30,454) and longitudinal (T1-T3, N=3,906) samples. Ontario students in HKCC communities were placed into 1 of 3 intervention groups [T2 data collection post-HKCC finishing (i1), T2 data collection during HKCC (i2), T3 data collection pre-HKCC starting (i3)]. Ontario student in non-HKCC communities were control group 1 and Alberta students were control group 2. Results: Repeat cross-sectional results show that over time the HKCC had no significant impact on moderate-to-vigorous physical activity (MVPA), meeting PA guideline recommendations, days per week strength training, time spent watching movies or videos, or time spent playing video games. However, over time the HKCC did result in a significant
increase in total daily SB (i3: +22.8 min/day), time spent watching TV (i1: +9.1 min/day), and time spent surfing the internet (i3: +5.2 min/day). Longitudinal results show that over time the HKCC had no significant impact on meeting PA guideline recommendations, days per week strength training, or time watching movies or videos, but did result in a significant decrease in MVPA (i2: -14.0 min/day) and time spent watching TV (i2: -4.4 min/day), and a significant increase in total daily SB (i3: +99.7 min/day), and time spent surfing the internet (i3: +37.3 min/day). Conclusions: In general, these robust quasi-experimental results suggest that the HKCC, a large community-based initiative to create communities where it is easier for youth to lead healthier lives, did not have the desired impact on various PA or SB outcomes among older youth.

O.16.5
A PILOT PRIMARY SCHOOL ACTIVE BREAK PROGRAM (ACTI-BREAK): EFFECTS ON ACADEMIC AND PHYSICAL ACTIVITY OUTCOMES FOR STUDENTS IN YEARS 3 AND 4.
Watson A1, Timperio A1, Brown H1, Hesketh KD1.1Deakin University, Melbourne, Victoria.

SIG: Children and families

Purpose: The ACTI-BREAK study was designed to address limitations associated with previous active break interventions, including a lack of teacher involvement in the development phase, use of long-term measures of academic achievement to assess short-term interventions, and lack of objective measures of physical activity intensity. The primary aim of this study was to assess the feasibility and potential efficacy of the ACTI-BREAK program for improving academic achievement in mathematics and reading. Secondary aims were to assess intervention effects on on-task classroom behaviour and objectively-measured school day physical activity. Method: Three hundred and seventy four children in Year 3 and 4 (74% response) were recruited from six schools across Melbourne, Australia. Using a cluster randomised controlled trial design; schools were randomised to a 6-week ACTI-BREAK intervention (n=3) or usual teaching practice (n=3). The intervention involved teachers incorporating 3x5 minute active breaks into their classroom routine daily. Academic achievement was assessed using 1-minute tests in reading and mathematics; classroom behaviour was observed by teachers; and physical activity levels were assessed using accelerometers. Multilevel mixed effects linear regression models were conducted using intention to treat (n=226-312) analyses. Paired t-tests were used to explore change in physical activity from baseline to mid intervention among intervention group participants. Results: Significant intervention effects were found for on-task classroom behaviour (ITT B=16.17; 95%CI: 6.58,25.76). Intervention effects were stronger for boys (B=21.42; 95%CI: 10.34,32.49) than girls (B=12.23; 95%CI: 1.52,22.92). No effect was found for reading, math or physical activity. Results from the paired t-test analyses showed physical activity in the intervention group increased from baseline to mid-intervention for girls (diff=2.47; 95%CI: 0.32,4.62) but not for boys (diff=2.46; 95%CI:-0.55,5.46). Teachers implemented on average two of the three prescribed active breaks daily. The majority of children (94%) enjoyed the ACTI-BREAK program and reported they found it easier to concentrate (66%) and their school work improved (67%) after doing ACTI-BREAKS. Conclusions: Implementing active breaks in the classroom may improve on-task classroom behaviour. Time out of the curriculum to perform active breaks had no detrimental effect on academic outcomes which may encourage classroom teachers to incorporate active breaks into their classroom routine.

O.17: Physical Activity in Older Adults (Lounge)

O.17.1
DOMAIN-SPECIFIC PATTERNS OF PHYSICAL ACTIVITY DURING MID-OLDER ADULTHOOD: WHAT HAPPENS TO PHYSICAL ACTIVITY DURING AGEING?
Cleland V1, Cocker F1, Salmon J2, Timperio A2, Ball K2, McNaughton S2.1University of Tasmania, Hobart, Tasmania; 2Deakin University, Geelong, Victoria.

SIG: Ageing
Facilitating elderly park PA so as to enhance the health status of elderly. Park planners and administrators should consider optimizing the function of PA areas (leisure, transport, work, domestic) via the International Physical Activity Questionnaire (long version). Domain-specific differences in physical activity between each timepoint (T2-T1, T3-T2) were standardised and classified as increasing, decreasing or stable. These categorical variables were then used to create domain-specific physical activity patterns over time, classified as stable, persistently decreasing, persistently increasing, or fluctuating. Summary statistics describe domain-specific physical activity patterns over four years. Results/findings: Over four years, a fluctuating pattern of physical activity was common amongst all domains. The fluctuating pattern was most apparent in domestic (70%) and least apparent in work-related (52%) activity. Work-related activity had the greatest proportion of participants classified as stable (38%) while transport activity had the least (18%). Transport activity had the largest proportion of participants classified as persistently increasing (7%), while work activity had the smallest proportion (5%). Persistent decreases were most evident for leisure (6%) and least evident for domestic (5%) activity. Conclusions: This is one of the first studies internationally to describe changes in physical activity during mid-older adulthood, a potentially critical time when numerous life-stage transitions occur. We observed high levels of fluctuation across all physical activity domains over time, highlighting the instability of physical activity over time. The greatest stability was seen for work-related physical activity, and the greatest increases were seen for transport-related physical activity. The findings underscore the critical nature of comprehensively assessing domain-specific physical activity at this life-stage.

O.17.2
PHYSICAL ACTIVITY AREAS IN PARKS AND THEIR USE BY ELDERLY ACROSS URBAN CONDITIONS
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SIG: Policies and environments

Purpose: Urban parks have been recognized as important physical activity (PA) places for senior city residents. This study aimed to investigate PA areas in parks and their use by elderly under high-density conditions in a Chinese city (Hong Kong), and low-density conditions in a German city (Leipzig). Methods: Based on a social ecological model, a cross-sectional study including systematic observation and face-to-face survey was conducted in six parks in Hong Kong (HK) and Leipzig, respectively. In the observation, PA areas and elderly use of PA areas were investigated. In the survey, elderly visitors (HK: n=317, Mage = 69.96, SD = 6.81; Leipzig: n=311, Mage = 72.06, SD = 6.78) were recruited to report their park-based PA, overall PA (i.e., stage of PA), and perceived park accessibility. Descriptive analysis, Chi2 tests and t-tests were used to analyze data with SPSS 22.0. Results: Findings of observation revealed that trails were the most often used PA areas by the elderly for walking (in both cities) and cycling (only in Leipzig). Fitness stations and secure areas (some paved and covered) are more often found in HK parks, however, more lawn areas are found in Leipzig parks, making structured exercise possible. Sports fields are often used by HK elderly for fitness exercising, walking and jogging, but are rarely used by Leipzig elderly. In both cities, more elderly often perform PA with low intensity. For PA type and intensity of the elderly, findings of survey are in line with that of observation. In addition, survey results indicated that the elderly prefer accessing PA areas in parks by walking or cycling within 10 minutes. Moreover, self-reported elderly park-based PA (Kcal/week) contributed to their overall PA, however the value in HK was significantly larger than that in Leipzig, suggesting the urban parks in HK are the primary locations for the elderly to engage in PA. Conclusion: The characteristics of PA areas in parks and their use by the elderly are urban condition-specific. Park planners and administrators should consider optimizing the function of PA areas and facilitating elderly park PA so as to enhance the health status of elderly.
THE PARK PRESCRIPTION TRIAL: PRESCRIBING PHYSICAL ACTIVITY AND PARK USE TO PROMOTE HEALTH AND WELL-BEING OF ADULTS IN SINGAPORE

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SIG: Policies and environments

Purpose: Park Prescription refers to the promotion of physical activity (PA) with a focus on the use of parks and green spaces. This trial investigates the effectiveness of a carefully developed park prescription intervention to increase PA, park use and PA in parks among community-dwelling adults.

Methods: One hundred and sixty participants aged between 40 and 65 years were recruited through Population Health Screenings conducted by a regional hospital in Singapore if they were physically inactive (with less than 150 minutes of exercise per week), passed the PA Readiness Questionnaire and had blood pressure and blood glucose values within healthy ranges. They were randomly assigned (maintaining allocation concealment) to 1) intervention: a face-to-face Park Prescription + invitation to a weekly PA program conducted in the park, or 2) control: standard PA promotion materials. The study duration was 6 months and participants completed baseline, 3- and 6-months follow-up assessments, including self-report questionnaires, accelerometer assessment, and health screening. T-test was used to compare outcomes between groups (analysis of the primary outcome, objectively measured PA, is blinded to group allocation). A p-value <0.05 was considered statistically significant.

Results: Eighty participants were allocated to each group with comparable characteristics at baseline. Participants were predominantly female (79.4%), of Chinese ethnicity (81.3%) and married (78.8%). At the 6-month follow-up, 90.6% of the participants provided outcome data. Adherence to the exercise sessions declined from 48% during the first week to 24% in the last week. Mean time (minutes/month) spent in parks (Intervention: 333.9 ± smn; 506.2; control: 186.4 ± smn; 358.4; p-value: 0.047) and PA in parks (Intervention: 333.0 ± smn; 499.3; control: 140.5 ± smn; 270.7; p-value: 0.005) was significantly greater in the intervention group. Similarly, recreational PA (minutes/week) was significantly greater in the intervention group (Intervention: 142.3 ± smn; 155.4; control: 93.6 ± smn; 131.0; p-value: 0.044). Objectively measured PA will additionally be reported. Conclusion: Park Prescription has the potential to be applied in community screenings in Singapore. Findings suggest that the intervention effectively increased park use, PA in parks and recreational PA. Outcomes on objectively measured PA, physical and mental well-being will provide further insights into the effectiveness of the intervention.

MOVEMENT BEHAVIOURS AND CLINICALLY RELEVANT MEASURES AMONG ADULTS WITH OBSTRUCTIVE LUNG CONDITIONS: A CROSS-SECTIONAL ANALYSIS OF THE CANADIAN LONGITUDINAL STUDY ON AGING

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SIG: Ageing

Purpose: To determine associations between movement behaviours, that is, sedentary time, walking, light, moderate, and strenuous intensity physical activity, and strengthening activity, with clinically relevant outcomes of lung function and healthcare use, as well as quality of life outcomes, among middle-aged and older adults who have an obstructive lung condition. Methods: The Canadian Longitudinal Study on Aging is a nationally representative, stratified, random sample of Canadians 45 to 85 years (at baseline). Those with self-reported physician diagnosed asthma (n=2569), COPD (n= 877), and those with Forced Expiratory Volume in 1 second (FEV1) below the lower limit of normal (LLN, n=1564), were used for...
analysis. FEV1 was assessed with spirometry, and FEV1%pred was calculated using formulas developed on the Canadian population; healthcare use was determined by self-reported overnight hospital stays and emergency room visits; quality of life was assessed using perceived health, perceived mental health, and perceived successful aging. A modified version of the Physical Activity Scale for Elderly was used to collect information on sitting time and physical activity. Crude and adjusted associations were determined by linear and logistic regression models. Models were adjusted for age, sex, sleep duration, retirement status, education level, and body mass index. Results: Strenuous intensity physical activity was significantly associated with FEV1%pred among those with asthma, COPD, and those below the LLN. Among those below the LLN, those who reported 14.1-18 hours/week (OR: 2.03, CI: 1.09-3.78) and 18.1-24 hours per week (OR: 2.57, CI: 1.40-4.72) of sedentary time were approximately 2 times more likely to report an overnight hospital stay in the past 12 months than those who reported <14 hours per week of sedentary time. Among those with asthma, participating in strengthening activities was associated with lower odds of reporting poor perceived health (OR: 0.64, CI: 0.53-0.78), poor perceived mental-health (OR: 0.72, CI: 0.60-0.88), and unhealthy aging (OR: 0.68, CI: 0.56-0.82) in fully adjusted models. Conclusions: Physical activity and sedentary time are related to both healthcare use and quality of life among adults with obstructive lung conditions. Furthermore, strenuous intensity physical activity may be an important correlate of clinical outcomes in this population.

O.17.5
EXERCISE CAN PREVENT FALLS IN OLDER ADULTS, PARTICIPATION IS POOR AND COMPLEX BUT A PUBLIC HEALTH PROGRAM WOULD BE COST-EFFECTIVE.

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SIG: Ageing

Objective. Falls are a common and highly impactful public health problem with one in three people aged 65+ falling each year and rising health costs internationally. These collaborative studies with a large multidisciplinary group of co-authors aimed to update the evidence, estimate participation in evidence-based programs, understand factors associated with participation and model cost-effectiveness of program provision. Methods. We undertook a systematic review of exercise for fall prevention (including 99 comparisons from 88 randomised controlled trials) (Sherrington BJSM 2016), a survey of over 5,681 randomly selected older people (=65 years) from the 2009 New South Wales Fall Prevention telephone survey (61% response-rate, Merom, Prev Med 2012), a systematic review and meta-synthesis of 132 qualitative studies (Franco, BJSM 2015) and a cost-effectiveness study using Markov model considering the costs and benefits of widespread rollout of a fall prevention program (Farag, Age Ageing, 2015). Results. These studies found that a) exercise can prevent falls in community dwelling older people with bigger effects (39% reduction in fall rates, Incidence Rate Ratio 0.61, 95% CI 0.53 to 0.72) from programs that include balance-challenging exercise; b) only 6% of the older NSW population participate in balance-challenging exercise; c) key themes in physical activity participation in older adults include social influences, physical limitations, competing prior- ities, access difficulties, impressions of benefits and motivation and beliefs; and d) an incremental fall prevention program cost-effectiveness ratio (ICER) of $A28,931 per QALY gained assuming program cost of $700 per person and at a fall prevention risk ratio of 0.75. Conclusions. Falls represent an urgent public health challenge for which there is now good evidence to guide investment.

O.18: Nutrition Policies and Environments (CES 2-3)

O.18.1
ASSESSING THE POTENTIAL IMPACT OF A FRONT-OF-PACK NUTRITIONAL RATING SYSTEM ON FOOD AVAILABILITY IN SCHOOL CANTEENS: A RANDOMISED CONTROLLED TRIAL

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of Sydney, Sydney, NSW; Centre for Population Health, NSW Ministry of Health, North Sydney, NSW; NSW Office of Preventive Health, University of Sydney, Sydney, NSW.

SIG: Implementation and Scalability

Purpose: Front-of-pack graphical nutritional rating of products is becoming an important strategy in many countries to improve healthy food purchases by consumers. Despite the potential of food labelling systems to inform school food service manager decision-making regarding menu content, the impact of such a system on their selection of foods to include on school menus has not been assessed. The primary aim of the study was to assess the impact of providing front-of-pack nutritional rating information on school canteen managers’ likely food selections. Secondary outcomes were canteen manager awareness, attitudes and reported barriers to using the front-of-pack information. Methods: A randomised controlled trial involving primary school canteen managers was conducted in a single region in New South Wales, Australia. Eligible participants were randomized to an intervention or control group and asked in a telephone interview which of 12 common food products sold in school canteens they would sell. Both groups received product name and brand information. The intervention group also received information regarding the nutritional rating of products. Canteen managers were also asked their awareness of and attitudes toward using the nutritional rating system in decisions regarding canteen food availability. Results/Findings: Ninety-one schools participated in the study (66% participation rate). Canteen managers in the intervention group (n=48) were significantly more likely than those in the control group (n=43) to indicate they would sell three of the six ‘healthier’ products (p = 0.036, 0.005, 0.009). There was no difference between groups in the likelihood of making available for sale any of the six ‘less healthy’ products. The majority of canteen managers who had heard of a product nutritional rating system agreed that it was helpful in identifying ‘healthier’ foods (88%, n=31). Conclusions: For childhood overweight and obesity improvements at a population level, the identification of ‘healthier’ foods and beverages needs to be simple, consistent and reliable. The inclusion of a front-of-pack labelling system as part of a school healthy eating policy has the potential to improve the availability of ‘healthier’ items on canteen menus and thus improve child dietary intake.

O.18.2
IMPACT OF A MANDATORY POLICY ON CALORIE LABELLING IN RESTAURANTS: EVIDENCE FROM A PROSPECTIVE QUASI-EXPERIMENTAL COHORT IN CANADA

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SIG: Policies and environments

Objective/purpose: In January 2017, the province of Ontario became the first Canadian jurisdiction to require sit-down and quick-service restaurants with more than 20 outlets in the province to display calorie information next to items on menus. The current study used a quasi-experimental, pre-post design to examine whether the policy influenced consumer responses among youth and young adults, including noticing nutrition information in restaurants, reported influence and behavioural impact of menu labelling. Methods: Online survey data were analyzed from Wave 1 (Oct 2016) and Wave 2 (Oct 2017) of the Canada Food Study, a prospective cohort of 16–30-year-old respondents from five Canadian cities. The current analysis examined data from the 993 participants who completed Wave 1 at baseline and Wave 2 at 12-month follow-up. Logistic regression analyses examined changes between Waves 1 and 2 among respondents from Toronto, Ontario—in which menu labelling was implemented between baseline and follow-up—and respondents from the four other provinces, in which no menu labelling was implemented (control). Measured variables included noticing of nutrition information in restaurants, reported location of nutrition information, perceived influence and behavioural impact of the noticed information, support of mandatory calorie labelling and socio-demographic factors. Results/findings: At baseline, no differences were observed for any outcome between Ontario respondents and those from other provinces. At follow-up, after menu labelling had been implemented in Ontario, respondents from Ontario were significantly more likely to notice nutrition information in restaurants and report seeing nutrition information specifically on the menu/menu board (p<.05). Ontario respondents were also more likely to report that they were
influenced by the nutrition information and to report a 'positive' impact, such as changing their order or consuming less food (p<.05). Support for mandatory calorie labelling significantly increased across all provinces, with a trend towards a greater increase in support in Ontario. Analyses will also examine socio-demographic differences and the extent to which responses were moderated by BMI, weight control efforts and disordered eating. Conclusions: The implementation of mandatory calorie labels on menus in Ontario, Canada is associated with a positive impact with respect to consumer perceptions and self-reported behaviour.

O.18.3 EXAMINING THE IMPACT OF INCLUDING 100% JUICE IN A TAX ON SUGARY DRINKS: A MODELLING STUDY
Jones A1, Veerman JL2, Hammond D1.1University of Waterloo, Waterloo, ON; 2Cancer Council NSW, Woolloomooloo, New South Wales.

SIG: Policies and environments

Purpose The consumption of free sugars is associated with excess weight gain and other adverse health effects. Sugary drinks (SDs) contain free sugars and are a substantial source of energy intake in Canada. In particular, 100% juice is consumed more widely and in greater volumes than any other SD, pointing to the need for inclusion of 100% juice in policy measures to reduce other SDs. The current study's purpose was to compare the differential health and economic impact of including 100% juice in a simulated Canadian beverage tax intervention. Methods A proportional multi-state life table-based Markov model was adapted to simulate the 2015 Canadian adult population. The model applied a 20% ad valorem tax on SSBs, as well as SDs, which included 100% juice, and accounted for any effects from substitute or complement beverages. The model simulated the effect of energy intake from beverages on 19 diseases mediated by body mass, and the direct effects of intake on type 2 diabetes. Monte Carlo simulation assessed uncertainty. Results According to national dietary intake estimates from 2015, Canadians consumed an average of 195mL SSBs and 270mL SDs/person/day. There were sizeable differences in the impacts of a SSB tax versus SDs tax: prevalence of overweight/obesity changed from 63.3% to 61.7% vs 61.0%; type 2 diabetes incidence rate decreased by -5.9% vs -7.4%. Over a 25-year period, compared to a SSB tax, a SD tax produced 47% more averted disability-adjusted life years (DALYs; 314,326 versus 460,812), 45% greater health care costs savings ($7.5 billion vs $10.9 billion Canadian dollars), and 37% more annual tax revenue ($1.0 billion CAD vs $1.4 billion CAD). Conclusions The current study suggests that a beverage tax in Canada has the potential to substantially reduce the health burden while generating health care savings and tax revenue, especially if 100% juice is among taxed beverages. Given Canadians' high 100% juice consumption, the mounting evidence on adverse effects associated with free sugar consumption, and the role of 100% juice as a substitute beverage to SSBs, there is a strong rationale for its inclusion as a taxed beverage.

O.18.4 MULTIPOLICY AND COMPLEXITY OF FOOD ENVIRONMENT IN CHINA – FINDINGS FROM A FULL SCALE FIELD CENSUS OF FOOD OUTLETS IN A TYPICAL CITY OF CHINA
Maimaiti MYL1,2, Li JY1,2, Jia MH1,2, Ma XG1,2, Zhao XY1, Zhu SK1.1Department of Nutrition and Food Hygiene, School of Public Health, Zhejiang University, Hangzhou; 2Chronic Disease Research Institute, School of Public Health, School of Medicine, Zhejiang University, Hangzhou.

SIG: Policies and environments

Purpose: Community food environment has been associated with resident's health status, and thus has received substantial attention by many researchers in recent years. However, the research was extremely limited for Chinese food environment. In fact, food environment in China is much more complicated than that in western countries. It could be attributed to the uniqueness of Chinese culture as well as rapid development of business and dramatic change of life styles. Thus, there is an urgent need to depict the multiplicity and complexity of food environment in China. Methods: A ground-truthed field census was conducted in Xihu district in Hangzhou, capital city of Zhejiang Province. The survey area was
approximately 551km² with 800 meters buffer. The census was conducted from 5th July to 29th August, 2017. Food outlets were investigated street by street and door by door by a group of well-trained volunteers and accurately positioned by the Magellan Explorist 110 device. Meanwhile, types of foods available in the store/restaurant and availability of take-out service were also recorded. According to the similarity of available food items, we categorized the outlets into 9 main types and 33 subtypes. Geocoding and food environment analysis was performed in the Arc-GIS software. Results: We accomplished 116 trips covering 2480 miles during the survey. Finally, we located 9,274 food outlets, specifically, 41 mega shopping malls, 405 supermarkets, 57 farmer's markets, 1,764 convenience stores, 846 fruit-vegetable stores, 2,692 fast food restaurants, 962 full-service restaurants, 410 Chinese special snacks, and 943 bakery and beverage stores. Fast food restaurants take 51.60% of all restaurants. Excitingly, fruit and vegetable shops are ranking No. 3 within all stores (by subtypes). Additionally, more than half of the fast food restaurants (65.53%) are available for take-out service. Conclusions: Food environment in China is complex and food access is excellent. Access to healthy foods seems reasonable with evenly distribution of Farmer's market, fruit-vegetable shops. However, our results also showed that fast food and take-out food industry were easily accessed by the residents. Thus, policy makers should pay more attention to these unhealthy food outlets and ensure the balance of community food environment.

O.18.5
THE NEXUS BETWEEN OBESITY AND FOOD INSECURITY: HARNESSING “CITIZEN SCIENCE” AND COMMUNITY SOCIAL ORGANIZATIONS TO ADDRESS THE FOOD ENVIRONMENT AND FOODWAYS IN SOUTH AFRICA

Lambert V1
1UCT Research Centre for Health through Physical Activity, Lifestyle and Health (HPALS), Division of Exercise Science and Sports Medicine (ESSM), Department of Human Biology, University of Cape Town, Cape Town.

SIG: Policies and environments

Purpose: Obesity has been described as a global epidemic and trends from LMICs shows the distribution of overweight and obesity shifts to more disadvantaged groups with increasing development. Obesogenic food and built environments most adversely affect food insecure, vulnerable urban poor. We are specifically interested in the juxtaposition of food insecurity (>40% households) and overweight/obesity (67%women/30%men) in South Africa, and how we might harness "citizen science" and community social organizations to address this problem. Methods: Using a mixed methods approach, we assessed retail food environments and food purchasing in low, middle- and high-income (SES) communities in urban Cape Town. We have longitudinal data on ecological factors related to weight gain in cohorts from these same low-SES communities, and are collecting ethnographic data on foodways. We are engaging them as "citizen scientists" to gather data on neighbourhood food environments (Discovery Tool). Finally, we are undertaking a systematic review of Rotating Credit and Savings Associations. In South Africa, these are called stokvels, and may provide a structural mechanism for addressing access to healthy, affordable food. Preliminary Results: We found persons shopping in high SES stores were more likely to purchase fruit and vegetables (F&V), dairy, snacks and sweets (P<0.001). Outshoppers (low SES persons/high SES stores) were more likely to be employed, have private transport (p<0.001), and perceived their neighborhood food environment to be less healthy (P<0.05). More shelf space was allocated for SSBs, snack and sweets than F&V in all stores, but differences were greatest in low-SES areas. In all high-SES stores, F&V received high-quality scores, compared to low-SES stores. Ethnographic interviews are underway, but preliminary results suggest that social constructs of “food” and “foodways” will play a key role in developing interventions, and that stokvels are widely utilized as an economic device. The final component will be advocacy-training based on our formative work. Conclusions: This project aligns with the WHO-endorsed "assets-based approach" which aims to build capacity to both identify the problems, and to develop bespoke solutions, by engaging meso-level actors and community-social organisations.

Jun 05, 14:50 - 15:50: Oral Presentations

O.19: Physical Activity Environments in Adults (Grand Ballroom)
O.19.1
THE IMPACT OF NEIGHBOURHOOD BUILT ENVIRONMENT CHANGES ON PHYSICAL ACTIVITY AND DIET: A SYSTEMATIC REVIEW OF BUILT ENVIRONMENT NATURAL EXPERIMENTS
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SIG: Policies and environments

OBJECTIVE: The potential for city planning to promote more equitable health outcomes is of major international research and policy interest. While many studies have identified cross-sectional associations between built environment features and physical activity (PA) or diet, evidence from longitudinal studies, synthesised into systematic reviews, is required to guide evidence-based policy. The purpose of this study was to systematically review natural experiment studies of the built environment, and to summarise study characteristics, study quality, and impact of changes in neighbourhood built environment on PA and diet outcomes. METHODS: A systematic review was conducted, with 5 databases searched: Embase, MEDLINE, PubMed, Web of Science, and CINAHL. Keywords relating to study design, built environment, health, and health-related behaviours were utilised, and searches conducted in May 2014 and re-run in May 2017. Eligibility criteria aligned with the PICOS (Population, Intervention, Comparisons, Outcomes, Study designs) strategy, and data on study design, intervention type, and efficacy on PA and diet outcomes were extracted. Risk of bias was also assessed. RESULTS: Nineteen papers, reporting on 15 different exposures, employing longitudinal natural experiment designs were identified and included in this review. Four studies were quasi-experimental and included a comparison group and 11 were pre-post/longitudinal studies without a comparison group. Studies reported on the impact of redeveloping or introducing cycle and/or walking trails (n=5), rail stops/lines (n=4), supermarkets and farmers markets (n=4), and park and green space (n=2). Six of 15 studies reported at least one beneficial impact on PA, diet, or health (e.g., body mass index) outcomes. CONCLUSIONS: While several studies reported a beneficial impact of built environment change on PA, diet, or health, due to limitations in study design and reporting, as well as the wide array of outcome measures reported, drawing conclusions to inform policy was challenging. Future research should consider a consistent approach to measure the same outcomes (e.g., using measurement methods that collect comparable PA and diet outcome data), to allow for pooled analyses. Adopting such an approach would better inform future city planning, as it would enable clearer identification of the specific characteristics of change to environments that facilitate optimal health outcomes.

O.19.2
ENVIRONMENTAL AND MOTIVATIONAL DETERMINANTS OF PHYSICAL ACTIVITY AMONG CANADIAN INUIT IN THE ARCTIC
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SIG: Policies and environments

Over the past 50 years, Canadian Inuit have experienced significant lifestyle transition from a physically active hunter-gatherer subsistence living to sedentary ways of life. Research on physical activity in the population is limited whilst recent studies have relied on self-reported measures and produced inconsistent findings. Objective: The purpose of the current study was to objectively measure the levels of physical activity among Nunavut Inuit adults, and explore the sociocognitive and environmental factors influencing the number of steps taken per day. Methodology: Inuit and non-Inuit adults (N = 272) were randomly selected from a cross-section of four communities in Nunavut to participate in a 7-day pedometer study during winter and summer seasons. Participants were asked to complete the Neighbourhood Environmental Workability Scale (NEWS) to examine the influence of environmental factors on the number of steps taken, and Behavioral Regulation of Exercise Questionnaire (BREQ-3) to determine whether the impact of the environmental factors on the number of steps taken was mediated by motivational regulation.
Data were analyzed using descriptive statistics and hierarchical linear regressions. Results: Nunavut Inuit adults were generally inactive at a rate of 4186 ±smn; 1446 and 5027±smn;1799 steps per day, during winter (n=169) and summer (n=148), respectively. There were no seasonal and age effects on the number of steps taken. However, a gender effect and community differences were observed; males were more physically active than females, while Iqaluit residents were generally more physically active than Resolute Bay residents. Community walkability, good infrastructure and safety were found to be positive environmental predictors of steps taken and this was partially mediated by identified motivational regulation. The mediation effect was found to be robust across seasons. Conclusion: Although Nunavut Inuit adults were generally inactive, physical activity can be promoted by improving (perceived) infrastructure and safety.

O.19.3

THE MODERATING ROLE OF SOCIAL NEIGHBOURHOOD FACTORS IN THE ASSOCIATION BETWEEN PHYSICAL NEIGHBOURHOOD FACTORS AND WEIGHT STATUS

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SIG: Policies and environments

Objective: To investigate the moderating role of social neighbourhood factors in the association between physical neighbourhood factors and weight status. We explored both the separate and simultaneous influences of physical and social neighbourhood factors on body weight, as hypothesized by socio-ecological models. Methods: We used data from 5,199 participants in the cross-sectional SPOTLIGHT study, conducted in 59 neighbourhoods of varying socioeconomic status and residential density in five European urban regions. Participants reported on their height, weight and sociodemographic characteristics. Using an innovative Google Street View-based virtual audit, four objectively measured aspects of the physical neighbourhood environment were assessed: presence of recreational facilities, features of the active transportation environment, neighbourhood aesthetics and presence of food outlets. Social neighbourhood factors were self-reported and included social network, social cohesion, social trust, neighbourhood socio-economic status (SES) and perceived crime. Outcome measures were Body Mass Index (BMI) and overweight status (BMI = 25.0). First, main associations were analysed using multilevel regression analysis adjusted for confounders. Then, moderation analysis was conducted by adding interaction terms between physical and social factors to the main association models. Results: Significant main effects were found between features of the active transportation environment and BMI (B=-0.21, 95%CI= -0.40; -0.02) and overweight status (OR=0.91, 95%CI= 0.83; 0.99). Higher social networks, social cohesion and social trust levels, and high neighbourhood SES were associated with lower BMI levels. Moderate social cohesion levels and high neighbourhood SES were associated with decreased odds of overweight. Several significant interaction terms were detected, but no significant associations between physical neighbourhood factors and BMI/overweight status were found when stratifying for social factors. Conclusions: We found evidence for independent effects between physical and social neighbourhood factors with BMI and overweight status, but we did not find a clear joint relationship. The use of other social and physical neighbourhood factors, or the use of objective weight status data, may help to clarify these complex relationships. The evidence from this study may provide entry points for community-based interventions aimed at altering the physical and/or social environment with the aim of reducing the prevalence of overweight and obesity.

O.19.4
GEOFLASHE: EXPLORING THE ROLE OF NEIGHBORHOOD WALKABILITY AND SOCIOECONOMIC STATUS ON ADOLESCENT PHYSICAL ACTIVITY
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SIG: Policies and environments

Objective: Spatial data are increasingly used in behavioral studies to understand multilevel influences on health behaviors. Neighborhood built environment and socioeconomic status (SES) have been associated with physical activity. The purpose of this abstract is two-fold: 1) To describe the availability of the National Cancer Institute’s (NCI) geoFLASHE spatial data for examining contextual correlates of health behaviors and; 2) To provide an example of how these data can be used to examine the role of neighborhood walkability and SES on adolescent physical activity in the U.S. Methods: We used adolescent data (n=1,302) from the NCI Family Life, Activity, Sun, Health and Eating (FLASHE) study. Minutes per week of moderate to vigorous physical activity (MVPA) were calculated using a combination of self-report and accelerometer data. Adolescents' home addresses were geocoded and linked to U.S. census data at varying street network buffer sizes. Factor analysis revealed three neighborhood walkability factors: 1. high density, 2. older homes, 3. short commutes. Neighborhood SES was measured using the Yost index derived from census data. Multiple linear regressions examined associations between neighborhood walkability and adolescent MVPA, and whether those associations were moderated by neighborhood SES. We controlled for adolescent age, gender, race/ethnicity, parent education, and neighborhood urbanicity. Results: All walkability factors were significantly associated with adolescent MVPA using home neighborhoods defined by both 400m and 1200m street network buffers. Living in neighborhoods with higher density (B=9.2, p=0.001) and older homes (B=4.4, p=0.02) were positively associated with MVPA. Living in a neighborhood with shorter commutes, and fewer by public transit, was negatively associated with MVPA (B=-5.1, p=0.03). The positive association between living in a higher density neighborhood and MVPA was stronger for those living in neighborhoods at the 3rd and 4th SES quintiles, compared with those in the lowest SES neighborhoods. Conclusions: Neighborhood walkability was associated with adolescent MVPA in this national sample of U.S. adolescents. For adolescents living in higher SES neighborhoods, the association between living in a high density neighborhood and MVPA was strengthened, suggesting that the walkability experienced in high density neighborhoods, or types of physical activities engaged in, may potentially vary by neighborhood socioeconomic factors.

O.19.5
OBJECTIVE, BUT NOT PERCEIVED, BUILT ENVIRONMENT MODERATED PHYSICAL ACTIVITY CHANGES AMONG RURAL OVERWEIGHT AND OBESE WOMEN PARTICIPATING IN A COMMUNITY-BASED RANDOMIZED CONTROLLED TRIAL
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SIG: Policies and environments

Objective: To examine whether changes in physical activity (PA) were moderated by the built environment among women receiving a behavioral change intervention in 16 rural US communities Methods: 194 overweight, sedentary, and midlife and older women (age range = 41-84 years [mean = 59 years]; 26.8% overweight; 73.2% obese) participated in a 24-week community randomized trial in Montana and New York, between 2015 and 2016. Eight towns received the 48-session (one hour each) Strong Hearts, Healthy Communities (SHHC) intervention (n=101), consisting of strength training, aerobic exercise, nutrition education, and civic engagement. The other eight towns received an education-only, 6-session (one hour each) minimal control intervention, Strong Hearts, Healthy Women (SHHW) (n=93). PA changes were assessed using accelerometers (Actigraph wGT3X-BT). Objective built environment was assessed
using Walk Score (WS) of participants' home address. WS was treated as a 4-level categorical variable using participants' quartiles as cut-offs. Perceived built environment was assessed using the Health Behavior and Environment Questionnaire that asked participants to rate how pleasant their community was as a place to be physically active on a four-point scale ranging from "very pleasant" to "not pleasant at all." We hypothesized that participants living in areas with a higher WS would have greater PA improvements. Linear mixed models were used to test our hypothesis controlling for site, participants' age, education, marital status, number of chronic conditions, and baseline PA. Analyses were conducted using SPSS 22. Results: The interaction between WS and the intervention was significant in the changes in daily step counts (p=0.01) and moderate-to-vigorous physical activity (MVPA) minutes per day (p=0.033).

Among participants living in the lowest WS quartile, SHHC participants significantly increased their daily step counts (Δ=2,320, p=0.004) and daily MVPA minutes (Δ=13.3, p=0.018) in comparison to control participants. Perceived built environment did not moderate any PA changes (p>0.05). Conclusions: Contrary to expectations, SHHC participants increased PA significantly if they were living in a neighborhood with a lower WS rather than higher WS. Findings suggest that the SHHC intervention offered indoor exercise opportunities to rural women that helped them overcome environmental and related perception barriers to increasing PA.

O.20: Interventions With Apps in Nutrition and Physical Activity (Salon 1-2)

O.20.1 CANCER SURVIVORS' EXPERIENCES OF USING PUBLICLY AVAILABLE PHYSICAL ACTIVITY MOBILE APPS: A QUALITATIVE STUDY

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SIG: E- & m-health

Purpose: Physical activity (PA) can improve a range of cancer outcomes following a diagnosis. Digital interventions have shown potential in PA promotion among cancer survivors. There are many PA mobile applications (apps) available for public use but none specifically developed for cancer survivors have been identified. We aimed to assess breast, prostate and colorectal cancer survivors' opinions and experiences of using publicly available PA apps. Methods: Each participant was randomly assigned to download two of four apps (Human, The Walk, Johnson & Johnson's 7 Minute Workout, Gorilla Workout). Participants used each app for one week consecutively. Following this, in-depth semi-structured telephone interviews were conducted to understand participants' experiences of using the apps and how app-based PA interventions could be developed in the context of cancer. The interviews were analysed using thematic analysis. Results: 32 participants took part; 16 (50%) had prostate cancer, 8 (25%) had breast and 8 (25%) had colorectal cancer. Three overarching themes were identified. The first, "Users' experience of the tested apps", encompassed participants' perspectives on the specific features of the apps tried in this study and the extent to which they engaged with them. Factors influencing engagement included how relevant they felt the apps were to them as an individual, the amount of faith/confidence they had in these apps, and the app's usability. The second theme, "Cancer-specific app development", included discussion around what participants felt was important for the development of an effective PA app-based intervention following a cancer diagnosis. This included the need to acknowledge the way cancer affects people in different ways and the need for flexibility and tailoring. "Integrating apps into healthcare services", covered aspects relating to the implementation of this type of intervention and the survivors' perspectives on who should recommend a PA app, when, and how this would be most effective. Conclusions: The results of this study can inform the development of an app-based PA intervention for cancer survivors. We believe this methodology was an effective and efficient approach to intervention development within a digital health context and could be used across physical activity, sedentary behaviour and nutrition research.
Purpose: The consumption of energy dense foods at school is over represented in children's lunchboxes. Effective and scalable interventions are urgently required. This study assesses feasibility and acceptability of an m-health intervention, 'SWAP IT', targeting parents to swap what's packed in the lunchbox from discretionary 'sometimes' foods, to 'everyday' core foods. Preliminary effectiveness on mean total energy (kilojoules), energy and percentage of energy from 'sometimes' foods packed in children's lunchboxes is reported. Methods/Design: A pilot RCT was conducted with twelve primary schools (n=1768 students, mean age=8.0yrs) with the required school communication app (school app) in New South Wales, Australia. Six schools were allocated to receive a multi-component intervention based on the Health Promoting Schools framework and designed using the behaviour change wheel. The intervention comprised five key strategies including; school nutrition guidelines, curriculum lessons, information to parents (sent via the app) and resources. Outcome measures were taken at baseline and immediately post intervention (6 months) and included intervention feasibility, parent acceptability and mean energy (KJ) packed in lunchboxes assessed via observation. Linear mixed models estimated the preliminary efficacy. Findings: App downloads increased by a mean of 74 parents per school throughout the intervention. Viewing rate of the pushed messages to parents ranged from 39-100% of families over ten messages. A large proportion (71%) of parents reported awareness of 'SWAP-It' and 55% reported making healthier swaps in the lunchbox. Frequency of pushed messages was considered acceptable by 95% of parents and 84% reported the content was helpful. A non-significant reduction favouring the intervention group in the mean energy of foods packed within lunchboxes was observed between groups (-129.66KJ, CI=-360.83, 101.50, p=0.24). Energy from 'sometimes' foods decreased (-221.89KJ, CI=-477.53, 33.74, p=0.08) and percentage energy from 'sometimes' foods decreased in intervention schools (-5.15%, CI=-11.08, 0.78, p=0.08). Discussion: 'SWAP-IT' appears feasible, acceptable and shows promise in reducing the energy content and nutritional composition of school lunchboxes. A fully powered trial is warranted to determine the efficacy of the intervention on energy packed within the lunchbox and the impact on total daily dietary intake and child weight status.

O.20.3
ASSESSING NAVIGATION IN EHEALTH APPS: A MARKOV CHAIN ANALYSIS OF THE START2CYCLE APP

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Purpose: Mhealth apps generate vast amounts of user data. Increasingly, researchers are discovering the opportunities of these data to assess the engagement levels of their applications. To date however, the analysis of these data is often limited to descriptive analysis. Using the right data mining techniques, application log data can offer significantly deeper insights. The purpose of this study was to map the user paths in an mHealth application and improve the engagement with the app. Methods This study used the log data of the ‘Start2Cycle’ application, developed by the Flemish public broadcaster (VRT), Ghent University and Vrije Universiteit Brussel. The goal of this application was to motivate users to start and continue cycling. A gamification approach was used, challenging the users (N=22) to cycle as much as possible in a 4 week period. The participants were randomly divided into two teams. The team who rode the most kilometers at the end of the trial, won the challenge. A transition matrix between the 9 pages of the app was composed. From this matrix, a Markov chain can be constructed, enabling an intuitive user behavior analysis tool. Results Figure 1 demonstrates the results. The app pages are represented by the nodes and node size is determined by the amount of visits on the page. The connections between the
nodes represent the probability of a user going from one page to another. The 'coach' page was the starting point for many routes in the app. In figure 1, only paths with a probability higher than 0.21 are displayed. Exiting the app mostly happened tracking a route or visiting one of the gamification pages. Conclusions Using Markov chains to assess in-app navigation presents an innovative method to evaluate mHealth interventions. The insights can be used to improve navigation of the app, flow between behavior change techniques and elements in the app. For example, by seeing from which pages users log out, it can be assessed which part of an intervention receives too little attention from the participants. This method can also be applied to evaluate the usability of the app.

O.20.4
"SWAP IT FOR CHILDCARE": USING THE BEHAVIOUR CHANGE WHEEL TO INFORM AN APP BASED INTERVENTION TO INCREASE PARENTS' PACKING OF HEALTHY LUNCHBOX FOODS FOR CHILDREN ATTENDING CENTRE BASED CHILDCARE.

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SIG: Early care and education

Purpose: Foods packed in children's childcare lunchboxes contain inadequate vegetables and excessive discretionary foods. Previous interventions to improve packing of healthy foods have been limited in their ability to reach and engage parents. Applications (apps) on smart phones, increasingly being used by childcare services to communicate with parents, may provide an opportunity for the delivery of evidence-based behavioural change techniques that target barriers to packing of healthy foods. We report application of the behaviour change wheel via a two-phased approach to inform the development of a healthy lunchbox intervention targeting parents ("SWAP It for Childcare"). Methods: The Behaviour Change Wheel (BCW) was chosen as theoretical framework to support the design of the "SWAP It for Childcare" intervention. In Phase 1 we collected data from literature and completed 30 semi-structured interviews to explore parental barriers and facilitators to packing healthy lunchboxes. In Phase 2 findings from the literature and interviews were subject to behavioural analysis, using the Behaviour Change Wheel Framework. Relevant behaviour change techniques were identified to address these barriers, informing the content of the intervention strategies. Findings: Parental barriers identified included: lack of knowledge about selecting appropriate foods; time versus convenience; perceived cost; conflicting nutrition messages from services; child food preferences; belief that there is no need to limit discretionary foods; and intentions to include treats and rewards. An intervention consisting of six key strategies incorporating the use of 8 behaviour change techniques addressing identified barriers was developed. Existing features of childcare communication App technology such as the ability to regularly provide information and online links, convenient access to static information and use of prompts (push notifications), were utilised as modes of delivery for behaviour change techniques. Conclusions: The research provides insights into parental barriers to packing healthy foods and describes how a behaviour change framework can be applied to inform the systematic development of a childcare parent based intervention. The resulting innovative intervention represents the first to employ the use of childcare communication App technology to directly reach and engage parents and improve food packed in child lunchboxes addressing a gap identified by previous interventions.

O.20.5
SELECTING AN APP THAT SUITS YOU: PRESENTLY USED BEHAVIOUR CHANGE TECHNIQUES AND EXPECTATIONS ARE RELATED TO RUNNING APP SELECTION

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SIG: E- & m-health
Objective: Behavior change techniques (BCTs) are important elements in promoting Physical activity (PA), for instance via health apps. However, no research has investigated whether the extent to which people engage in BCTs relates to health app selection and usage. This study investigated how self-monitoring, social support, goal-setting, and searching for feedback relate to app selection and past and intended frequency of app use. We investigated whether (1) the extent to which people apply BCTs themselves is related to running app use, and (2) the fulfillment of app expectations is related to (intended) usage during and after running routines. Beyond BCT elements, we focused on entertainment purposes for app use, including looking stylish. Methods: Cross-sectional data on (intended) running app usage, self-monitoring, social support, goal-setting, and searching for feedback in the past month were available from 294 runners (Mean age 39.89; 54.2% female). Also, they were asked whether they thought that their app(s) provided them with the above BCTs. Data were analyzed through logistic and linear regression analysis. Results: Nearly two-thirds (65.7%) had used a running app during their running routine in the past four weeks. People were more likely to select running apps when they searched for more performance feedback. Past usage during running sessions was not predicted by any BCTs or entertainment purposes, but higher usage after running sessions was associated with lower fulfillment of expectations of self-monitoring (B = -0.353; t = -2.471; p = .015). Furthermore, Intended usage in the following four weeks was related to higher perceived stylishness of the app (B = 0.599; t = 3.306; p = .003), and with lower fulfillment of expectations of social support from their app (B = -0.374; t = -2.027; p = .044). Conclusions: Findings indicate that different BCTs in running apps are relevant for app usage during and after running routines as well as intended future use. The findings also suggest that people use running apps to complement BCTs they already engage in, rather than substituting them. The results of this study are helpful for understanding why and when people select and use mobile running apps.

O.21: Interventions in youth’s Physical Activity (Salon 3-4)

O.21.1
TO EVALUATE THE IMPACT OF THE YOUTH-PHYSICAL ACTIVITY TOWARDS HEALTH (Y-PATH) INTERVENTION ON PHYSICAL ACTIVITY (PA) LEVELS IN YOUTH.
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: To evaluate the impact of the Youth-Physical Activity Towards Health (Y-PATH) intervention on physical activity (PA) levels in youth. Methods: A total of 565 participants from 20 schools (n = 10 intervention) participated in the study. Data were collected on all participants at two time points; baseline (September 2013), and one year follow-up (September 2014). Data were collected on a subsample of 10 schools (intervention n = 5, total participant n = 276) at two year follow-up (September 2015). The control condition continued with normal care, while the intervention condition received a multi-component intervention including Y-PATH physical education (PE) delivered by a specialist PE teacher. The primary outcome measure was minutes of PA. Average moderate-to-vigorous physical activity (MVPA) per day, 15 fundamental movement skills (FMS), health-related fitness, and weight status were assessed. The primary outcome (PA) was assessed from baseline to one year follow-up and from baseline to two year follow-up using 2-level (student, school) multi-level modelling adjusted for baseline values of the outcome, and potential confounders. Differences in intervention by subgroup (gender, weight status, FMS level and HRF level) were explored using statistical interaction. Statistical significance was set at p<0.05, and at p<0.10 for interaction terms. Results: Significant between-groups effects were observed for Total Weekday MVPA at two year follow-up (ßa;=11.66 (5.25, 18.07) p<0.001). Interaction analyses revealed that the intervention was most effective for participants who are overweight and obese (OWOB), have low VO2max levels and females, during different time periods. Interactions will be presented in detail in the paper. Conclusion: The Y-PATH intervention resulted in significant long-term effects on Total Weekday MVPA. The Y-PATH intervention is effective for the most at risk adolescents in the population, namely i) those who are OWOB, ii) those with low aerobic capacity, and iii) the more inactive gender (i.e. female). Future research should evaluate the efficacy of targeted strategies aimed at increasing PA behaviour during specific time periods. The evaluation of the Y-PATH intervention effect over a longer duration of time is also justified, to
determine whether the observed halt of the age related decline in PA is retained over time.

O.21.2
THINKING WHILE MOVING: EVALUATION OF TEACHER PROFESSIONAL LEARNING
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SIG: Implementation and Scalability

Objective: Many Australian schools are failing to provide children with the necessary skills or opportunities to become physically active across the lifespan. Education authorities, school executives and teachers are reluctant to make policy and programming changes for issues they perceive to be outside the core business of student learning. Lack of time, the crowded school curriculum with a focus on academic achievement, and the lack of support from school leadership are among the biggest barriers to the successful implementation of school-based physical activity programs. Integrating physically active lessons into the mathematics curriculum has the potential to increase physical activity, reduce sedentary time and enhance learning. Methods: Building on the success of the EASY Minds cluster RCT for improving student physical activity levels, and academic outcomes an evidence-based professional learning workshop (Thinking while Moving) and online resources were developed for multi-site dissemination. During 2016-2017, 21 professional learning workshops have been presented across NSW, Australia, for teachers (n=482) from public schools (n=282). Follow-up surveys were administered and a stratified random sample of participants were interviewed using a semi-structured discussion framework. Results: Teacher evaluation of the professional learning workshop revealed high participant rating (out of five) for positive impact on teaching skills 4.83 (.43) and confidence to teach movement-based mathematics 4.71 (.47). Furthermore survey and interview data revealed that 87.5% of attendees developed their own lessons since attending the workshop, and over 50 % have integrated physical activity in other curriculum areas. Themes emerging from qualitative analysis included improved student mathematical engagement and motivation, and prevailing barriers to implementing integrated lessons (e.g., lack of equipment). Interestingly 95% of participants expressed a desire to attend similar training to align physical activity with the school English curriculum. Conclusions: The Thinking while Moving program was successfully implemented as dissemination supported by the Department of Education, and was highly rated by teachers. Programs that are designed to increase children's physical activity and also enhance their academic outcomes are likely to be particularly attractive to teachers, especially if they are designed in partnership with education authorities (e.g., NSW Department of Education), who have a vested interest in dissemination.

O.21.3
ASSESSING THE SUSTAINED IMPACT AND MEDIATORS OF HEALTH BEHAVIOR CHANGE OF THE “HEALTHY HABITS, HEALTHY GIRLS – BRAZIL CLUSTERED RANDOMIZED CONTROLLED TRIAL FOR BRAZILIAN ADOLESCENTS: DO WE NEED TO RE-THINK THE PRIMARY OUTCOME OF OBESITY PREVENTION INTERVENTIONS?
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SIG: Socio-economic inequalities

Background: Pediatric obesity is a major public health concern in low- and middle-income countries (LMIC) such as Brazil. There is an urgent need for preventive programs for adolescents, the assessment of their sustained impact, as well as identification of the mediators of effects on body composition. Purpose: This study evaluates the 12-month impact of the Healthy Habits, Healthy Girls –sh;Brazil school-based obesity prevention program on body composition and tests behavior mediators of change. Methods: A cluster randomized controlled trial with 253 adolescent girls [mean (SE) age = 15.6 (0.87) years] from 10 public schools (i.e., 5 pairs) in the city of São Paulo, Brazil. Body mass index (BMI), waist circumference (WC), dietary intake, physical activity (PA) and sedentary behaviors (SB) during the weekdays and weekends were assessed at baseline, 6-month (post-test) and 12-month (follow-up). ANCOVA and mediation
analyses were performed using intention to treat principles. Results: There was no intervention effect on BMI, the primary outcome. Alternatively, a significant effect was found on waist circumference (F=3.314, p=0.03). This effect was mediated by hours of TV/week (AB =0.14 (se 0.10), 95%CI 0.01 to 0.44), total SB/week (0.27 (0.15), 0.04 to 0.64) and total SB/weekend (0.21 (0.13), 0.01 to 0.56). The largest mediator total time on SB/week explained 12% of the variance in WC. Conclusion: H3G-Brazil had a significant but weak effect on WC but not on BMI, the primary outcome. Since WC is more strongly related to metabolic health, future obesity prevention intervention studies may wish to use WC as a primary indicator for improvements in body composition. SB mediated the intervention effect on WC at 12-month follow-up. These findings might have implications for future obesity prevention research with girls from LMIC.

O.21.4
CAN A TEACHER-LED RCT IMPROVE ADOLESCENT GIRLS’ PHYSICAL SELF-PERCEPTION AND PERCEIVED MOTOR COMPETENCE?

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SIG: Theories of motivation

Purpose: Low actual and perceived motor competence (MC), are potential barriers of physical activity (PA) participation in youth, particularly among females. If these potential barriers are addressed via intervention, youth may be more likely to not only become physically active but also maintain PA levels throughout the lifespan. This teacher-led randomized controlled trial aimed to i) improve adolescent girls' perceived MC and physical self-perception, and ii) assess whether change in actual MC across the intervention was associated with perception outcomes. Method: Four all-girl Australian secondary schools were randomized into intervention or control groups. In total, 171 Year 7 girls (92 control/79 intervention, mean age 12.5 ±smn; 0.3 years) completed all measures. Perceived competence was measured by the Physical Self-Perception Profile (PSPP) and the pictorial scale of Perceived Movement Skill Competence (PMSC). Actual MC was measured using the Victorian FMS Assessment instrument. Mixed models were conducted with post physical self-perception or perceived MC as the outcome, adjusting for baseline perceived competence, group and change in actual MC as well as clustering at school and class levels. An interaction term between change in MC and intervention status was included in the model to test the secondary aim. Results: There were significant intervention effects on girls’ physical self-perception (t=7.10, p<0.001), perceived total skill (t=8.43, p<0.001), perceived object control skill (t=9.30, p<0.001) and perceived locomotor skill (t=3.02, p=0.003) at follow-up. Change in actual MC was not associated with post-intervention perceptions. Conclusion: Targeting perceived MC and physical self-perception as part of an intervention that improves actual MC, may be a promising future direction for protecting the declining levels of PA in early adolescent girls. However, it is recommended that considerable attention be paid to improving adolescents’ assessment skills, to ensure perceptions of their MC align more closely with their actual MC performance.

O.21.5
"BE THE CHANGE": A PHOTOVOICE PROJECT TO EXPLORE YOUTH'S PERCEPTIONS OF COMMUNITY HEALTH ISSUES

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SIG: Policies and environments

Purpose: Photovoice, a community-based participatory research methodology that allows individuals to capture their perspectives through photography (Wang & Burris, 1997), has been used with youth to explore, create discussion, and incite social action related to many diverse health and social issues (Catalani & Minkler, 2010). The purpose of this study was to explore, using photovoice methodology, the
health-related issues that were perceived as important by adolescents participating in a 5-day social justice camp in London, Canada. Methods: Adolescents enrolled in the "Be the Change" summer camp (July, 2017) were invited to participate in the study. Participants received photovoice training (Wang & Redwood-Jones, 2001), were divided into three groups (n = 5 each), and were given digital cameras to photograph community health issues that were identified by the group as important. Using a 3-step analysis procedure, participants then: (1) selected 1-3 photographs that best reflected the selected issue(s), (2) contextualized the photographs using "SHOWed", a mnemonic to foster critical thinking and group discussion, and (3) codified photographs into themes (Wang & Burris, 1997). Findings: Participants were 15 adolescents (Mage = 12.9 years, 66.7% female, 61.1% White). In total, the three groups of participants took 101 photographs. Following prolonged group-based discussions, 31 photographs were selected for contextualizing and subsequently codified into 10 themes, including: unhealthy lifestyles, environment, human rights, and environmentally-friendly transport (Group 1); animal welfare and rights, kindness and social health, clean water, and pollution and recycling (Group 2); and pollution and environmental strengths (Group 3). Though the initial task was to use photovoice to identify community health issues, participants frequently identified and contrasted both weaknesses and strengths in the community. Participants created posters to showcase the projects, which were viewed by and discussed with members of a local Youth Advisory Council. Conclusions: "Be the Change" participants identified diverse community health concerns, as well as numerous community strengths. Implications and recommendations, including empowering adolescents through photovoice and creating opportunities for youth to become advocates for healthy changes in their communities, will be discussed.

O.22: Physical Activity Implementation Studies in Schools and Pre-Schools (Drawing Room)

O.22.1
CAN IMPLEMENTATION OF A PHYSICAL ACTIVITY INTERVENTION FOR PRE-SCHOOLERS BE MAINTAINED LONG-TERM?
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SIG: Early care and education

Purpose: Few physical activity (PA) interventions facilitated in early childhood education and care (ECEC) settings have been evaluated long-term (>1 year), with mixed results being reported. Understanding factors that contribute to the success of long-term PA interventions is important, however intervention fidelity is rarely reported. Additionally, there is little evidence as to what types of support might increase intervention fidelity. Therefore the aims of this study were: (1) to describe the level of intervention fidelity at three points of an 18-month intervention and (2) to examine the relationship between the type of support provided to ECECs and changes in intervention fidelity. Methods: Direct observations were conducted in 21 ECECs at 5-, 10- and 16-months after the start of the Jump Start intervention. Day-long observations were conducted using an intervention specific observation tool. Inter-observer reliability tests were conducted after observations on the same day in the same ECEC. Intervention fidelity (%) was calculated for each centre. Following the first direct observation, centres were classified as high, medium and low implementers. Support strategies provided throughout the rest of the intervention were determined by the intervention fidelity percent at first direct observation. Results: Inter-rater reliability revealed good-to-excellent agreement (range: 72.4% - 90.6%). Intervention fidelity increased in the majority of ECECs (86%) at 10-months, with an overall increase of 11.7% at 16-months. Between the second and the third observations, seven ECECs increased their intervention fidelity. Between the first and the second observation, phone calls were the only type of support that was significantly related to the positive change in intervention fidelity (r = 0.532, p = 0.013). The most effective type of support between the second and third observations is currently being analysed. Data will be presented. Conclusions: Ongoing support throughout the intervention period resulted in an increase in intervention fidelity between 5- and 10-months with the changes being maintained at 16-months. Phone calls were the only support strategy related increased intervention implementation. Only a few studies have reported fidelity and strategies of support for educators, thus additional studies are needed to clarify optimal support strategies to increase intervention implementation fidelity long-term.
0.22.2
IMPROVING IMPLEMENTATION OF EVIDENCE-BASED OBESITY PREVENTION POLICIES AND PRACTICES IN CHILDCARE SERVICES: FINDINGS FROM A SERIES OF RCTS CONDUCTED BY THE HUNTER NEW ENGLAND POPULATION HEALTH RESEARCH GROUP

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SIG: Early care and education

Purpose: Supporting childcare services to implement policies and practices which encourage children to eat healthily and be physically active has the capacity to make an important contribution in reducing the health burden of excessive weight gain in early childhood. Few trials, however, have been conducted to examine the strategies that may be most effective in improving implementation of such policies and practices in this setting. This presentation will describe the findings and key learnings of a series of RCTs of interventions to support the implementation of obesity prevention policies and practices in centre based childcare services. Methods: Three RCTs were conducted in the Hunter New England region of NSW, Australia between 2010 and 2015. Each trial sought to improve childcare service implementation of evidence-based policies and practices to support child healthy eating and physical activity. The first trial tested the effectiveness of a low intensity intervention comprised of multiple performance review and feedback cycles delivered via telephone over 9 months; the second was a more intensive multi-component intervention delivered over 4 months via face to face and telephone; the third was a high intensity multi-component intervention delivered over 12 months and via multiple in-person and telephone contacts. Data on policy and practice implementation was assessed via observation and telephone surveys of childcare service staff. Results/findings: Findings from the first trial suggest that the performance review and feedback intervention was largely ineffective in improving any of the targeted policies and practices. The impact of trials 2 and 3 were equivocal, with significant improvements in the implementation of 1/11 and 2/7 targeted policies and practices respectively. Conclusions: Key learnings included the difficulty of implementing multiple changes to childcare services environments simultaneously, the need for sound measures of implementation constructs in order to assess and understand intervention mechanisms to enable the development of more efficient and effective interventions.

0.22.3
EFFECT OF AUTONOMY-SUPPORTIVE CLIMATE IN PHYSICAL EDUCATION CLASS ON YOUTHS’ DEVELOPMENTAL TRAJECTORIES OF PHYSICAL ACTIVITY

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SIG: Theories of motivation

Purpose: Lack of physical activity is partly responsible for the obesity pandemic observed around the world. Physical education (PE) is the only place where all children to meet and develop physical activity (PA) habits and motivation. The goal of this study was to test the influence of PE teachers on trajectories of childrens’ motivational resources and physical activity level during elementary school. Methods: A study involving thirteen teachers and more than 1000 students was conducted. A multi-wave-multi-cohort accelerated design was used. Measures of students' motivational resources were assessed via questionnaires and PA via accelerometers. Teachers' behaviors were assessed by children and teachers via questionnaires, but also objectively through videotapes of PE lessons. Results: Results demonstrated that PA and motivational resources decline over school years. Moreover, our results emphasize the role of teacher autonomy-supportive style. Differences between self-reported, perceived, and observed teachers style on trajectories were also found. Teachers’ behaviors were responsible for part of the trajectories of students’ PA and motivational resources across elementary school. Conclusions: Youths’ habits are an important determinant of adult habits. Therefore, teachers could strengthen motivation for PA or reduce the decline over years by creating a more autonomy-supportive climate in their lessons. Professional
development programs intended to support students' motivation toward PA, based on self-determination theory, could reduce the effect of physical inactivity on obesity.

O.22.4
PROCESS EVALUATION OF THE SWITCHTM TRAINING MODEL FOR ENHANCING SCHOOL WELLNESS
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SIG: Implementation and Scalability

Objective: Few school-based wellness intervention programs have demonstrated sustainability. The purpose of the present study was to provide a process evaluation of a new school wellness training model that integrated motivational interviewing (MI) to promote effective adoption and implementation of an evidence-based childhood obesity prevention program called SWITCHTM - School Wellness Integration Targeting Child Health. Methods: The study took place in Iowa, United States in spring 2017. School staff members (n=23) from eight elementary schools participated in five online SWITCHTM training sessions (two based on integrated MI conversations). The Motivational Interviewing Treatment Integrity (MITI) scale was administered to assess the extensiveness of MI elements among the training conversations. The school coordinators completed a survey capturing engagement and experience with SWITCHTM. In addition, 602 students in fourth and fifth grades at baseline and 514 students at post-test completed a questionnaire to evaluate changes in attitudes and subjective norms from the programming. Results: The training webinars were sufficient to enable school SWITCH teams to initiate and run the SWITCH programming on their own. All schools successfully used the online content-management system, enrolled teachers and successfully promoted student engagement. The MITI results demonstrated that MI elements were successfully integrated into the two MI-based training sessions (MI global scores ranged from 4.00 to 5.00 on a 5-point scale). All schools rated at least somewhat satisfied (on a 3-point scale) with the overall SWITCHTM implementation (M/SD=2.34/.49) and SWITCHTM training (M=2.35, SD=.49). All but one staff members reported that the SWITCHTM training promoted team cohesion during implementation (M/SD=2.55/.60). The schools also provided constructive feedback on how to improve future SWITCHTM programming. In addition, both boys and girls reported favorable changes in most of the attitudes/subjective norms factors underlying physical activity (Do), screen time (View), and fruits and vegetable consumption (Chew) behaviors. Conclusions: This study supports the utility of employing MI as an intervention strategy to promote school engagement in school-based wellness programming. The training may have empowered the school leaders to take action but additional research is needed to test effects. Broader deployment of this model offers potential to enhance the dissemination of the SWITCHTM programming.

O.22.5
SUSTAINABLE IMPLEMENTATION OF SCHOOL-BASED PHYSICAL ACTIVITY: A FOUR-STAGE DELPHI CONSENSUS PROCESS
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SIG: Implementation and Scalability

Objective: In 2014 a major reform of the Danish public-school system made it mandatory that physical activity (PA) form part of the syllabus for all year groups corresponding on average to 45 minutes per day. The aim is to promote health and well-being among children and youth and to support motivation and learning in school subjects. However, there still seem to be an implementation gap between stated activity
goals of the reform and prevailing practice. Therefore, the purpose of this study was to identify and examine important factors for sustainable implementation of school-based PA in a Danish context.

Method: A modified Delphi design was chosen as methodological approach consisting of four rounds. In the first round, a scoping review was conducted assessing both scientific and grey literature in the area. In the second round, a group of national experts were identified using the snowball-sampling method. Via a web-based questionnaire, the experts were asked to rate the importance of the various implementation factors identified in the literature. In the third round, a purposeful sample of the national experts were interviewed to elaborate on their questionnaire answers. And finally, in the fourth round, a workshop was held with the national expert-group—sh; to condense the identified and prioritized factors to the ones of greatest importance. Results: More than 1500 factors impacting implementation of school-based PA were identified in the literature. These were condensed into a total amount of 63 factors, arranged into nine overall categories, and prioritized by the national expert group in the questionnaire (1. School leadership, 2. Co-workers, 3. Resources, 4. Policy level, 5. Organizational/cultural level, 6. Pupils, 7. Physical surroundings, 8. Intervention context, and 9. External factors). Based on five expert interviews, outliers from the questionnaire was examined. Finally, at the workshop, five of the nine overall categories were rated as particularly relevant and important (School leadership, Co-workers, Policy level, Resources and Organizational/cultural level). Conclusion: All nine overall categories are deemed as decisive for sustainable implementation of school-based PA. However, School leadership were singled out as a particular important category, since commitment at this level is deemed a pre-requisite for many of the other factors.

O.23: Physical Activity, Injury, Rehabilitation and QoL (Lounge)

O.23.1
PREVALENCE OF PHYSICAL ACTIVITY-RELATED INJURY AND ITS RISK FACTORS AMONG UNIVERSITY STUDENTS: A MULTI-CENTER CROSS-SECTIONAL STUDY IN CHINA

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Promotion of physical activity (PA) is a public health priority owing to its great benefits that have been proven in numerous studies. However, a corresponding increment of physical activity-related injury (PARI) can also be expected. In China, university students are relatively active and may more likely to sustain PARI. Knowledge about PARI epidemic and its risk factors among general university students is paucity compared with adolescents and collegial athletes. This baseline study, supported by the National Natural Science Foundation of China (Grant No.31640038), was designed to investigate the epidemiologic characteristics and identify risk factors of PARI among Chinese university students via a multi-center mixed survey. Methods: A self-reported online questionnaire survey was conducted among Year 1-3 students of nine universities in three Chinese cities during March and April, 2017. Data of socio-demographic characteristics, PA habits (including frequency and duration of vigorous-intensity PA (VPA) and moderate-intensity PA (MPA) in domestic/work/study, commuting (MPA only, including walking and biking), and sports and leisure-time), sedentary behaviors, sleep duration, and PARI experiences in the past 12 months were collected. Hierarchical logistic regression was performed to estimate risks of the factors for PARI after controlling for each other. Results: A total of 4758 participants completed the survey, with an overall PARI incidence rate of 22.7% (27.3% in males and 20.9% in females). Around one quarter of the injured (26.4%) experienced PARI at least three episodes. More than half of the injured experienced PA absenteeism and sought medical care. All PA indicators were significantly and positively associated with PARI, with frequency of leisure-time VPA being the strongest (adjusted OR: 1.079, 95% CI: 1.018-1.144). Moreover, males, Shantou students, Year 1 students, sports team members, and those with insufficient sleep time were also at higher risks for PARI experience. Conclusions: PARI was prevalent among university students in China. Frequency of leisure-time VPA was the strongest risk factor among all PA
indicators. The above data can inform future programs for the injury-intervention in university students. Safety issues should also be involved and emphasized when promoting PA among the public to reduce PARI occurrence.

O.23.2
BEING PHYSICALLY ACTIVE INCREASES RISK FOR INJURY AMONG UNIVERSITY STUDENTS: A CROSS-SECTIONAL STUDY IN HONG KONG

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Increase in PA has been observed in several studies in the past decade. However, it might elevate risks for physical activity-related injury (PARI). University students are relatively active and may expose to high risk for PARI. Evidence in PARI occurrences and associated risk factors among the general population is scarce. This study aimed to investigate the epidemic and identify risk factors for PARI among a sample of university students in Hong Kong. It is a part of a multi-centered mixed study on PARI supported by the National Natural Science Foundation of China (Ref. No.: 31640038). Methods: A self-administered online questionnaire survey was conducted among undergraduate students in five universities in Hong Kong from March to June, 2017. PARI episodes in the past 12 months, PA habits (including duration (min/day), frequency (days/week), and level (min/week) of moderate-PA (MPA) and vigorous PA (VPA) in work, commuting and leisure-time), sedentary behaviors, sleep duration, and socio-demographic characteristics were self-reported. Multivariate logistic regression was performed to estimate risks of the study variables. Results: A total of 1472 participants completed the survey, with an overall PARI incidence rate of 14.9% (n=220) in the past 12 months. Four tenths of the injured (42.9%) experienced PARI only once, while another 14.2% reported 5 episodes or more. The majority of the injured reported utilization of medical care (76.4%) and stopping planned activities (58.2%) due to the injuries. After controlling for significantly related socio-demographics, all PA measures (except for duration and level of commuting PA) were significantly associated with PARI, with adjusted ORs of VPA measures being higher than those of MPA (range of adjusted ORs: 1.001–sh; 1.413). In addition, males, Year 2 students, those born in Hong Kong, sports team members, and those with insufficient sleep were also at higher risk for PARI. Conclusions: PARI was common among university students in Hong Kong. The overall VPA level (min/week) was the strongest predictor of all PA measures. Safety should be emphasized when recommending PA to the public. There is an urgent call for actions to reduce PARI among university students.

O.23.3
CHANGES IN VOLUME AND PATTERN OF OBJECTIVELY MEASURED PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR FOLLOWING TOTAL KNEE ARTHROPLASTY: A LONGITUDINAL STUDY

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SIG: Ageing

Purpose: To comprehensively describe objectively measured changes in volume and pattern of physical activity (PA) and sedentary behaviour (SB) in patients undergoing total knee arthroplasty (TKA) for knee osteoarthritis. Methods: Patients (13 males, 76 females between 55 and 80 years of age) scheduled for
primary TKA took part in the study. PA and SB were measured with an ActiGraph GT3X+ accelerometer for seven consecutive days (24 hours/day) and range of motion (ROM) was measured prior to, six weeks and six months after TKA. Patient-reported outcomes were also assessed using disease-specific questionnaires. Results: Of the initial 89 patients recruited 57 completed the 6 months follow up and 45 had valid activity data from baseline to 6 months follow up. There was a significant improvement in WOMAC [median (interquartile range): 71.0 (27.0) vs. 4.0 (11.3), p<0.001], UCLA [median (interquartile range): 2.0 (1.0) vs. 5.0 (1.0), p<0.001] as well as ROM [mean range: (0.0 - 90.0)° vs (0.0 - 110)°, p<0.05] between baseline and 6 months after TKA. Proportion of time spent in SB decreased after TKA [baseline: mean (95% CI): 70.1 (67.5-72.7)%; 6 months: 64.0 (60.6-67.9)%; p=0.009]. The interruptions to SB improved between baseline and six months after TKA [mean (95% CI): 85.0 (80.0-90.0) to 93.0 (88.0-98.0) breaks/day, p=0.014]. Proportion of time spent in light physical activity (LPA) increased from baseline [29.0 (26.6-31.4)%] to 6 months [34.8 (31.3-38.3)%; p=0.008]. Time spent in moderate to vigorous PA (MVPA) did not change from baseline [median (interquartile range): 2.0 (7.8) min/day] to six months after TKA [3.4 (11.6) min/day, p>0.05]. Conclusions: Following TKA, there was a decrease in overall time spent in SB and an increase in the number of breaks in SB which appeared to be replaced by LPA. Patients were unable to achieve current PA guidelines because no improvement to MVPA occurred. The self-reported outcomes also improved in line with the objectively measured PA, SB and ROM. This comprehensive analysis of detailed daily activity behaviours can be used to employ feasible interventions for increasing the duration of LPA and decreasing sedentary time to improve quality of life and overall health following TKA.

O.23.4
PHYSICAL ACTIVITY PROMOTION IN REHABILITATION: LONG-TERM PHYSICAL ACTIVITY TRAJECTORIES AND QUALITY OF LIFE
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SIG: Policies and environments

Objective: Stimulating an active lifestyle among persons with a physical disability is important to reduce risks of secondary complaints and to improve mobility and participation. Unfortunately, few studies have researched how physical activity (PA) behavior of patients develops from pre- to post rehabilitation and what factors might contribute to the understanding of why certain patients maintain or acquire an active lifestyle whereas others do not. The purpose of this study was to identify trajectories of physical activity during up till 52 weeks after rehabilitation among patients with a chronic disease or physical disability. Additionally, we assessed associations between distinct physical activity trajectories and quality of life.

Methods: Patients (N=1719) from the ReSpAct-study (www.respact.nl) with different kinds of disabilities and/or chronic diseases who received tailored PA-counseling during and after rehabilitation were followed at baseline (T0; 3-6 weeks before discharge) and after 14 (T1), 33 (T2) and 52 (T3) weeks after discharge. Physical activity was determined by an adapted version of the SQUASH questionnaire and quality of life was determined by the RAND-12 Questionnaire. Latent class growth mixture modelling was used to determine trajectories of PA based on the total minutes PA per week. Associations between trajectory membership and quality of life were determined by regression models adjusted for relevant patients' characteristics. Results: Six trajectories were identified, whereof two large and stable trajectories were investigated for further analysis: an active (N=235) and a semi-active (N=959) trajectory. The other four small trajectories all showed fluctuations in physical activity in some degree or another (N=27, N=30, N=40, N=50). Patients in the active trajectory at all moments of follow-up demonstrated higher quality of life compared to patients in the semi-active trajectory (e.g. a score of 44.5 versus 38.4 at T3, respectively). Conclusions: This study showed that the majority of patients were classified in either a semi-active stable trajectory or an active stable trajectory; many patients did not show an (expected) PA-decline after discharge. This indicates that for the majority of patients, tailored PA-counseling during and after rehabilitation is a promising tool to stimulate an active lifestyle and increase QoL.

O.23.5
THE JOINT CONTRIBUTION OF PHYSICAL ACTIVITY, INSOMNIA SYMPTOMS AND SMOKING TO THE DIRECT COST OF SHORT-TERM SICKNESS ABSENCE
Purpose: Physical inactivity, smoking and insomnia symptoms are independently associated with increased sickness absence from work. However, their joint contribution to sickness absence and, especially, their direct cost for employer, are poorly understood. Objectives: We aimed to examine whether physical activity (PA) modifies the association of smoking and insomnia symptoms with short-term (<15 days) sickness absence and their cost. Methods: The Helsinki Health Study is a cohort of midlife employees of the City of Helsinki, Finland (baseline n=8960, response rate 67%). During 2000-2002 the participants were mailed a questionnaire that gathered information on health behaviour and sociodemographic characteristics. Sickness absence, salary, and time of employment were followed up through the employer's personnel register between 2002-2016 for those with a written consent to the use of their register data (78% of the participants). Individual salary data were used to calculate the direct cost of short-term sickness absence. Data were analyzed with a two-part model. In the first part, association between joint insomnia symptoms-PA, and smoking-PA variables and the probability of having short-term sickness absence cost was analyzed among all participants, using generalized linear model with binomial distribution. In the second part, generalized linear model with gamma distribution and log-link function was used to analyze association between the joint variables and short-term sickness absence cost among participants who had cost during the follow-up. Then marginal effects were evaluated at covariate means to provide estimated effect of the joint variables on employer's cost in monetary terms. Analyses were adjusted for participants' age, sex, marital status, occupational class and follow-up time. Results: Inactive participants with frequent insomnia symptoms had 2526€ (95% CI 1736€-3915€) higher cost of short-term sickness absence than vigorously active participants without insomnia symptoms over the follow-up. Furthermore, inactive smokers had 4166€ (95% CI 2737€-5595€) higher cost for the employer over the follow-up than vigorously active non-smokers. Conclusions: Physical activity, smoking and insomnia symptoms are jointly associated short-term sickness absence and their cost. The results emphasize encouraging employees – especially those who smoke and have frequent insomnia symptoms - into vigorous physical activity in order to reduce the cost of sickness absence.

SIG: Policies and environments

Purpose: To better understand the impact of different community-based healthy food retail strategies on non-nutrition outcomes we performed a systematic scoping review to identify what types of non-nutrition related outcomes of these retail strategies have previously been reported on. The overarching aim of this work is to understand how non-nutrition outcomes may affect the implementation and sustainability of healthy food retail strategies. Methods: A systematic scoping review was undertaken to map the key concepts in this emerging research space, and to allow inclusion of non-nutrition outcomes not identified a priori but relevant for healthy food retail intervention implementation and sustainability. Peer-reviewed and grey literature was searched including medical, business and psychology databases. Titles were screened and cross-checked. Key inclusion criteria included qualitative or quantitative real-world food or beverage retail strategies designed to improve the healthiness of the non-alcoholic food and beverage environment.
within stores through changes to the consumer nutrition environment (e.g. changes to product price or placement), and reporting store or chain level outcomes on factors affecting business viability, or retailer or customer psychosocial outcomes. Exclusion criteria included hypothetical interventions and descriptive studies. We conducted a narrative synthesis to map the range of non-nutrition outcomes reported for healthy food retail strategies. Results: 9,611 titles were screened for inclusion with 110 included for review. We identified a number of significant themes: objective and subjective measures of business viability including overall item sales, revenue and patronage; and customer satisfaction with (support of) intervention were the most frequently examined non-nutrition outcomes. Few studies examined retailer psychosocial outcomes, such as attitude towards being able to positively influence consumer food choice. Conclusions: Examination of non-nutrition outcomes to date has been largely limited to objective business viability outcomes. A better understanding of the effect of healthy food retail strategies on retailer psychosocial outcomes, and their interrelationship with business viability and customer psychosocial outcomes, may assist in identifying strategies considered to be feasible and sustainable by retailers. These considerations are likely to be critical to encourage wide-scale food environment changes required to promote healthier population food and beverage purchases.

O.24.2
A MIXED-METHODS STUDY ON THE PROCESS FOR PREPARING AND CONDUCTING NUTRITION AND PHYSICAL ACTIVITY POLICY ADVOCACY CAMPAIGNS
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SIG: Policies and environments

Objective: To elucidate key tasks in conducting a successful public health policy advocacy campaign. Participating campaigns were part of a national (United States) policy intervention focusing on community- and state-level nutrition and physical activity policies, particularly those addressing health equity. Methods: A sequential exploratory mixed methods study was completed in 2016. Interviewees (n=21) with expertise in public health policy advocacy were asked about the processes and main tasks completed when conducting campaigns. Interviews were coded for emerging themes, which were operationalized into survey questions about 42 key tasks in order to measure correlation with campaign success. Success was considered to be higher scores on a policy progress scale, which asked about 3 intermediate progress indicators (e.g., "Was the policy voted on by the relevant body?") as well as policy enactment (scores could range from 0-4). The survey underwent cognitive interviewing with five experienced policy advocates prior to being administered to participants (n=38) who had recently conducted policy campaigns for the intervention. Results: Based on emergent themes from the expert interviews, campaign tasks fell into five loosely chronological steps: setting policy objective, building capacity, strategic planning, action, and an overarching emphasis on health equity. Campaigns that completed more of the 42 tasks had greater policy success (r=0.460, p<0.05). The individual tasks that were most highly correlated (r2=0.05) with policy progress among campaigns at least one year old included: identifying relevant decision-makers to target; assigning clear roles and responsibilities among members; utilizing technical assistance; establishing a formal internal monitoring system; establishing efficient methods of communication; drafting/assisting in drafting a written policy solution; anticipating and countering opposition arguments; developing easily understood external messaging; developing a traditional-media advocacy campaign; mobilizing community members; meeting with key decision makers; and developing a written plan to sustain community engagement. Conclusions: Results showed that there were key tasks important for successfully influencing public health policy via an organized campaign. These findings can be informative both in the US and internationally to apply to the development and implementation of initiatives that aim to support and guide community- and state-level public health policy campaigns.

O.24.3
BUILDING INTERNATIONAL CONSENSUS ON GUIDELINES FOR RESEARCHERS ENGAGING WITH THE FOOD INDUSTRY: SYSTEMATIC SCOPE REVIEW AND DELPHI STUDY
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Objective: Researchers studying food behaviours and population diet need to understand how the food industry shapes food choices. This may require that researchers work with industry to find solutions to pressing dietary public health problems. However, there is no explicit consensus among researchers regarding what constitutes acceptable or effective engagement with industry. This has led to disagreements and confusion over real and perceived conflicts of interest, which can obscure findings and undermine scientific integrity. We set out to build international consensus on what constitutes appropriate relationships between researchers and the food industry. Methods: We undertook a systematic scoping review of published and grey literature, and a two-stage Delphi study of dietary public health researchers. For the review, Scopus and Pubmed were searched to May 2017 for articles in English referring to principles guiding relationships between researchers and industry. We also asked experts in the field to nominate related documents, conducted an advanced Google search and hand searched reference lists. We thematically analysed data extracted from included articles to derive the principles until saturation was achieved. A two-round, online Delphi survey was undertaken to determine and build consensus on these principles. A multi-pronged, purposeful approach to recruitment of researchers internationally was adopted. Consensus was defined as 80% agreement on each closed statement. Qualitative feedback was analysed using rapid analysis to inform the second round of the Delphi. Results: Our systematic review identified 56 unique principles. These covered five key areas: governance of funding, risk assessment, maintaining standards of governance, ensuring transparency and improving publication standards. 100 dietary public health researchers completed the first round of the Delphi survey and 92 completed the second. Overall, 39 statements (68%) reached consensus. Detailed comments were provided by participants in relation to the principles. Conclusions: Overall, there was good agreement on the identified principles among Delphi participants, but little detailed guidance on how they should be applied in practice. Some themes, particularly concerning assessing the appropriateness of industry partners and type of engagement, require greater clarity and consensus. An international consensus meeting in April 2018 will pursue this further and develop guidelines for researchers.

O.24.4

SYSTEMATIC ASSESSMENT ON THE STRENGTH AND COMPREHENSIVENESS OF NUTRITION POLICIES AT FOOD PANTRIES IN THE UNITED STATES

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Objective: Food pantries play a key role in the emergency food network in the United States (US). Food pantries are typically small and often grassroots organizations operating independently or sometimes under a regional food bank. The degree to which food pantries can adopt and implement nutrition policies to improve the quality of food distributed is of public health importance and has been understudied. The purpose of this study was to determine the strength and comprehensiveness of nutrition policies at food pantries across the US. Methods: The system for coding was modeled on previously published methods for assessing the strength and comprehensiveness of policies. The content for the coding tool was adapted from published guidelines for drafting nutrition policies at food banks. The adapted coding tool contained six components comprised of 23 items. A policy’s strength was reflected by the degree to which a policy included detailed information and strong language, whereas the policy’s comprehensiveness reflects the breadth across components. Total scores for comprehensiveness and strength components could range from 0 (least comprehensive/weakest) to 1 (most comprehensive/strongest). Two coders independently scored each policy and kappa coefficients were computed to ensure data quality and reliability. Results: Pantries (N=40) submitted nutrition policies through a nationwide survey of food pantries in the US. Of those, n=13 (32.5%) pantries had policies that were determined to be eligible for coding. Other policies were determined ineligible because they did not contain a nutrition component. Overall strength scores ranged from 0.00-0.86 (M=0.18; SD=0.26). Overall comprehensiveness scores ranged from 0.00-0.69 (M=0.34; SD=0.18). Conclusions: Overall, very few pantry respondents had policies
and many were not nutrition specific. For those with nutrition policies, the average strength and comprehensiveness scores were low. Policies that are stronger are more likely to be implemented and have the intended impact. A better understanding of what constitutes a successful nutrition policy and how to draft, adopt, and implement the policy is needed for food pantries since they are an important part of the emergency food assistance network. These results will be discussed within the global context of food insecurity, and lessons learned applied to different geographies.

O.24.5
THE COST OF DOING NOTHING: THE ECONOMIC BURDEN OF NOT MEETING FOOD RECOMMENDATIONS IN CANADA
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Few studies have assessed the economic burden of chronic diseases (e.g., type 2 diabetes, cardiovascular diseases, cancers) attributable to unhealthy eating. In this study, we estimated the economic burden of chronic disease attributable to not meeting Canadian food recommendations.

Methods: We obtained chronic disease risk estimates for both protective (1. vegetables; 2. fruit; 3. whole grains; 4. milk; 5. nuts and seeds) and harmful (6. processed meat; 7. red meat; 8. sugar-sweetened beverages) foods from the Global Burden of Disease Study, and food intakes from the Canadian Community Health Survey 24-hour dietary recalls (n=33,932 respondents). We calculated population attributable fractions (PAFs) to determine the fraction of disease attributable to not meeting the aforementioned eight food recommendations and attributable costs by multiplying these PAFs with 2014 annual direct health care (hospital, drug, physician) and indirect (human capital approach) costs. Results: Not meeting recommendations for the eight foods was responsible for CAD$13.8 billion/year (direct health care: CAD$5.1 billion, indirect: CAD$8.7 billion). Nuts and seeds and whole grains were the top cost contributors rather than vegetables and fruit. Conclusions: Unhealthy eating constitutes a tremendous economic burden to Canada that is similar in magnitude to the burden of smoking and substantially larger than that of physical inactivity. A status quo in promotion of healthy eating will allow this burden to continue. Where promotion of healthy eating has traditionally focused on vegetables and fruit, the present study suggests more cost savings if this focus is broadened to include nuts and seeds and whole grains.

O.25: Trends in Physical Activity, Fitness and Weight (Concord 1)

O.25.1
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SIG: Children and families

Objective: To estimate and compare international temporal trends in the cardiorespiratory fitness (CRF) of children and youth. We hypothesized that CRF had declined in recent decades. Methods: Data were obtained from a systematic search of studies that explicitly reported 20 m shuttle run test descriptive data (a validated measure of CRF) on apparently healthy children and adolescents aged 9–17 years. Studies were located up to October 2015 via a search of bibliographical databases, reference lists, and personal communication with international experts. Following the estimation of relative peak oxygen uptake (mL/kg/min), sample-weighted temporal trends were estimated at the country-sex-age level using best-fitting linear or polynomial regression models relating the year of testing to mean CRF. Post-stratified population-weighted mean changes in absolute and percent CRF were estimated. Results: Temporal
trends were estimated for 965,264 children and youth from 19 high-income and upper-middle-income countries between 1981 and 2014, using data from 137 studies. Collectively, mean CRF declined by 3.3 mL/kg/min (95%CI: -3.5 to -3.1) or 7.3% (95%CI: -7.8 to -6.7). The rate of decline diminished with each decade, slowing markedly since 2000 and with almost no recent change. The rate of decline was larger for boys than girls, similar for children and youth, and varied among countries. Conclusions: There has been a substantial decline in CRF since 1981, which is suggestive of a meaningful decline in population health. However, the trend has not followed the anticipated trajectory, by diminishing since 2000 and stabilizing with almost no change recently. CRF data are needed from children in low-income countries to more confidently determine true international trends.

O.25.2
GENDER, SOCIOECONOMIC AND SPATIAL DIFFERENCES IN OVERWEIGHT, OBESITY AND WAIST CIRCUMFERENCE: MULTILEVEL EVIDENCE FROM A NATIONALLY REPRESENTATIVE SURVEY OF 19,363 PRIMARY SCHOOL CHILDREN IN CHINA

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SIG: Socio-economic inequalities

OBJECTIVE: The prevalence of child obesity is rising in China and is a forerunner to major chronic disease incidence in adulthood. However, few studies have examined correlates of weight status in children of primary school age and to what extent they might vary by gender, socioeconomic and spatial circumstances, negating the potential for targeting public health interventions. METHODS: Multilevel logistic and linear regressions were used to analyse the odds of being overweight or obese and differences in waist circumference in a nationally representative survey of 19,363 children in primary schools. Two-way interactions were used to examine how gender differences varied across urban/rural areas and the interplay between the socioeconomic circumstances of parents and the areas in which children lived, adjusted for nesting within schools. RESULTS: The prevalence of overweight or obese status was 19.1% among boys and 12.3% for girls. The prevalence of obesity was 7.6% and 4.4% for boys and girls respectively. Mean waist circumference was 59.5cm and 56.9cm for boys and girls, respectively. The odds of being overweight or obese were higher for boys compared to girls (AOR 1.65, 95%CI 1.52 to 1.79) and in urban areas compared to rural (AOR 1.75, 95%CI 1.28 to 2.38). An interaction (p<0.05) suggested bigger urban/rural differences for boys than girls. Higher odds were reported among children with highly educated mothers. All of these results were similar to those from the analyses of obesity specifically and also for differences in waist circumference. The odds of being at least overweight, obese or larger waist circumference were significantly higher among boys in more affluent areas and/or those with highly educated mothers. Socioeconomic gradients were weaker among girls for all of the outcomes. CONCLUSIONS: Childhood obesity prevention interventions ought to target boys of primary school age in urban areas from educated maternal backgrounds in China.

O.25.3
FITNESS, FATNESS AND ACTIVE SCHOOL COMMUTING AMONG LIVERPOOL SCHOOLCHILDREN

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SIG: Socio-economic inequalities

Objective: This study investigated differences in health outcomes between active and passive school commuters, and examined associations between parent perceptions of the neighbourhood environment and active school commuting (ASC). Method: One hundred-ninety-four children (107 girls), aged 9-10 y were recruited from ten schools in Liverpool, England. Measures of stature, body mass, waist circumference and cardiorespiratory fitness (CRF) were taken. Body mass index (BMI) was calculated from stature and body mass and BMI z-scores were assigned [1]. Children were classified as healthy weight [2] and aerobically fit [3] based on previously recommended cut-points for BMI and CRF.
respectively. School commute mode (active/passive) was self-reported and parents completed the neighbourhood environment walkability scale for youth [4]. Distance to school was calculated from home and school postcodes using Google Maps. Area deprivation was calculated from home postcodes. Multivariate analysis of covariance (MANCOVA) assessed differences in health outcomes by school commute mode. \( \chi^2 \); with odds ratios (OR) as a measure of effect examined school commute mode group differences in weight status, CRF, deprivation and school commute distance. The same analyses were repeated to examine deprivation group differences in weight status, CRF, school commute mode and school commute distance. Logistic regression analyses assessed associations between parent perceptions of the neighbourhood environment and ASC. Results: Fifty-three percent of children commuted to school actively. Active school commuters had significantly higher BMI (\( p=0.02 \)), BMI z-score (\( p=0.05 \)), and waist circumference (\( p=0.01 \)) than passive school commuters. Children who lived in more-deprived neighbourhoods that were perceived by parents as being highly connected, un-aesthetic and having mixed land-use were more likely to commute to school actively (\( p<0.05 \)). These children were at greatest risk of being obese and aerobically unfit (\( p<0.01 \)). Conclusions: Our results suggest that deprivation may explain the counterintuitive relationship between obesity, CRF and ASC in Liverpool schoolchildren. These findings encourage researchers and policy makers to be mindful of the social determinants of health when planning and advocating behavioural and environmental health interventions. Further research examining contextual factors to ASC, and the concurrent effect of ASC and diet on weight status by deprivation is needed.

O.25.4
CORRELATES OF OBESITY IN CHILDREN AND ADOLESCENTS: A MULTILEVEL ANALYSIS OF HONG KONG COMMUNITY FITNESS SURVEY
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SIG: Children and families

Purpose: The primary objective of this study is to examine potential individual-level as well as district-level determinants of obesity among high school students in Hong Kong. Data were obtained from a nationwide survey in Hong Kong in 2010-2011. Methods: A total of 2,805 student participants with ages between 13 and 19 years were recruited by random sampling, and 2,517 sets of questionnaires with physical fitness data were successfully collected. Multilevel regression approach was used to examine the effects of various predictor variables on children's body fat percentage. Individual variables of sex, moderate to vigorous physical activity (MVPA), cardiovascular fitness, attitude and intention to exercise, time spent doing homework, screen time, family income, sleep quality, family PA participation were entered to the models as first-level predictors. District level characteristics such as air pollution levels, population density and district mean family income were considered as second-level covariates. Results/findings: The average age of participants was 15.65 ±smn; 1.71 years old. The mean percent body fat and MVPA was 16.04 ±smn; 7.67% and 297 ±smn; 443 min/week for boys, and 23.41 ±smn; 4.91% and 169 ±smn; 333 min/week for girls, respectively. In terms of cardiovascular fitness, boys (41.19 ±smn; 15.93) performed better than girls (21.68 ±smn; 7.47). Significant age-adjusted correlations (\( p<0.01 \)) were found between percent body fat and attitude, intention, family sport participation, population density and cardiovascular fitness for boys, and attitude, intention, time spent doing homework, screen time and cardiovascular fitness for girls, respectively. Age, sex, cardiovascular fitness, family sport participation and district nitric dioxide (NO2) concentration were the variables remained in the final multilevel model. Conclusions: Compared to self-reported MVPA, cardiovascular fitness was found to be a better predictor of children's body composition. On-field fitness test or objective PA measurement might be a better method of surveillance. Since family played an important role in modifying the lifestyles of overweight children, future children weight loss interventions should involve their family members as well. In terms of public policy level, improving air quality could be a mean to control the epidemic of childhood obesity.

O.25.5
A LONGITUDINAL STUDY OF THE BI-DIRECTIONAL ASSOCIATION BETWEEN CHANGES IN PHYSICAL ACTIVITY, SLEEP QUALITY AND SLEEP DURATION OVER A TWO-YEAR PERIOD, IN

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**Note:** The document contains multiple studies and analyses, each with its own methodology and findings. The above text is a concise summary of the key points from each section, focusing on the methodologies and conclusions. Further reading would be necessary for a comprehensive understanding of each study.
MID-AGED ADULTS.
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Insufficient physical activity (PA) and inadequate sleep quality (SQ) and sleep duration (SD) are highly prevalent behaviours that increase the risk of developing many chronic health conditions. Evidence regarding bi-directional relationships between PA, SQ and SD is inconsistent. Clarifying these relationships is important since synergistic links could be leveraged in multi-behaviour interventions, to maximise effective and efficient behavioural and health outcomes. This study aimed to examine the relationships between changes in PA, SQ and SD, over a 2-year period, in middle-aged adults.

Methods: Participants were adults from Brisbane, Australia, aged 42-72 years, who self-reported PA, SQ, SD, socio-demographic and health characteristics in 2011 and 2013 (n=3649). Multinomial logistic regression analyses were conducted to examine the relationships between patterns of change in PA, SQ and SD between 2011 and 2013.

Results: Changes in PA were not associated with changes in SD. However, there were positive associations between changes in SQ and changes in PA, such that improving or maintaining good SQ was associated with increasing or maintaining PA. Positive associations between changes in PA and changes in SQ were also identified with maintenance of PA being associated with maintenance or improvement in SQ. All results were significant at p<0.05.

Conclusions: A bi-directional relationship between PA and SQ was identified however, no evidence of a relationship between PA and SD was found. Multi-behaviour interventions targeting both PA and sleep quality are warranted. Middle-aged adults with poor SQ may benefit from increasing activity and improving SQ may promote higher levels of activity.

O.26: Correlates of Adult Physical Activity (Concord 2-3)

O.26.1 HOUR-BY-HOUR PHYSICAL ACTIVITY PROFILES OF ADULTS WITH AND WITHOUT YOUNG CHILDREN.
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SIG: Children and families

Objective: Research has shown that parents with young children are less active than their childless counterparts. However, there have also been reports that parents accumulate substantial physical activity across the day through lifestyle activities. The purpose of this study is to explore hour-by-hour profiles of physical activity among adults with and without young children.

Methods: Movement data was collected via accelerometry over 7d among 2,013 adults aged 20-65 years. Accelerometer data were expressed as mean proportion of each hour spent in sedentary time (ST; <100 cpm), light-intensity activity (LPA; 100-999 cpm), and moderate-to-vigorous activity (MVPA; ≥1000 cpm). Participants were partitioned into three sub-groups:

O.26.2 SLEEP QUALITY AND PHYSICAL ACTIVITY ARE ASSOCIATED WITH HEALTH SATISFACTION AMONG CHINESE ADULTS
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Objective: The aim of this study is to explore the relationship between sleep quality, physical activity, and level of health satisfaction among Chinese adults. Methods: In 2016, 471 participants in Hangzhou, China were recruited to complete a packet of surveys including measures of demographic information, sleep quality, physical activity (Godin & Shepard, 1985), and satisfaction with health. Multiple linear regression models were used to estimate associations of sleep quality and physical activity with health satisfaction, adjusting for confounders (age, gender, BMI, education, marital status, smoking status, comorbidity, commuting mode and behaviors of staying home most of the day). All statistical analyses were performed using Stata version 14.0 (STATA Corp., College Station, Texas, USA). Results: After removing missing data, 349 participants (mean age 23.5 ± 5.2 years old, BMI = 21.8 ± 4.5 kg/m2) were included in the analyses. We observed significant linear associations of sleep quality and physical activity with health satisfaction after controlling for a range of confounding factors. Having good sleep quality is associated with 12.30 (95% CI: 6.98 to 17.62) higher health satisfaction score compared to those with very poor sleep quality. We observed an overall significant trend between better sleep quality (very poor, poor, average, and good) and higher health satisfaction (p for trend <.001). In addition, physical activity, as indicated by the frequency of weekly leisure-time activities pursued "long enough to work up a sweat", was significantly associated with health satisfaction. Being sufficiently physically active (>5 times of sweating activities) was associated with 4.09 (95% CI: 1.16 to 6.98) higher score on health satisfaction. All statistical significance was set at p<0.05. Conclusions: Better sleep quality and being physical active are associated with higher health satisfaction among Chinese adults. Improving sleep quality and increasing the levels of physical activity, particularly frequencies of sweating activity, may lead to greater satisfaction with the perceived health conditions.

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Purpose Time spent on various movement behaviours such as in light (LPA), moderate-vigorous physical activity (MVPA), sedentary behaviours and sleep within 24 hours/day are inherently co-dependent or compositional. However, previous studies investigating the association between time-use on these behaviours and abdominal obesity have not addressed the compositional property of the data. Thus we aimed to investigate the association between daily compositions of time spent sedentary, LPA, and MVPA using technical measures of body posture and physical activity and in bed with waist circumference (WC) among workers. Methods Waist circumference (cm) of the 827 workers was objectively measured horizontally midway between the crista illaca and 12th costae using a measurement tape. The time-use composition of various movement behaviours was obtained using an Actigraph placed on the thigh for 1-5 consecutive days. The data on body postures and physical activity types were processed using the Acti4 software and transformed using isometric log-ratio transformation. The cross-sectional associations between the transformed time-use composition and WC were investigated using the multiple linear regressions and isotemporal substitution models based on Compositional Data Analysis approach. The analyses were adjusted for age, sex, alcohol consumption, smoking, occupational group, and diet. Results Daily composition of the time spent on movement behaviours was significantly associated with WC (F= 6.00, P<0.0001). Specifically, as shown in Figure 1, evenly reallocating time from other behaviours to sedentary behaviour (P<0.0001) was deleteriously associated with WC, while reallocating more time from other behaviours to time in bed (P=0.04) was beneficially associated with WC. Conclusions Daily time-use composition of movement behaviours is associated with abdominal obesity. Reallocating more time to sedentary behaviour from other behaviours was deleteriously associated with WC, while reallocating more...
time spent in bed was beneficially associated with WC among workers. Compositional data analysis is helpful in determining the theoretical reallocation strategies based on how to spend 24 hours.

O.26.4
HOW COHABITATION, MARRIAGE, AND DIVORCE INFLUENCE EXERCISE, EATING, AND BMI: A PROSPECTIVE PANEL STUDY

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SIG: Children and families

Objective Life Course Theory describes the different roles that a person experiences over her lifetime, such as finding a partner or getting married. Such life course changes as moving in with a partner or getting married represent profound changes in a person's close social environment and affect general health and life expectancy. However, how such life course transitions affect eating, exercise, and Body Mass Index (BMI) are less well understood. This study examines how changes in cohabitation or marital status affect eating, exercise, and BMI over time in a large representative sample. Methods Participants were 20,950 individuals (50% female; 19 to 100 years), representative of the German population, who provided 81,926 observations over 16 years. Demographic data, including cohabitation and marital status, height, body weight, exercise, and healthy eating were obtained in face-to-face interviews. Results When controlling for the effects of age and having children, cohabitation led to significant weight gain in men and women—double the size of that associated with marriage. BMI after separation was largely comparable to BMI before starting cohabitation; divorce generally predicted weight gain (all p-values <.05). Changes in exercise and healthy eating did not predict the changes observed in BMI above and beyond transitions in relationship status. Conclusions This is one of the first longitudinal studies to directly compare the effects of various changes in relationship status on exercise, eating, and BMI. The findings extend and qualify previous results by showing that the benefits of marriage or cohabitation do not necessarily include a healthier BMI. They also suggest that relationship transitions—particularly to cohabitation, parenthood, and divorce—may be important time windows for weight gain prevention.

O.26.5
LEADING 'US' TO BE ACTIVE: THE POSITIVE RELATIONSHIP BETWEEN SOCIAL IDENTITY LEADERSHIP, GROUP IDENTIFICATION, AND PHYSICAL ACTIVITY PARTICIPATION

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Growing evidence indicates that when people develop a strong social identity (i.e. a strong self-definition) as a member of a particular physical activity group (e.g. a sports team or exercise group) it has positive implications for their participation in group-relevant activity. Despite this, the relationship between physical activity leaders engagement in social identity leadership—a theoretical perspective which asserts that successful leadership depends on a leaders capacity to create, represent, advance, and embed a shared sense of identity (i.e. a shared sense of 'us') among group members—and group members' participation has not been tested. Indeed, no studies have examined the relationship between any particular type of leadership and group members' participation in these settings. Building on promising findings in other domains, we hypothesized positive associations between (1) group members' perceptions of their physical activity leaders engagement in social identity leadership and their own group identification, and (2) members' group identification and their physical activity participation. We also hypothesized an indirect effect of perceptions of leader engagement in social identity leadership on members' participation through group identification. Methods: A cross-sectional design was used, with 583 participants from sports teams (n=307) and exercise groups (n=276) completing questionnaires measuring identity leadership, group identification, and participation. Results: Supporting our hypotheses, we observed
positive associations between members' perceptions of their sport or exercise leader's engagement in social identity leadership and their own group identification \( (r = .37, p < .01) \), and between members' group identification and their sport or exercise participation \( (r = .17, p < .01) \). Moreover, there was a significant indirect effect for the relationship between perceptions of leader engagement in identity leadership and members' participation through members' group identification \( (ß;\text{indirect effect} = .015, 95\%\text{CI}: .008, .025) \).

Conclusions: Extending growing evidence for the influence of social factors (e.g. social support, social capital) on individuals' physical activity behaviours, findings highlight the importance of considering the impact of physical activity leaders on group members' behavior. Specifically, findings suggest that leaders who create, represent, advance, and embed a shared sense of 'us' may facilitate greater group member participation.

O.27: Interventions on Children's Nutrition (Oasis)

O.27.1

OBESITY PREVENTION IN INFANTS USING MHEALTH: KEY LESSONS AND IMPACT OF THE GROWING HEALTHY PROGRAM ON MILK FEEDING, TIMING OF INTRODUCTION OF SOLIDS AND INFANT GROWTH.

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SIG: E- & m-health

Objective The objective of this study was to determine the feasibility and effectiveness of a novel mHealth obesity prevention intervention in terms of reach, acceptability and impact on key infant feeding outcomes. This is one of the first studies to report on the effectiveness of mHealth for promoting healthy infant feeding practices important for obesity prevention. Method A quasi-experimental design was used with a mHealth intervention group and a concurrent non-randomised comparison group. Parents were recruited via health practitioners, researchers and online when infants were less than 3 months of age. Intervention participants received a free mobile phone app and access to a website aimed at promoting healthy infant feeding behaviours. Three push notifications a week were sent tailored to the baby’s age and feeding mode linking to app content. Data were collected using online surveys (at baseline and when infants were 6 and 9 months old), via app analytics. Results A total of 645 parents met the eligibility criteria and were included in the study. The majority of mothers were Australian born and just under half had a university education. Retention of participants was high (80%) in both groups. Most parents (84%) downloaded and used the app, however usage declined over time. Satisfaction with the program was high with 86% reporting that they trusted the information in the app and 85% would recommend it to a friend, however some technical problems were encountered with just over a quarter of parents reporting that the app failed to work at times. There were no significant differences between groups in any of the target behaviors. Growth trajectories of BMIz, weight and height also did not differ between the two groups. Conclusion An mHealth intervention using a smartphone app to promote healthy infant feeding behaviors is a feasible and acceptable mode for delivering obesity prevention intervention to parents. Learnings from this study will be used to further enhance the program to improve its potential for changing infant feeding behaviors. Future research using randomized controlled design is required to determine the effectiveness of mHealth programs in preventing obesity early in life.

O.27.2 - SHORT-LISTED FOR THE BEST ORAL PRESENTATION AWARD BY AN EARLY CAREER RESEARCHER

DIETARY CHANGES IN PRESCHOOL CHILDREN WITH OBESITY AND THEIR HOME FOOD ENVIRONMENT: RESULTS FROM A CLINIC AND HOME-BASED BEHAVIORAL INTERVENTION
SIG: Children and families

Purpose: To identify changes in the diet and home food environment of preschoolers with obesity participating in a clinic and home-based behavioral treatment intervention (LAUNCH) compared to preschoolers participating in a motivational interviewing (MI) intervention and standard of care (SOC).

Methods: A randomized clinical trial with 151 preschool children with obesity (55.1±smn;11.2 months; 43% male; 76.2% white). Children were randomized to one of three conditions: LAUNCH (18-session clinic and home-based behavioral intervention); MI (delivered at the same frequency as LAUNCH); or SOC for 6-months. Child dietary variables (energy intake, Healthy Eating Index [HEI]-2010, food groups) were derived from 3-day dietary recalls. Availability of foods (‘RED’ high fat/sugar foods; ‘GREEN’ low fat/sugar foods) in the home food environment were assessed by trained observers. Repeated measures linear mixed effects models were used to examine changes in diet and availability of foods in the home environment by time and condition to examine main effects of time, condition and their interaction. Results: Post hoc comparisons of the significant interactions found at 6-months LAUNCH had a significantly lower energy intake compared to MI (p<0.001) and SOC (p<0.001) and a significantly higher HEI-2010, an indicator of diet quality, compared to MI (p<0.007) and SOC (p<0.02). At 6-months servings of sugar-sweetened beverages were significantly lower in LAUNCH compared to MI (p=0.001) and SOC (p<0.001) and sweet and salty snack foods were significantly lower in LAUNCH compared to MI (p=0.01), but not SOC. Servings of fruits and vegetables were significantly greater in LAUNCH than SOC (p=0.01), but not MI. At 6-months LAUNCH had significantly less ‘RED’ foods in the home environment compared to MI (p=0.001) and SOC (p=0.002). There were no statistically significant effects in the model for ‘GREEN’ foods in the home environment. Conclusion: Delivery of behavioral interventions in the home environment is novel and may enhance dietary outcomes in children due to the ability to modify availability of foods.

O.27.3
EFFECTIVENESS OF AN ACTIVE VERSUS PASSIVE DISSEMINATION AND IMPLEMENTATION STRATEGY ON THE UPTAKE OF A WEB-BASED MENU PLANNING PROGRAM IN CHILDCARE SERVICES: A CONTROLLED TRIAL

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SIG: Implementation and Scalability

Purpose: The implementation of evidence-based dietary guidelines in childcare settings is recommended to improve child public health nutrition, and avert social, health and economic harms. Web-based systems offer opportunities to provide effective, ongoing support to childcare services to implement dietary guidelines. Despite intentions however, previous research demonstrates low rates of adoption and implementation of web-based interventions in various settings. This study assessed the effectiveness of an active implementation strategy relative to passive dissemination on childcare service i) adoption and; ii) implementation, of a web-based menu planning program to increase dietary guideline compliance. Methods: A controlled trial was conducted with 46 Australian long day care services that provide food to children. Services in the active group (intervention) received access to an evidence based web-based menu planning program, in addition to training, telephone contact and provision of a portable computer tablet to support implementation of the program. Services in the passive group (control) received notification and access to the web-based menu planning program only. At baseline, nominated Supervisors and Menu planners of participating services completed a computer assisted interview. Adoption (proportion of services accessing the program at least once) and implementation (proportion of services with a current menu in the program) were assessed at 6 months follow-up and compared between groups. Results/findings: Twenty-seven services were allocated to the intervention, with 19 to
control. At 6 months follow-up, a significantly higher proportion of intervention services (100%) had adopted the web-based menu planning program compared to control (58%) (p<0.01). A significantly higher proportion of intervention services had also implemented the program (41%) at 6 months compared to control (5%) (p<0.01). Conclusions: Passive dissemination and implementation strategies may produce a substantial effect in increasing the adoption of a web-based menu planning program for the implementation of dietary guidelines in this setting. However, active strategies are required to ensure the web-based program is used as intended. Future research examining the effectiveness of differing active implementation strategies to identify the most feasible strategy to employ at scale is required to ensure dietary guideline compliance in this setting, resulting in improvements in child public health nutrition.

O.27.4
A NUTRITION REPORT CARD ON FOOD ENVIRONMENTS FOR CHILDREN AND YOUTH: THREE YEARS OF EXPERIENCE FROM CANADA
Raine KD, Milford K, Ferdinands A, Nykiforuk CIJ, Maximova K, Olstad DL. University of Alberta, Edmonton, AB; University of Calgary, Calgary, AB.

SIG: Policies and environments

Purpose: This presentation summarizes the methods used to develop a Report Card to assess how current food environments support or create barriers to healthy eating in Canadian children, as well as how the Report Card has evolved over the first 3 years of data collection, and its impact as an advocacy tool to improve opportunities for healthy eating among children and youth. Methods: A comprehensive evidence review of the academic and grey literature, government and non-government websites, and consultation with public health experts identified data pertaining to 42 indicators of the quality of children’s food environments (physical, communication, economic, social, and political) and supportive policies for the province of Alberta, Canada. In 2015, an Expert Working Group, consisting of content experts, used these data to compare indicators to objective benchmarks, and to assign grades through a systematic consensus process. The Report Card was streamlined to reduce indicators to 36 and to facilitate data collection and analysis in 2016 and 2017. Annual Report Cards, summarizing grades and accompanying policy recommendations, were developed and publicly released. Media impressions were tracked and stakeholder use assessed via an online survey. Results/Findings: The grading process proved useful in refining indicators and benchmarks. Grades were assigned to all indicators, with an overall grade of 'C' in 2015 and 2017, and 'D' in 2016, demonstrating room for improvement. Examples of grades include 'A' for documented guidelines for foods served in schools, recreation facilities and childcare centres, but 'D' for implementation of the guidelines in recreation settings. Economic benchmarks, such as the affordability of a healthy diet, scored lowest, with an 'F'. Public release of the Report Card garnered significant media attention, and captured interest of policy makers. Overall findings suggest the Report Card succeeds in benchmarking progress and stimulating dialogue regarding the healthfulness of children’s food environments. Conclusions: Benchmarking food environments through an understandable tool, such as the Report Card, may offer an efficient and effective means of creating a supportive climate for positive change in children’s food environments, as well as a means to track change in environments and policies over time.

O.27.5
EFFECTIVENESS OF AN INTERVENTION PROVIDING TRAINING, WRITTEN MENU FEEDBACK, AND PRINTED RESOURCES, ON INCREASING CHILDCARE CENTER COMPLIANCE WITH NUTRITION GUIDELINES: A RANDOMIZED CONTROLLED TRIAL
Finch M, Seward K, Wedesweiler T, Stacey F, Grady A, Jones J, Wolfenden L, Yoong S. Hunter New England Population Health, Wallsend, NSW; School of Medicine and Public Health, University of Newcastle, Callaghan, NSW; Hunter Medical Research Institute, Newcastle, Lambton, NSW; Priority Research Center for Health Behaviour, Callaghan, NSW; Priority Research Center for Physical Activity and Nutrition, Callaghan, NSW.

SIG: Early care and education
Purpose: Research suggests most childcare centers that provide food to children are not compliant with nutrition guidelines. The provision of training, feedback and printed resources may represent a highly scalable approach to support compliance. While such strategies have been frequently employed their impact has yet to be rigorously evaluated in this setting. This study examined the effect of a theoretically informed and potentially scalable menu-based intervention in childcare centers specifically designed to address barriers to achieving nutrition guideline compliance. Methods: This randomized controlled trial was conducted with 44 centers. The intervention was designed using the theoretical domains framework. Implementation strategies targeting identified barriers included a training workshop, menu audit and written feedback report, and provision of nutrition guidelines and resources. The primary outcome was the proportion of centers providing food servings compliant with all food group nutrition guideline recommendations. Compliance with guidelines for individual food groups and discretionary foods was also assessed. Cook guideline knowledge was collected via a questionnaire. Logistic regression models, were used to determine effectiveness of the intervention. Results: At baseline and follow-up, zero centers in the intervention and control groups were compliant with all food guidelines or for the vegetable and meat food groups individually. Although mostly appearing promising, follow-up between group compliance differences for discretionary (33 vs 5, CI p=0.18), dairy (42 vs 15, p=0.16), breads and cereals (8 vs 10 p=1.00), and fruit (17 vs 10, p=0.48), were all non-significant. Intervention centers showed a significantly greater increase in percent of cooks with correct knowledge for vegetable servings (93.3 vs 36.4, p=0.008).

Conclusions: The application of the theoretical domains framework produced a broad understanding of the determinants of center compliance with nutrition guidelines. However due to the complexity of the guidelines, lower training uptake, low intervention dose and limited follow-up support, the intervention was not effective in supporting the practice change required for services to achieve full compliance. These findings provide an important contribution to the limited literature regarding addressing barriers to compliance with nutrition guidelines in childcare, and have important implications for practitioners looking to the evidence to inform program implementation in this setting.

Jun 06, 09:20 - 10:20: Oral Presentations

O.28: Adults Physical Activity, Cardiovascular Diseases and Obesity (Grand Ballroom)

O.28.1

REHABILITATION ENABLEMENT IN CHRONIC HEART FAILURE (REACH-HF): FINDINGS AND DELIVERY QUALITY ISSUES IN A MULTICENTRE RANDOMISED CONTROLLED TRIAL OF A FACILITATED, EXERCISE BASED REHABILITATION INTERVENTION IN HEART FAILURE.


SIG: Ageing

Background: Centre-based cardiac rehabilitation (CR) reduces risk of hospitalisations and improves health related quality of life for people with heart failure. Nevertheless, uptake of CR remains suboptimal, so alternative delivery models, such as home-based programmes are needed. Objective: The REACH-HF multi-centre trial (ISRCTN86234930) evaluated the effectiveness of a novel, evidence-informed, home-based rehabilitation intervention for people with heart failure and their caregivers. Methods: Patients from 4 UK centres with left ventricular heart failure (ejection fraction of < 45%) and their caregivers were randomised to the REACH-HF intervention (an exercise based rehabilitation and self-help manual facilitated by trained nurses or physiotherapists over 12 weeks) plus usual care (intervention group) or usual care alone (control group). The primary outcome was the Minnesota Living with Heart Failure Questionnaire (MLHFAQ) measuring disease specific quality of life at 12 months. Secondary outcomes included physical activity (accelerometry), generic quality of life (EQ-5D-5L), psychological well-being and exercise capacity (incremental shuttle walk test). Intervention fidelity was checked by applying a checklist.
based on the designers' specifications to recordings of all participant-facilitator contacts for a purposively selected sample of 20 patients. Results: We randomised 216 patients and over 85% provided primary outcome data at 12 months. Compared with controls, the intervention group experienced a clinically meaningful improvement in MLHFQ score at 12-month follow up (Mean Diff: -5.7 (95%CI: -10.6 to -0.7, p=0.025). There were no significant differences in EQ-5D-5L, Anxiety, Depression, exercise capacity or physical activity. Intervention fidelity analysis found mean scores of 1.1 to 4.2 (out of 6) for the 13 checklist items, where a score of 3 indicated "adequate" delivery. The lowest fidelity scores were for the caregiver-support elements of the intervention. Analysis (ongoing) of variations in response by fidelity score within the fidelity-assessment sample will also be presented. Conclusions: Our findings indicate that the REACH-HF home-based rehabilitation-intervention generates clinically important improvements in disease-specific HRQoL. However, there is considerable scope for improvement in delivery quality and addressing this may help to increase the proportion of people who benefit from the intervention.

O.28.2
ESTIMATES OF THE COMPOSITION OF TIME SPENT IN DIFFERENT PHYSICAL BEHAVIOURS THAT ARE ASSOCIATED WITH BETTER CARDIOMETABOLIC MARKERS OF HEALTH
McGregor Duncan1,2, Palarea-Abaladefo Javier3, Dall Philippa1, Stamatakis Emmanuel3, Chastin Sebastien1,4, Glasgow Caledonian University, Glasgow, Scotland; 2Biomathematics & Statistics Scotland, Edinburgh, Scotland; 3Charles Perkins Centre, Epidemiology Unit, School of Public Health, University of Sydney, Sydney, New South Wales; 4Department Movement and Sports Sciences, Ghent University, Ghent, East Flanders.

SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: To investigate the overall association between time spent in sedentary behaviour (SB), light intensity (LIPA) and moderate to vigorous physical activity (MVPA) and markers of cardiometabolic health. Additionally, to estimate what changes in time use between the different behaviours could be associated with lower cardiometabolic health risks. Methods: A cross-sectional analysis of the Health Survey for England 2008 on N=1,411 adults (with accelerometer and covariate data) was undertaken using compositional analysis methods to examine the relationship between cardiometabolic risk biomarkers and physical activity. Compositional analysis accounts for co-dependency between the relative amounts of time spent in different behaviour types. The daily composition of time spent in SB, LIPA and MVPA was determined from waist-mounted accelerometer data (Actigraph GT1M). This was modelled against markers of cardiometabolic health (BMI, waist circumference, waist to hip ratio, blood pressure, cholesterol, VO2 maximum, and HDL cholesterol level and glycated haemoglobin). The compositional models obtained were used to estimate how exchanges in time use between the different behaviours were associated with metabolic profiles. Results/findings: The composition of time spent in SB, LIPA and MVPA was significantly associated with BMI, waist circumference, waist-to-hip ratio, HDL cholesterol and VO2 maximum (p<0.001), but not with glycated haemoglobin, systolic and diastolic blood pressure, or total cholesterol. Increased time spent in MVPA was always associated with better cardiometabolic outcomes, whilst increased time spent in SB was always associated with poorer outcomes. The associations of increased LIPA depended on whether it displaced MVPA or SB within the composition. Increased MVPA had the strongest association with the cardiometabolic markers, but we found that reallocation of SB to a mixture of time spent in MVPA and LIPA could achieve similar outcomes. Conclusions: The way that people distribute their time between physical behaviours during the day is associated with cardiometabolic markers of health. Time spent in MVPA is still an important target for intervention, but similar benefits could be achieved through a mixture of increasing LIPA and MVPA.

O.28.3
PSYCHOSOCIAL CORRELATES OF OBJECTIVELY MEASURED PHYSICAL ACTIVITY IN HIGHER AND LOWER EDUCATED BELGIAN ADULTS AT RISK FOR TYPE 2 DIABETES. THE FEEL4DIABETES-STUDY
Huys N1, Van Stappen V1, Shadid S2, De Craemer M1, Androutsos O3, Lindstrom J4, De Miguel-Etayo P5, Iotova V6, Rurik I7, Manios Y3, Cardon G1, Ghent University, Ghent; 2Ghent University Hospital, Ghent; 3Harokopio University of Athens, Athens; 4National Institute for Health and Welfare, Helsinki; 5University of Zaragoza, Zaragoza; 6Medical University of Varna, Varna; 7University of
Objective. Individuals with an increased risk for the development of type 2 diabetes (T2D) are an important target group for the prevention of diabetes. Their risk can be decreased by increasing their physical activity (PA) levels. However, studies show that socioeconomically deprived individuals are less likely to engage in PA. To tackle low levels of PA in low socioeconomic groups with an increased risk for the development of T2D in preventive interventions, it is important to gain insight in the correlates of this behavior. Nevertheless, literature on those correlates in this target group is inconclusive and to date, no studies used objectively measured PA. Therefore, the main aim of the present study was to investigate the moderating effects of socioeconomic status (SES) on the relationship between psychosocial factors and objectively measured PA in individuals with an increased risk on T2D.

Methods. In Flanders, Belgium, adults with an increased risk for T2D (based on the Finnish Diabetes Risk Score) were selected in 11 low SES neighborhoods. Data were collected between March and August 2016. Participants filled out a questionnaire on socio-demographic variables, health behavior and psychosocial correlates and wore an ActiGraph accelerometer for 5 consecutive days. The final sample consisted of 164 adults (mean age: 38; 13.4% men). Statistical analyses were performed using ANCOVA models. Results. Descriptive results showed that low SES adults had less moderate to vigorous PA, more light PA and more overall total PA than high SES adults. SES was only a significant moderator of the associations between weight perception and light PA on weekend days (p = 0.017) and total PA on weekend days (p = 0.049). In low SES participants, adults who perceived their weight as underweight or normal were more physically active and in high SES participants, adults who perceived their weight as overweight were more physically active. SES was no significant moderator of the associations between all other psychosocial correlates and PA-variables. Conclusion. It is not necessary to tailor interventions targeting psychosocial correlates of PA in adults with a higher risk for the development of T2D to specific SES-groups.

O.28.4
DO TRIGLYCERIDE LEVELS MEDIATE THE ASSOCIATION OF LIFESTYLE BEHAVIOURS OF DONORS AND HAEMOLYSIS?

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PURPOSE To investigate whether a relatively unhealthy lifestyle, i.e. low levels of moderate to vigorous physical activity, high levels of sedentary behaviour, and high intake of unhealthy foods, are associated with higher levels of haemolysis during storage of miniature red cell concentrates from Dutch blood donors. Furthermore, we explored whether the associations between lifestyle factors and haemolysis were mediated by triglyceride levels.

**METHODS** A cross-sectional analysis was performed on data of 760 Dutch blood donors participating in Donor InSight (DIS)-III. The average number of minutes spent per day on moderate to vigorous physical activity and sedentary behaviour were objectively measured using a GT3X Actigraph accelerometer. Intake frequency and amount of fish, nuts, eggs and meat was assessed using a food frequency questionnaire. Blood samples were taken from the diversion pouch, processed to and stored as mini red cell concentrates in SAGM at 2-6°C for 28 days. Total haemoglobin was measured by Sysmex haematology analyser and free haemoglobin was determined by a spectrophotometer. Haemolysis was expressed as percentage of free haemoglobin of the total haemoglobin present in the red blood cells after correction for haematocrit (i.e. percentage of red blood cells in blood). Mediation analyses were performed to study triglyceride level as a potential mediator in the association of lifestyle behaviours and haemolysis level.

**RESULTS** No associations of any of the lifestyle behaviours with haemolysis were found, nor were there any associations between lifestyle behaviours and lipids. Although triglyceride levels were associated with haemolysis levels (βa=1.71, 95%CI=1.24 - 2.30), we did not find evidence for a mediating role of triglyceride levels. **CONCLUSION** In a large sample of Dutch donors, triglyceride levels but not lifestyle behaviours were associated with haemolysis.
DIET QUALITY IS AN INDICATOR OF DISEASE RISK FACTORS IN HISPANIC COLLEGE FRESHMAN

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Purpose: Few studies have used dietary indices to assess metabolic disease risk in a Hispanic college population. A novel approach to measuring diet quality, the Healthy Eating Index (HEI), which measures conformity to the Dietary Guidelines for Americans. The purpose of this study was to assess the associations between diet quality and adiposity, metabolic health, and physical activity levels in a Hispanic college freshman population. It was hypothesized that decreased diet quality would result in adverse health outcomes and reductions in physical activity. Methods: Cross sectional data were obtained from 92 Hispanic college freshman (18-19y, 49% male) including the following: height, weight, waist circumference, body mass index, body fat via BodPod, hepatic fat, visceral adipose tissue (VAT) and subcutaneous adipose tissue (SAT) via magnetic resonance imaging, glucose, insulin, homeostatic model assessment of insulin resistance (HOMA-IR), lipids via fasting blood draw, physical activity measures via 7-day accelerometry, and dietary intake via three 24-hour dietary recalls. Dietary quality was calculated using the HEI-2010. Linear Regressions were used to compare dietary quality and anthropometric, metabolic and physical activity outcomes. A priori covariates included sex, body fat and/or BMI, and MVPA (for adiposity and metabolic models). Results: For every one unit increase in diet quality, VAT decreased by 1.6 mL (p = 0.03), SAT decreased by 7.3 mL (p=0.03), light activity increased by 10.3 mins (p < 0.01), MVPA increased by 7.4 mins (p= 0.01), step counts increased by 1018.8 total steps (p < 0.01), insulin decreased by 0.1 μg/dL(p = 0.02), and HOMA-IR decreased by 0.5 (p < 0.01). Conclusion: Diet quality, as measured with HEI, was a strong predictor of disease risk even after controlling for physical activity in first-year Hispanic college students. College represents a time where young adults can take onus for dietary and lifestyle choices. These results suggest that small improvements in diet quality have favorable impact on reduction in metabolic disease risk. Moreover, findings suggest HEI can serve as a robust measurement tool in future population monitoring and nutrition interventions.

O.29: Adults Nutrition (Salon 1-2)

O.29.1

DEPRESSION, EMOTIONAL EATING AND 7-YEAR WEIGHT CHANGES: DO SOCIODEMOGRAPHIC FACTORS, SLEEP DURATION OR PHYSICAL ACTIVITY MODERATE THESE ASSOCIATIONS?

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Purpose: Evidence is accumulating that emotional eating might be one mechanism explaining the positive association between depression and development of obesity. However, studies have rarely examined this mediation effect in a prospective setting and its dependence on other factors linked to stress and weight control. We used a population-based 7-year prospective study of adults to investigate 1) whether emotional eating partly mediates the associations between depressive symptoms and increases in body mass index (BMI) and waist circumference (WC), and 2) whether sociodemographic characteristics (gender, age, employment status), night sleep duration or leisure time physical activity moderate these associations. Methods: Participants were Finnish 25- to 74-year-olds who attended the DILGOM study at baseline in 2007 and follow-up in 2014. At baseline (n=5024), height, weight and WC were measured in a health examination. At follow-up (n=3735), height, weight and WC were based on measured or self-reported information. Depressive symptoms (Center for Epidemiologic Studies-Depression Scale), emotional eating (Three-Factor Eating Questionnaire-R18), physical activity and sleep duration were self-
reported. The main analytical method was structural equation modelling (SEM) with full information maximum likelihood estimator. Results: Estimates from SEM indicated that higher levels of depressive symptoms and emotional eating were both related to greater 7-year increases in BMI and WC. The effects of depressive symptoms on BMI ($\beta_a = 0.004$, $P = 0.009$ for indirect effect) and WC ($\beta_a = 0.018$, $P < 0.001$ for indirect effect) were partly mediated by emotional eating. Multiple group SEM implied that emotional eating predicted greater BMI gain in participants sleeping 7 hours or less per night ($\beta_a = 0.251$, $P < 0.001$), while no such association was observed in those sleeping 7.5-8.5 hours ($\beta_a = 0.057$, $P = 0.505$) or 9 hours or more ($\beta_a = -0.199$, $P = 0.314$) per night. Additionally, depressive symptoms predicted greater BMI gain particularly in younger participants (e.g. $\beta_a = 0.035$, $P = 0.006$ for 25-39-year-olds vs. $\beta_a = -0.011$, $P = 0.188$ for 60-74-year-olds). No other statistically significant interactions were detected. Conclusions: Our findings provide support for the hypothesis that emotional eating is one behavioural mechanism between depressive symptoms and subsequent weight gain. Individuals with higher emotional eating and shorter sleep duration may be particularly vulnerable to weight gain, which should be taken into account in weight control interventions.

O.29.2
QUANTIFYING THE EFFECTS OF BETWEEN MEAL SUGAR-SWEETENED BEVERAGE CONSUMPTION ON GLUCOSE AND LIPID METABOLISM.

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: To quantify the acute effects of between-meal sugar-sweetened beverage (SSB) consumption on glucose and lipid metabolism in habitual soft drink consumers. Methods: Twenty-eight inactive, overweight or obese male and female adults [15 men; mean ±smn; SD: 23 ±smn; 3 years, body mass index (BMI) 31.0 ±smn; 3.6 kg.m$^{-2}$] participated. During uninterrupted sitting and following standardised breakfast and lunch meals, each participant completed two 7-hour conditions on separate days in a randomised, crossover design study. For each condition, participants consumed either SSBs or water mid-morning and mid-afternoon. Total area under the curve (tAUC) for blood glucose, insulin, C-peptide and triglyceride levels was calculated and compared using generalized linear mixed models controlling for baseline value, sex, age, BMI, physical activity and treatment order. Results/findings: Compared to water, SSB consumption significantly increased peak blood glucose concentration in the morning (mean ±smn; SEM: 6.0 ±smn; 0.2 versus 7.1 ±smn; 0.2 mmol.L$^{-1}$, $P < 0.05$) and afternoon (6.2 ±smn; 0.1 versus 6.6 ±smn; 0.2 mmol.L$^{-1}$, $P < 0.05$). The tAUCs were significantly higher for SSBs compared to water for glucose (35.9 ±smn; 0.8 versus 37.4 ±smn; 0.8 mmol.h.L$^{-1}$), insulin (638.0 ±smn; 66.7 versus 803.7 ±smn; 71.8 mmol.h.L$^{-1}$) and C-peptide (19,121 ±smn; 1,036 versus 20,927 ±smn; 1,082 pmol.h.L$^{-1}$); all $P < 0.05$. The overall tAUC for triglycerides was lower with the SSB condition ($P < 0.05$). This lowering in tAUC was driven by the males (15.1 ±smn; 0.7 versus 11.0 ±smn; 0.8 mmol.h.L$^{-1}$; $P < 0.05$), whereas females had significantly lower triglyceride levels than males ($P < 0.05$), and showed no difference between conditions. Conclusions: In overweight/obese young men and women, the peak plasma glucose response after SSB consumption was elevated by 18% compared to water. This was associated with a sustained 26% elevation in insulin throughout the day. The triglyceride lowering in men after SSB consumption is consistent with a greater sensitivity to insulin-mediated suppression of liver triglyceride production. In the context of standardised meals, this study identifies significant additional metabolic perturbations associated with SSB ingestion, which likely underpin the development of metabolic disease when consumption is habitual.

O.29.3
HOW DOES CHANGING THE PLACEMENT OF FOOD PRODUCTS IN SUPERMARKETS INFLUENCE CUSTOMERS’ DIETS?

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SIG: Socio-economic inequalities

Purpose: Supermarkets are a major source of food for families yet understanding of how the environment within supermarkets influences food choices is sparse. Evaluating environmental strategies to enable families, particularly those from disadvantaged backgrounds, to make healthy food choices is necessary to reduce obesity prevalence and improve population health. Aim: To assess whether improving the availability and placement of fruit and vegetables in supermarkets, and removing confectionery from checkouts improves the dietary quality of women aged 18-45 years. Methods: This study was the pilot phase of a natural experiment with a prospective matched cluster design. The setting was a discount supermarket chain in England. The intervention had 3 components: i) new fresh fruit and vegetable section at the store entrance, ii) frozen fruit and vegetables in the first aisle, and iii) removal of confectionery from checkouts. Women customers with a store loyalty card, who regularly shopped at 3 intervention and 3 matched-control stores in England were recruited. Data on women's dietary quality and demographic characteristics were collected via telephone survey before refurbishment, and three months after. Results: A total of 150 women were recruited, and 138 provided complete data at baseline and 3 month follow-up. There was no difference in participant characteristics at baseline between intervention and control participants (all p>0.5). Participants' median age was 36 years, 91% were white British and 55% had low educational attainment (=GCSE). Almost half reported the discount supermarket chain was their primary supermarket (41%). Linear regression models showed that dietary quality was higher among intervention than control participants at three months ($\beta_a=0.25SD$ (95% CI 0.01, 0.49), equivalent to four additional portions of green salad per week. This relationship weakened only slightly after adjustment for neighbourhood deprivation, age, money spent on groceries, number of children and educational attainment ($\beta_a=0.23$ (95% CI -0.01, 0.47). Conclusions: Creating a healthier store layout within supermarkets may improve the diets of women customers. Future government programmes that involve directing food retailers and manufacturers to improve food product properties should also consider including product placement.

O.29.4
PERCEIVED NORMALITY OF A REDUCED PORTION SIZE PREDICTS WITHIN-MEAL COMPENSATORY EATING: RESULTS FROM TWO LABORATORY-BASED STUDIES

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Reducing commercially available food portion sizes has been proposed as a useful strategy to reduce energy intake and improve public health. However, there is the potential that consumers will compensate for reduced portion sizes by increasing their intake of other foods. Based on our previous work, we hypothesize that portion size reductions that result in a portion being perceived as 'normal' are unlikely to result in compensatory eating, whereas reductions that result in portions being visually perceived as 'smaller than normal' in size will result in increased compensatory eating. Methods: In two within-subjects experiments, participants (Study 1: N = 45, M BMI = 26.87, SD = 3.65; Study 2: N = 37, M BMI = 26.86, SD = 3.65; 51% female) were served a lunchtime meal in three different sized portions: one large portion, and two smaller portions that that were visually perceived as 'normal' and 'smaller than normal', respectively. To assess compensatory intake, participants were given the opportunity to serve themselves additional helpings of the lunchtime food (Study 1) or energy-dense dessert foods after consuming their initial lunchtime portion (Study 2). Results: Each reduction in portion size significantly reduced energy intake from that portion. As predicted, compensatory intake was not significantly different following consumption of the 'normal' and 'large' lunchtime portions (Study 1: m diff kcal= 20.93, SE = 11.75, p = .23; Study 2: m diff = 19.94, se = 17.38, p = .26). In contrast, participants engaged in greater compensatory eating after consuming a 'smaller than normal' compared to a 'normal' lunchtime portion (Study 1: m diff kcal= 38.49, SE = 11.72, p = .01; Study 2: m diff = 35.60, se = 18.33, p = .06). Conclusions: Reductions to portion sizes that still result in a meal being perceived as being normal size do not cause compensatory eating. Perceived normality of a reduced portion size may therefore be a useful factor to consider in designing effective portion size reductions.
THE IMPACT OF SATIETY RESPONSIVENESS ON WEIGHT LOSS AND APPETITE CONTROL IN RESPONSE TO LOW AND HIGH ENERGY DENSE MEALS

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Objective: Impaired ability to detect satiety signals might impact the success of a weight loss attempt. This study examined the effect of satiety responsiveness on weight loss over 14 weeks. Additionally, as low energy dense (LED) foods can be beneficial for appetite control, this study tested the impact of LED and high energy dense foods (HED) on satiety, satiation and food preferences in individuals showing weak satiety responsiveness. Methods: Using a crossover design, participants underwent laboratory probe days (LED, HED) at week 3 and 12 of the weight loss programme. Diurnal appetite ratings, ad libitum meal energy intake (EI) and food preferences (Leeds Food Preference Questionnaire) were assessed in response to iso-caloric LED and HED breakfast and lunch meals. Free-living appetite control and adherence to the weight loss programme were assessed with weekly questionnaires. Mean satiety quotients based on post-LED and HED breakfasts were calculated to determine low (n=26) and high (n=26) satiety groups by tertile split. Results: The low satiety group lost less weight (M: -2.89±smn; 3.08\%) compared to the high satiety group (M: -5.71±smn; 0.72\%) (p=.003). The low satiety group also showed greater liking and wanting for HED foods and less wanting for LED foods compared to the high satiety group (largest p=.005). In weekly questionnaires, the low satiety group reported less control over eating and felt less able to adhere to the weight loss programme (largest p=.004). Under HED conditions, the low satiety group consumed more snacks and showed greater total day-EI compared to the high satiety group (largest p=.03). Under LED conditions, the low satiety group reported feeling less full post-breakfast and post-lunch compared to the high satiety group (largest p=.007) but EI did not significantly differ. Conclusions: Weak satiety responsiveness hinders weight loss attempts. Consumption of LED meals, can counteract weaker appetite control and result in controlled evening meal and snack EI under laboratory conditions. Use of LED meals to enhance self-regulation of eating may benefit those with low satiety phenotypes. Funding: This trial was funded by Slimming World UK. Trial registered at ClinicalTrials.gov #NCT02012426.

INCLUDING NON-WEAR ACTIVITIES IN ACCELEROMETER MEASURED PHYSICAL ACTIVITY: EXPERIENCES FROM THE EUROPE-WIDE IDEFICS COHORT STUDY

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Purpose: Assessing physical activity (PA) with accelerometry has become state of the art even in large cohort studies. Moderate-to-vigorous PA (MVPA) will be underestimated, if devices are not worn during sport activities. Therefore, it seems appropriate to use a diary to record non-wear periods and their reasons. However, this information is rarely utilized to correct the usual estimates. Methods: 16,228 children aged 2–sh;9.9 years from eight European countries participated in the first survey (T0) of the IDEFICS study. 11,041 of these children participated in the follow-up survey (T1) 2 years later, plus 2,555 newly recruited children (Ahrens et al., 2017). In this subgroup PA was assessed during waking hours with Actigraph GT1M and Actitrainer devices. Additionally, parents were asked to record non-wear periods.
during the day including the reason and start/end of the period in a diary. This information was used to impute MVPA from non-wear periods in which sport activities were performed following the algorithm described by Meester et al. (2011). Results: Accelerometer data were collected from 14,151 children of which 10,500 (74%) completed the diary. Of these, 61% reported at least one non-wear period (median duration 50 minutes). 14% of the children (n=1,990) removed the accelerometer at least once for a sport activity (median duration 80 minutes). A median time of 45 minutes MVPA was imputed for one non-wear activity. Before imputation 25% of the children reached the WHO recommendation of 60 minutes MVPA per day in T0, 29% in T1. After imputation 27%, respectively 35% reached the recommendation. For children not fulfilling the recommendation the increase in BMI z-score after two years was more pronounced when also considering information from PA diaries (beta=0.059 (p=0.04). Conclusions: Imputing MVPA from non-wear activities improves the assessment of objectively measured PA behavior, especially for sports where removal of the accelerometer is recommended (e.g. swimming, martial arts). Without imputation the time spent in MVPA due to these activities is "lost". Aside from imputing MVPA it should be further investigated, if the inclusion of light PA activities or even sedentary behavior is a reasonable mean to further reduce uncertainty from non-wear periods.

O.30.2
PSYCHOMETRIC PROPERTIES OF THE PHYSICAL ACTIVITY PARENTING PRACTICES ITEM BANK: AN INTEGRATION OF BOTH CLASSICAL AND ADVANCED PSYCHOMETRIC METHODS
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SIG: Children and families

Objective: Parenting practices can influence children’s physical activity (PA) and thus are an important target for family-based interventions. Our ability to understand the influence of the family, however, has been hampered by considerable variation in how PA parenting practices have been measured. To help standardize our measurement of parenting practices, a PA parenting practices item bank was built. This study examined the psychometric properties of the PA parenting practices item bank using the expert informed conceptual framework which guided the development of the item bank. Methods: Canadian parents (n=602) of 5- to 12-year old children were recruited from a web-based panel sample [Mean age=42; 51% mothers; 51% white; 44% income below median]. The 100-item questionnaire assessed 12 PA parenting constructs regrouped into three main domains of parenting: a) neglect/control which included permissive and pressuring; b) autonomy support which included encouragement, guided choice, involvement, and praises/rewards; and c) structure which included co-participation, expectations, facilitation, modeling, monitoring, and restrictions. Confirmatory Factor Analysis (CFA) (using STATA v15) and Item Response Modeling using the Rasch approach (using RUMM 2030) were used to assess the construct validity of the item bank. Results: In general, the analyses supported using the expert informed conceptual framework to explain the structure of the PA parenting practices item bank (aha; ranging from .76 to .92 except for two constructs where aha=.55 (restrictions scale) and .68 (expectations scale)). Small deviations from the expert informed framework were as follows: a) the permissive and pressuring constructs from the neglect control domain were highly correlated (r=0.86) which suggested combining the two constructs; b) the encouragement and restrictions constructs were not unidimensional so each was divided into two constructs; c) involvement and praises merged together to create a single construct; and d) the monitoring construct was reduced to a single item and was no longer a scale based on the analyses. Conclusion: The results demonstrate that the PA parenting practices item bank has strong psychometric properties. The item bank will provide researchers with a strategy to standardize measurement of PA parenting practices and support comparison of results across studies.

O.30.3
THE DEVELOPMENT OF A QUESTIONNAIRE TO MEASURE CONFIDENCE AND BEHAVIORAL AUTONOMY FOR HEALTHY EATING IN ADOLESCENTS
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Objective: Obesity is a strong risk factor for cardiovascular diseases but physical activity (PA) and sedentary behavior (SB) are known to moderate the effect. Studies have examined the independence of SB and PA on health and obesity risk but associations tend to vary depending on whether estimates come from report-based measures or monitor-based measures. The purpose of this study was to examine the independent and joint associations of SB and moderate-to-vigorous PA (MVPA) with obesity, and compared the associations between a self-report measure (24-hour Physical Activity Recall; 24PAR) and an objective, monitor-based measure (SenseWear Armband; SWA). Methods: Data were obtained from the Physical Activity Measurement Survey (PAMS) project which evaluated measurement properties of PA behavior in a representative sample of 1342 Iowan adults. Each participant performed a series of data collection procedures for two randomly selected days, each of which required wearing a SWA for a full day, and then completing a telephone-administered 24PAR the following day. Participants were classified into tertiles of SB and MVPA to examine cross-sectional associations with obesity. Results: For the SWA outcomes, the odds ratios (95% confidence interval) of obesity were 2.55 (1.80-3.63) and 9.19 (6.08-13.90) for the medium and most sedentary group, respectively, compared with the least sedentary group; 0.48 (0.34-0.67) and 0.47 (0.30-0.72) for medium and high MVPA, respectively, compared with low MVPA, after adjusting for cofounders and MVPA for SB or SB for MVPA. For the 24PAR, no significant
associations were observed for SB; odds ratios were 0.72 (0.54-0.95) for medium MVPA and 0.52 (0.42-.0.79) for high MVPA, compared with low MVPA. Joint analyses found that compared with individuals with lower SB and higher MVPA, those with higher SB and lower MVPA had considerably higher odds of obesity (odds ratio: 12.68 (8.77-18.34)) when assessed with the SWA; the association was substantially stronger than the association (odds ratio: 1.83 (1.35-2.48)) as assessed with the 24PAR. Conclusions: Objectively assessed SB and MVPA were positively and negatively associated with obesity, respectively, independent of each other. Measurement errors in self-reported SB and MVPA using the 24PAR may obscure clinically important associations with obesity.

O.30.5
A REVISED AND UPDATED YOUTH COMPENDIUM OF PHYSICAL ACTIVITIES: ACTIVITY CODES AND METABOLIC INTENSITIES

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SIG: Children and families

Objective: Assessment of physical activity and its energy costs in children has many applications for clinical practice, public health and applied research. In epidemiologic studies and clinical practice, self-report questionnaires and direct observation are common tools to assess physical activity. In these approaches, reported or observed physical activity data have been converted to energy expenditure using metabolic equivalents (METs) published in either the Adult Compendia, or the Ridley Compendium of Physical Activities which contains a mixture of adult and child values. Predicting energy costs of physical activities in children is particularly difficult due in part to a lack of published data and age-related variation in MET levels. The purpose of this study was to produce a new Youth Compendium of Physical Activities (Youth Compendium) that estimates the energy costs of physical activities using data based solely on youth, taking into account the age-dependent changes that occur across childhood. Methods: The energy costs of physical activities were compiled from a literature search and pooled data of energy expenditure measurements in youth from our laboratories. To estimate the intensity of each activity, measured oxygen uptake (V\(\text{O}_2\)) was divided by estimated basal metabolic rate (Schofield age- and sex- specific equations) to produce a youth MET (METy). A mixed linear model was developed for each activity category to impute missing values for age ranges with no observations for a specific activity. Results: The Youth Compendium consists of METy values for 196 specific activities classified into 16 major categories for four age groups, 6-9, 10-12, 13-15, and 16-18 years. METy values in the Youth Compendium were measured (51%) or imputed (49%) from youth data. Conclusions: The Youth Compendium of Physical Activities uses pediatric data exclusively, addresses the age-dependency of METy and imputes missing METy values and thus represents advancement in the physical activity research and practice. The Youth Compendium is freely accessible via a website: http://nccor.org/tools-youthcompendium/. The resource will be valuable for researchers and stakeholders interested in surveying physical activity levels and evaluating interventions, programs, and policies designed to encourage physical activity in youth.

O.31: Weight-Related Studies in Children and Adolescents (Drawing Room)

O.31.1
CHANGE IN BMI DISTRIBUTION OVER A 24-YEAR PERIOD AND ASSOCIATED SOCIOECONOMIC GRADIENTS: A QUANTILE REGRESSION ANALYSIS

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SIG: Socio-economic inequalities

Purpose: Focusing on mean changes in body mass index (BMI) and related socioeconomic inequalities can obscure differences in changes and inequalities occurring at the different extremes of the BMI distribution. This study assessed the change in BMI distribution across the whole BMI spectrum among 18/19 year-olds over 24 years. It also investigated parallel changes in the distribution of birth weight and in the association between birth weight and later risk of overweight/obesity. Parental educational variations in the trends and associations were explored. Methods: The study used data on 606,832 military conscripts enlisted between 1985 and 2008. Objective measures of weight and height at age 18/19 and at birth were obtained from the Conscript Registry and from the Medical Birth Registry. Quantile regression analyses were used to assess the temporal change in BMI and birth weight distribution. The association between birth weight and overweight/obesity at age 18/19 years was quantified using logistic regression. Differences by parental educational status in the changes were tested. Results: BMI increased over time, especially in the 90th to 99th percentiles. Socioeconomic differences in this increase were documented in the 75th to 97th percentiles. The distribution of birth weight and the association between birth weight and the later risk of overweight/obesity remained relatively stable over the 24-year period. Conclusions: The difference in weight gain occurring between BMI at low and high percentiles indicates the limited role of mean BMI in reflecting population changes. The results suggest a need to focus on those with low socioeconomic position in the upper ends of the BMI distribution to combat increasing disparities in obesity-related outcomes. The contribution of the prenatal environment to the documented increases in the prevalence of overweight and obesity over time is likely to be through mechanisms that do not affect birth weight directly.

O.31.2
MISPERCEPTION OF CHILD WEIGHT STATUS: A CROSS-SECTIONAL ANALYSIS OF THE CORK CHILDREN’S LIFESTYLE STUDY (CCLAS).
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SIG: Children and families

Purpose: Despite the increased global awareness of childhood obesity, a high proportion of parents and children continue to misclassify child weight status. This is worrying given that one of the first steps in the treatment of childhood obesity is for parents to correctly identify that their child is carrying excess weight. This study aimed to identify factors associated with parental and child misperception of child weight. Methods: A cross-sectional study involving a sample of 1,075 children, aged 8-11 years, drawn from primary schools in Cork city and county in Ireland. Data were collected using child and parent self-administered questionnaires. Physical measurements were taken by trained researchers according to standard procedures. Binary logistic regression was used to identify factors associated with parental and child misclassification of child weight status. Findings: Almost one-quarter (23%) of parents of all children misclassified their child's weight. Forty five per cent of parents of overweight or obese children misclassified their child's weight. In all children, factors associated with parental misperception of child weight included the child being female (OR=1.60; 95% CI: 1.19-2.14, P=0.02), being overweight/obese (OR=4.03; 95% CI: 2.94-5.53, P<0.001), misperceiving their own weight (OR=3.93; 95% CI: 2.87-5.37, P<0.001), parental ethnicity (OR=1.58; 95% CI: 1.03-2.41, P=0.04) and lower parental education (OR=1.61; 95% CI: 1.04-2.49, P=0.03). In terms of child misperception of weight, 77% of overweight/obese children misclassified their weight. Factors associated with child misperception of weight included the child being overweight/obese (OR=6.63; 95% CI: 4.81-9.14, P<0.001), single-parent household (OR=1.40; 95% CI: 1.02-1.92, P=0.04), low parental education OR=2.05; 95% CI: 1.42-2.95, P<0.001) and a parent being unemployed/other (OR=1.31; 95% CI: 1.01-1.70, P=0.04). Conclusion: Findings suggest that in an obesogenic society where overweight and obesity has become the norm, the capacity of both parents and children to correctly classify child weight status is significantly impaired.
Health care professionals should be aware of the frequent misperception of weight status, especially when dealing with parents of younger children, children who are overweight or obese as well as those parents from other ethnic backgrounds. This is particularly relevant for those involved in paediatric weight management programmes at hospital and community-level.

O.31.3
PHYSICAL ACTIVITY PATTERNS AND THE USE OF SOCIAL NETWORKS OF ADOLESCENTS IN OVERWEIGHT TREATMENT – A SOCIODEMOGRAPHIC STRATIFIED ANALYSIS
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SIG: E- & m-health

Purpose: Overweight poses enormous challenges for health services, not just because of its high prevalence but also due to accompanying and secondary diseases. The improvement of existing overweight treatment for children and adolescents requires knowledge about social and personal conditions, individual needs, and life style because of the connections to the energy consumption and thus to the overweight. Considering this, informations about physical activity and media use as a function of sociodemographic determining factors would allow intervention objectives, contents and methods to be adapted to individual target groups, enabling the effectiveness of current overweight treatment to be maximized. Methods: In 2015, 530 obese and overweight adolescents aged 11 to 17 years participated in a survey on above named factors in a german multicenter study. To estimate group effects more efficiently, stratified analysis was used to explicitly identify variability-reducing confounders. The following strata were used: gender (male, female), age (14–sh;17 and 11–sh;13 years old), school type (high, secondary and middle school) and parents' employment (both in work, neither in work). Mann–Whitney U test, correlation analysis and logistical regression were used to analyze data with SPSS 22.0. Results: Participants were commonly found to be physically active together with friends (75.5%), alone (41.4%) and in sports clubs (34.9%). Girls (OR 1.55) were less likely to participate in club sports. All in all, the respondents spent less time on physical activity compared to control groups. Social media, especially YouTube, WhatsApp, Instagram and Facebook were widely accessed using digital devices. However, differences emerged among sociodemographic groups in the use of social network functions. A third of the respondents said they were regularly prompted to take physical exercise by smartphone apps. Conclusion: The results indicate the need for individualised treatment approaches. During overweight treatment for adolescents, both physical activity in a social context and digital media activity on social networks should be addressed. For treatment providers in particular, social networks may open up new opportunities to reach overweight adolescent in their individual lifeworld, to improve their activity and media competency, and leverage information and communication to support existing treatment approaches.

O.31.4
IMPROVEMENTS IN THE LEAST PHYSICALLY ACTIVE CHILDREN’S RECESS BEHAVIOUR AFTER SCHOOLYARD RENOVATIONS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Increasing schoolyard physical activity during recess has been the aim of numerous interventions. However, it is unclear if these interventions ‘just’ provide more opportunities for those who are already physically active. Drawing on a mix of methods the aim of the Activating Schoolyards Study was to investigate the least physically active children's change in recess physical activity behaviour and perception after a tailored schoolyard renovation combined with organisational changes. The budget per school ranged from 120,000 to 900,000 USD. Methods: Using a quasi-experimental pre-post study design, data were collected at six Danish schools during spring in 2014 and 2016. 554 children (grade 4-8) at baseline and 440 children (grade 4-8) after renewals wore an accelerometer (ActiGraph GT3X) and a GPS (Qstarz BT-Q1000XT) for five school days. The least physically active children represented children from the lowest activity quartile at baseline and follow-up, respectively, based on mean recess moderate-to-vigorous physical activity per child per school. Changes in recess physical activity after renewals were
calculated descriptively using Wilcoxon’s rank-sum test. Five of the children included in the lowest activity quartile at follow-up participated in interviews. A thematic analysis was used to identify these children’s perceptions of their recess physical activity. Results: 154 children (71 % girls) at baseline and 114 (75% girls) at follow-up represented the least physically active children. The least physically active children spend 40% of recess time in the schoolyard post-renewal, equivalent to an increase of 8.5% compared to baseline (p<0.001). The proportion of schoolyard time spent in moderate-to-vigorous physical activity and low physical activity increased by 1.9% (p<0.001) and 3.9% (p=0.07), respectively, and the least physically active children spent 5.8% (p<0.001) less time sedentary during recess post-renewal. The interviewed children preferred fresh air and socialising with friends outdoors during recess and mentioned the possibilities for playing ball games and dancing to music outdoors were improved after renewals. Conclusion: Combining schoolyard renovations with organisational changes can improve time and physical activity in the schoolyard during recess among the least physically active children and may lead to relevant health benefits.

O.31.5
EXAMINING BODY IMAGE SELF-CONSCIOUS EMOTIONS AND PHYSICAL ACTIVITY OVER TIME AMONG FEMALE AND MALE ADOLESCENTS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Body image is a commonly-reported factor perpetuating declines in physical activity levels during adolescence. However, the evidence is predominantly anecdotal, cross-sectional, and focused on girls. Furthermore, the affective dimension of body image has been overlooked compared to the perceptual (e.g., misrepresentations of body size) and cognitive (e.g., dissatisfaction) dimensions. Body image affect has been conceptualized as a range of self-conscious emotions including guilt, shame, envy, embarrassment, and both authentic and hubristic pride. These emotions have differential effects on physical activity in adult women and men. This study examined the association between body-related self-conscious emotions and physical activity over four years during early to mid adolescence. Methods: The self-report data were collected in classes once a year prospectively as part of the MATCH study (Belanger et al., 2013). Linear mixed-effects models were estimated for data collected for four data collections to test main and interaction effects over time. Results: Participants (N= 638, 56.3% girls) initially aged 12.6 (0.63 SD) years provided data at Time 1. Descriptively, girls reported significantly (p < .05) and consistently higher body-related guilt, shame, envy, and embarrassment and boys reported higher pride emotions. Controlling for sex in the linear mixed-effects models, body-related embarrassment was negatively associated with physical activity (B = -.39, p < .01) and this association tended to get weaker over time. Body-related authentic and hubristic pride facets were positively associated with physical activity (B = .42, p < .01; B = .48, p < .01, respectively) and both relationships got weaker over time. The effects for guilt, shame, and envy were not significant. Conclusions: These findings highlight the unique relationships between the self-conscious emotions and physical activity during adolescence. Embarrassment is an understudied yet potentially important emotion to study in physical activity contexts specifically since the social and judgment-oriented facets of physical activity may exacerbate self-conscious emotional experiences. Nonetheless, and consistent with empirical evidence in adults, pride appears to be protective of physical activity declines and could be targeted in intervention efforts. The timing of the relationships needs to be further explored. It is possible that different intervention targets are needed at different times during adolescence.

O.32: Weight and Physical Activity Studies in Pregnancy and Post-Menopause (Lounge)

O.32.1
ENABlers AND BARRIERS TO PHYSICAL ACTIVITY IN OVERWEIGHT AND OBESE PREGNANT WOMEN: AN ANALYSIS INFORMED BY THE THEORETICAL DOMAINS FRAMEWORK AND COM-B MODEL
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Objective: Interventions targeting PA in pregnancy are on-going but few identify the underlying behaviour change mechanisms by which the intervention is expected to work. To enhance the effectiveness of these interventions recent tools in behavioural science such as the Theoretical Domains Framework (TDF) and COM-B model (capability, opportunity, motivation, and behaviour) have been employed to better understand behaviours for intervention development. Using these behaviour change methods, this study aimed to identify the enablers and barriers to PA in overweight and obese pregnant women. Methods: Semi-structured interviews were conducted with a purposive sample of overweight and obese women at different stages of pregnancy attending a public antenatal clinic in a large academic maternity hospital in Cork, Ireland (CUMH). Face-to-face interviews were carried out in the antenatal clinic on a day and time suitable for the participant by two researchers (CF) and (AEA) between June and September 2015. An interview schedule was used to facilitate the interviews. Data on age, nationality, body mass index (BMI) and gestational age were recorded. Interviews were audio recorded and transcribed into NVivo V.10 software. Data analysis followed the framework approach, drawing on TDF and the COM-B model.

Results: Overweight and obese pregnant women were interviewed (n=30); nationality (Irish, African, Chinese, French, Lithuanian and Hungarian), BMI (25.6-41.7), age (22-39 years), gestation (12-39 weeks). Twenty-one themes were identified and mapped directly on to the COM-B model of behaviour change and ten of the TDF domains. Social opportunity to engage in PA was identified as an enabler; pregnant women suggested being active was easier when supported by their partners. Knowledge was a commonly reported barrier with women lacking information on safe activities during pregnancy and describing the information received from their midwife as ‘limited’. Physical capability and physical opportunity to carry out PA were also identified as barriers; experiencing pain, a lack of time, having other children, and working prevented women from being active. Conclusion: This study is a theoretical starting point in making a ‘behavioural diagnoses’ and the results will be used to inform the development of an intervention to increase PA levels among overweight and obese pregnant women.

O.32.2
WHAT THE HEALTH? INFORMATION SOURCES AND MATERNAL LIFESTYLE BEHAVIOURS
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SIG: Early care and education

Purpose: Regular physical activity (PA), adequate gestational weight gain (GWG) and healthy eating may promote long-term health for the mother and baby. Hence, it is important that women receive current and updated advice on these topics, and are encouraged to adopt a healthy lifestyle during pregnancy. The aim of this study was to investigate the main information sources among pregnant women regarding PA, GWG and nutrition, as well as evaluate how these information sources may affect their health behaviours. Methods: A cross-sectional study design, comprising an electronic questionnaire was distributed to two antenatal clinics, as well as pregnancy-related online chat forums and social media. Inclusion criteria was = 18 years, = 20 weeks gestation and able to read/write Norwegian. In total, 150 pregnant women answered the questions, which was a mix of 11-point Likert scales, close-ended questions and semi close-ended questions. The relationship between information sources and selected variables, including health behaviour and descriptive variables, were assessed by logistic regression, linear regression or X2 as appropriate (p < 0.05). Results/findings: Mean age (years), gestation week and pre-pregnancy BMI (kg/m²) were 31.1 (±smn; 4.3), 30.6 (±smn; 5.9) and 24.2 (±smn; 4.2), respectively. More than eight out of ten had received or retrieved information about PA (80%) and nutrition (89%), whereas 54% reported
information on GWG. When combining all three lifestyle factors, 38.5% had retrieved information from blogs and Internet forums, and 26.6% from their midwife or family physician. Reporting Internet as primary source increased the odds of gaining below the IOM guidelines (p = 0.02), but was also associated with higher compliance with nutritional guidelines (p = 0.03). Family and friends advice was significantly associated with gaining above the IOM guidelines (p = 0.03). Otherwise, no other associations were found between information sources and health behaviours. Key conclusions: The small number of providers giving information, and that about 40% use blogs and Internet based sources, highlight the need to address the quality of advice and guide women towards trustworthy sources of information during pregnancy. The association between information sources and PA, GWG and nutrition requires further research.

O.32.3
ASSOCIATION BETWEEN SLEEP QUALITY AND SARCOPENIC OBESITY IN PRE- AND POST-MENOPAUSAL CHINESE WOMEN
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SIG: Ageing

Objective: To assess the association between sleep quality and the onset of Sarcopenic obesity in pre- and post-menopausal Chinese women. Methods: A total of 1919 participants, aged 18 to 80 years, were recruited from Lanxi, China in 2015. Sleep quality scores were measured using the Pittsburgh Sleep Quality Index (PSQI). Global PSQI score>7 was indicative of poor sleep quality. Dual-energy X-ray absorptiometry (DXA) was utilized to measure total fat mass and relative appendicular skeletal muscle mass (RASM). Sarcopenic obesity (SO) was defined as a ratio of RASM to weight (WASM) that was lower than 1 standard deviation of a young reference population and a body fat percentage that was greater than the 50th percentile of the study sample. Multiple logistic regression models were conducted to evaluate the association between sleep quality and onset of high fat mass, sarcopenia and SO, adjusting for potential confounders in pre- and post-menopausal Chinese women. Results: Post-menopausal women with good sleep quality had significantly higher total fat mass (£a; = 0.37, 95% CI=0.06-0.67) and lower WASM (£a; =-0.39, 95% CI=-0.68--0.09) than those whose sleep quality was rated poor. It indicated that post-menopausal women with poor sleep quality were more likely to suffer obesity, sarcopenia and SO. The odds ratios for incident obesity, sarcopenia and SO in post-menopausal women were 1.54 (95%CI: 1.01-2.36), 1.61 (95%CI: 1.04, 2.49), and 1.60 (95%CI: 1.02-2.51) respectively after adjusting for age, weight, height, lifestyle factors, education, related disease, and years since menopause. No significant relationship between sleep quality and SO in pre-menopausal women was found in this study. Conclusions: To our knowledge, this is the first study to indicate that sleep quality was independently associated with the onset of SO in post-menopausal women. These findings would help inform better preventive guidelines of SO in post-menopausal women.

O.32.4
RECRUITMENT OF PREGNANT WOMEN TO THE COMMUNICATING HEALTHY BEGINNINGS ADVICE BY TELEPHONE (CHAT) RANDOMISED CONTROLLED TRIAL – PROCESS EVALUATION TO IDENTIFY FACILITATORS AND CHALLENGES
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SIG: E- & m-health

Purpose: Recruitment of pregnant women to trials is a challenge, exacerbated by a number of factors including strict eligibility criteria. There has been little in-depth examination of the recruitment process to
trials involving pregnant women. The purpose of this study was to identify facilitators and challenges in recruiting pregnant women to the Communicating Healthy Beginnings Advice by Telephone (CHAT) randomised controlled trial that aims to reduce the prevalence of infant and childhood obesity. Methods: Data were collected from the following: 1) administration of a short questionnaire to women at time of recruitment to explore their reasons for consent and non-consent; 2) interviews with recruiters to capture their experiences of the recruitment process; and 3) analysis of field notes taken by recruiters on number of women approached/recruited and reasons as to why women did not consent to participate. Data obtained was triangulated to gain insight into the process of recruiting pregnant women. Results: 1,155 pregnant women were enrolled within five months. The main reasons for women consenting to participate in the study were convenience in program delivery mode (text messages/telephone calls), altruism and because it was a free service. Main reasons for not consenting were lack of interest, women who have had children before, women who felt they did not need information and support, and language barriers/difficulty speaking English. Facilitators included organisational support, women who have had no other children, altruism and rapport with recruiters. Challenges included women's unwillingness to participate in a survey, language barriers and lack of interest in research. Conclusion: Pregnant women were successfully recruited to an infant feeding/obesity prevention RCT at antenatal clinics during their scheduled appointments. Despite some challenges, organisational support from the lead site, the minimal effort required of women to participate, and recruiters' knowledge of and commitment towards the trial contributed towards successful recruitment. This study adds to the knowledge base on recruitment process of pregnant women to trials for generalisability and for future research translation. 

Trial Registration: The CHAT Trial is registered with the Australian Clinical Trial Registry (ACTRN12616001470482p). Ethics approvals obtained to administer questionnaire to women and conduct interviews with recruiters.

O.32.5
EFFECT OF AEROBIC EXERCISE ON CIRCULATING OSTEOCALCIN IN OVERWEIGHT POSTMENOPAUSAL WOMEN
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SIG: No, this does not fit in any of the above mentioned special interest groups

PURPOSE: Female prone to centripetal obesity and other metabolic syndrome after menopause due to estrogen reduction and metabolic syndrome are one of the risk factors of cardiovascular disease, diabetes and other diseases. This study aimed to explore the effect of aerobic exercise on circulation osteocalcin level in overweight postmenopausal women. METHOD: One-hundred and eight postmenopausal women were divided into normal weight, overweight and obese groups according to their body mass index (BMI). 21 subjects were selected from the overweight group for square dance intervention. The intervention time was 60-90 min 5 times per week for 8 weeks. Before starting and after ending of the experiment, the human morphological indicators and glucose and lipid metabolism indicators were detected. Serum osteocalcin levels were measured by electrochemiluminescence. RESULT(s): The serum osteocalcin level in total postmenopausal women was negatively correlated with BMI (r=-0.243, p=0.050), FPG (r=-0.299, p=0.016), HOMA-IR (r=-0.284, p=0.022), and HR (r=-0.253, p=0.042). In normal weight group, the serum osteocalcin level was negatively correlated with BMI (r=-0.508, p=0.045), HR (r=-0.712, p=0.002), WC (r=-0.700, p=0.003), and HOMA-IR (r=-0.521, p=0.039) and was negative associated with age (r=0.450, p=0.005), TG (r=-0.321, p=0.050), and FPG (r=-0.344, p=0.037) in overweight group. However, the osteocalcin level in obese group were only negatively correlated with TC (r=-0.683, p=0.014). No significant difference was seen in serum osteocalcin level between pre-exercise and post-exercise in overweight postmenopausal women (p>0.05). The serum osteocalcin level in overweight postmenopausal women was negatively correlated with TG (r=-0.661, p=0.001) and FPG (r=-0.488, p=0.025) pre-exercise while was negatively correlated with BMI (r=-0.432, p=0.050) post-exercise. CONCLUSION: Square dancing had no effect on circulating osteocalcin level in overweight postmenopausal women but could alter the association between the osteocalcin level and some parameters of energy metabolism.

O.33: Nutrition Policies in Children (CES 2-3)
O.33.1
HOW DO DIFFERENT STAKEHOLDER GROUPS INFLUENCE PUBLIC HEALTH POLICY?
QUALITATIVE ANALYSIS OF RESPONSES TO A PUBLIC CONSULTATION ON THE REGULATION OF TELEVISION FOOD ADVERTISING TO CHILDREN IN THE UK
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SIG: Policies and environments

Purpose: Public health policy making is a complex process involving the evaluation of a variety of evidence by different stakeholders, as well as public and political sensibilities. We explored one aspect of the decision-making process – public consultation on policy proposals by a national regulatory body – aiming to understand how public health policy development is influenced by different stakeholders.

Methods: Qualitative content analysis of responses to the UK Office of Communications Regulator (Ofcom) consultation on the regulation of television advertising of foods high in fat, salt and sugar aimed at children. Results: 139 responses from key stakeholders were analysed to determine how they influenced the regulator’s initial proposals for advertising restrictions. Stakeholders commented on definition of the foods to which the regulations should apply, whether volume of advertising should be taken into account, whether restrictions should apply to children’s programming or a time of day threshold, how a child should be defined and when the restrictions should start. The regulator’s priorities were questioned throughout the consultation process by public health stakeholders. The eventual restrictions implemented were less strict in many ways than those originally proposed. These changes appeared to be influenced most by commercial, rather than public health, stakeholders. Independent analysis of the eventual regulations showed that the regulations were ineffective at reducing the exposure of children to advertising of foods high in fat, salt and sugar. Conclusions: Public health policy-making may inadvertently prioritise commercial over public health interests. Tactics such as the questioning and reframing of scientific evidence may be used. In this example exploring the development of policy regulating television food advertising to children, commercial considerations appear to have led to a watering-down of initial regulatory proposals. This seems likely to have compromised the ultimate public health effectiveness of the regulations eventually implemented.

O.33.2
ASSESSING THE IMPACT OF NATIONWIDE GUIDELINES ON TELEVISION FOOD ADVERTISING TO CHILDREN IN SINGAPORE
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective In view of rising concerns over childhood obesity in Singapore, the Advertising Standards Authority of Singapore (ASAS) issued the Children’s Code for Advertising Food & Beverage Products (CCAFB), in 2015. The self-regulation aimed at lessening children's exposure to advertising of food and beverages (F&B) high in sugar, sodium, and fat. In lieu of these guidelines, the study examines the landscape of the television food advertising in Singapore to compare F&B advertisement features before and after guideline implementation. Methods We content analyzed a sampling of commercials from three free-to-air (FTA) channels with high accessibility and viewership rates. Daily weekday and weekend time-bands targeted at children were selected. Two-week samples were recorded across three FTA channels, resulting in a sample of 49 and 85 unique advertisements from 2014 and 2016, respectively. All F&B advertisements were coded by two independent coders (k = .94). The coding scheme comprised the product category and selected advertising devices as defined in the CCAFB. Product categories included are: 1) Healthy Food; 2) Fast Food; 3) Candy, Gum, Chocolate; 4) Bread, Pastries; 5) Breakfast Cereals; 6) Medicines, Supplements; 7) Dairy Products; 8) Sweetened Beverages; 9) Others. Selected advertising devices include: 1) Celebrity Endorsement; 2) Product Tie-ins; 3) Premiums Implying Undue Urgency; 4) Qualifiers Implying Affordability; 5) Implied Resemblance to Role Model; 6) Disclaimers. Chi-square tests of independence were conducted to ascertain if items were significantly different pre- and post-CCAFB.
Results Our results revealed that the Fast Food category showed significant decline in the number of commercials post-CCAFB ($\chi^2(1) = 4.12, p < .05$). With regards to devices used, the use of Celebrity Endorsement significantly decreased post-CCAFB ($\chi^2(1) = 4.34, p < .05$). Changes in all other variables showed no significant differences. Conclusions Although the CCAFB achieved some immediate favorable results, the impact of the self-regulation seems to be limited in changing advertising practices. Hence further tracking of the landscape is necessary to fully understand impact. Additionally, there is a need for further government regulations mandating food advertising practices toward children.

O.33.3
ANALYSIS OF FOOD PROVISION IN AUSTRALIAN LONG DAYCARE HIGHLIGHTS THE NEED FOR FOOD AND NUTRITION INTERVENTION AND POLICY SUPPORT?
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SIG: Early care and education

Objective/Purpose Evidence suggests children aged 0-5-years are nutritionally vulnerable. Advances in neuroscience research have determined cognitive and emotional brain development is optimised when adequate iron and other key nutrients are consumed. Children attending long-day-care (LDC) should receive 50-75% of their daily-food-intake yet globally studies indicate food provision is sub optimal. Menu assessment may not reflect actual food provided, thus impacting the accuracy of reported provision. To inform intervention and policy priorities this study reviewed food provision based on actual weights of raw ingredients in 30 LDC. Methods 30 randomly selected metropolitan LDC, in Perth, Western Australia, had raw food ingredients weighed for three-meals over two-days. Ingredient weights and cost were entered into Foodworks 8.0.3 and divided by the number of children provided with food. Data was exported to R (version 3.4.2). A one-sample t-test was used to compare the LDC mean servings of core food groups for a reference child, (2.5-year-old male) against Australian-Dietary-Guidelines (ADG). Micro-nutrients were compared to 50% of their respective Estimated-Average-Requirement (EAR). Logistic regression was used to assess if food group compliance is associated with food budget. Results/Findings On average LDC achieved compliance ($p>0.05$) for mean daily servings across two days; individually, <55% of centres were compliant for vegetables, meat/meat alternatives and dairy. >80% of LDC were compliant in grains and fruit provision. 80% of LDC under-provided iron (mean±smn;SD;3.4±smn;1.1 mg), was significantly lower than the EAR ($p<0.001$); whereas >90% of LDC over provided sodium (1048±smn;737 mg/d), unsaturated fat (10.6±smn;3.6 g) and discretionary foods (1.1±smn;0.7 serves) (all $p<0.001$). Added sugar (4.1±smn;2.7% of energy) was within the recommended level (7% LDC non-compliant). Food group compliance was associated with an increased food budget. Conclusions Over 50% of LDC did not meet daily ADG recommendations. Discretionary, unsaturated fat and sodium were high. Added sugar did not contribute significantly to energy. Low iron intake may influence cognitive development. Improvement of food group provision and nutrient compliance may require more prescriptive policy guidelines supported by contextualised interventions such as online-menu-planning tools to assist with menu assessment and supportive communities of practice, training and education.

O.33.4
A CAPACITY-BUILDING INTERVENTION TO IMPLEMENT VOLUNTARY PROVINCIAL NUTRITION GUIDELINE IN RECREATIONAL SPORT SETTINGS IN CANADA: IMPACT ON FOOD AND BEVERAGE MARKETING
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SIG: Policies and environments

Purpose: Recent research in Canada found that recreation (and sport) facilities contain copious amounts of predominantly unhealthy food marketing. Unhealthy food marketing in recreation and sport may contribute to consumer misunderstandings about links between diet, exercise, and health. This study assessed the impact of voluntary provincial nutrition guidelines and a randomly assigned capacity-building intervention (CBI) on food marketing in public recreation facilities. Methods: Food marketing was
measured in 51 sites using the Food and beverage Marketing Assessment Tool for Settings (FoodMATS) in December 2015-April 2016 (pre-CBI) and August-December 2017 (post-CBI). Changes in the frequency and repetition (‘exposure’) of food marketing and the presence of marketing techniques [healthfulness, child-targeted, sports-related, and size (‘power’)] will be compared using GLM repeated measures ANOVA comparing (a) guideline+CBI (intervention) sites, (b) guideline only (control) sites, and (c) non-guideline (comparison) sites. Preliminary findings from one guideline province (n=8 intervention, n=8 control) are presented using Wilcoxon Signed Rank Tests. Results: Preliminary results showed the proportion of “Least Healthy” food marketing was significantly reduced in intervention sites (median change= -0.20, IQR -0.45, -0.9, p=0.017) but was unchanged in control sites (p=0.866). Frequency of food marketing tended to decrease in intervention sites (median= -6.5 marketing occasions, IQR -10.6, -0.50, p=0.176), and increase in control sites (median= +1.5 marketing occasions, IQR -1.5, 3.0, p=0.445); six of eight intervention sites reduced their food marketing frequency but 5/8 control sites increased their food marketing frequency. Repeated marketing of the same food product, brand, or retailer significantly increased in control sites (median= +2.0 products, brands, retailers, IQR 0.5, 3.0, p=0.024) but not intervention sites (median= +0.5 products, brands, retailers, IQR -1.5, 1.5, p=0.288). There were no significant changes in proportion of food marketing occasions that were child-targeted, sports-related, or large in intervention or control groups (p-values >0.3). Conclusions: A preliminary sample of recreation facilities involved in a food-environment CBI reduced their proportion of unhealthy food marketing, but few other significant changes were found, perhaps due to sample size. A final analysis with additional sites will be presented. In the context of guidelines that do not address food marketing, capacity-building appears important to achieving improvements generating more healthful food environments.

O.33.5
BREASTFEEDING AND ASSOCIATED FACTORS IN HOMELESS CHILDREN IN THE GREATER PARIS AREA IN FRANCE: THE ENFAMS SURVEY
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SIG: Socio-economic inequalities

Purpose: Compared to other European countries, breastfeeding rates are rather low in France. Seventy percent of women initiate breastfeeding at birth, but only 19% of the infants are still breastfed at 6 months. While in the general population breastfeeding has been shown to be inversely associated with socio-economic position, less is known regarding breastfeeding and its associated factors among extremely disadvantaged and hard-to-reach populations. We aimed to describe breastfeeding in homeless families and its associated social factors in the Greater Paris area in France. Methods: The ENFAMS study is a cross-sectional study, performed in 2013 among a random, representative sample of 801 homeless families sheltered in emergency housing centers, social rehabilitation centers and social hotels in the Paris region. Previous research showed that half of this population group was single-parent families, 94% were born outside France, 94% lived below the poverty line, along with a high rate of household food insecurity (87%). Data were collected by bilingual interviewers in 17 languages using face-to-face questionnaires. The current study was undertaken on a subsample of 435 children aged 0.5-5 years, the parents of whom answered questions regarding milk feeding. A child was defined as being breastfed if he/she received any breast-milk, regardless of any other source of milk or food. Regression analysis is being undertaken to assess the associations between breastfeeding duration and the following factors: mother’s age, country of birth, education level, employment, time spent in France, homelessness duration, health cover, type of shelter, mental health, household income and food insecurity. Preliminary results: Most of the children aged 0.5-5 years (89%) were being or had been breastfed at the time of the survey; 61% were fed with breastmilk for 6 months or more. The analysis of factors associated with breastfeeding is on-going.
Conclusion: The preliminary findings of the current study provide original insights into the feeding practices displayed in this under-studied population. The relatively high proportion of breastfeeding observed in homeless families seems in contradiction with the inverse social gradient observed in the general population, suggesting that its social determinants are different in this extremely vulnerable and culturally diverse population group.

O.34: Correlates and Patterns of Sleep, Sedentary Behavior and Physical Activity in Children and Adolescents (Concord 1)

O.34.1
ASSOCIATIONS OF WEATHER WITH PHYSICAL ACTIVITY, SEDENTARY BEHAVIOR, AND SLEEP DURATION IN HONG KONG ADOLESCENTS
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SIG: Policies and environments

Purpose: Weather is a recognized environmental factor impacting daily activity behaviors. However, the influence of humid subtropical climate on daily activity behaviors is unclear. The purpose of this study was to investigate the associations of weather conditions with physical activity (PA), sedentary behaviors (SB) and sleep duration in Hong Kong adolescents. Methods: A total of 740 students (mean age: 14.7±smn;1.5 years) were recruited from 15 secondary schools located in different districts of Hong Kong. The time spent in moderate to vigorous physical activity (MVPA), SB and sleep duration was assessed by the activPALTM (PAL Technologies, Glasgow, UK). A valid day was considered as being less than 4 hours of consecutive zero counts during waking time. Only those participants who provided at least 4 valid days (3 weekdays and 1 weekend day) were included in data analyses. The assessment took place from Sep 2016 to May 2017. Weather conditions (temperature, relative humidity, rainfall, sunlight) were obtained from the Hong Kong Observatory. Linear mixed models were used to examine the associations of weather conditions with MVPA, SB, and sleep duration after adjusting for sex, age, body mass index, puberty stage, and school cluster. Results: Valid data from 492 (52.4% boys) students were included for analyses. On average, participants spent 40 minutes in MVPA and 10.9 hours in SB, and slept for 8 hours per day. The temperature during the assessment period was between 12.8 and 31.1?. Higher relative humidity was associated with less MVPA (b=−0.34; 95% CI, -0.45 to -0.22) and longer sleep duration (b=0.03; 95% CI, 0.03 to 0.04). Sunlight was negatively correlated with MVPA (b=−0.35; 95% CI, -0.60 to -0.11) and SB (b=−0.03; 95% CI, -0.05 to -0.01), whereas positively correlated with sleep duration (b=0.06; 95% CI, 0.04 to 0.08). Conclusion: Higher relative humidity and longer sunlight are associated with lower MVPA and SB, and longer sleep duration. Weather conditions should be considered when designing and implementing interventions to promote healthy activity behaviors among adolescents, particularly living in subtropical climate.

O.34.2
SEDENTARY BEHAVIOR, DAYTIME SLEEPINESS, DEPRESSION, AND ACADEMIC ACHIEVEMENTS IN CHINESE ADOLESCENTS
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SIG: Children and families

Purpose: Research indicates that many high school adolescents are physically inactive and adopting a sedentary lifestyle (Hidding et al., 2017). Moreover, the prevalence of sleep disorder and depression was reported to associate with poor academic achievements among high school adolescents (Sorensen, 2014). However, it is unclear how sedentary behavior may be interacted with psychological problems to influence adolescents' academic achievements. This study attempted to fill this research gap and aimed to
examine the associations among sedentary behavior, daytime sleepiness, depression, and academic achievements among Chinese adolescents. Methods: Participants were 642 adolescents (356 females; 286 males; Mage = 16.9) recruited from four high schools in Shanghai, China. They completed previously validated questionnaires assessing their sedentary behavior on weekdays and on weekend days, daytime sleepiness, and depression. Students’ academic achievements in mathematics, reading, and English were obtained from the school principals. Results/findings: Descriptive analyses revealed more than 20% of participants showed sleep disorder, and 67% of participants had depressive symptoms. Further, more than 97% of adolescents sit over 5 hours on weekdays, and over 11 hours on weekend days. Correlation analyses demonstrated that sedentary behavior on weekend days was not related to study variables. However, sedentary behavior on weekdays was positively related to daytime sleepiness and depression, and negatively associated with mathematics, reading, and English (rs ranged from -.12 to .14). While daytime sleepiness and depression were positively related to each other (r = .35), they were negatively associated with mathematics, reading, and English (rs ranged from -.10 to -.16). The results of three multiple regressions revealed that both sedentary behavior and depression were significant predictors of mathematics (βa; = -.15, -.14; R2 = 4.8%) and reading (βa; = -.14, -.14; R2 = 4.3%), respectively. Sedentary behavior and daytime sleepiness significantly predicted English (βa; = -.15, -.11; R2 = 4.0%). Conclusions: The findings provide empirical evidence of the associations among sedentary behavior, daytime sleepiness, depression, and academic achievements in Chinese adolescents. The results suggest that reducing sedentary behavior and increasing physical activity during school days should be emphasized in adolescence. Improving adolescents’ psychological health is also critical for schools to promote academic achievements.

O.34.3 MODERATE-TO-VIGOROUS PHYSICAL ACTIVITY BUFFERS THE ADVERSE EFFECT OF STRESS ON INTERNALIZING PROBLEMS DURING THE TRANSITION FROM ADOLESCENCE INTO EMERGING ADULTHOOD

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: To investigate if moderate-to-vigorous physical activity (MVPA) would moderate the relationship between stress and internalizing problems (e.g., depression and anxiety) in adolescents over time.

Methods: This study was a longitudinal analysis using data of the Child and Adolescent Behaviors in Long-term Evolution study with two study cohorts. Data collected between 2012 and 2015 were used in this study as all variables (i.e., physical activity, stress, and internalizing problems) were available during this period. A single database was created by overlapping two cohorts based on the age. This analysis included a total of 4,121 participants in 2012 (Cohort 1 = 2215, 53.7%; male = 2113, 51.3%). The average ages were 17.7 and 20.7 years in Cohort 1 and 2, respectively, in 2012. The random effect mixed model was used to examine the relationships between MVPA and internalizing problems over time. Several models with controlling for age and sex were created to investigate if MVPA would buffer the adverse effect of stress on internalizing problems (i.e., significant interaction of stress by MVPA on internalizing problems). Results: The results showed that internalizing problems significantly decreased over time (estimate = -0.467, SE = 0.025, p < .001). While controlling for age and sex, higher stress (estimate = 5.188, SE = 0.125, p < .001) and lower MVPA (estimate = -0.001, SE < 0.001, p < .01) significantly predicted greater risks for internalizing problems. Furthermore, when the interaction term of stress by MVPA was added into the model, a statistically significant interaction was found on internalizing problems (estimate = -0.002, SE < 0.001, p < .01), indicating that, regardless of the levels of stress, higher MVPA could reduce internalizing problems in adolescents over time. Conclusions: This study highlights the important protecting effect of MVPA on the relationship between stress and internalizing problems during the transition from adolescence to emerging adulthood. Participation in MVPA would reduce the negative effect of life stress on mental health. These findings also provide practical implications that, in order to improve or prevent mental illness in adolescents and young adults, interventions should target engagement in physical activities, specifically those with higher intensity.

O.34.4
Objective This study describes age-related changes in sedentary bout length and frequency from childhood to adolescence. Additionally, associations (cross-sectional and prospective) between sedentary bouts and health-related outcomes are explored. Methods Participants of the Study of Early Child Care and Youth Development with valid accelerometer data at 9 (n=733), 12 (n=454), and 15 years (n=364) were examined. At each age, daily sedentary time and MVPA were determined across valid days, as well as daily time (and frequency) in sedentary bouts lasting 1, 2-4, 5-9, 10-14, 15-19, 20-24, 25-29, and = 30 minutes. Age-related trends in sedentary bouts were examined using repeated measures analysis of variance. Separate generalized linear models were used to report: 1) cross-sectional associations involving sedentary bouts with BMI percentiles (9/12/15 years), waist circumference (15 years), and percent body fat (15 years) and 2) prospective associations between sedentary bouts at 9 years with BMI percentiles, waist circumference, and percent body fat at 15 years. Analyses were adjusted for sex, ethnicity, income:needs ratio, accelerometer wear time, and MVPA. Associations were reported using unstandardized B coefficients (95% CI) and significance was set a P < 0.05. Results Daily time (and frequency) in sedentary bouts < 5 minutes decreased, whereas sedentary bouts = 5 minutes increased with age. Inverse associations were found between sedentary bouts of 1 and 2-4 minutes with BMI percentiles at 9 (-0.764 and -0.384, respectively) and 12 years (-0.854 and -0.235, respectively), whereas positive associations with BMI percentiles were found for sedentary bouts lasting 15-19 minutes at 9 (0.210) and 12 years (0.243), and for sedentary bouts lasting 25-29 and = 30 minutes at 12 years (0.333 and 0.104, respectively). At 15 years, sedentary bouts lasting 10-14 minutes were inversely related with BMI percentiles (B= -0.231) and waist circumference (B= -0.123), but not percent body fat. Prospectively, sedentary bouts of 1 and 2-4 minutes at 9 years were inversely associated with waist circumference (-0.117 and -0.108, respectively) and percent body fat (-0.069 and -0.067, respectively) at 15 years. Conclusion Sedentary bouts lasting < 5 minutes at 9 years were beneficially related to body size characteristics at 15 years.

O.34.5
PATTERNS OF SEDENTARY BEHAVIOUR DURING SCHOOL TIME IN EUROPEAN CHILDREN & ADOLESCENTS.

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Purpose: The amount of time spent sitting/lying (SLT), standing (StT) and in light intensity physical activity (LIPA) may be important for long-term health in child and adolescent populations. However, little or no objectively-determined data on how child and adolescent cohorts accumulate such behaviours during a typical school day exists. This study objectively quantifies level and patterns of activity behaviours during school hours in a group of European children and adolescents using the activPAL 3 micro (aP3m) device. METHODS: This study is based on a sample of European adolescents (N=153, median-age (Interquartile range (IQR)), 14.7 (0.8) years) and children (N= 153, median-age (IQR), 7.7 (0.7) years) recruited through the DEDIPAC- European Knowledge Hub in Germany and Ireland. Participants wore the aP3m (PAL Technologies Ltd, Glasgow, Scotland), on the anterior aspect of the midline of the right thigh for 8 consecutive days during the school year. The duration of SLT, StT, LIPA, and moderate-to-vigorous physical activity (MVPA) was processed and quantified using specialised software. A Mann-Whitney U-

SIG: No, this does not fit in any of the above mentioned special interest groups
Test (Bonferroni correction alpha=0.004) examined differences between child and adolescent levels and patterns of sedentary activity during school hours. RESULTS: Results are expressed as % median hours (IQR). Children and adolescents spent 55.7% (10.9%) vs 64.9% (10.9%)* of their typical waking day in SLT, 25.5% (8.0%) vs 22.0% (8.1%)* StT, 2.7% (1.9%) vs 3.3% (2.0%) in MVPA and 15.3% (5.0%) vs 9.4% (4.2%)* in LIPA respectively. During school hours, children and adolescents spent 50.7% (12.2%) vs 68.0% (10.8%)* in SLT, 27.2% (9.6%) vs 20.9% (8.9%)* StT, 17.8% (18.0%) vs 8.2% (3.85%)* in LIPA and 3.4% (1.4%) vs 2.9% (2.2%) MVPA respectively. When SLT bout duration was compared during school hours, significant differences were observed between adolescents and children. Adolescents spent a significantly greater amount of school based SLT in bouts >20 minutes (z = -6.9, p<0.001).*denotes P<0.004, Mann Whitney U-test. CONCLUSION: In comparison to the child cohort, the adolescent cohort spent more time in prolonged sedentary bouts and less time in LIPA during school hours. These data reinforce the concept that school hours may offer a feasible site for intervention to fractionate long sedentary bouts with LIPA in adolescents.

O.35: Cancer Studies in Physical Activity (Concord 2-3)

O.35.1
LONG-TERM EFFECT OF PROJECT MOVE ON PHYSICAL ACTIVITY BEHAVIOUR, MOTIVATION AND QUALITY OF LIFE IN FEMALE BREAST CANCER SURVIVORS: 1 YEAR FOLLOW-UP
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SIG: Cancer prevention and management

Objective: Physical activity (PA) is an effective strategy to mitigate many of the health challenges associated with breast cancer (BC) survivorship. However, the majority of BC survivors are not meeting the minimum recommended PA (150 minutes of moderate to vigorous intensity). Project MOVE, an approach that combined a) Microgrants: funds ($2000) awarded to applicant groups to develop and implement a PA initiative and b) Financial incentives: a reward ($500) for increasing group PA, was developed as a unique model for increasing PA. The purpose of this study was to examine the long-term effect of Project MOVE on PA behavior, PA motivation, and quality of life (QoL) in female BC survivors, as well, investigate differential outcomes in those meeting PA guidelines compared to those not meeting guidelines. Methods: This pre-post, pilot study included groups of self-identified adult (18+ years) female BC survivors living in British Columbia, Canada. PA was assessed by accelerometry. PA motivation and QoL were assessed by self-report. All data were collected at baseline, 6-month and 12-month follow-up. Repeated measures mixed ANOVA was used to test changes in the main outcomes. Results: A total of 10 groups (each comprising 8 to 12 women) were awarded microgrants (total n=87). A significant interaction effect was found between participants meeting PA guidelines at baseline (yes vs. no) over time (p = .004). Post-hoc analysis showed a significant increase in PA between baseline and 6-month follow-up for those who were not meeting PA guidelines at baseline (p < .001). Significant decreases across time points for all participants were found for QoL dimensions of: physical health limitations (p = .002) and emotional health limitations (p = .04). Significant increases across time points for all participants were found on combined variables of intrinsic and identified regulation (p = .048) and on the QoL dimensions of physical functioning (p < .001), social functioning and general health (p = .005). Conclusion: Based on these encouraging findings and the importance in understanding if this innovative approach is effective in changing behaviour, next steps include conducting a larger trial to evaluate this highly promising intervention model.

O.35.2
A DAILY DIARY STUDY OF SELF-WEIGHING AND COMPENSATORY HEALTH BEHAVIORS IN WOMEN WITH OBESITY AND BREAST CANCER
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SIG: Cancer prevention and management

Purpose: Breast cancer is often comorbid with overweight and obesity, with approximately 65% of diagnosed women also reporting excess weight. Since higher weight status can worsen cancer outcomes and survival, self-monitoring weight is commonly recommended in clinical practice. It is theorized that consistently monitoring weight helps individuals identify acute gains in weight and respond by making diet and exercise changes to halt subsequent gains. However, frequent self-weighing has recently been linked with adverse psychological consequences (i.e., negative emotions), and may increase engagement in pathological health behaviors. As such, the present study assessed how emotional responses after self-weighing predicted compensatory cognitions and behaviors to engage in exercise, dieting, and purging behaviors. Methods: Participants consisted of women with a history of breast cancer (N=52, Mage=57.4±8.9; MBMI=35.3±6.2 kg/m2), who were seeking medically-supervised behavioral treatment for weight management. In accordance with standard practice in weight management, participants completed a weeklong protocol of daily self-weighing, and reported weight-related emotions, compensatory exercise, dieting, and purging cognitions and behaviors. Results: Multilevel models revealed that when women felt more ashamed of their weight than usual, they experienced more intentions to exercise (β=0.53, p<.01), yet less exercise behavior (β=-0.45, p<.05). Alternatively, weight-related emotions were not associated with cognitions to diet (p = .09 to .34), but feeling guilty about one's weight positively predicted behaviors of dietary restriction (β=0.65, p<.05). Meanwhile, when women experienced higher shame than usual, they reported more cognitions to purge (β =0.48, p < .05), although this did not translate to purging behaviors (p = .12 to .32). Conclusions: Women who feel negatively about their weight in the process of daily self-weighing are at risk of engaging in less exercise behavior, more dietary restriction, and higher cognitions to engage in disordered purging behaviors, such as vomiting or laxative use. Due to the salience of managing weight for cancer-related survival, it is likely that women with a history of breast cancer may be particularly susceptible to the negative consequence of self-weighing. As such, daily self-weighing practices may be psychologically detrimental, and should be reconsidered for women with a history of breast cancer.

O.35.3
RACIAL DIFFERENCES IN PHYSICAL ACTIVITY AND DIET ADHERENCE AMONG OLDER PROSTATE CANCER SURVIVORS
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SIG: Cancer prevention and management

Purpose: Prostate cancer survivors are at increased risk of developing low bone mineral density, due to androgen deprivation therapy, poor health behaviors and aging. Regular physical activity and adequate intake of foods rich in calcium can improve skeletal health and reduce fracture risk. Racial differences may also influence behaviors that impact bone health. This study investigated racial differences in adherence to the US Dietary and Physical Activity Guidelines for physical activity (PA), strength training (ST), calcium/dairy (CA), and body mass index (BMI, kg/m2), between Non-Hispanic White (NHW) and Non-Hispanic Black (NHB) prostate cancer survivors. Methods: Data are from the cross-sectional 2005, 2010, and 2015 National Health Interview Surveys. Levels of PA, ST, and CA intake were obtained by self-report. The total sample of prostate cancer survivors (N=881) included 717 NHWs and 164 NHBs >50 years of age. We used chi-square tests and ANOVA to compare mean differences. Multivariable logistic regression was used to compare adherence with PA, ST and CA guidelines among NHW and NHB. Results: Significantly higher percentages of NHWs compared to NHBs were older (> 71 years), attended college, married, had comorbidities and consumed alcohol. NHBs compared to NHWs were smokers, had functional limitations, and reported a brother or father with prostate cancer. NHBs reported higher non-adherence to total PA, moderate PA, and CA guidelines than NHWs (p<.001; p=.011; p<.001), respectively. In the adjusted model, NHBs compared to NHWs were more likely to be obese than normal weight (OR=1.4; 95% CI=1.1, 2.0). In the model adjusting for sociodemographic covariates, smoking,
alcohol, comorbidities, and BMI, NHBs were more likely to be non-adherent to moderate PA (OR 1.6; 95% CI=1.1, 2.3) and CA (OR=3.3; 95% CI=2.0, 5.3) guidelines compared to NHWs. Both NHWs and NHBs reported high non-adherence to ST guidelines, however this difference was not statistically significant.

Conclusions: Non-adherence to the PA, ST and CA guidelines were highest among NHBs compared to NHWs, however non-adherence was high in both groups. Culturally relevant Interventions targeting older prostate cancer survivors should focus on improving PA and ST levels, in addition to CA intake to prevent bone loss and maintain bone health.

O.35.4 - SHORT-LISTED FOR THE BEST ORAL PRESENTATION AWARD BY AN EARLY CAREER RESEARCHER
INFORMING ONCOLOGY CARE PROVIDER TRAINING AND FACILITATORS FOR PHYSICAL ACTIVITY COUNSELLING: UNDERSTANDING INTRINSIC AND ENVIRONMENTAL FACTORS
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SIG: Cancer prevention and management

Purpose: While oncology care providers (OCPs) are key messengers for physical activity (PA) information among cancer survivors, they do not regularly counsel on PA. Indeed, it could be that OCPs do not have appropriate resources to facilitate PA counselling behaviors within a clinical setting; however, this is not well understood. The purpose of this study was to identify salient personal and environmental factors that influence PA counselling in OCPs for informing future resources to facilitate PA counselling. Methods: Using a constructivist paradigm with a relativist ontology and a subjectivist epistemology, focus groups (n=4) were conducted with OCPs (n=27) from a province in Canada. Focus groups were audio recorded and transcribed verbatim. An inductive thematic analysis was used guided by Braun and Clarke’s (2006) methodology. Results: OCPs perceived an overall lack of formal education (i.e., medical or nursing school) on PA, yet wanted PA counselling education tailored for their role. There are intrinsic factors, which influenced OCPs to seek additional education to close this educational deficit. This developed from their desire for continued education related to cancer-specific PA in the form of presentations and lunch-and-learn sessions from researchers, other practitioners and community organizations who had experienced “success” in implementing PA for cancer survivors. OCPs have a desire to learn although through less formal mechanisms than traditional continuing education credits. Similarly, OCPs found that hospital administration, poor funding for PA initiatives, and pressure to maintain flow of patients within clinics negatively impacted opportunities for PA counselling due to lack of time and availability of reliable resources and referral options. In order to facilitate PA counselling, providers wanted resources that focused on PA as a patient-managed behavior, were simple to implement, and available on multiple platforms. Conclusions: There are salient factors that developed both intrinsically from OCPs themselves and extrinsically from clinical settings. These factors are informative for development and testing resources to facilitate PA counselling. Future research is encouraged to develop and test presentations for OCPs’ PA knowledge retention, a resource of available cancer-specific, community-based PA programs, and referral pathways to trained allied health professionals for facilitating PA counselling.

O.35.5
THE EFFECT OF HEALTHCARE PRACTITIONER AUTONOMY SUPPORT FOR EXERCISE ON YEAR-LONG TRAJECTORIES OF CHANGE IN AUTONOMOUS AND CONTROLLED EXERCISE MOTIVATION AMONG BREAST CANCER SURVIVORS
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SIG: Theories of motivation

Purpose: Empirical data shows that physical activity levels in breast cancer survivors are below that
required for health benefits. This is concerning as regular physical activity (i) mitigates the negative physical and mental health effects of a diagnosis and its related treatments; and (ii) improves overall quality of life. According to self-determination theory and existing research in other clinical populations, autonomous exercise motivation yields increased and sustainable long-term physical activity behaviour whereas controlled exercise motivation yields increased but unsustainable short-term physical activity behaviour. Healthcare practitioners are well-placed to facilitate autonomous exercise motivation, and circumvent controlled exercise motivation, by providing autonomy support for exercise behaviour. This includes actively listening to patients, providing meaningful rationales for rules and limits, imparting empathy for negative affect, and personalizing information via collaborative dialog. Thus, the purpose of this study was to examine whether these autonomy supportive behaviours for exercise provided by healthcare practitioners predicted year-long trajectories of change in exercise motivation among breast cancer survivors following completion of main cancer treatments. Methods: Participants (N = 201, Mage = 55.01, SD = 10.96 years) reported their perceptions of their healthcare practitioners' autonomy support once and levels of their own autonomous and controlled exercise motivation five times over a one-year period following breast cancer treatment. Parallel process latent growth modelling was used to test our hypotheses, with baseline age, breast cancer stage, and time since treatment as covariates. Results: Analyses showed that healthcare practitioner autonomy support positively predicted between-person variability in the change trajectories of autonomous exercise motivation (b = .30, p = .01). Controlled exercise motivation showed no between-person variability in change trajectories and was therefore not predicted by healthcare practitioner autonomy support. Interestingly, age negatively predicted the intercepts of controlled motivation (b = -.23, p < .001). Conclusions: These findings indicate that when breast cancer survivors perceive their healthcare practitioners as autonomy supportive of exercise, survivors tend to respond by adopting more autonomous reasons for exercise behaviour over time. Encouraging autonomy supportive environments for exercise within the oncology setting may support overall health and wellbeing in breast cancer survivors.

O.36: Youth and Adults’ Physical Activity Interventions in Cognition, Sleep and Mental Health (Oasis)

O.36.1 EFFECTS OF A SCHOOL-BASED HIGH-INTENSITY INTERVAL TRAINING INTERVENTION ON OLDER ADOLESCENTS’ COGNITION.

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective Research suggests that improving cardiorespiratory fitness (CRF) may enhance cognitive control (i.e., working memory, inhibition and cognitive flexibility) in young people, but the majority of studies have been conducted in laboratory settings with children. High-intensity interval training (HIIT) has emerged as a time efficient method for improving CRF and may have benefits for cognitive control. As such, the aim of this study was to assess the impact of a school-based HIIT intervention, known as 'Burn 2 Learn' (B2L), on cognitive control in a sample of older adolescents. Methods Two secondary schools from New South Wales, Australia were recruited. Participants (i.e., grade 11 students; 16.2 ±smn; 0.4 years) were randomised by school to either the 14-week B2L intervention (n=38) or a wait-list control group (n=30). Participants in the intervention group participated in 2-3 self-directed HIIT sessions each week delivered at school. Inhibition (Flanker task), and working memory (serial n-back task) were evaluated via laptops using purpose-built software at baseline and immediately post-intervention (14-weeks). Outcome measures for each test condition included response time (ms) and response accuracy (% correct), interference (Flanker) and d-prime (serial n-back). Group-by-time effects were examined for participants
providing complete data at both time points using linear mixed models in SPSS, and effect sizes calculated. Results A significant group-by-time effect was found for response accuracy in the Flanker task (incongruent trials) (4.6%, 95% CI 0.8 to 8.5; p=0.019; d=0.62). There were no statistically significant effects for any of the remaining cognitive outcomes. However, moderate effect sizes in favour of the B2L group were observed for Flanker task response accuracy (congruent trials; d=0.43) and interference accuracy (d=0.44). Conclusions Statistically significant effects were found for inhibition, indicating a potential benefit of HIIT on this aspect of cognitive control in older adolescents. Although not statistically significant, moderate effects were observed for additional indicators of inhibition, which should be explored further in a powered trial, with no effects found for indicators of working memory. Further large-scale trials are needed to confirm the benefits of HIIT for aspects of cognitive control in older adolescents. Australian and New Zealand Clinical Trials Registry (ACTRN12617000544370)

O.36.2
ADDITIVE EFFECTS OF NARRATIVE AND ACTIVE VIDEO GAME ON PHYSICAL ACTIVITY AND WORKING MEMORY IN YOUNG ADULTS: A RANDOMIZED, ACTIVE PLACEBO-CONTROLLED TRIAL
Hwang Jungyun1, Lu A S1.1Northeastern University, Boston, MA.

SIG: Implementation and Scalability

Purpose: This study aimed to evaluate the additive effects of narratives (N) and active video gaming (AVG) on physical activity (PA) and working memory in young adults. Methods: 100 young adults (M=21.3y; 55male) were randomly assigned to Narrative-AVG (N-AVG) (n=25; 15male), Non-narrative (NN) AVG (n=25; 12male), Narrative-sedentary video game (N-SVG) (n=25; 14male), or NN-SVG (n=25; 14male). Kung-Fu for Kinetic on Xbox One was the AVG and the SVG was Street Fighter V on PlayStation 4. Each condition involved a 10-min protocol (A 2-min narrative or rest and an 8-min AVG or SVG) repeated three times for a total of 30 min. During the 30-min protocol, total step counts (STEP) were measured with ActiGraph accelerometers on wrist and waist for both AVG groups; the heart rate (HRbpm) was assessed with a Polar HR monitor for all four groups. All participants’ working memory was assessed with a delayed match-to-sample memory task by measuring correct trial (CT), study time (ST), and reaction time (RT) before and after the 30-min protocol. Results: Both N-AVG and NN-AVG produced moderate-intensity PA levels as indicated by HR (M=131.24 and 126.08, respectively) with no difference between groups (t1,49=0.90, p>0.05), whereas N-AVG (M=656.45) had higher STEPwaist than NN-AVG (M=457.45) (t1,49=2.19, p<0.05). A 2time×es;4group RM-ANOVA revealed the significant effect on response accuracy (Ftime*group=2.89, p<0.05); higher CT in N-AVG, NN-AVG, or N-SVG than NN-SVG (ps<0.05). There was a significant effect on cognitive process speed in ST (Ftime*group=7.22, p<0.01) and RT (Ftime=6.67, p<0.05); both N-AVG and NN-AVG had shorter ST and RT than N-SVG (ps<0.01) and NN-SVG (ps<0.01). A 2time×es;2AVG×es;2N RM-ANOVA confirmed that AVG was a way of enhancing CT (Ftime*group=3.84, p<0.05), ST (Ftime*group=11.39, p<0.01), and RT (Ftime*group=4.20, p<0.05), while adding a narrative to AVG had a positive trend of improving CT (F time*AVG*N=3.46, p=0.07). Conclusions: Adding a narrative as a motivational and cognitive component to an AVG increased PA level and showed a trend of working memory enhancement. While the AVG and narrative improved response accuracy in working memory; AVG that produced moderate-intensity PA level was the primary reason for overall working memory benefits.

O.36.3
SELF-REPORTED AND OBJECTIVE PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR IN RELATION TO PSYCHOLOGICAL DISTRESS AMONG AN URBAN ASIAN POPULATION
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Objective: There is accumulating evidence supporting the associations of adults' moderate-to-vigorous intensity physical activity (MVPA) and sedentary behavior (SB) with psychological distress; however, only a few studies have investigated these associations using 'objective' (wearable technology) measures. Data from Asian populations are even more scarce. We aimed to estimate the associations using self-reported and accelerometry-assessed MVPA/SB in an urban Asian adult population. Methods: 2,686 adults (aged 18 years) who participated in a nationally representative prospective cohort study in Singapore were included, providing baseline data on self-reported MVPA/SB using the validated Global Physical Activity Questionnaire (GPAQ). In addition, 895 of these participants were invited to wear the ActiGraph accelerometers for 7 days in a sub-study. Psychological distress was assessed using the Kessler Screening Scale (K6) and General Health Questionnaire (GHQ-12). Valid wear-time was defined as 4 valid days and =10 h/day. Accelerometry-assessed MVPA was regarded as =2690 counts per minute (CPM) (accumulated in =10-min bouts) and SB as <150 CPM. Logistic regression models were used to calculate odds ratios (ORs) and 95% confidence interval, adjusted for potential confounders. Results: 2,653 adults (mean age=45.0 years, 55% females, 66.7% Chinese) with valid self-reported MVPA/SB were analyzed, and 703 of them had valid accelerometry-assessed MVPA/SB. The prevalence of psychological distress based on the K6 and GHQ-12 was 8.4% and 21.7% respectively. Higher levels of self-reported MVPA were associated with significantly higher odds for K6 (OR=1.47 [1.03-2.09]; p-trend=0.03) but not GHQ-12 (OR=0.97 [0.77-1.23]; p-trend=0.79) when comparing the highest with the lowest tertile. Accelerometry-assessed MVPA was not significantly associated with K6 (OR=1.32 [0.65-2.71]; p-trend=0.45) nor GHQ-12 (OR=0.92 [0.58-1.48]; p-trend=0.76). Self-reported SB was not associated with K6 (OR=0.94 [0.62-1.42]; p-trend=0.92) and GHQ-12 (OR=1.15 [0.88-1.50]; p-trend=0.33). Contrary to this, the highest tertile of accelerometer-assessed SB was associated with significantly higher odds for K6 (OR=1.92 [1.00-3.71]; p-trend=0.04), but not GHQ-12 (OR=1.33 [0.86-2.06]; p-trend=0.20). Conclusions: Unexpectedly, higher levels of self-reported MVPA and accelerometer-assessed SB were both associated with significantly higher odds for K6 psychological distress. This present study underscores the importance of integrating both self-reported and accelerometer-assessed measures of MVPA/SB in future studies.

O.36.4
WHAT DO OFFICE WORKERS LIKE AND NOT LIKE ABOUT HEIGHT ADJUSTABLE WORKSTATIONS? 12-MONTH PROCESS EVALUATION FEEDBACK FROM THE SMARTWORK TRIAL

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Purpose. One popular strategy to reduce sitting time and increase movement in the office setting is to introduce height adjustable workstations (desks). While these have been shown to be effective in reducing sitting time, rather less is known about how office workers react to such changes. This paper presents data on what features of such workstations are seen as positive or negative. Methods. Recruitment into a randomised controlled trial designed to reduce workplace sitting was from 37 office clusters (n=77 intervention participants; N=69 controls). All were desk-based office workers in the English National Health Service. Those randomised into the intervention arm were given a choice of height adjustable desk: full electronic workstation, chosen by 48%, or the manually operated Varidesk workstation placed on top of the conventional desk, chosen by 52%. As part of the 12-month process evaluation, participants were asked a series of questions about the workstation (and other features of the intervention), as well as asked to provide open-ended responses to the questions "what was positive about using the height adjustable workstation?" and "what was negative about using the height adjustable workstation?". Focus group interviews also addressed these issues. Results. Responses were provided by 43 participants. From 71 positive comments on the workstation, eight initial themes emerged and were labelled: musculo-skeletal...
and posture, mental benefits, more movement, ergonomic, general health benefits, social norms and benefits, increased choice, and general. Musculo-skeletal outcomes featured comments concerning posture as well as neck, shoulder and back. The perceived mental benefits of using the workstation appeared to be significant, including better cognitive function and work productivity, feelings of energy and alertness, and better mood. Negative perceptions also reflected musculo-skeletal issues, ergonomics and additional work issues. Lack of worktop space was the most frequently cited negative issue. Nine people said nothing was negative. Conclusions. Overall, these qualitative data reflected a large number of positive statements concerning the workstations. Musculo-skeletal and mental health benefits were prominent. Negative issues included lack of space and some ergonomic and musculo-skeletal issues.

O.36.5
A RANDOMISED WAITLIST CONTROLLED TRIAL USING A THEORY-BASED M-HEALTH INTERVENTION TO IMPROVE PHYSICAL ACTIVITY AND SLEEP HEALTH IN ADULTS: THE SYNERGY STUDY

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SIG: E- & m-health

Objective: This study aimed to test the efficacy of a 3-month theory-based mobile health intervention to reduce physical inactivity and poor sleep health in adults, as both behaviours are independently associated with high chronic disease risk. Methods: One hundred and sixty Australians aged 18-55, who were insufficiently physically active and reported poor sleep health at baseline were recruited using social media (Facebook). This randomised waitlist-controlled trial consisted of a specifically designed mobile app for participants to self-monitor active minutes, daily step counts, resistance training, bed and wake times, sleep quality ratings and sleep hygiene practices. The app was complemented by a personalised support package including weekly summaries, engagement prompts, weekly facts and tool sheets for goal-setting, action planning and stress management. Participants also received a pedometer and a comprehensive handbook. Two primary outcomes were specified: minutes of moderate-vigorous intensity physical activity (AAQ) and sleep quality (PSQI). Linear mixed models (LMM) with fixed effects for group, time and their interaction were used to examine differences in changes between the groups after 3 months. Huber-White standard errors were used for mild departures of homoscedasticity or normality. Results: A total of 125 participants provided data at the 3-month time point. Physical activity (MVPA) increased from 157.6 (SD = 157.9) to 363.9 (SD 348.8) minutes/week for participants in the intervention group and from 191.8 (SD = 258.9) to 312.4 (SD = 336.3) minutes for participants in the waitlist control group. The difference in changes between groups was not statistically significant (p = 0.187). Sleep quality improved in both groups with a 2.53-point reduction in the intervention group and a 1.21-point reduction in the waitlist control group. The difference in changes between the two groups at the primary endpoint was statistically significant (p < 0.001). Conclusions: This multi behaviour m-health intervention with a duration of 3 months successfully improved sleep quality. Although a clinically meaningful change was observed for physical activity, the large degree of variation in MVPA levels made it difficult to detect differences in change between groups for this outcome. Additional efforts are required to address attrition rates in remotely delivered interventions.

Jun 06, 14:00 - 15:00: Oral Presentations

O.37: Physical Activity Implementation in Workplace, Community and Schools (Grand Ballroom)

O.37.1
IMPLEMENTATION EVALUATION OF THE EFFECTIVE PHYSICAL ACTIVITY 4 EVERYONE (PA4E1) PROGRAM
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SIG: Implementation and Scalability

Purpose: PA4E1 was a successful two-year multi-component school-based physical activity program, and one of few worldwide that have been effective in reducing the decline in adolescent moderate-to-vigorous physical activity and preventing unhealthy weight gain. Understanding how schools implemented the program is vital to build an evidence base to inform policy and practice, and gain insight in to how the program could be replicated. This study reports on the implementation of PA4E1. Methods: The PA4E1 RCT was conducted in 10 secondary schools in NSW, Australia. Five schools were allocated to the PA4E1 program, and supported to implement seven physical activity practices. Six additional strategies supported schools to implement the practices. This evaluation was guided by the Taxonomy of Implementation Outcomes and included the domains: fidelity, cost, adoption, sustainability, feasibility, penetration (reach), acceptability, and appropriateness. Implementation measures were collected through surveys (PE teachers, students and parents), focus groups (teachers and students), a review of administrative records, and interviews with project staff during program implementation, at program completion, and six months post-program completion. Results/findings: PA4E1 was implemented as intended according to the protocol demonstrating high fidelity, with only minor amendments to resources and training. The program cost was estimated at AUD$329,952. Four of five schools adopted all seven practices, and one school adopted six practices. Eighty-seven percent of teachers agreed that PA4E1 had lasting effects on student physical activity in their school six months after program support ended. High student reach was achieved for the pedometer-based lessons (90%), enhanced sport program (73%) and organised recess/lunch activities (53-60% of students reported participating one day/week). However, only 24% of parents reported receiving newsletter information on physical activity strategies. Overall, teachers and students considered PA4E1 to be highly acceptable and appropriate, although pedometer-based lessons (76% to 44%) and student activity plans (90% to 74%) were perceived to be less acceptable by students at 24 months (Grade 9) than at 12 months (Grade 8). Conclusions: PA4E1 was feasible with school facilities and resources, and the majority of practices were adopted by all schools. Amendments to the practices, resources and support strategies may further enhance acceptability and sustainability.

SIG: Implementation and Scalability

Purpose: Interventions to promote physical activity which can be successfully delivered at scale are urgently needed. The workplace is an important setting for physical activity promotion with potential to reach a large proportion of the adult population. Understanding how to effectively implement workplace physical activity interventions at scale is an important area of research. The aim of this study was to identify the main factors which influenced the successful implementation of the Workplace Challenge, a national, scaled-up, sport and physical activity intervention in England targeting inactive adults. Methods: The Workplace Challenge is an ongoing multi-component intervention based around a website/app with locally organised sports events and competitions, and signposting to other local activities. It is led by the County Sports Partnership Network and delivered locally by County Sports Partnerships, National Governing Bodies for Sport (NGBs), other local/national partners and trained workplace champions. Interviews or focus groups were conducted using a semi-structured protocol with delivery partners (n=7 interviews), workplace representatives (n=6 interviews), workplace champions (n=10 interviews) and programme participants (n=9 focus groups). Data were coded in NVIVO 10 and analysed thematically to identify the key factors for successful implementation. Results: Four overarching themes emerged in...
relation to the factors for successful implementation: 1) delivery model (national leadership with local delivery, ability to adapt national programme to suit local needs, comprehensive intervention package, local partnership development, support from NGBs, responsive to feedback); 2) workplace engagement (no joining cost, inclusivity, flexibility in using the intervention to complement existing workplace health programmes, positive influence on workplace culture for physical activity and health promotion); 3) engagement of the target group (tailored information, low level taster sessions/alternative activities, emphasis on fun, enjoyable and social activities, awareness raising and prompting intention formation, use of incentives, role of workplace champions); and 4) employee participation (individual registration, flexible participation, competition element, benefits for working relationships and morale). Conclusions A number of factors were identified which influenced the successful implementation of a national scaled-up workplace physical activity intervention. These factors should be taken into consideration in developing future workplace physical activity interventions to facilitate successful implementation and scale-up.

O.37.3
CORRELATES OF OBJECTIVELY MEASURED PHYSICAL ACTIVITY IN SINGAPOREAN ADULTS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Examining physical activity (PA) and its correlates is important for intervention development, but little research has been conducted in Asia. In available studies PA was mainly assessed through self-report and no study examined psychological determinants comprehensively. We investigated the influence of socio-demographic and psychological correlates on objectively measured moderate-to-vigorous physical activity (MVPA) in Singaporean adults. Methods: Participants were recruited from the Singapore Health Study in 2014 and 2015. PA was measured with an ActiGraph GT3X+ accelerometer. In addition to socio-demographic information we collected psychological variables: PA recommendation knowledge, PA motivation, perceived social support, and PA barriers (external barriers, daily life barriers, danger perceptions, internal barriers). Bouts of at least 10 minutes in MVPA were derived and used to categorise participants into meeting/not meeting recommendations (150 min/week). A stepwise logistic regression was performed to identify variables that were associated with this outcome. These variables were simultaneously entered into a final regression model for parameter estimation. Findings: A total of 745 participants wore the accelerometer for a minimum of 4 days (mean age = 45.6 years, 58.3% female). The majority of participants were Chinese (66.2%), followed by Malays (16.4%), Indians (13.6%), and Others (3.9%). Only 25.6% of participants adhered to the MVPA recommendations. The final model included age, education, social support and daily life barriers. The odds of achieving the MVPA recommendations were higher for people under 30 years compared to older individuals (30 to 49 years: OR 1.41, 95% CI 1.07 to 1.62; 50+ years: OR 1.54, 95% CI 1.23 to 1.73). People with higher education (OR 1.84, 95% CI 1.26 to 2.68) and fewer daily life barriers (OR 1.22, 95% CI 1.04 to 1.36) were more likely to meet the MVPA recommendation. More social support was associated with lower odds of achieving the recommendations (OR 0.82, 95% CI 0.68 to 0.99). Conclusions: Younger age, higher education and fewer daily life barriers (e.g., lack of time, different priorities) were associated with meeting the MVPA recommendation. In contrast, individuals with greater perceived social support from family and friends were less likely to meet MVPA recommendations.

O.37.4
DISSEMINATING THE ‘RESISTANCE TRAINING FOR TEENS’ PROGRAM IN SECONDARY SCHOOLS: AN EXPLORATION OF TEACHERS’ PERCEPTIONS APPLYING THE RE-AIM FRAMEWORK
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SIG: Implementation and Scalability
Objective School leadership and management is often highlighted as an important determinant of the impact of organizational and wider contextual changes required to realize the full potential of multicomponent school-based physical activity programs. Successful integration of physical activity in everyday school curriculum is conditional on coordinated and high-performance team processes. School management (i.e., school principals and/or vice-principals) is crucial in establishing and developing the organizational frameworks needed to secure optimal coordination and co-work among key frontline personnel (i.e. educators). Methods Based on the Theory of Relational Coordination (RC), developed by Jody Hoffer Gittell, this study examines to what degree school management succeed with establishing effective organizational structures and relational drivers for the implementation of a specific multi-faceted school-based physical activity intervention: The Danish Move for Well-being in Schools Program (MWS). In brief, MWS consisted of a four-phased process –sh; design, pilot, randomized controlled trial (RCT) and evaluation –sh; guided by The Medical Research Council framework for the development of complex interventions. The study is based on semi-structured interviews with managements at nearly all schools (11 out of 12) enrolled in the intervention group of the cluster randomized trial conducted as part of MWS. The interview material has been analyzed from theory driven coding on the basis of relational coordination and is compared with levels of program implementation, as reported via electronic survey by involved school personnel (n=148) at the start, midterm and end of the intervention period. Results Managements with a high focus on core RC-components, like shared goals and effective communication, are often found at schools that are highly effective in implementing both particular program activities and school-based physical activity in general. This highlights the importance of school management in making the physical
active school a sustainable reality. Conclusions Implementation of multicomponent physical activity programs in the school setting demands strong management, that can make visible how such programs are important in the efforts to fulfill general organizational aims. This, in turn, calls for a continual flow of task-relevant information, knowledge sharing and dialogue between the parties involved. Relational Coordination appears to hold great potential in advancing exactly these features.

O.38: Correlates of Physical Activity in Children and Adolescents (Salon 1-2)

O.38.1
CHILDHOOD SPORT PROFILES PREDICT MENTAL HEALTH IN ADOLESCENCE
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SIG: Children and families

Objective: Leisure time physical activity (PA) and sport participation can promote mental health and prevent mental illness. However, the PA practices of performance athletes (who specialize in one sport, train intensely for many hours, over-train and who experience high levels of competitiveness) may threaten mental health. At the other extreme, youth who do not participate in sport report more depressive and anxiety symptoms and higher stress levels. This study examines the longitudinal associations between three sport profiles (recreational, performance, non-participation) in childhood and mental health in adolescence. Methods: Participants include 756 children age 10-11 years at inception, from the longitudinal Monitoring Activities of Teenagers to Comprehend their Habits (MATCH) study. They self-reported their participation in organized and unorganized PA in questionnaires administered every 4 months over 5 years during class time. Students were categorized as recreational or performance sport participants, or non-participants in each year. Mental health was assessed using the Mental Health Continuum, a comprehensive measure including emotional, psychological and social well-being. The associations between sport profiles in years 1 to 5 and mental health level (flourishing or not flourishing) in year 5 were assessed in logistic regression models. Results: In year (y) 1, 2, 3 and 5, relative to non-participation, the performance sport profile was positively associated with flourishing mental health (OR (95% CI): y1= 2.97 (1.31, 6.91), y2= 2.75 (1.30, 5.95), y3=1.93 (1.01, 3.74) and y5= 2.82 (1.50, 5.38)). In year 4, both the performance and recreational sport profiles were associated with flourishing mental health (OR (95% CI) = 1.85 (1.09, 3.16) and 2.29 (1.23, 4.36), respectively). Involvement in performance or recreational sport profiles in all 5 years was associated with flourishing mental health (OR (95% CI) = 1.87 (1.14, 3.10)), relative to involvement in ≥4 years. Conclusion: Sport participation, and especially in performance sport, during childhood and adolescence is associated with higher mental health in adolescence. If replicated, our findings support developing strategies to encourage children to engage and remain involved in sports into adolescence, to positively impact mental health.

O.38.2
PARENT TV-VIEWING PRACTICES AND RULE-SETTING TO LIMIT THE TV-VIEWING TIME OF THEIR 8 TO 12 YEAR OLD CHILDREN
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SIG: Children and families

Purpose: Television (TV) viewing remains popular among adults and children, with child TV-viewing positively associated with parent TV-viewing time. Efforts to limit the TV-viewing time of children typically target parent rule-setting. However, little is known about the association between parent TV-viewing practices and rule-setting. The present study objective was to examine parent TV-viewing time on weekdays and weekend days and their TV-viewing rule-setting behaviors for their children. Methods: Baseline
height/weight and parent survey data collected between 2011 and 2015 from parents and their 8 to 12 year old child (n=212 parent/child dyads) who were participants in two community-based obesity prevention intervention trials (SNAPSHOT, HOME Plus) conducted in metropolitan Minnesota were used for analysis. Multivariable binary logistic regression analysis was used to assess the association between parent TV-viewing time on week days or weekend days dichotomized as = 2 hours per day versus = 2.5 hours per day and parent rules limiting child TV-viewing time. Results: Child mean age was 10 (SD=1.4), mean body mass index (BMI) percentile was 81 (SD=16.7), about half were boys and 40% were non-White. Parent mean age was 41 (SD=7.5), mean BMI 29 (SD=7.5), most were female and 36% were non-White. In adjusted analysis, parents who limited their TV-viewing time on weekend days to = 2 hours per day were almost three times more likely to report setting rules limiting child TV-viewing time than parents viewing = 2.5 hours per day (p=0.01). A similar association was not seen for parent week day TV-viewing time. Conclusion: Success with setting rules to limit children's TV-viewing time will likely require parents to consider their own TV-viewing practices, especially the time they spend in front of the TV on weekends.

O.38.3
PHYSICAL ACTIVITY AND SCHOOL CLIMATE: A SOCIAL IDENTITY APPROACH
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SIG: Children and families

Purpose: School-based physical activity interventions have commonly targeted effects at the individual student level. More recently, there has been a move toward ecological models, which consider determinants of physical activity behavior at multiple levels, including individual, social, environmental and policy level-factors. Social factors have a significant influence on physical activity behaviors, therefore, applying a social identity framework of group behavior to physical activity interventions may be a novel and valuable approach. In this study, we investigate the social identity process and the effect of school climate on physical activity and student attitudes toward physical education (PE). Methods: Participants were 283 grade-six primary school students from 16 elementary schools participating in the Physical Education Physical Literacy (PEPL) project. Questionnaires were administered to students to assess: school climate factors, including shared mission of valuing physical activity, meaningful student-to-teacher and student-to-student interactions, and engagement in learning; school norms relating to physical activity; and attitudes towards PE. Physical activity was assessed via accelerometers. General linear mixed modelling (accounting for school clustering) was used to investigate the influence of school norms and school climate on habitual physical activity and student attitudes toward PE. Results: Children who perceived there to be a high degree of shared classroom, peer and school norms in relation to the importance of physical activity participated in more moderate-to-vigorous physical activity (MVPA), less sedentary activity and held more positive attitudes toward PE (all p < 0.05). Students reporting higher levels of engagement in learning participated in more MVPA (p = 0.002), less sedentary activity (p = 0.018) and had more positive attitudes toward PE (p = 0.005). Finally, students who perceived more positive student-to-student (p = 0.001) and student-to-teacher (p = 0.001) interactions within the school held a more positive attitude toward PE. Conclusions: Social level factors operating within a school context, such as school climate and school norms, are related to student MVPA, sedentary activity and attitude towards PE. The social identity approach provides a promising framework from which to explore physical activity behavior, and highlights a novel approach to intervention.

O.38.4
THE MODERATION EFFECT OF LIGHT-INTENSITY PHYSICAL ACTIVITY IN THE RELATIONSHIP BETWEEN SITTING TIME AND ADIPOSITY MARKERS IN ADOLESCENTS
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SIG: Children and families
Purpose Evidence suggests that the relationship between sedentary time and adiposity markers may be independent of moderate-to-vigorous intensity physical activity (MVPA) among adolescents. However, little is known about the role of light-intensity physical activity in this relationship. The aim of this cross-sectional study is to examine whether low (LLPA) and high (HLPA) light-intensity physical activity and MVPA moderate associations between sitting time and adiposity markers (i.e. waist circumference [WC] and body mass index [BMI]) among adolescents. Methods This study is based on valid data obtained from 188 adolescents (mean age 15.3±smn;1.6) from The Neighbourhood Activity in Youth: The NEArbY Project in Melbourne, Australia collected during 2013-15. ActiGraph accelerometers were used to obtained time spent on LLPA (101-799 counts/minute), HLPA (800 counts/minute to 3.99 METs) and MVPA (= 4 METs), using the Freedson age-specific equation. Time spent sitting was obtained from activPAL inclinometers. Two sitting groups were created using median sitting time (645.7min/day) as a cut-off point: "low-sitting time group" (low-SIT) and "high-sitting time group" (high-SIT). Anthropometric measures were assessed by trained staff. Moderation impact of LLPA, HLPA and MVPA were examined adding interaction terms to the simple regression model. Significant interaction effects were probed by computing intensity-specific associations (at average, one standard deviation [SD] below and above values of LLPA, HLPA or MVPA). Results LLPA but not HLPA nor MVPA significantly moderated the relationship between sitting groups on WC and BMI after adjusting for age, sex and MVPA. Specifically, at low level of LLPA (-1SD), adolescents in the high-SIT group had significantly higher BMI (1.3 kg/m2) compared to the participants in the low-SIT group. Similarly, adolescents in the high-SIT group had higher WC (3.59 cm) compared to the low-SIT group, but this association was not significant. Conclusions Time spent in LLPA moderated the relationship between sitting and adiposity especially among adolescents who sit more compared with those that sit less. Results suggest that decreasing the time spent sitting by increasing LLPA may provide protection from deleterious effects of sitting on adiposity markers among adolescents. Experimental evidence is needed to support these conclusions.

O.38.5 PHYSICAL ACTIVITY ENJOYMENT MOTIVES EXPLAIN ADOLESCENT MODERATE-TO-VIGOROUS PHYSICAL ACTIVITY TREND.

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SIG: Theories of motivation

OBJECTIVE: Intrinsic and extrinsic motives for participation in physical activity (PA) have been used to explain moderate-to-vigorous intensity PA (MVPA) at different life stages; however, to our knowledge, the association between motives and MVPA have not been examined over time during the transition from childhood to adolescence. The purpose of this investigation was to examine the longitudinal associations between intrinsic (i.e., enjoyment, competence, fitness) and extrinsic (i.e., social affiliation, appearance) motives for participation in PA and participation in MVPA over a 5 year period spanning late childhood and early adolescence. METHODS: Data were from an ongoing cohort study (Monitoring Activities for Teenagers to Comprehend their Habits [MATCH]) among 937 children aged 10-11 years at study inception. For this analysis, data collected via questionnaires administered three times per school year over 5 years (resulting in 15 survey cycles) were used. Motives for participation in PA were assessed using the 30-item Motives for Physical Activity Measure Revised Scale (MPAM-R), and participation in MVPA was assessed using Prochaska's two items questionnaire. After establishing longitudinal invariance for a truncated (22-item) MPAM-R, sex-stratified piecewise latent growth models (LGM) were conducted. RESULTS: MVPA levels followed an upward trend from cycles 1 through 7 and then a downward trend through cycle 15. In two separate LGMs (one for cycles 1-7 and one for cycles 7-15), intrinsic motives of enjoyment were frequently positively associated with MVPA for both sexes, and intrinsic motives of fitness were frequently positively associated with MVPA for girls. Intrinsic motives of competence were positively associated at one cycle with MVPA for girls only. Extrinsic motives of social affiliation were negatively associated with MVPA at one cycle for boys and at two cycles for girls. For both sexes, extrinsic motives of
appearance were not associated with MVPA at any cycle. CONCLUSIONS: Ensuring youth enjoy PA appears critical to ensure maintenance of MVPA during the transition from childhood to adolescence. Findings confirm the importance of increasing adolescents’ enjoyment experiences in PA.

O.39: Methods in Youth Physical Activity (Salon 3-4)

O.39.1
AN ECOLOGICAL MOMENTARY ASSESSMENT OF MOOD RESPONSES TO FREE-LIVING SEDENTARY AND ACTIVE BEHAVIOURS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: The benefits of physical activity range from immediate to long-term. However, there is a lack of understanding of immediate mood state responses to sedentary and active behaviours during daily living. The purpose of this study is to examine the association between current mood and sedentary and active behaviour in the 60 min prior to reporting mood, in a free-living setting. Use of longitudinal monitoring of mood and activity aims to minimise participant reactivity bias. Methods: This study used ecological momentary assessment to assess mood and sedentary and active behaviours among 82 employed adults for a period of 7 days. Movement data was collected with dual Axivity AX3 units located on the back and thigh, sampling at 100Hz. Three scales assessed bipolar mood states (Gloomy-Cheerful, Tired-Energised, and Tense-Relaxed) three times per day for four days with SMS messaging. For each time-stamped mood state response, the previous 60 min of Axivity data were extracted. Each minute of Axivity data were classified as either lying, sitting, standing, or active. Separate tests of association were performed in R ver. 3.4.2 using repeated measures correlation ('rmcorr' package ver. 0.2.0

O.39.2
RELIABILITY OF ACTIGRAPH ACCELEROMETER GENERATIONS AND COMPARABILITY OF PLACEMENT SITES
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: The purposes of this study were: 1) to establish inter-instrument reliability between Actigraph GT3X+ and GT9X placed on wrist and hip; 2) to examine comparability between hip and wrist placement sites in estimating physical activity (PA) behavior, which has not yet been conducted with a bilateral coordination exercise like active video game (AVG) play in young adults. Methods: Forty young adults (M=21.2y, SD=2.2; 54%male) wore ActiGraph GT3X+ and GT9X accelerometers, both on their non-dominant wrist and hip, while they engaged in a 30-min AVG play with Xbox One Kung-Fu Kinetic. Both GT3X+ and GT9X were used to measure total step counts (step) and 10-sec epochs were coded and downloaded using the ActiLife software. For the reliability of two accelerometers and the comparability of two placement sites, Intraclass coefficient correlations (ICCs) were calculated to evaluate inter-instrument reliability, Friedman analyses of variance with post hoc pair-wise analyses were used to detect step differences, and Bland-Altman analyses were conducted to evaluate mean bias and the limits of agreement for step. Results: Inter-instrument reliability between GT3X+ and GT9X was excellent on both the hip-worn accelerometers [ICC= 0.93, 95% CI: 0.87–sh;0.96 (F= 15.02, p<.01)] and the wrist-worn accelerometers [ICC= 0.89, 95% CI: 0.79–sh;0.94 (F= 8.81, p<.01)]; however, Friedman analyses revealed that there was significant difference (p<0.01) between GT3X+ (M=1141, SD= 292) and GT9X (M=1415, SD= 328) on wrist, whereas there was no difference (p=0.69) between GT3X+ (M=553, SD= 309) and GT9X (M=551, SD= 293) on hip. Bland-Altman analyses demonstrated that the corresponding 95% limits of agreement were -us;114.02 to 704.47 step (GT3X+ vs. GT9X) on wrist and -us;302.8 to 307.9 step (GT3X+ vs. GT9X) on hip, indicating that inter-accelerometer differences for step were equal to or close to zero in the hip placement than the wrist placement. Conclusions: Based on these findings, we
conclude that there is a strong agreement between the GT3X+ and GT9X accelerometers placed on the hip, thus making the hip an acceptable placement site for researchers and practitioners to measure PA in a bilateral coordination exercise such as AVG. We suggest ActiGraph accelerometers be attached to the non-dominant hip.

O.39.3
IMPACT OF ACCELEROMETER EPOCH LENGTH ON PRESCHOOLERS’ PHYSICAL ACTIVITY LEVELS
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SIG: Early care and education

Background The use of accelerometers to objectively assess physical activity (PA) in young persons (i.e. children and preschoolers) have surged in the past decade, and also across different research disciplines. It is therefore imperative for researchers to understand the sources of variability related to the use of accelerometers. Because children and preschoolers' movements are often sporadic and intermittent, the impact of accelerometer epoch length on PA estimates has been examined in depth. However, most of these studies were conducted using older accelerometer models (e.g. uniaxial models; Actigraph 7164) or only with children (6–sh;18 years old). Due to the significant differences in stages of motor skills development and movement patterns between children and preschoolers (3–sh;5 years old), accelerometer validity issues must be examined separately for these two age groups. The lack of understanding in this area may significantly impede researchers’ ability to make accurate conclusions about PA measures. Purpose The purpose of this study was to examine the impact of epoch length on PA estimates. Altogether, this study aims to provide better understanding on a critical methodological issue (i.e. epoch length) to accelerometer users that come from diverse disciplines. Method Preschoolers’ (N = 77) PA during school hours was measured by the Actigraph GT3X+ accelerometer. One-way ANOVAs and Post-Hoc tests were conducted to examine the impact of epoch length (1s, 5s, 15s and 60s) on PA estimates (time spent in sedentary, light, moderate and vigorous PA). Impact of epoch length on PA estimates, stratified by gender, was also examined. Results Time spent in sedentary, moderate and vigorous PA decrease as epoch length increased and time spent in light PA increased as epoch length increased. Conclusions and implications The selection of epoch length has significant impact on PA estimates. Further experimental investigations are needed to determine which epoch length would be most suitable for preschoolers' PA measurement. Researchers that wish to use accelerometers as assessment tools should make informed judgements about technical settings (e.g. epoch length) and interpret PA measures cautiously.

O.39.4
EXAMINING THE RELATION BETWEEN AUTONOMOUS MOTIVATION AND PHYSICAL ACTIVITY USING AN ACTOR-PARTNER INTERDEPENDENCE MODEL
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SIG: Children and families

Objective: Within self-determination theory, autonomous motivation is an adaptive form of motivation which is related to positive health outcomes and associated behaviors, such as physical activity. Within a dyadic relationship, such as parent-child dyads, researchers have shown that the motivational factor of one member may affect that of another. Nonetheless, few studies have explored whether autonomous motivation of one dyadic member may affect behavioral outcomes of the other member directly. In this study, we employed the actor-partner interdependence model to examine the relation between parents and children's autonomous motivation and physical activity outcomes. Methods: 423 pairs of parent-child dyads took part in the study. Both parents and children completed questionnaires measuring their autonomous motivation and physical activity behaviors. Using structural equation modeling techniques, responses were analyzed using the actor-partner interdependence model, whereby parents and children's autonomous motivation predicted physical activity outcomes of both dyad members. Results: There were
significant paths from autonomous motivation to physical activity of the same member (beta = .13 to .39). However, there were trivial relation between one member's autonomous motivation and the other's physical activity. These results corresponded to an actor-only pattern. Conclusions: Parents' autonomous motivation may have an effect on their children's physical activity behavior, and vice versa, but results from the current study suggest these relations is indirect. Nonetheless, these factors are interrelated, meaning interventions targeting both dyad members simultaneously may be more effective than those focusing on either member only.

O.39.5
FREE LIVING EVALUATION OF MACHINE LEARNING MODELS TO PREDICT PHYSICAL ACTIVITY TYPE AND ENERGY EXPENDITURE IN YOUTH
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SIG: No, this does not fit in any of the above mentioned special interest groups

Machine learning (ML) methods have emerged as a viable alternative to threshold-based accelerometer data processing approaches, yet no studies have evaluated the performance of these models under free living conditions. PURPOSE: To evaluate the performance of a Random Forest (RF) classifier and Artificial Neural Networks (ANN) for predicting activity type and energy expenditure (METs) in children over a 7 day free living assessment period using the ActiGraph (AP) as a reference measure. METHODS: Nineteen children wore an ActiGraph GT3X+ on the hip and an AP on the thigh for 7 consecutive days. The RF was developed from time and frequency domain features extracted from the raw acceleration. ANNmet and ANNNmet were developed from time domain features extracted from proprietary activity counts. AP event-based data were converted to 10 s epochs to match the window size of the RF and ANN models. Since the RF and ANNact predicted 5 activity classes that did not align with the AP's 3 activity classes, RF, ANNact, and AP predictions were dichotomised as "non-activity" (RF/NNact: sedentary, AP: sit/lie) or "activity" (RF/NNact: light activity and games, moderate activity and games, walking, running, AP: standing and stepping). Performance was evaluated by calculating mean bias, limits of agreement, accuracy, sensitivity, specificity, and ROC-AUC relative to the AP estimates. Additionally, the relationship between ANNmet and AP predicted MET.mins was evaluated using a Pearson correlation coefficient. RESULTS: The accuracy, sensitivity, specificity, and ROC-AUC for the RF and ANNNact were as follows: RF = 72.1%, 74.1%, 70.5%, and 0.72, ANNact = 66.6%, 86.1%, 51.0%, and 0.68. Mean bias and limits of agreement for the RF and NNact were -37.6 min/day (95% LOA: -149.6 to 74.3 min/day) and -147.5 min/day (95% LOA: -252.4 to -42.6 min/day), respectively. The Pearson correlation for MET.mins per day was 0.88. CONCLUSIONS: Relative to AP estimated activity time, ML classifiers trained on lab data exhibited moderate to good activity recognition under free living conditions. Both ML models provided higher estimates of activity time compared to the AP, with the RF providing closer estimates to AP than the ANNact. MET predictions from ANNmet were strongly correlated with AP estimated MET.mins per day.

O.40: Correlates and Interventions for Sedentary Behavior in Children (Drawing Room)

O.40.1
ASSOCIATION OF SCREEN-VIEWING TIME WITH LATER ADIPOSITY AMONG YOUNG CHILDREN IN SINGAPORE
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SIGNIFICANT ASSOCIATIONS WITH SITTING TIME IN 6-TO-8-YEAR-OLD CHILDREN

OBJECTIVE: Screen-viewing time (SVT) has been associated with obesity in mid-childhood, but less is known in younger children, particularly in Asians. We investigated the associations of total and device-specific SVT in toddlers with later body mass index (BMI) and skinfold thicknesses among Asian children in Singapore. Methods: As part of the Growing Up in Singapore Towards healthy Outcomes (GUSTO) cohort, toddler’s weekly time spent watching/using television (TVT), handheld devices (HHDT) and computer were reported by parents at age 2 years. SVT was categorized into low (first two quartiles), medium (third quartile) and high (upper quartile) levels (<1.0, 1.0-2.5, and =2.5 h/day for TVT, <0.5, 0.5-1.0 and =1.0 h/day for HHDT and <2.0, 2-3.5, and =3.5 h/day for total SVT (TVT+HHDT+computer), respectively). Children’s weight, height and skinfold thicknesses were measured at ages 2, 3, 4 and 5 years. BMI and sum of triceps, biceps and subscapular skinfolds (SSF) were calculated. Associations were investigated separately for boys and girls using multivariable repeated-measure linear regression models adjusted for potential confounders. Results: 903 participants (52.8% boys) were analysed. Compared to boys whose mothers reported a low level of total SVT, boys engaged in high total SVT at age 2 years had a higher BMI at ages 3, 4 and 5 years [difference in means (95% CI): 0.35 (0.49, 0.65), 0.49 (0.16, 0.83), and 0.48 (0.06, 0.91) kg/m²;], and higher SSF at ages 4 and 5 years [2.16 (0.83, 3.48), 2.20 (0.40, 3.99) mm]. Similarly, high TVT at age 2 years was associated with higher BMI at ages 3, 4 and 5 years [0.37 (0.05, 0.69), 0.42 (0.06, 0.78), and 0.45 (-0.003, 0.91)], and higher SSF at age 4 and 5 in boys [1.97 (0.55, 3.38), and 2.07 (0.15, 3.99)]. HHDT was not associated with BMI in boys, and higher HHDT was associated with higher SSF at ages 4 years [1.72 (0.40, 3.04)]. No significant associations were seen in girls. Conclusion: Greater total-SVT, particularly TVT, at age 2 years was associated with higher childhood BMI and SSF in boys in Singapore, but not in girls. Further studies are warranted to confirm our findings.

SHORT-LISTED FOR THE BEST ORAL PRESENTATION AWARD BY A STUDENT

CORRELATES OF OBJECTIVELY-ASSESS SITTING TIME IN 6-TO-8-YEAR-OLD CHILDREN

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SIGNIFICANT ASSOCIATIONS WITH SITTING TIME IN 6-TO-8-YEAR-OLD CHILDREN

PURPOSE: Very little is known regarding children’s objectively-assessed sitting and its correlates. This study aimed to determine the correlates of sitting time in 6- to 8-year-old children across multiple levels of the ecological model. Methods: Children (n=403; mean age 7.6y) in the Healthy Active Preschool and Primary Years (HAPPY) Study follow-up (2011-12) wore activPAL™ accelerometers for eight days to assess sitting time. School time was removed from weekday data to provide a measure of sitting time outside school hours. Parents reported a range of potential individual, social and physical environmental correlates. Mixed model regression analyses were undertaken, stratified by sex and by week/weekend day. Correlates significantly associated with sitting time in bivariate analyses (p<0.05) were included in multivariable models. All models controlled for child age, activPAL™ wear time and clustering by recruitment site. Results: On weekdays, boys spent 55.0% (SD=10.7%) and girls spent 55.7% (SD=11.2%) of time sitting (p=0.05), while on weekend days boys spent 55.6% (SD=14.5%) and girls spent 51.9% (SD=11.8%) of time sitting (p=0.008). Maternal co-participation in physical activity (PA) was negatively associated with boys' week and weekend day sitting. Additional correlates of boys’ weekday sitting were: parental knowledge of the health outcomes associated with screen time (positive association); child prosocial PA behaviour; family screen time values; and paternal praise/encouragement for PA (all negative associations). Additional correlates of boys’ weekend day sitting time were: parental co-participation in PA;
paternal praise/encouragement for watching TV; and the total number of pieces of equipment/toys to be physically active with at home (negative associations). Correlates of girls' weekday sitting were: paternal education (negative association); and maternal logistic support for electronic game use (positive association). The only correlate of girls' weekend day sitting time was fruit consumption (negative association). Conclusions: The modifiable correlates identified in this study could be targeted in interventions as potential mediators of children's sitting time. In particular, parental beliefs and parental modelling, co-participation, support and encouragement for some behaviours seem to be important. With correlates differing between sexes and week/weekend days, interventions may benefit from ensuring that a range of strategies are included to cover all identified correlates.

O.40.3
SLEEP, ACTIVITY BEHAVIOURS AND ADIPOSITY IN SOUTH AFRICAN PRESCHOOL-AGED CHILDREN
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SIG: Children and families
Purpose: Insufficient sleep and excessive sedentary behaviour (SB) have been shown to be positively, and physical activity (PA) inversely, associated with obesity in young children. Previously published research has shown that preschool children's activity behaviours and adiposity differ across income settings, although few studies to date have assessed the association between these variables. This study aimed to examine relationships between sleep, SB, PA, and adiposity in South African preschool children from varying income settings. Methods: Data were collected from rural low-income (RL), urban low-income (UL), and urban high-income (UH) settings. Children had their height and weight measured, and wore an ActiGraph GT3X accelerometer for 7 days to objectively measure sleep, SB and PA. Regression analyses were used to evaluate associations between sleep, SB, PA, and adiposity. Analyses controlled for age, sex and setting. Results: Children (n=198, aged 5.2±smn;0.7y, 49.5% boys) slept for an average of 10.48±smn;0.78h/night, and 73.7% met sleep guidelines (10-13h/night). UL children slept significantly less than UH and RL children (9.91±smn;0.68 vs. 10.76±smn;0.61 and 10.76±smn;0.68h/night for UH and RL, respectively; p<0.001). UL children were 1.88 times less likely to meet sleep guidelines than UH children (95%CI: 1.66-1.96; p<0.001). Children were very active (337.4±smn;55.5min SB/day; 464.8±smn;58.5min total PA/day; 125.5±smn;36.8min MVPA/day), with 98.0% meeting PA guidelines (180min/day total PA, inclusive of 60min 'energetic play'). UH children did significantly less total PA than RL and UL children (p<0.001). Children spending more time in SB and those with higher MVPA were 1.03 (95%CI:1.01-1.03, p<0.001) and 1.04 (95%CI:1.02-1.05, p<0.001) times less likely to meet the sleep guidelines, respectively. Mean BMI-z score was 0.02±smn;1.03, 71.2% of the children were normal weight and 8.1% overweight/obese. UL children had higher BMI-z scores compared to UH and RL children (0.37±smn;1.04 vs. -0.34±smn;0.70 and -0.12±smn;1.03, respectively, p=0.017). For every 1h less sleep, children were 1.41 times more likely to fall into a higher BMI-z score quartile (95%CI:0.36, 0.97; p=0.037). Conclusions: Sleep appears to play a significant role in adiposity in preschool-aged children, despite high levels of PA. UL children appear to be a particularly vulnerable group with shorter sleep and higher BMI-z scores than UH and RL children.

O.40.4
EVALUATION OF THE ‘STAND UP FOR HEALTH’ INTERVENTION TO REDUCE ADOLESCENT SITTING TIME DURING THE SCHOOL DAY: A RANDOMISED CONTROLLED TRIAL
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SIG: Children and families

Purpose: Large proportions of the adolescent school day are spent sitting. There is a growing body of evidence suggesting that sedentary behaviour contributes to health risks in children and adolescents. Means of reducing this risk are urgently needed. The primary aim of this project was to evaluate the feasibility, acceptability and potential efficacy of a school-based intervention to reduce sitting time in 13-16 year-old high school students. Methods: This study was a two-arm parallel-group randomised controlled trial. Adolescents in grades 7 and 8 were recruited from four private high schools in a regional and a metropolitan region of New South Wales, Australia. Schools were pair-matched and randomised to either treatment or control. Research assistants were blinded to the intervention aims and treatment allocation. Intervention initiatives included classroom and school outdoor environment measures to break up and reduce sitting time. The primary outcome was sitting time, as measured by the activPal monitor, worn during the school day for one week. Secondary outcomes included body mass index (BMI), body fatness, executive function and working memory. Data were analysed using a general linear mixed model adjusted for clustering. The magnitude of the intervention effects were examined using standardized Cohen's effect sizes, calculated for differences between the mean effects. Results: A total of 88 adolescents (Mage = 14.7 ±smn; 0.7, 50% male) participated in the trial. Eighty six students had valid data for all variables (43 control, 43 intervention). There was no significant intervention effect on the primary outcome. There was a significant effect on working memory (adjusted difference + SD) -0.42 +1.37; P=0.048 (Cohen's d) = 0.31). Whilst teachers and students were supportive of the program, the results of the process evaluation indicate a potential lack of fidelity with program implementation in the school environment. Conclusions: These findings contribute to limited research in this area, providing guidance for the development and implementation of future sedentary behaviour interventions in the high school environment.

O.40.5
STAND OUT IN CLASS: EFFECTS OF A STANDING DESK INTERVENTION ON CHANGES IN ACCELEROMETER DERIVED SEDENTARY BEHAVIOUR AND PHYSICAL ACTIVITY

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SIG: Children and families

Purpose: This study investigated the impact of a sit-stand desk intervention in primary school classrooms on children's school-day accelerometer-derived sedentary behaviour and physical activity (PA). Methods: 'Stand Out in Class' was a two-arm pilot cluster RCT conducted in 8 primary schools (4 intervention, 4 control) with Year 5 (9-10 year-old) children, in Bradford, UK. Baseline measurements were conducted in November/December 2016 with follow-up measures taken 6-months later. In the intervention classrooms, 6 sit-stand desks replaced standard desks, and teachers received support in devising a rotation plan to ensure all children were exposed to the sit-stand desks for >1 hour/day on average across the week. All children wore ActiGraph GT3X+ accelerometers for 7 days at baseline and follow-up. Due to the exploratory nature of the study, data were included in the analysis if participants wore the device for >10 hours/day on >2 weekdays. Total minutes and proportion of time spent sedentary, in light PA and in moderate-to- vigorous activity (MVPA) across the whole school day, during class-time and after school were explored. Results: 178 children provided parental consent for the evaluation; of which 176 (98.9%) attended baseline measurements and 174 (97.8% of consenting sample) attended follow-up measurements. 120 children (60 control, 60 intervention) provided valid ActiGraph data at both baseline and follow-up. At baseline, during waking hours on school days, the intervention and control groups spent on average 11.5 hours/day (69% of waking hours) sedentary; 4.5 hours/day (26% of waking hours) in light PA and 48 mins/day (5% of waking time) in MVPA. For both groups, at baseline 70% of class time was spent sedentary. This reduced to 65.2% and 69% at follow-up for the intervention and control groups,
respectively (TxG p<0.0001). The proportion of class time spent in light PA increased by 5.5% and 0.16% at follow-up for the intervention and control groups (TxG, p<0.001). There was no evidence of any compensatory effects from the intervention after school. Conclusions: Incorporating sit-stand desks in primary school classrooms appears to be an acceptable strategy for reducing sedentary behaviour and increasing PA across the school day.

O.41: Physical Activity and Sedentary Behavior Environment Studies in Children and Special Populations (Lounge)

O.41.1 WALKING ROUTES TO PROMOTE PHYSICAL ACTIVITY IN CHILDREN WITH AUTISM
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SIG: Children and families

Background: Children with autism are at increased risk for overweight/obesity, and face a variety of challenges with achieving the recommended levels of physical activity, including social barriers, decreased motor skills and coordination, and sensory sensitivities. Traditional sporting activities used to promote childhood physical activity, such as team and individual sports, may thus not be ideal for children with autism. Walking is an achievable form of physical activity for children with autism, and prior work has shown that the use of walking routes can increase daily physical activity in children and adolescents who are overweight/obese. Objective: To test the feasibility and preliminary efficacy of using walking routes to increase physical activity in children with autism. Methods: Twelve overweight/obese children with autism ages 6-17 will provide 3 separate weeks of physical activity data, using accelerometers. Families are counseled on using walking routes to increase physical activity after collecting the child's baseline (T1) physical activity. Physical activity data are collected for one week after counseling (T2), and again for one week three months later (T3). Changes in moderate-to-vigorous physical activity (MVPA) and sedentary time are assessed. Results: Eleven eligible subjects declined participation. Nine children dropped out of the study, with equipment discomfort/hypersensitivity (n=6) cited as the most common reason. In this ongoing study, T1 data has been collected on all 12 enrolled children, T2 data has been collected on 10/12 children, and T3 data on 7/12 children. Mean age=11.9 years. Among actively enrolled study children, MVPA has increased after counseling (Δ MVPA=2.7, range=-12-32) and remains elevated at 3 months (Δ MVPA=34.8, range=-11-133). Sedentary time has decreased (Δ sedentary time=-19.9, range=-141-44) and remains lower at 3 months (Δ sedentary time=-84.8, range=-146-147). Conclusion: Use of accelerometry in children with autism is challenging and may limit adherence in studies that require objective measurement. Autism-specific technologies may enhance objective physical activity assessment for this population. Preliminary data indicate counseling on walking routes may provide a means for increasing MVPA and decreasing sedentary time in children with autism, representing a novel approach to increasing physical activity in this high-risk population. These findings should be corroborated in larger controlled studies.

O.41.2 ASSOCIATIONS OF PHYSICAL ACTIVITY WITH VISUOSPATIAL ATTENTION IN CHILDREN WITH AND WITHOUT MOTOR IMPAIRMENTS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: To examine the relationship between visuospatial attention and objectively measured physical activity (PA) in boys and girls with motor impairments (MI) when compared to their typically developing (TD) peers. Methods: Participants included 58 (26 MI, 32 TD) children aged at 7-12 year who were recruited from a regular primary school and met inclusion criteria. PA was assessed using ActiGraph GT3X+ accelerometers for consecutive seven days. The time spent in different PA intensity levels (light
[LPA], moderate [MPA], vigorous [VPA]) were converted into percentage (%) of the monitored time and analysed on weekdays and weekends separately. The attentional shift in response to valid or invalid cues was assessed using a computer-based visual-motor task (Posner paradigm). Reaction time (RT) and the accuracy were recorded for each trial and inhibitory control was evaluated by the RT difference between the invalid-cue condition and the valid-cue condition. Linear mixed-effect models were used to compare all outcome measures in boys and girls with MI and TD, and to determine the association of inhibitory control with motor ability (MI vs TD) and different PA levels by sex after controlling for body mass index, general cognitive ability, and total wearing time of accelerometers. Results: All participants showed significantly longer RT and poorer accuracy in the invalid-cue condition than the valid-cue condition, indicating that the ability to shift attention was decreased by the presence of invalid cues. Boys with TD had significantly higher %MPA on weekend days compared to girls with TD. Motor ability (b=189.98) and %VPA on weekdays (b=-43.18) were significant predictors of inhibitory control in girls only, in which the MI group had significantly poorer inhibitory control than the TD group and every 1% increase of weekday VPA was related to 43.18 ms saving of time spent on inhibiting target-irrelevant stimuli. Conclusions: Inhibitory control of children (in girls) is significantly and positively correlated to their PA (VPA on weekdays) and such relationship is moderated by sex and motor ability. Further intervention studies are needed to determine the effects of PA (intensity and context) and moderators on the enhancement of cognitive ability (attention and inhibition) in children.

O.41.3
ASSOCIATIONS BETWEEN PRESCHOOL ENVIRONMENTAL FACTORS AND CHILDREN’S SEDENTARY TIME: THE MODERATING ROLE OF PARENTAL SOCIOECONOMIC STATUS

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SIG: Early care and education

Purpose: Preschool children's high levels of sedentary time (ST) is a public health concern due to its high prevalence and negative health consequences. Preschool is an ideal setting for interventions, because it reaches a large population of children aged 3-6 years from different socioeconomic status (SES) backgrounds. Still, many interventions have not achieved the expected results of diminished ST. To enhance effects of future interventions, more knowledge on the social, physical and policy environment in preschool associated with children's ST are needed. As socioecological models assume, the associations between environment and behavior may be moderated by a range of variables (e.g. SES). Conducting moderation analyses may provide insights that aid in tailoring intervention strategies for at-risk groups (e.g. children with low SES). This study aims to explore 1) how are preschool environmental factors associated with children's ST, and 2) does SES moderate these associations? Methods: Total 864 children with their parents and 66 preschools participated in the cross-sectional study between years 2015 and 2016. Children's preschool ST was measured by accelerometer. Early educators and principals answered questionnaires covering social (e.g. habits, attitudes) and policy (e.g. regulations, rules) environment. Researchers observed physical environment. Mother's education was used as an indicator of SES, and moderator in the analyses. Linear regression analyses clustered with preschool and adjusted for study season and child's gender and age were conducted to test the main effects and interactions. Results: Early educators' habit of planning activities to break ST was associated with lower children's ST, whereas early educators' habit of asking children to sit was associated with higher children's ST. A frequency of physical activity (PA) theme weeks was inversely associated with children's ST. Out of thirteen SES * environment interactions tested, two were significant (p<0.05): ST theme weeks and instructed physical education (PE) lessons. When stratified with SES, the instructed PE lessons remained significant: more PE lessons were associated with less ST among children with high SES background. Conclusions: Preschool interventions need to focus on chancing early educators' habits related to children's ST. Having PA theme weeks has potential to diminish ST among children from all SES backgrounds.

O.41.4
GAME OR MOTOR CONTROL COMPETENCE FOR THE PROMOTION OF PHYSICAL ACTIVITY
OUTCOMES AMONG PRIMARY SCHOOL CHILDREN? OUTCOMES OF A CROSS-SECTIONAL STUDY
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SIG: Children and families

Background: To engage in games and sports activities, a player uses perceptual-cognitive skills to extract information available within the game, and makes decisions to enact physically using their motor skills. High level players extract more relevant information and use their motor skills to engage in more purposeful and high quality play. Despite the relationship between motor and perceptual-cognitive skills, only measures of motor skill competence have been used to investigate relationships between physical competence and physical activity. The aim of this study was to investigate the associations between object control competence, game play competence and physical activity in primary school children. Methods: Cross sectional study. Actual and perceived object control competence were assessed using the Test of Gross Motor Development –sh; 3rd Edition, and a Pictorial Scale of Perceived Competence respectively. Actual and perceived game play competence were assessed using a modified Game Play Assessment Instrument, and a Game Play Perception Profile respectively. Physical activity (PA) was objectively assessed using a seven-day accelerometer protocol. A total of 107 children (43% boys, 57% girls) aged 9 –sh; 12 years (M 10.5, SD 0.65) completed assessments. Regression models, adjusted for age, sex, school cluster and average accelerometer wear time (PA models) were performed for object control competence predicting game play competence, and for PA predicted by each of the actual and perceived object control and game play competence variables. Results: Actual object control competence accounted for 3.5% (p = 0.001) of the variance in game play competence. For PA as the outcome, actual object control and game play competence accounted for 3.9% (p < 0.000) and 14.3% (p < 0.000) of variance respectively, and perceived object control and game play competence accounted for 11.7% (p = 0.002) and 14.1% (p < 0.000) of variance respectively. Conclusions: Whilst object control and game play competence were significantly associated, game play competence (actual and perceived) accounted for a greater proportion of physical activity than object control competence. This study provides evidence for the importance of improving game based competence among primary school students when the focus is on physical activity outcomes.

DOES ENCOURAGING INDEPENDENT OUTDOOR TIME FOSTER MORE ACTIVE CHILDREN AGED 10 TO 13 YEARS?
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SIG: Children and families

Objective: Children who spend more time outdoors are less sedentary and more active. Yet, whether these associations differ when children spend time outdoors with or without adult supervision remains largely unexplored, especially during children's transitional age to adolescence. This study aimed to investigate whether outdoor time was associated with total sedentary time (SED), time spent in light physical activity (LPA) and moderate-to-vigorous physical activity (MVPA); and in addition, to examine whether these associations differed between non-independent and independent contexts. Methods: Participants consisted of 93 children aged 10-13 years from three different neighbourhoods in Vancouver, Canada. 52% were male, 66% were Caucasian and 68% had university educated parents. Child and parent participants completed a daily survey to determine the amount of time children spent outdoors with or without an adult (including alone or with siblings/friends) for 7 consecutive days. During the same week, child participants wore an Actical accelerometer to assess their daily SED, LPA and MVPA. Multi-level linear regression models were used to assess the relationships of interest, which accounted for the nested structure of the data (i.e. there were up to 7 days of observations per participant). Child's age, gender, ethnicity, parental education, neighbourhood and daily accelerometer wear time were adjusted for as confounders. Results: Both non-independent and independent outdoor time were significantly associated with SED, LPA and MVPA. Each hour increase in non-independent outdoor time was associated with a 9.4
Tumori, Predictive Medicine, Nutritional Epidemiology Unit, Fondazione IRCSS Istituto Nazionale dei ...

O.42.4

A WITHIN-SIBLING PAIR ANALYSIS OF LIFESTYLE BEHAVIORS AND BMI Z-SCORE IN THE MULTI-CENTER I.FAMILY COHORT STUDY

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(95% CI: 6.9-12.0) minute decrease in SED and 5.4 (95% CI: 3.7-7.1) and 3.9 (95% CI: 2.5-5.4) minute increase in LPA and MVPA, respectively. Each hour increase in independent outdoor time was associated with a 14.6 (95% CI: 10.3-18.8) minute decrease in SED and 6.2 (95% CI: 3.4-9.0) and 8.7 (95% CI: 6.4-11.1) minute increase in LPA and MVPA, respectively (all p < 0.001). The association with MVPA was significantly stronger for independent outdoor time (p = 0.003). Conclusions: Increasing both non-independent and independent outdoor time may be useful strategies to promote active living among pre- and early adolescents. As independent outdoor time had a greater contribution to MVPA, intervention should focus on bringing back unsupervised outdoor play.

O.42: Family and Parenting in Children’s Nutrition (CES 2-3)

O.42.1

HAPPY MEALS ARE HEALTHY MEALS: FAMILY MEALTIME ROUTINES AND THEIR RELATION TO CHILD NUTRITIONAL HEALTH


SIG: Children and families

Objective According to ecological models, eating behavior needs to be understood in a social context. Particularly for children, family meals are associated with healthier nutrition. However, what about family meals is “healthy”? Our meta-analysis (Dalacker, Hertwig, & Mata, 2017) –sh; based on cross-sectional, observational studies –sh; identified six family mealtime routines that are associated with healthier nutrition in children: positive mealtime atmosphere, TV off, longer meal duration, children’s involvement in meal preparation, homemade food, and parental role modeling. While this meta-analysis is a necessary first step, longitudinal field studies on endorsement of these routines in daily meals, their intercorrelations (to determine whether they are distinctive routines or potentially all measure the same dimension), and their predictive value for children’s nutritional health are missing. Methods Daily, for seven consecutive days, N=309 parents (mean age 42 years) described their most important family meal of the day (e.g., foods, duration, participants), food intake for a target child (mean age 9 years), and indicated which mealtime routines were present during each meal. On average, each parent responded to 5.6 (SD=1.4) of 7 total daily surveys. Results Correlations between mealtime routines were small (rs <.22), suggesting distinct behaviors. The most endorsed mealtime routines were turning TV off (on average across the measurement week, 76% reported having the TV turned off entirely during meals) and creating a positive mealtime atmosphere (78% described mealtime atmosphere as positive). The best predictors of higher nutritional quality of children’s meal intake were creating a positive mealtime atmosphere, parental role modeling, and children’s involvement in meal preparation (ps<.05). Conclusions: The results suggest that the mealtime routines deduced from independent meta-analyses are distinct routines, endorsed by families in everyday family meals, and predictive of healthier nutrition in daily family meal settings. Importantly, more experimental research is needed. Family routines are a potentially effective low-cost intervention to improve children’s nutrition.
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SIG: Children and families

Objectives: The aim was to investigate associations between lifestyle behaviors and BMI z-scores after controlling for potential familial confounding by comparing sibling pairs. Methods: Within the European I.Family cohort, we conducted a cross-sectional analysis of 2 subsets of children: 1) among all same-sex sibling pairs with a maximal age difference of four years (n=1404, mean age 10.7 years) and 2) among overweight-discordant sibling pairs (defined as one overweight or obese sibling with a non-overweight sibling and a BMI difference of at least 10 percentiles) (n=304, mean age 11.3 years). Physical activity was measured by accelerometry and dietary intake by 24-hour dietary recalls. Sedentary behaviors and potential covariates were assessed by questionnaires filled in by the children or their parents. Mixed linear regression was used to examine the associations between sibling differences in lifestyle behaviors and BMI z-scores adjusting for height, age and sex, and the correlations between children within families and countries. Results: Among all sibling pairs, the siblings with higher screen time, lower MVPA, less sleep and higher intake of energy and unhealthy foods showed higher BMI z-scores. Within the overweight-discordant pairs, screen time and MVPA were significantly related to BMI z-scores. Of the overweight siblings, 37% were on a weight-loss diet, while the corresponding number in non-overweight siblings was only 12%. Conclusion: Lifestyle behaviors explain part of BMI z-score differences among siblings raised in the same household. It remains to be explored whether genetic variants distinguish overweight-discordant siblings and whether these genes influence food intake or energy expenditure behaviors. This work was done as part of the I.Family Study (http://www.ifamilystudy.eu/). We gratefully acknowledge the financial support of the European Community within the Seventh RTD Framework Programme Contract No. 266044.

O.42.2
KIDS IN THE KITCHEN? TRANSFERERENCE OF COOKING SKILLS IN THE HOME
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SIG: Children and families

Purpose: Mothers have been identified as key figures in influencing children's weight status. They have also been cited as the primary source for learning cooking skills and those that learnt from their mothers had better dietary outcomes than those who learnt from other sources. In addition, learning cooking skills at a younger age has been associated with skill maintenance, cooking confidence and a better diet quality. However, mothers may no longer possess or use the necessary skills to prepare a healthy diet. While anecdotally, it has been noted that there is a lack of skill transference occurring in the home environment, as yet there is no scientific evidence to support this. In addition, the underlying processes and reasons for the lack of cooking skills in children have not been explored. Therefore, research is needed to understand the various barriers mothers face when passing on cooking skills to their children. The study aimed to explore mother's perceptions associated with children in the kitchen and children learning cooking skills. Methods: Sixteen focus groups were undertaken with young mothers (20–39 years old) (n=141) from Northern/Republic of Ireland, after they completed a cooking 'from scratch' experiment. All transcripts were transcribed verbatim and analysed using an inductive thematic analysis using Nvivo 11. Results: Seven themes emerged from the dataset. They link together to illustrate the process of cooking skill transference/non-transference in modern times. The novel conceptual map shows the lack of cooking skill transference and illustrates the mechanisms and processes associated with skill transference. Additionally, the map highlights key areas for successful interventions so that future generations can acquire the necessary skills to enable the preparation of a healthy diet. Conclusions: The culture of children in the kitchen has vastly changed over time, with opportunities for children to learn basic skills not present in this
current climate. The potential for using cooking skills as a possible mechanism to prevent childhood obesity is re-emphasised in this study. The study argues that a greater awareness of age related skills and tasks for children in the kitchen should be promoted.

O.42.3
COMPARISON OF CHILD VERSUS PARENT PERCEPTIONS OF CHILD-LEVEL FOOD SECURITY IN A HISPANIC COHORT

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SIG: Socio-economic inequalities

Purpose There is a need to directly and accurately conceptualize and measure food insecurity in children as part of surveillance and monitoring efforts. The purpose of this study was twofold: 1) to test the validity and reliability of a newly developed 5-item Food Security Youth Questionnaire (FSYQ); and 2) compare parental versus child perceptions of child food security status in a Hispanic cohort. Methods Cross-sectional, baseline data from a cluster-randomized controlled trial involving 3rd-5th grade students and their parents from six elementary schools in the Austin, TX area were used for analysis. A sample of 166 children completed both the FSYQ and the validated 9-item Food Security Survey Module for Youth (FSSMY) for validity assessment. From that sample, 65 children completed the 5-item questionnaire a second time within three days to assess test-retest reliability. A separate sample of 671 children completed an adapted 5-item food security questionnaire and participant parents completed the child-referenced 8-item USDA Household Food Security Survey Module (HFSSM). Responses on food security questionnaires were compared between child-parent dyads. Concordance or agreement between child and parent dyads were calculated using Cohen's kappa (κ) statistic. Results Satisfactory Cronbach's alpha values were found for the 5-item FSYQ (0.74). The FSYQ showed acceptable content validity compared to the 9-item FSSMY (r=0.52). Test-retest reliability of the FSYQ between Time one and Time two had high percent agreement, 82%. Child and parent reports of child food security using the FSYQ and HFSSM questionnaire, found poor agreement, 56%, between inter-rater dyad responses (κ = 0.003, p= 0.92). Children reported themselves as being more food insecure 26% of the time on the 5-item questionnaire relative to their parent's report on the HFSSM child referenced questions. Conclusions This study shows that the FSYQ is valid and reliable. Furthermore, results highlight the discordance between child and parent reports of child food insecurity and suggest that children may be better at reporting their own food security experiences. Further qualitative and quantitative research is warranted in this area.

O.42.5
INDIGENOUS PARENT PERCEPTIONS OF THE FACILITATORS AND BARRIERS TO A SCHOOL NUTRITION POLICY

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SIG: Children and families

Objective According to the United Nations, poor nutrition affects indigenous peoples worldwide. A school nutrition policy (SNP) is one strategy to improve the food environment of indigenous children. However, there is little knowledge concerning SNP implementation in indigenous contexts. This study examined SNP implementation in an indigenous school in Canada that adopted a SNP as an approach to improve child nutrition. The research asks: What are indigenous parent perceptions of the facilitators and barriers to SNP implementation? Methods This is process evaluation research that seeks to understand factors influencing SNP implementation. One year after SNP adoption, surveys were administered to all parents of children attending the school (n=83, 66.4% response) to understand their perceptions of the SNP and factors influencing implementation. Descriptive statistics were generated using quantitative data analysis software. Survey results informed semi-structured interviews with parents (n=10). Interviews were transcribed and analyzed using a content analysis approach. Results were triangulated by integrating
interview themes with statistical frequencies. Results Facilitators to SNP implementation include parent support for the policy and the school’s role in food provisioning. Almost all (95%) of parents reported support for the SNP and, in interviews, perceived the SNP as helping to address obesity and chronic disease. Barriers include parents’ lack of support for guidelines concerning food served at special events, lack of knowledge about the SNP, and socioeconomic barriers. Fewer parents (67%) supported restricting unhealthy options at school celebrations and fundraisers. While most (60%) of parents believed that the school was successfully communicating with them about the SNP, none could not demonstrate a comprehensive understanding of the SNP in interviews. Finally, parents face barriers related to the cost and accessibility of healthy foods. Conclusions An understanding of parent facilitators and barriers to the SNP provides insights into strategies to address factors that may be interfering with effective SNP implementation (e.g., improving the communication of SNP guidelines to parents). This knowledge may be used to create effective school nutrition policies that improve nutrition and reduce risk for chronic disease in school-aged children in indigenous communities in Canada and worldwide.
SO.01: Physical Activity and Sedentary Behavior Interventions and Correlates in Children and Adolescents (Lounge)

SO.01.1 EFFECT OF A COMMUNITY-BASED, FAMILY-INVOLVED INTERVENTION ON OBJECTIVELY MEASURED PHYSICAL ACTIVITY IN BELGIAN PRIMARY SCHOOLCHILDREN: THE FEEL4DIABETES-STUDY

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SIG: Children and families

OBJECTIVE The Feel4Diabetes-study (F4D) (2015-2019) developed a community-based, family-involved intervention to enhance energy balance-related behaviours in primary school children and their families, living in low socio-economic areas. The present study aimed to evaluate the effect on light physical activity (LPA) and moderate-to-vigorous physical activity (MVPA) in Belgian children from parents at risk for the development of type 2 diabetes (T2D). METHODS The F4D-intervention involved three different levels: the school, community and family level. At the family level, parents were invited to participate in 6 counseling sessions if one of the parents had an increased risk on the development of T2D. For the present study, children of these parents were selected. During the counseling sessions (1 individual and 5 group sessions) information to promote physical activity (PA), healthy eating behaviours, and the reduction of sedentary behaviours within families was provided. Main outcome variables were LPA and MVPA, measured by ActiGraph accelerometers. Measurements were performed at baseline (March-June 2016) and mid-intervention (March-June 2017). The intervention effects were analyzed with Repeated Measures Manova, in SPSS statistics 22. RESULTS In total 148 children (mean age: 7.27±smn:0.99 years; 50.70% boys) from 58 Belgian primary schools (25 intervention and 33 control schools) were included. In the total sample, no intervention effects were found for LPA (p=0.89) and MVPA (p=0.18). Furthermore, there was no significant difference in change in children's LPA (p=0.98) and MVPA (p=0.44) between parents who attended 1 session, 2-4 sessions, 5-6 sessions and the control group. CONCLUSIONS This study showed that the F4D-intervention had no mid-term effect on LPA and MVPA in Belgian primary schoolchildren from parents at risk for the development of T2D. This may be explained by the fact that the counseling sessions mainly focused on parents so children were not directly involved. Due to the high drop-out during the first intervention year (12.9%), it might be beneficial to organize more individual sessions instead of group sessions. The mid-term intervention effects on PA in the parents will be examined in further research.

SO.01.2 THE ASSOCIATION BETWEEN THE SATISFACTION OF PSYCHOLOGICAL NEEDS, MOTIVATION, AND PHYSICAL ACTIVITY AMONG MEXICAN ADOLESCENTS

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SIG: Theories of motivation

Background: The proportion of young people obese or overweight (36.3% by 2016) in Mexico exceed those in many Western countries (e.g., in England 31% by 2014). Regular engagement in moderate-to-vigorous physical activity (MVPA) is important for the maintenance of healthy weight. Yet, in Mexico less than 60% of young people meet the recommended levels of MVPA. Despite such statistics, there has been little research attention given to the determinants of MVPA in Mexican adolescents. Purpose: Guided by self-determination theory, this study sought to test a theoretically-informed model of the motivational antecedents of MVPA in a sample of adolescents from Mexico City. Methods: Cross-sectional design. Adolescents (n= 138) aged 13-15 from 6 secondary schools in Mexico City completed an online survey to assess psychological need support from parents, peers, and physical education teacher, basic psychological need satisfaction, motivation towards exercise, and objectively measured MVPA for 7 consecutive days. Structural equation modeling was used to test the proposed model. Results: The hypothesized model demonstrated adequate fit to the data [?2 (161) = 336.84; p< 0.05; TLI=0.91; CFI=0.92; SRMR=0.08; RMSEA=0.08 (90% CI=0.76 to 0.10)]. Results showed perceptions of psychological need support from friends and family, but not physical education teachers, to positively predict basic psychological need satisfaction, which in turn positively predicted autonomous motivation. Yet, autonomous motivation did not predict MVPA. Conclusions: The role of family and friends is important for Mexican adolescent's autonomous motivation for physical activity. However, unlike in many other countries, motivation is not sufficient to predict physical activity outcomes, suggesting it would be worth exploring contextual factors that moderate this relationship.

SO.01.3
ASSOCIATIONS BETWEEN CHILD'S AND PARENTAL PERCEPTIONS OF PARENTAL STRATEGIES RESTRICTING SCREEN USE AMONG CHILDREN, SCREEN ENVIRONMENT, SCREEN TIME AND BODY FAT TISSUE AMONG CHILDREN.
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SIG: Children and families

Objectives: This longitudinal dyadic study investigated associations between (1) parent and child perceptions of parental strategies restricting screen use among children (2) screen environment at home, (3) time spent on screen behaviors by children, and (4) the main outcome, child body fat percentage at a follow-up. Methods: At Time 1 (the baseline), 879 dyads participated in the measurement. At Time 2 (7-8-month follow-up), data from 603 full parent-child dyads was collected. Children (age 5-11) and parents provided their self-report data. Child body fat was measured with bioimpedance method (Time 1 and 2). Results: Path analysis indicated indirect effects of the screen home environment (Time 1) on child body fat (Time 2), with child screen behavior (Time 2) mediating these associations. There was also a direct effect of child perceptions of parental strategies restricting screen use among children (Time 1) on child body fat tissue (Time 2), but no effect of parental perceptions of parental restrictions. Children perceiving their parents applying a higher level of screen use restrictions at the baseline had a lower body fat at the 7-8 month follow-up. These associations were found after controlling for age, gender, and child body fat at Time 1. Conclusions: If noticed by children, parental strategies restricting screen use may predict better obesity-related outcomes in children (i.e., lower body fat). Importantly, not parental, but child perception of these strategies mattered. Unlike the home screen environment, the effects of these parental restriction strategies were not mediated by the screen use behavior. Further research need to elucidate mechanisms through which parental restriction strategies affect child's obesity.

SO.01.4
BARRIERS AND FACILITATORS OF PARTICIPATING IN A COMMUNITY-BASED PEER-LED PHYSICAL ACTIVITY INTERVENTION FOR INDIVIDUALS WITH POOR MENTAL HEALTH AND MENTAL ILLNESS
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Objective: Peer support in physical activity interventions provide an opportunity for individuals to interact within a community of similar others, and address feelings of loneliness and isolation through enhanced feelings of connectedness (Kidd et al., 2015). Despite benefits of physical activity on mental health, individuals face barriers towards initial physical activity engagement and continued exercise behaviour (Soundy et al., 2014). Research is required to better understand how peer support within community-based physical activity interventions for mental health may reduce these barriers. Get Set to Go (GStG) is a multi-site community-based intervention implemented by Mind (mental health charity) to promote physical activity in mental health service users. Tailored peer support was provided to 1198 participants who registered to GStG within eight Local Minds, across four priority regions in the UK. This study investigated barriers and facilitators that participants experienced during their engagement in GStG.

Methods: Thirty-five participants (19 males, 16 females, M age=49.03 SD=11.57 years) with a range of mental health diagnoses participated in one of four focus groups conducted across the four regions. Experiences of barriers and facilitators towards engagement in physical activity sessions were explored. Inductive thematic analysis was conducted to identify, analyse and generate themes from data collected. Criteria (validity, credibility, reflexivity and conformability) were used to ensure trustworthiness. Results: Benefits of peer support for engagement in GStG included increased perceived social support, increased quality of connections and social interaction with similar others, and the creation of genuine friendships through feeling a valued part of the mental health community. Contrarily, reported barriers of engagement in the physical activity intervention included heightened anxiety due to fear of the unknown and feelings of guilt which developed through external pressure to engage in physical activity. Severe negative symptoms such as physical pain and prolonged exhaustion following an activity session led to reduced physical activity engagement and adherence. Conclusions: Strategies to capitalise on facilitators and mitigate barriers are essential to ensure long-term adherence to peer-led community-based physical activity interventions for individuals with mental illness. Peer support interventions should be designed to promote psychological wellbeing and encourage long-term maintenance of physical activity behaviours.

SO.01.5 EVALUATING THE IMPACT OF ONTARIO’S HEALTHY KIDS COMMUNITY CHALLENGE (HKCC) ON WEIGHT STATUS AMONG YOUTH: EVALUATION OF A NATURAL EXPERIMENT USING THE COMPASS DATA

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: The Healthy Kids Community Challenge (HKCC) is a community-based intervention funded by the Government of Ontario (Canada), to develop and provide local programs and activities to support healthy weights among youth. The first 9-month theme of the HKCC was launched in Sept. 2015 (Run. Jump. Play. Every Day), encouraging physical activity through a mix of active play, active transportation, sports and structured physical activity. The present study evaluates the impact of this HKCC theme on weight status among youth over time within the context of a natural experiment. Methods: A quasi-experimental design was used to examine the impact of the HKCC on 5 weight status outcomes among grade 9 to 12 students in the COMPASS study. COMPASS data from year 3 (T1 2014-15: baseline pre-HKCC), year 4 (T2 2015-16: HKCC intervention), and year 5 (T3 2016-17: post-HKCC follow-up) were used as both repeat-cross-sectional (T1 n=31,548, T2 n=31,457, T3 n=30,454) and longitudinal (T1-T3, N=3,906) samples. Ontario students in HKCC communities were placed into 1 of 3 intervention groups [T2 data collection post-HKCC finishing (I1), T2 data collection during HKCC (I2), T3 data collection pre-HKCC starting (I3)], Ontario student in non-HKCC communities were control group 1 (C1) and Alberta students were control group 2 (C2). Results: Repeat cross-sectional results and longitudinal results both found that over time, the HKCC had no significant impact on body mass index (BMI), body weight, having a BMI weight status classified as normal weight, overweight or obese. Conclusions: These robust quasi-experimental results suggest that the HKCC, a large community-based initiative to create communities
where it is easier for youth to lead healthier lives, did not have the desired impact on the 5 weight status outcomes examined here among older youth.

SO.01.6
THE ACCEPTABILITY AND FEASIBILITY OF A NOVEL PEER-LED SCHOOL-BASED PHYSICAL ACTIVITY INTERVENTION FOR ADOLESCENT GIRLS (THE G-PACT PROJECT)
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SIG: Children and families

Purpose: This study assessed the feasibility and acceptability of a novel peer-led physical activity (PA) intervention for adolescent girls aged 13-14 years. It was hypothesised that girls' PA levels would increase following engagement with the peer-led intervention. Methods: The intervention employed a three-tier peer-led model underpinned by Social Cognitive Theory (SCT) and Self-Determination Theory (SDT). The 8-week intervention was delivered in three schools and involved 233 participants. Each school recruited 12-16 girls to become PA-leaders, who received leadership training delivered by undergraduate PA students, who subsequently acted as their intervention mentors and role models. The PA-leaders were encouraged to support their school peers to engage in more PA. Two of the schools provided organised after-school PA opportunities which the PA-leaders actively promoted. The acceptability, practicality, engagement, and perceived success of the intervention was investigated using focus groups (peers, leaders & mentors) and interviews (teachers). PA levels were measured using wrist-worn ActiGraph Link GT9X accelerometers over 7-days. Qualitative analysis adopted deductive and inductive methods, using SCT and SDT as thematic frameworks, and then exploring additional emergent themes. ANCOVA analyses assessed change in all outcome measures over the intervention period. Results: The intervention was perceived as feasible and acceptable between mentors (n=6) and leaders (n=47). However, the relationship between leaders and their peers (n=196) suggested uncertainty in delivery and engagement. Disparity was reported from the peers in how much and what information was conveyed to them by their PA-leaders. Moderate to vigorous PA (MVPA) levels showed a positive trend in the two intervention schools who received the additional after-school club component although, this change was non-significant (p>.05). Conclusions: This intervention was reported to be feasible and acceptable among mentors and PA-leaders. Moreover, teachers were supportive of the intervention and the intervention demonstrates innovation incorporating undergraduate students as mentors and role models to adolescent girls. The after-school club component was particularly successful and well received by PA-leaders and peers, this was stronger when the students could self-select the activity. Further research is needed to clarify the roles and responsibilities for the PA-leaders.

SO.01.7
PHYSICAL ACTIVITY AND BODY-MASS INDEX AMONG DANISH SCHOOL-AGED CHILDREN BEFORE AND AFTER THE INTRODUCTION OF A NATIONWIDE SCHOOL REFORM: RATIONALE AND DESIGN OF A NATURAL EXPERIMENT
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SIG: Early care and education

Purpose: In 2014 the Danish Government introduced a wide-ranging school reform that applies to all public schools in Denmark. The reform is ambitious and centers on several aspects of the school structure and content. In a health promotion perspective, an important part of the school reform is an increased focus on physical activity (PA). It has now become mandatory to integrate in average 45 minutes of PA per
day in the regular school day. The purpose of the present study is to examine whether this nationwide legislative health initiative is effective in promoting PA and reducing body-mass index (BMI) in school-aged children. A secondary purpose is to examine whether the school reform induced changes in PA and BMI vary across socioeconomic and ethnic groups. Methods: Data from approximately n=3800 children from four historical observational studies conducted from 1998-2012 comprise the data used to evaluate pre-reform PA levels and trends. To evaluate post-reform PA levels, an additional data collection is conducted from 2017-18. Approximately n=2500 children are recruited to represent the historical study populations. Thus, the same year-groups are recruited from the same schools and measured in the same seasons as in the historical studies. PA is evaluated by waist-mounted accelerometry. BMI data will be collected from 2011-2018 from The Child Database on approximately 100,000 children each year. Information on ethnicity and parents' educational level is collected through national registers. In the absence of a control group, the interrupted time-series analysis will be used to evaluate pre- and post-reform PA and BMI levels and trends. Results: Changes in total-, school- and leisure time PA will be presented in strata of socioeconomic and ethnic groups. PA will be presented as time spent sedentary and in different intensity domains (low, moderate and vigorous). Conclusions: The introduction of the ‘45 minutes of PA per day’ initiative and the access to historical data on objectively measured PA provide a unique opportunity to evaluate whether a nationwide legislative health initiative is able to promote PA and BMI in school-aged children. The results may potentially be of great importance to Danish and International decision makers.

SO.01.8
STAND OUT IN CLASS: ACCEPTABILITY OF A STANDING DESK INTERVENTION IN UK PRIMARY SCHOOLS – A QUALITATIVE STUDY
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SIG: Children and families

Purpose: To explore the acceptability of a standing desk intervention amongst primary school children and their teachers. The Stand Out in Class study aims to increase the time children spend standing during school hours by promoting the use of a bank of 6 sit-stand desks situated in the school classroom. Teachers are trained in the use of the desks and are asked to ensure equal exposure to the desks by rotating children in their class throughout the school day. Teachers were provided with a guidebook which identifies a number of behaviour change strategies to encourage use of the desks. Findings of the process evaluation undertaken as part of this study are reported herein. Methods: Four Year 5 primary school classes recruited from four different schools in Bradford, United Kingdom, participated in the intervention which had a duration of 5 months. Four focus groups were conducted with 24 children (11 Boys, 13 Girls) aged 9-10 years and four interviews were conducted with four teachers (2 Male, 2 Female). Interview and focus group guides explored intervention acceptability and barriers to implementation of the intervention. Data were analysed using thematic analysis. Findings: The intervention was acceptable to both children and teachers, with teachers reporting an increase in the amount of time children spent standing up during class time. Teachers felt the desks were a positive addition to the classroom and aided children’s concentration level. Children liked the opportunity to choose whether to stand or sit. Barriers to implementation included teachers’ apprehension about how the intervention would be received by children and their ability to implement it, although this decreased after training. Teachers reported finding it difficult to rotate children twice daily as per the intervention guidance and stated that they needed to amend the protocol. Conclusions: Use of sit-stand desks in primary schools are acceptable to both children and teachers. Adequate training on the use of the desks is vital to ensure teachers feel comfortable implementing the intervention. Further research exploring of the effectiveness of sit-stand desks on reduction of sedentary behaviour is warranted.

SO.01.9
DAIRY PRODUCTS INTAKE IN RELATION TO OVERWEIGHT/OBESITY: FINDINGS FROM A CROSS-SECTIONAL STUDY AMONG CHINESE ADOLESCENTS IN BEIJING
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SIG: Children and families

Objective Childhood obesity is becoming a public health challenge in China. Beijing, the capital city of People's Republic of China, ranks top in terms of the prevalence of childhood obesity. Attention has been focused primarily on reducing energy intake and increasing energy expenditure for weight maintenance. However, there is some evidence indicating either a beneficial or neutral effect of dairy products intake on body weight. Thus, we sought to examine the association of dairy products intake with overweight/obesity.

Methods Two middle schools from Chaoyang District of Beijing, were invited into the study. All students in grade 7 whose age ranged between 11-15 years were invited to participate. In total, 539 students completed the questionnaire during class time. A 23-item food and beverage frequency questionnaire was filled in by students to collect eating behaviors. Exploratory factor analysis (EFA) and subsequent multiple logistic regression were conducted to identify the association of dairy products intake with overweight/obesity. Overweight and obesity was defined by using the references developed by Working Group on Obesity in China (WGOC). Results The rate of overweight was 18.45% for boys and 6.51% for girls, and the rate of obesity was 16.99% for boys and 8.88% for girls; boys had higher odds of being overweight/obese compared to girls (Adjusted OR=1.58, 95% CI:1.02 to 2.44, P=0.039). EFA identified that three patterns were popular among the adolescents: Pattern 1 was associated with sugar-sweetened beverages (SSBs), fast food and sweet food; Pattern 2 was associated with fruits and vegetables (FVs); Pattern 3 was associated with dairy products. Multiple logistic regression showed that pattern 3 was a protective factor of overweight/obesity (Adjusted OR=0.59, 95% CI:0.48 to 0.74, P Conclusions Our results suggest that high intake of dairy products is associated with a lower risk of overweight/obesity; increasing dairy products intake may be an effective strategy to address rising childhood obesity in China.

SO.02: Physical Activity Studies in Children and Adolescents (CES 2-3)

SO.02.1 LESSONS LEARNED FROM A FAMILY-BASED PHYSICAL ACTIVITY PROMOTION INTERVENTION: THE FAMILIES REPORTING EVERY STEP TO HEALTH (FRESH) Feasibility Study

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SIG: Children and families

PURPOSE: There is a need for high quality research aiming to increase physical activity in families. This study assessed the feasibility and acceptability of FRESH, a child-led family-based physical activity intervention delivered online. METHODS: In a two-armed randomised feasibility study 12 families (with an 8-10-year-old index child) were allocated to a 'child-only' (CHILD) or 'family' arm (FAM) of the theory-based FRESH intervention. Both received access to the FRESH website, allowing participants to select step challenges to 'travel' to target cities around the world, log their steps, and track their progress as they virtually globetrot. Only index children wore pedometers in CHILD; in FAM, all family members wore pedometers and worked toward collective goals. All family members were eligible to participate in the evaluation. Mixed-methods process evaluation at 8-week follow-up consisted of completing questionnaires assessing acceptability of the intervention and accompanying effectiveness evaluation, focussed on physical (e.g., fitness, blood pressure), psychosocial (e.g., social support), and behavioural (e.g., objectively-measured family physical activity) measures. Children provided dichotomous yes/no responses and adults responded on a 5-point agreement scale. Semi-structured focus groups were conducted with 11/12, and website engagement was explored. RESULTS/FINDINGS: All families were retained. Parents
enjoyed FRESH (mean±SD; FAM: 4.3±0.7, CHILD: 4.2±1.0) and all children liked FRESH and found it fun. More FAM children wanted to continue with FRESH, found the website easy to use, and enjoyed wearing pedometers. FAM children also found it easier to reach goals. Focus groups revealed that 5/6 CHILD families would have preferred whole family participation. Compared to CHILD, FAM exhibited greater website engagement as they travelled to more cities (36±11 vs. 13±8) and failed fewer challenges (9 vs. 14). Focus groups also revealed that most families wanted elements of competition. All children enjoyed being measured, and adults disagreed that there were too many intervention measures (overall: 2.2±1.1) or that data collection took too long (overall: 2.4±1.3). CONCLUSIONS: FRESH was feasible and acceptable to participating families, however, findings favoured the FAM group. Lessons learned from this study informed decisions to modify study design (e.g., discontinuation of CHILD) and intervention delivery (e.g., adding competition elements) for the upcoming pilot.

SO.02.2
AN INVESTIGATION OF PHYSICAL LITERACY AND MODERATE-TO-VIGOROUS PHYSICAL ACTIVITY IN CHILDREN AGED 8-12 IN SOUTHWESTERN ONTARIO
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SIG: Children and families

Purpose: Physical literacy has been described as means to achieve an active lifestyle (Physical and Health Education Canada, 2014) and as the building blocks of physical activity. In Canada, the Canadian Assessment of Physical Literacy (CAPL) was developed as a means to collect and monitor physical literacy in Canadian children 8 to 12 years of age. The aim of the present study was to investigate associations between the overall CAPL score and the 4 domains: daily behaviour (DB), physical competence (PC), knowledge and understanding (KU), and motivation and confidence (MC) and objectively measured moderate to vigorous physical activity (MVPA). Methods: From 2014-2016, 1081 children (ages 8-12 years; 51% male) from Southwestern Ontario (Canada) were measured for physical literacy using the CAPL protocol (including the 4 domains: DB, PC, KU, and MC). Time spent in MVPA (mins/day) was measured using PiezoRx pedometers over 7 days and estimated by averaging the time spent >110 steps/minute/day. Separate multiple regression models were used to determine the associations among the time spent in MVPA and the overall PL and the 4 domain scores (while controlling for gender, age, urban/rural/suburban status). Results/Findings: The results indicated that only 26.7% of children in Southwestern Ontario met the physical literacy requirements to achieve health benefits. Further, 43% (n=237) of males and 28% (n=144) of females met the 60 minutes of MVPA recommended by the Canadian 24-Hour Movement Guidelines (CSEP, 2016) with a mean of 60 minutes (SD=27.96) and 50 minutes (SD=21.86) for males and females, respectively. Participants who attained higher overall CAPL scores, and the 4 domains individually, also spent a greater time spent in MVPA (ps <0.001). Conclusions: Although positive correlations existed, the low levels of physical literacy and MVPA suggest that future studies should determine to what extent one influences the other and how best to promote physical literacy and MVPA to children to achieve health benefits.

SO.02.3
STUDENT-ATHLETES’ PERCEIVED PHYSICAL LITERACY IN PREDICTING COACHING EFFICACY AND LEADERSHIP BEHAVIOR
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SIG: Early care and education

Purpose: The concept of physical literacy (PL) has evolved to work as a guiding ideology in physical education, physical activity and health, while little is known for coaching context. This study aimed to examine the influence of perceived physical literacy (PPL) in predicting coaching efficacy and leadership behavior from the perceptions of student-athletes in Hong Kong secondary schools. Methods: A total of 352 student-athletes (M=14.78, SD=1.73, 200 boys) participated in this study. Perceived Physical Literacy Instrument for Adolescents (PPLI-A), Coaching Efficacy Scale (CES) and Leadership Scale for Sport
(LSS) for student-athletes, were adopted to assess the student-athletes' self-reported PL, perceptions of coaching efficacy and leadership behavior, respectively. Results: Hierarchical linear regressions revealed that student-athletes' knowledge and understanding of PL significantly predicted all the dimensions of coaching efficacy (18%-23%, p<0.01) and leadership behavior (15%-27%, p<0.05) except for autocratic behavior after controlling for the effects of demographic variables (such as age, gender, and training experience). The PPL attribute of sense of self and self-confidence also demonstrate significant predictions with coaching efficacy (17%-19%, p<0.01), while the PPL attribute of self-expression and communication with others only significantly predicted social support behavior (14%, p<0.05). Path analysis showed PPL of student-athletes has significant predictions to their perceptions of coaches' leadership and indirect influence mediated by their perceptions of coaching efficacy (βα; =-.57).

Conclusions: Discussion highlights that this study is the first empirical study to explore PPL in the coaching context and its strength in predicting coaching effectiveness. The study provides a new perspective for coaching education programs or coach-oriented interventions by emphasizing the concept of PL.

SO.02.4

ORGANISED SPORTS PARTICIPATION AND ADIPOSITY AMONG YOUNG PEOPLE OVER A TWO YEAR PERIOD.

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Overweight and obesity among young people is alarmingly high. Overweight and obesity during childhood and adolescence adversely affects almost every bodily system, and children and adolescents who are overweight or obese are more likely to experience increased rates of cardiovascular diseases and the metabolic syndrome, adverse psychosocial complications, and increased adult mortality. One of the most popular contexts for child and adolescent health promotion worldwide, including the promotion of physical activity, is organised sports. While hundreds of millions of children participate in organised sports worldwide, it is currently unknown whether time spent in organised sports is associated with levels of adiposity among young people. This study aimed to investigate bidirectional associations between participation in organised sports and adiposity over a two year period. Methods: Data were drawn from the Longitudinal Study of Australian Children. In total, 4033 participants (51% male) reported time spent in organised sports and had their body mass index, body fat percentage, and waist circumference measured at age 12, and again two years later. A cross-lagged panel model was used to examine bidirectional relationships over time, as well as potential interaction effects. Results: No relationships between sports participation and measures of adiposity were evident over time, in either direction. Thus sports participation did not predict later adiposity, and adiposity did not predict subsequent sports participation. There were no differences in the strength or direction of the relationships by type of sport (team or individual) or by sex. Conclusion: Organised extracurricular sports programs as they are currently participated in, governed, designed, and implemented had no association with levels of adiposity over time among 12- to 14-year-old Australian children and adolescents. Nonetheless, the popularity of sports supports the potential that they may be used for public health benefits. Policy and programmatic changes may be needed before organised youth sports can become effective as a public health intervention. However, a more nuanced and detailed understanding of the how and why organised youth sports do not lead to health benefits is needed before evidence-based changes can be made.

SO.02.5

THE RELATIONSHIP BETWEEN OBJECTIVELY ASSESSED PHYSICAL ACTIVITY INTENSITY AND WELLBEING IN ADOLESCENTS

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Despite overwhelming evidence for the benefits of physical activity (PA) for physical health, less...
is known about PA intensity and mental health in young people. Therefore, the aim of this study was to determine the cross-sectional and longitudinal associations between PA intensity (light, moderate, vigorous) and affective wellbeing among adolescents. A secondary aim was to determine if these relationships were moderated by sex, ethnicity, BMI-z (relative weight adjusted for age and sex) or socio-economic status. Methods: Students in Year 8 (at baseline)(n=1,421) from government-funded secondary schools in low socio-economic areas of Western Sydney (Australia) (mean age at baseline:12.9(0.54); 55.1% male) were assessed at baseline and 18-months. PA was objectively assessed for 1-week (5 weekdays and 2 weekend days) at each time point using accelerometers, and time (minutes/day) spent at each PA intensity was estimated. The short form Positive and Negative Affect Scale (PANAS) for Children was used to measure positive affective wellbeing. Linear mixed models were used to assess associations between time spent in different intensities of physical activity (min/day) and positive affective wellbeing. Potential moderators (i.e., sex, ethnicity, BMI-z or socio-economic status) of wellbeing were explored. Results/findings: PA intensity was associated with positive affective wellbeing for adolescents. A greater proportion of time spent in light activity (B= 0.016, p<0.0001) was associated with positive wellbeing, and remained consistent at 18-months. Vigorous PA was associated with positive affective wellbeing (B=0.041, p<0.05) and more so for females than for males (B=-0.047, p<0.05). At 18-months the relationship between vigorous PA and positive wellbeing was stronger than at baseline (B=0.027, p<0.1). Conclusions: Our findings highlight the importance of adolescents engaging in higher intensity PA for improving wellbeing. Females appear to benefit most from engaging in vigorous PA compared to males, which might be explained by existing lower levels of PA reported by females compared to males. Alternatively, PA may yield other improvements for females (e.g., self-esteem, self-concept and appearance) which also enhance wellbeing. Strategies tailored specifically according to sex, which promote relevant opportunities (e.g., activity type and delivery methods) to engage in more vigorous PA, may be needed to enhance affective wellbeing.

SO.02.6

PHYSICAL ACTIVITY IS ASSOCIATED WITH LOWER ALLOSTATIC LOAD AMONG INDIGENOUS UNIVERSITY STUDENTS WHO EXPERIENCE HIGH LEVELS OF RACIAL DISCRIMINATION

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SIG: Socio-economic inequalities

Purpose: Racial discrimination is a stressor shown to negatively affect health and wellness across minority populations. Allostatic load (AL) provides a model for assessing physiologic dysregulation that may help us understand how racism can influence physical health, yet limited research has directly examined this association. This study examined the impact of racial discrimination on AL among Indigenous university students, and the role that physical activity may play in buffering this effect. Methods: Data were collected through in-person surveys and physical measures across seven biomarkers for Indigenous university students (N = 150, median age = 26 years). Participation in leisure-time physical activity was self-reported. Poisson regression was used to examine associations between past-year racial discrimination (high vs. low) and allostatic load score (range: 0-7). Effect modification by physical activity was examined through stratified analyses. Results: Overall, 75% of students experienced racial discrimination in the past year, with the majority reporting high levels (i.e., across 3 to 9 situations) in that time. In a Poisson regression model adjusted for age, those who had experienced high levels of discrimination had an AL score that was 0.30 points higher than those who had experienced low to moderate discrimination in the past year (95% CI 0.05 to 0.56, p = 0.02). Among those reporting insufficient physical activity (37% of sample), high racial discrimination was associated with a 0.7 point increase in AL (95% CI 0.33 to 1.10, p = 0.001). Among those reporting sufficient physical activity (63% of sample), racial discrimination had no apparent association with AL score. Conclusions: The results of this study, combined with previous work, highlight the negative consequences of racism for Indigenous peoples in Canada. Findings suggest racism may contribute to physiologic dysregulation among adults, as evidenced by elevated AL scores. This may, in turn, contribute to health inequities with age. Effective policy and action is needed to reduce high levels of racism; while this work unfolds, physical activity may be a tool that Indigenous adults can use to help buffer the physiologic impacts of racism on the body.
SO.02.7
AVAILABILITY OF PHYSICAL ACTIVITY DESTINATIONS AND PHYSICAL ACTIVITY AMONG ADOLESCENTS IN CHENNAI, INDIA
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SIG: Policies and environments

Purpose: Physical activity is low among adolescents in India. The built environment is likely to influence adolescents' engagement in physical activity but this has not yet been examined in India. This study examined associations between self-reported availability of physical activity destinations and visitation, engagement in physical activity at these destinations and overall moderate-vigorous intensity physical activity (MVPA) outside school hours and on non-school days. Methods: The BE ACTIV! India Study recruited adolescents aged 12-17 years (n=324) and their parents from households in diverse areas of Chennai, India. Adolescents and parents self-reported time taken to walk to 12 and 9 physical activity destinations, respectively. Adolescents reported the frequency they visited and engaged in physical activity at these destinations. MVPA on a non-school day and outside school hours was objectively measured using accelerometry. Linear regression examined associations between availability of physical activity destinations (=10 min walk) and MVPA. Logistic regression models determined the odds of visiting and engaging in PA (=once/week) at the respective destinations. All models adjusted for key covariates.

Results: Small public parks (46%) and indoor recreation/exercise facilities (35%) were most commonly reported by adolescents as being =10 min walk from home. All other destinations were reported by <20% adolescents to be close to home. Adolescents who reported living =10 min walk to each PA destination had higher odds of visiting and engaging in physical activity at least once/week at each of these destinations. There was an inverse association between parent perceptions of availability of public open space and MVPA on non-school days (B=−6.05, 95%CI=−11.54, -0.56). No other associations were observed with MVPA outside school hours or on non-school days. Conclusion: The results indicate that proximity to physical activity destinations is associated with visiting and being active at these destinations, however, the lack of associations with objectively measured MVPA suggests that other factors may more strongly influence overall physical activity among adolescents. It is possible that adolescents over-reported the frequency of visiting and being active at these destinations or that physical activity undertaken at these locations was not of a sufficient intensity to contribute to overall MVPA.

SO.02.8
CAN THE MOBLEES MOVE CANADIAN CHILDREN? INVESTIGATING THE IMPACT OF A TELEVISION PROGRAM ON CHILDREN'S PHYSICAL ACTIVITY
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SIG: Children and families

Objectives: The effects of messaging about physical activity and sedentary behavior purposefully integrated into children's TV programming on children's behaviour is unknown. The Moblees is a Canadian childrens' show that explicitly promotes physical activity. Two studies were conducted to 1) examine whether children were more physically active when watching a Moblees episode, and 2) explore parental perceptions of the show. Methods: Study 1 was an experimental study with 21 families randomized to watch an episode of The Moblees versus a control condition. Movement was assessed through accelerometry and observation. A Chi-square test was used to compare the direct observation proportions of children sitting between intervention and control conditions. Independent t-tests were performed to examine the differences in total vector magnitude counts between the experimental and control groups. Study 2 was an online cross-sectional study with 104 parent/child dyads that included viewing an episode of The Moblees. To identify correlates and predictors of parent-reported child PA during viewing The
Moblees compared to other TV programs, Pearson's correlations and a linear regression were calculated, respectively. Results: In study 1 there was a significant association between condition and whether or not children remained sitting \( \chi^2 = 55.96, \ p < .001 \). There was a significant difference in counts between the two conditions, \( t(13.61) = 2.29, \ p < 0.05 \). Children randomized to the experimental group (i.e., Moblees) moved more compared to control. In study 2 the majority (76%) of parents reported that their child engaged in some physical activity during viewing. Parent encouragement during viewing was the strongest predictor of child physical activity while viewing (\( \beta_a = .30, \ p<.01 \)). Conclusion: Television content that includes messaging physical activity and sedentary behaviour, and positive portrayals of physical activity may influence the physical activity of young children. Although the benefits of such modest movement are not clear without further evidence of accumulation over time and/or transfer to other settings, television programming might provide a far reaching medium for knowledge translation.

SO.02.9
THE IMPACT OF AMBIENT FINE PARTICULATE AIR POLLUTION ON PHYSICAL ACTIVITY AMONG FRESHMEN STUDENT WITH DIFFERENT BODY WEIGHT STATUS: A COHORT STUDY IN BEIJING

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SIG: Policies and environments

Objective: We aimed to assess the impact of ambient fine particulate matter (PM2.5) air pollution on physical activity among freshmen students in different body weight status living in Beijing by use of follow-up data. Methods: We conducted 4 follow-up health surveys on 3,481 freshmen students from Tsinghua University from 2012 to 2013 and 2,392 freshmen (68.72%) completed BMI measurement and all of the 4 surveys. Linear individual fixed-effect regressions were performed based on repeated-measure physical activity-related health behaviors and ambient PM2.5 concentrations by weight status and gender among the follow-up participants. Results: An increase in ambient PM2.5 concentration by one standard deviation (43.74 \( \mu \text{g/m}^3 \)) was associated with more reduction in overweight participants than normal-weight participants in weekly minutes of vigorous physical activity, moderate physical activity and moderate to vigorous physical activity (MVPA) (i.e., overweight: 44.81, 95% CI = 31.89, 14.10, \( p<0.001 \); normal-weight: 23.00, 95% CI = 60.43, 29.19, \( p<0.001 \)). The impact of ambient PM2.5 concentration on weekly total minutes of moderate physical activity tended to be greater among males with normal-weight than among females with normal-weight. Conclusions: The detrimental impact of air pollution on physical activity was more among freshmen with overweight than counterparts with normal-weight participants. These novel findings require replication in other Chinese cities and populations.

SO.03: Nutrition Interventions and Methods (Concord 1)

SO.03.1
USING BIG DATA TO BETTER UNDERSTAND FOOD CHOICE AND RECREATIONAL FACILITY USE AMONG YOUNG ADULTS

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SIG: Ageing

Purpose: To build a data system to study predictors of food choice and recreational facility use among young adults residing at a university. Young adults (ages 18-21) residing on a university campus are transitioning from a home environment that often offers structure and support to a more independent living environment. Once on the university campus, young adults make 100% of their eating and physical activity decisions within the university and local community environment. The habits developed during this time may influence their eating and physical activity behavior post university. Methods: Students from Fall 2013 through present, living on a university campus and participating in the university dining plan, are the sample population. Approximately 6 university data systems used to manage and facilitate the operation of
a large urban university in the US were merged. Specifically, systems that contained information on student food purchases, recreational facility use, student organization participation, academic schedule, academic achievement, residential facility use, and demographic characteristics were merged using the university student identification number. Eleven nutrients (such as calories, fiber, carbohydrates) were linked to the food purchase data. A healthy food score was constructed. Results/Findings: More than 17,000 students are represented in the dataset. Preliminary analysis finds that students spend approximately $265 on fast food each semester. The average calorie content of a fast food purchase is 654 calories. On average students utilized the recreational facilities 8.5 times per semester. Being female, participating in a Greek organization, and more use of the recreational facilities were associated with healthier food purchases. While being older, being African American, being an International student, and having a lower income were associated with less health food purchases. Conclusions: This project is ongoing and developing. The research team is working to 1) identify additional data systems to link to the current dataset, 2) develop research questions utilizing the dataset, and 3) develop grant proposals to conduct intervention studies using the dataset.

SO.03.2
PSYCHOMETRIC PROPERTIES OF THE TX SPROUTS GARDENING AND NUTRITION QUESTIONNAIRE

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SIG: Children and families

Purpose: To examine the validity and reliability of the TX Sprouts Gardening and Nutrition Questionnaire in assessing gardening, nutrition, cooking preferences, attitudes, self-efficacy, and knowledge among 3-5th grade Texas children and their parents. Methods: Children and parents participating in a cluster-randomized controlled gardening, nutrition, and cooking intervention, called TX Sprouts, completed the questionnaire packet at baseline. The constructs assessed included: (i) self-efficacy to cook and garden FV (10-items-children; 11-items-parents), (ii) preferences for FV consumption (36-items), (iii) cooking and gardening attitudes (6-items-children; 14-items-parents); (iv) engagement in family gardening activities (6-items-children; 9-items-parents); (v) family meal behaviors (6-items-children; 7-items parents); and (vi) nutrition and gardening knowledge (7-items). Internal consistency was evaluated with Cronbach’s alpha (a) and intra-rater reliability was estimated via Spearman’s rank correlation coefficients (r). Results: Participants completing the questionnaire packet included 572 children (9.4 ±smn;0.6 y) and 95 parents (37.8 ±smn;6.0 y, 90% mothers). Internal consistency (IC) was good for preferences for FV for children and parents (a=0.85 & 0.83), engagement in family gardening activities for children, and self-efficacy to cook and garden FV, cooking and gardening attitudes, and family meal activities for parents (a=0.80-0.86). IC was acceptable for self-efficacy to cook and garden FV and cooking and gardening attitudes for children (a=0.78 & 0.76). IC was questionable for engagement in family gardening activities for parents (a=0.65); and poor or unacceptable for family meal activities for children, as well as the nutrition and gardening knowledge for both children and parents (a=0.17-0.53). Intra-rater reliability was strong for cooking and gardening attitudes for children (r=0.69), moderate for children and parents for self-efficacy to cook and garden FV, preferences for FV, engagement in family gardening activities, and nutrition and gardening knowledge (r=0.41-0.58); moderate for family meal activities for the child (r=0.43), but weak for family meal activities for the parent (r=0.30). Conclusion: TX Sprouts Gardening, Nutrition, and Cooking Questionnaire provides a comprehensive assessment of psychosocial behaviors/constructs linked to nutrition, cooking, and gardening and may be a useful tool for evaluation of garden-based interventions among children in 3-5th grade and their parents.

SO.03.3
EATING ADVICE TO STUDENTS (EATS): DEVELOPMENT AND PROCESS EVALUATION RESULTS OF A BRIEF ONLINE NUTRITION INTERVENTION FOR YOUNG ADULT UNIVERSITY STUDENTS

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Objective: Young adults are a priority population for nutrition intervention due to the high prevalence of unhealthy eating behaviours, high risk of weight gain, and the importance of this life-stage for developing lifelong eating behaviours. Innovative intervention strategies are needed to reach and engage young adults, while more detailed reporting of intervention development and testing would facilitate progression of research in this challenging area. The aim is to describe the development of a targeted nutrition intervention for young adults in the university setting, and report process evaluation results from a pilot RCT. Methods: EATS (Eating Advice To Students) brief online nutrition intervention for young adult university students was developed using the PRECEDE-PROCEED framework, including: a systematic review of brief nutrition interventions to identify effective behaviour change techniques (BCTs), a cross-sectional survey of university students eating behaviours to identify target eating behaviours, and consultation with a steering committee of key stakeholders (university staff and students). A 3-month pilot RCT with 126 students aged 17-35 years from the University of Newcastle, Australia, will be conducted in February-June 2018. Process evaluation measures will include intervention acceptability (online survey immediately post-intervention) and objective intervention usage data (collected in real-time). Results: Four target eating behaviours (consumption of vegetables, fruit, discretionary foods, breakfast), and 26 BCTs (e.g. goal-setting, feedback on behaviour), were incorporated in EATS. EATS was developed as a website with four components 1) brief screening quiz providing personalised feedback on eating behaviours and barriers to healthy eating, 2) providing information, tips and strategies for each target behaviour, and two guided exercises to facilitate behaviour change; 3) goal-setting and 4) creating strategies. Process evaluation results will describe mean±srm;SD rankings of satisfaction, usability and appropriateness for each component and overall, and website usage statistics (e.g. session duration, page visits). Conclusion: The EATS intervention presents an innovative solution to address many of the difficulties faced in targeting young adults to improve their eating behaviours. Given the lack of interventions specifically targeted to young adults, and the strong methodological approach undertaken in developing EATS, this work provides significant contribution to the advancement of this area of research.
methodologies are validated and can be applied to measure dietary quality of students at schools. Researchers need to weigh the costs and benefits of each food waste method in order to determine the most appropriate application for studying the nutrients that students consume and waste at school.

SO.03.5
DEVELOPMENT OF A HOME FOOD ENVIRONMENT QUALITY SCORE USING THE HEALTHY EATING INDEX-2010
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: To develop and evaluate psychometric properties of a tool that describes the overall quality of the home food environment (HFE). Methods: The Home Inventory for Describing Eating and Activity (Home-IDEA) is a validated checklist for assessing food items (n=108) present in the home at a single time-point. The Healthy Eating Index (HEI) is a measure of diet quality in conformance to the Dietary Guidelines for Americans. A Home-IDEA Quality Score was developed using the HEI-2010 algorithm and evaluated against the National Food Acquisition and Purchase Survey (FoodAPS) food-at-home data set. Content validity was tested for each Home-IDEA item and corresponding edible gram weights. Internal criterion validity was tested by examining contributions of foods to components and total scores. Range and sensitivity were examined on five hypothetical HFEs representing diet patterns ranging from "Minimally healthful/Low HEI" to "Very healthful/High HEI." Finally, concurrent external criterion validity was tested by comparing Home-IDEA quality scores (n=4,202) calculated from items found on the Home-IDEA (limited inventory) to all household foods captured in the FoodAPS database (complete inventory).

Results: Content validity testing resulted in 104 foods being retained. Internal criterion testing demonstrated that 42 foods (40%), changed component scores by >5%; however, no single food changed a total Home-IDEA Quality total score by >5%. Testing of hypothetical HFEs resulted in a range of scores in the expected directions, establishing sensitivity to varied HFEs. Comparing the FoodAPS and Home-IDEA quality scores established external criterion validity. Paired t-tests indicated the means for all components/total score of the FoodAPS and Home-IDEA scores were significantly different (p<0.05). However, these differences were not practically significant. The Home-IDEA inventory (representative food items) had similar range and sensitivity for detecting differences in the HFE when compared to the complete HFE inventories (complete inventory of foods). Conclusions: This study demonstrated the Home-IDEA quality score can accurately assess the overall quality of the HFE, thus contributing a novel approach for examining home food environments. Future research can test interventions modifying the HFE quality to improve individual dietary intake.

SO.03.6
VALIDITY OF VARIOUS MEASURES TO ASSESS COMPLIANCE OF SCHOOL CANTEEN MENUS
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SIG: Implementation and Scalability

Purpose: Internationally school healthy eating policies have been developed to help combat childhood obesity. Whilst direct observations are the 'gold standard' method for assessing school nutrition environments, this measure is typically costly to administer and impractical for ongoing monitoring at a population level. As such, there is a need for valid, low-cost tools to quantify and monitor policy impact. The aim of this study is to describe the development of measures to assess policy compliance and assess their validity compared to the 'gold standard' of direct observations. Methods: A cross sectional study took place in the Hunter region of NSW, Australia involving 38 primary schools already participating in a randomised trial to improve school healthy canteen policy compliance, where observations (Gold Standard) were already occurring. Compliance with the policy was assessed using four methods: 1)
Principal self-report via telephone; 2) Canteen Manager self-report via a telephone; 3) Comprehensive assessments by trained dietitians and 4) Quick Menu Audits conducted by trained dietitians. Percentage agreement, kappa, sensitivity and specificity of each method was compared to observations (gold standard), together with the direct time taken and costs of each of the four methods. Results/Findings: Agreement with observations was substantial for the Quick Menu Audit (kappa=0.68), and moderate for the Comprehensive Menu Audit (kappa= 0.42). Likewise, the Quick Menu Audit had the highest sensitivity, specificity and positive and negative predictive values, followed by the Comprehensive assessment. Both principal and canteen manager self-report on compliance resulted in poor percentage agreement, kappa, specificity and positive and negative predictive values with observational audits. The self-reported measures had the lowest cost, followed by the Quick Menu Audit and lastly the Comprehensive assessment. Conclusions: Findings from this study indicate that self-reported measures are unlikely to provide an accurate representation of policy compliance. The Quick Menu Audit represents an inexpensive, relative to a gold standard approach, and valid method that can be used to assess healthy canteen policy compliance on a large scale. The availability of such valid measures is essential to support future research assessing the impact of intervention strategies to overcome policy implementation failure in this field.

SO.03.7
ASSOCIATIONS BETWEEN FOOD OUTLET AVAILABILITY AND CHANGE IN BODY MASS INDEX: A LONGITUDINAL STUDY USING 8864 ADULTS FROM THE YORKSHIRE HEALTH STUDY, UK
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SIG: Policies and environments

Objective: Investigate associations between the availability of food outlets at baseline within the home neighbourhood and change in body mass index (BMI). Methods: Longitudinal data collected by questionnaire, from the Yorkshire Health Study (YHS) (n=8864; wave I: 2010-2012, wave II: 2013-2015) for adults aged 18-86 at baseline were used for analyses. BMI was calculated using self-reported height (cm) and weight (kg). The Ordnance Survey (OS), a national mapping agency provided food outlet locations (accurate to the level of building footprints) for 2010 from the Point of Interest (Pol) dataset to correspond with the timing of baseline YHS data. Food outlets were split into 'fast-food outlets', 'large supermarkets' and 'convenience or other food retail outlets'. To define availability, home addresses were geocoded to postcode zone centroids and neighbourhood was defined as a 2km radial buffer around these centroids. Food outlets that were within each 2km buffer were then counted using a point in polygon analysis in ArcGIS V10.2.2 (ESRI Inc., Redlands, CA). Multi-level linear regression was used to examine the association between the count of food outlets and change in BMI, accounting for the clustering of measurement occasions within individuals. Results: Overall, individuals had 8.12 (±smin;9.52) fast-food outlets, 1.28 (±smin;1.21) large supermarkets and 19.08 (±smin;22.23) convenience or other food retail outlets within their residential neighbourhood. Mean BMI did not increase over time in any models. There was no evidence of an interaction (p>0.05) between time and the baseline count of fast-food outlets (b=0.002 95% CI [-0.001, 0.007]), time and large supermarkets (b=0.006 95% CI [-0.027, 0.040]), and time and convenience stores and other food retail (b=0.001 [-0.001, 0.003]). Conclusions: Research investigating links between the food environment and BMI is largely cross-sectional, limiting causal inferences. Contrary to popular policy initiatives carried out by policymakers including public health and planners, change in BMI was unrelated to the availability of fast-food outlets, large supermarkets, or convenience or other food retail outlets at baseline in a large UK dataset. Given that the average change in BMI was negligible it is perhaps unsurprising we did not find evidence of an association.

SO.03.8
AVAILABILITY OF HEALTHIER VS. LESS HEALTHY FOOD AND FOOD CHOICE: AN ONLINE EXPERIMENT
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SIG: Policies and environments

Objective: It is increasingly recognised that our environments shape our behaviour, but little research has addressed whether healthier or less healthy food cues have a greater impact. This online study examined the impact of the number of (i) healthier and (ii) less healthy snack foods available on food choice, as well as possible moderation by (a) cognitive load and (b) socioeconomic status. Methods: UK adults (n=1,511) were randomly allocated to one of six groups (two cognitive load conditions x three availability conditions). Participants memorised either a simple (e.g. 7777777; low cognitive load) or a complex 7-digit number (e.g. 8529713; high cognitive load). While remembering this number, participants were asked which of a selection of foods they would most like to eat right now, with the selection comprising: (a) two healthier and two less healthy foods, (b) six healthier and two less healthy foods, or (c) two healthier and six less healthy foods. Results: Compared to being offered two healthier and two less healthy options, the odds of choosing a healthier option were twice as high (OR: 2.0, 95%CI: 1.6, 2.6) when offered six healthier options and two less healthy ones, while the odds of choosing a less healthy option were four times higher (OR: 4.3, 95%CI: 3.1, 6.0) when offered two healthier options and six less healthy ones. There were no significant main effects or interactions with cognitive load or socioeconomic status. Conclusions: This study provides a novel test of the relative impact of healthier vs. less healthy food cues on food choice, suggesting that less healthy compared with healthier food cues may have a larger effect on selection, and thus removing less healthy as opposed to adding healthier food options would have greater impact on healthier choices. Studies are now needed in which choices are made between physically-present food items, and which alter availability in different ways.

SO.03.9 SUSTAINABILITY VIA ACTIVE GARDENING EDUCATION (SAGE): DEVELOPMENT OF CULTurally APPROPRIATE PARENT MESSAGES USING NOMINAL GROUP TECHNIQUE (NGT) GROUPS Lorenzo E1, Szeszulsiki J1, Arriola A1, Lee RE1.1Center for Health Promotion and Disease Prevention, College of Nursing and Health Innovation, Arizona State University, Phoenix, Arizona.

SIG: Early care and education

Purpose: Community-based interventions implemented in early care and education centers (ECEC) among preschoolers have limited effectiveness to change behavior outside the ECEC, without reaching parents. Nominal Group Technique (NGT) is a systematic method to generate ideas in a group, while minimizing dynamics that inhibit participation of members. This study describes how NGT was used to create culturally appropriate parent messages to increase physical activity (PA) and fruit and vegetable (FV) consumption at home. Methods: The SAGE Community Advisory Board (CAB) participated in two NGT focus groups to develop parent messages for children receiving the SAGE curriculum. The CAB consisted of leaders representing early childhood education, gardening, and Hispanic/Latino (HL) organizations. The CAB was asked to generate ideas for HL parent messages to increase PA and FV consumption of children outside ECEC. They were given ten minutes to independently brainstorm short messages. Next, each member presented one idea at a time until all ideas were exhausted. Each idea was discussed and refined by the group for clarity. CAB members independently rank ordered the top five messages, which were then ranked by preference. Results: The CAB (N = 7) included 4 white non-HL, 2 white HL, and 1 black non-HL members (6 females and 1 male). NGT produced 48 PA and 36 FV messages. The five most highly ranked PA items included dance together, children are happiest when moving, go on a nature walk and collect items, visit a local park and play [active games], and play catch with your children. The top five FV messages included have your kids help shop, purchase, wash, and prepare FV; visit a community garden, farmers market, or U-pick farm to show children where FV come from; young children are creating eating habits for life and eating FV can be one of those habits; choose a “FV of the week” and learn different ways to prepare them; and offer FV substitutions or additions in recipes. Conclusions: NGT is an innovative and effective method to develop robust, culturally tailored parent messages to be used in conjunction with school-based interventions to maximize translation to the home environment.

SO.04: Physical Activity, Sports and Fitness Interventions (Concord 2-3)
SO.04.1
HEALTH PROMOTION INTERVENTIONS DELIVERED THROUGH PROFESSIONAL SPORT: A SYSTEMATIC REVIEW
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Professional sporting organizations are in an optimal position to promote healthy lifestyle behaviors and positive social change. While sport is increasingly being recognized as a strong entry point from which to engage adults in health initiatives, the nature and effectiveness of health promotion interventions delivered through professional sport is unclear. The purpose of this study was to systematically collate, evaluate and synthesize the evidence on health promotion interventions targeting adults through professional sport.

Methods: Systematic database searches were conducted in CINAHL, MEDLINE, SportDISCUS, SCOPUS, the Cochrane Database of Systematic Reviews and Web of Science. Studies were included if they: were delivered in a professional or semi-professional sporting context; targeted at least one health outcome (e.g., weight, physical activity, dietary intake); targeted adults aged =18 years; were published in English; and included a pre- and post-test measure of the primary health outcome.

Results: Database searches yielded 8,171 hits. After excluding duplicates (n = 3,288), we excluded a further 4,809 studies based on title and 40 based on abstract. A total of 34 studies were retained for full text screening and of these, 11 intervention studies targeting outcomes such as body weight, physical activity, diet and chronic disease risk met the inclusion criteria for this review. Nine studies were delivered through professional Football/Soccer organizations in England (n=7) and Scotland (n=2), 1 was delivered through Rugby League in England and 1 was delivered through Rugby League and Rugby Union organizations in Australia. Sample sizes ranged from 9 to 2,026, and program duration ranged from 6 weeks to 3 years. Seven studies were designed specifically for men, who are recognized as a hard-to-reach population for health promotion. The success of interventions was varied, however, studies that were most effective were multicomponent interventions combining education and practical activities, studies that capitalized on the sport ‘experience’ and studies that were gender-sensitized in their design and delivery.

Conclusions: Health promotion interventions delivered through professional football can engage and improve health outcomes in adults from hard-to-reach and disadvantaged population groups. Further research is needed to assess the effectiveness of interventions delivered through other professional sports.

SO.04.2
PROMOTING LIFE-SKILLS, PHYSICAL ACTIVITY AND HEALTHY DIET IN HIGH SCHOOL SOCCER PLAYERS: RESULTS FROM THE WAVE~RIPPLES FOR CHANGE CHILDHOOD OBESITY PREVENTION 2-YEAR INTERVENTION
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SIG: Implementation and Scalability

Purpose: To evaluate the impact of a 2-y diet (fruit/vegetable [FV], saturated fat, added sugar), physical activity (PA, step/d) and life-skills intervention for obesity prevention in high school (HS) soccer players. Secondarily, we examined the association between sex, ethnicity, participation in National School Lunch Program (NSLP), and youth’s self-reported parental practices on and youth’s diet and PA. Methods: Soccer players (n=405; age 15.3±smn;1.1y; 57% female; 40% Latino; 39% NSLP participants (80% Latino)) completed baseline demographic questionnaires and diet/PA assessments (Block Food Frequency Questionnaire; 7-d Fitbit-zip steps). Participants were divided into intervention/comparison groups by school teams/geographic location (non-randomized). Intervention participants (n=293) received sports nutrition lessons, life-skill workshops, and virtual experiential learning for 2-y, while comparison received none. ANOVA was used to examine changes in intakes of FV, saturated fat, added sugar, and PA over the intervention, while ANCOVA models examined the differential between group changes. Linear regression was used to examine differences in diet/PA between race/ethnicity (Latino/non-Latino),
biological sex, and NSLP (participants/non-participants). At baseline, the association between youth self-reported parental practices and diet/PA was examined with Pearson correlation. Results: At 2-y, 208 participants finished exit assessments (51% retention rate), without significant changes in pre/post FV intake or differential between group changes in FV. Both groups significantly decreased saturated fat and added sugar intake, but the intervention group had greater decreases (10 grams/d) in added sugar vs. control (9.3 g/d). As expected, PA was lower (1800 steps/d) in both groups out-of-soccer season vs. in-season (9374 steps/d). Compared to non-Latino participants, Latinos had higher intakes of added sugar (+15 g/d; p=0.023) after controlling for sex and NSLP. Youth with higher FV consumption and PA, and lower intakes of added sugar, self-reported that parents frequently practiced role modeling healthy eating and PA, provided healthy foods, and set rules about what youth ate and screen time. Conclusions: HS soccer players are receptive to sport nutrition and life-skill building that focuses on sport performance; results showed decreased saturated fat and added sugar intake and maintained FV intake. Future research should focus on maintaining PA in youth when not engaged in sport to establish life-time PA.

SO.04.3
PROMOTING HEALTHY LIFESTYLE BEHAVIOURS AMONG INDIGENOUS AUSTRALIAN CHILDREN THROUGH AN AFTERSCHOOL CULTURAL ACTIVITY PROGRAM
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SIG: Children and families

Purpose: The two-way health disparity and social disadvantage between Indigenous and non-Indigenous Australians is a significant public health concern. Evidence from our previous formative study indicates that Indigenous populations can achieve better health and well-being outcomes if they maintain a strong connection with their culture through cultural practices, knowledge and expressions. This study aimed to determine potential efficacy of a pilot afterschool cultural activity program on promoting physical activity, sedentary time and healthy eating in Indigenous children in New South Wales, Australia. Methods: The afterschool cultural activity program is an 8-week program for children aged 8-12 years. The pilot program uses a pre-post design and a framework of respect, relationship, responsibility, reciprocation and a 'two-eyed seeing' approach to guide the research and development of the program. Physical activity and sedentary time were objectively measured at baseline and post program using accelerometry. Outcome variables were percentage of time in sedentary, light, moderate, vigorous and moderate-to-vigorous physical activity. Food intake was assessed using repeated 24hr recall methodology in a paper-based interviewer administered format following a multiple pass approach pre- and post-program. Food intake analysis was aided by FoodWorks nutrient analysis software using the AUSNUT 2011/12 food consumption database. Changes in lifestyle behaviours were assessed using t-tests and Mann-Whitney U tests. Interpretation of the data was done through reciprocal yarning with local community members. Results: Physical activity, sedentary time and food intake was assessed in a total of 16 children (9 male). There were no significant differences in physical activity or sedentary time. Dietary analysis showed significant changes in daily dietary energy consumption (mean difference = -2197kJ/day, p<0.05), total fat consumption (mean difference = -39kJ/day, p<0.05) and added sugar consumption (mean difference = -361.9kJ/day, p<0.05). Seasonal festivities impacted the post data collection. Conclusions: The afterschool cultural activity program is a unique program developed and run by communities to promote cultural connectedness and healthy lifestyles in Indigenous Australian children. The community-based interpretation of the results indicated a need for more targeted cultural activities that influence and include healthy eating and physical activity. A larger pilot study is currently underway in three Indigenous communities.

SO.04.4
IMPLEMENTING A SCHOOL-BASED RESISTANCE TRAINING PROGRAM: IMPACT ON TEACHER-LEVEL OUTCOMES AND PROCESS EVALUATION
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Purpose: The majority of school-based physical activity programs utilise teachers as delivery agents, however there is a paucity of research examining the effects of these interventions on teacher-level outcomes. The aim of this study was to determine the impact of the Resistance Training for Teens (RT for Teens) intervention on teacher outcomes, and to evaluate process data. Methods: RT for Teens was evaluated using a cluster randomized controlled trial in 16 secondary schools. Teachers (N=44; 48% female; years teaching experience=10.6±smn;8.0 [mean±smn;SD]) attended a one-day professional development workshop, and received information on the structure of the physical activity program (focused on resistance training), as well as strategies for implementation. Teacher outcomes included: confidence to teach health-related fitness, barriers to teaching health-related fitness, and perceived fitness. Detailed process evaluation data was also collected. Assessments were conducted at baseline and 6-months (post-program), and outcomes were assessed using repeated measures analysis of variance. Results: Regarding confidence to teach health-related fitness, there was a significant effect for the overall composite score (p = 0.010, partial eta-squared [$\eta^2$] = 0.29), as well as confidence to teach 'boxing' (p = 0.025, [$\eta^2$] = 0.15), and 'CrossFit-style' (p = 0.010, [$\eta^2$] = 0.19) activities. Regarding barriers to teaching health-related fitness, there was a significant effect for 'inadequate equipment' as a barrier (p = 0.013, [$\eta^2$] = 0.18), a significant effect in favour of the control for 'negative student attitude' (p = 0.032, [$\eta^2$] = 0.14), but not other outcomes. There was a significant group-by-time effect for overall perceived fitness (p = 0.044, [$\eta^2$] = 0.13), but not for other specific fitness self-perceptions. Teachers were highly satisfied with both the professional learning workshop and the RT for Teens program, and believed it was beneficial for students. Resource usage was high during lessons, with movement-based games and high intensity resistance training workouts the most utilised session components. Conclusion: RT for Teens improved teachers' confidence, perceptions of barriers, and perceived fitness. These findings highlight the potential for high-quality teacher training and delivery of a physical activity intervention to positively influence teachers' knowledge, skills and confidence towards fitness instruction.

SO.04.5 EVALUATING THE IMPACT OF A HIGH INTENSITY INTERVAL TRAINING INTERVENTION IN YOUNG ADULTS IN A UNIVERSITY SETTING: THE UNI-HIIT RANDOMISED CONTROLLED TRIAL

Eather N\textsuperscript{1,2}, Riley N\textsuperscript{1,2}, Miller A\textsuperscript{1,2}, Morgan P\textsuperscript{1,2}, Lubans D\textsuperscript{1,2}.\textsuperscript{1}The University of Newcastle, Callaghan, NSW; \textsuperscript{2}Priority Research Centre for Physical Activity and Nutrition, University of Newcastle, NSW.

SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Physical inactivity is a serious and enduring public health concern for people of all ages and is now the fourth leading risk factor for global mortality. Strong evidence supports that risk factors for all-cause mortality are decreased though participation in high intensity physical activity and high levels of physical fitness. Yet, physical activity drops by up to 24% in young adults transitioning into university studies. High-intensity interval training (HIIT) is a potent and time-efficient mode of exercise that has been shown to produce similar physiological adaptations to endurance training in adults in laboratory settings. The primary aim of this study was to evaluate the feasibility and efficacy of a novel 8-week high intensity interval training intervention (Uni-HIIT) for improving physical, mental and cognitive outcomes in a sample of young adults in a university setting. Methods: Uni-HIIT was conducted at the University of Newcastle, Australia, February to June, 2017; and involved students 18-25yrs (n= 53; 20.38 ±smn; 1.88yrs) randomised into wait-list control (n=27) or UNI HIIT (n=26) conditions. Uni-HIIT included a variety of aerobic and muscular fitness exercise combinations lasting 8-12 minutes (using 30:30sec rest:work intervals) and participants attend up to 3 sessions / week for 8 weeks. Outcomes included: cardio-respiratory fitness (primary), muscular fitness (standing jump, push-ups), body composition (InBody), executive function (Trail Making Test), anxiety levels (STAI) and perceived stress (Perceived Stress Scale). Linear mixed models were fitted and Cohen’s D effect sizes calculated. Results: A significant group-by-time difference and large effect was found for 20mSRT [8.35 shuttles (95% CI (2.76-13.94), P=0.004, d = 1.08] and push-ups [3.99 push-ups (95% CI (1.23-6.75), P=0.006, d=0.99]; and a significant group-by-time difference and a moderate effect size observed for Trail B [-5.89 (95% CI (-11.83-0.06), P=0.052, d=0.63]. No significant intervention effects found for body composition, standing long jump,
anxiety or perceived stress (P>0.05). Conclusions: The Uni-HITT program effectively targeted improvements in fitness and executive function in young adults in the university setting using unique combinations of aerobic and resistance training exercises. A larger, multi-site program trial is needed to build support for the potential scalability and sustainability of the Uni-HITT program.

SO.04.6
FEASIBILITY AND PRELIMINARY EFFICACY OF A HIGH-INTENSITY INTERVAL TRAINING INTERVENTION FOR OLDER ADOLESCENTS: THE ‘BURN 2 LEARN’ PILOT RANDOMISED CONTROLLED TRIAL.
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective Older adolescents (i.e., in the final years of secondary school) are typically ‘time poor’, and lack of time is the most consistently cited barrier to the implementation of school-based physical activity interventions. High-intensity interval training (HIIT) has been shown to elicit similar physiological adaptations to steady-state endurance exercise, but requires considerably less time. The aim of this study was to assess the efficacy and feasibility of a school-based HIIT intervention, known as 'Burn 2 Learn' (B2L), on physical and psychological health in a sample of older adolescents. Methods Two secondary schools from New South Wales, Australia were recruited, and participants (i.e., grade 11 students; 16.2 ±smn; 0.4 years) were randomised by school to the B2L intervention (n=38) or wait-list control group (n=30). Participants in the intervention group participated in 2-3 self-directed HIIT sessions/week (~10 minutes) delivered at school. Assessments for the primary outcome cardiorespiratory fitness (CRF), and secondary outcomes of upper- and lower-body muscular fitness, psychological distress, and perceived stress were conducted at baseline and post-intervention (14-weeks). Intervention effects were examined for participants providing complete data at both time points using linear mixed models in SPSS. Results Significant intervention effects were found for CRF (8.4 laps [95% CI, 1.6 to 15.3]; d=0.69), lower body muscular fitness (10.1cm [95% CI, 0.3 to 19.8]; d=0.46), and total psychological difficulties (-2.1 units [95% CI, -4.0 to -0.3]; d=0.58). The specific domains of mental health influenced by the intervention were emotional problems (-0.9 units [95% CI, -1.6 to -0.1]; d=0.57), and peer problems (-0.7 units [95% CI, -1.3 to -0.2]; d=0.62). Averaged across all sessions, students achieved 74.6% (8.1) heart rate max and participated in 1.7 (0.4) sessions per week across the 14-weeks (including school holiday periods). Overall, students were satisfied with B2L (mean [SD] = 4.0 [0.8]) (1=strongly disagree to 5=strongly agree). Conclusions Participation in a school-based HIIT intervention had a meaningful impact on older adolescents' health-related fitness and psychological health. HIIT delivered in the school setting may be an efficacious and time efficient intervention approach for supporting older adolescents’ health and wellbeing. Australian and New Zealand Clinical Trials Registry (ACTRN12617000544370)

SO.04.7
DISPARITIES IN PHYSICAL ACTIVITY PERFORMANCE AND AEROBIC CAPACITY BETWEEN NORMAL-WEIGHT AND OVERWEIGHT-OBESE CHILDREN DURING ACTIVE VIDEO GAME PLAY
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SIG: Children and families

Purpose: While active video games (AVGs) help increase physical activity (PA) among children, the physical activity (PA) pattern and metabolic activity during AVG play may be different between overweight-
obese (OO) children and their normal-weight (NW) peers. Methods: Forty children [M=9.8y, SD=1.5: 20 OOC (95.1 BMI%, 10 boys); 20 NW (45.7 BMI%, 12 boys)] played three different Xbox One AVGs: Fruit Ninja (upper body movement), Shape Up (lower body movement), and Kung-Fu for Kinect (whole body movement) for 10 m/game. Participants wore an ActiGraph GT3X+ on their non-dominant wrist to track step count using a 10-sec epoch length. A Cosmed metabolic cart with a face mask was used to measure oxygen uptake (VO2, ml/kg/min) and respiratory exchange ratio (RER, VCO2/VO2) at 15-sec sampling rate. Data without sufficient play time or data loss > 20% were dropped from the analysis. Three by two (Game x Group) repeated measures ANOVAs were performed on the dependent measures. Results: While total steps, average step count/10 sec, and RER did not have significant differences, significant Game (F2,64 = 5.3, p = 0.008) and Group (F1,32 = 8.0, p = 0.008) effects were observed when bursts of activity (defined as consecutive epochs with steps above mean longer than 30 seconds) were tracked. Similarly, significant Game (F2,52 = 5.3, p = 0.008) and Group (F1,26 = 8.0, p = 0.008) effects were observed for mean VO2. Although most step counts were observed during the game, Fruit Ninja, the oxygen uptake measure was the lowest. Conclusions: Unhealthy weight status is associated with significant decrements in establishing healthy PA behaviors during early childhood. Different AVGs resulted in different physiological requirements. Although both groups produced similar step counts, OO children were less able to sustain bursts of more intense PA. NW children exhibited greater aerobic capacity by being able to sustain higher VO2 levels at the same RER. Future PA interventions should take the disparities in PA performance and aerobic capacity among children of different weight statuses into consideration.

SO.04.8
PHYSICAL ACTIVITY IMPROVES ACADEMIC PERFORMANCE THROUGH MENTAL HEALTH IN SHANGHAI PRIMARY SCHOOL STUDENTS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Abundant of evidence has suggested that physical activity has a positive impact on students' academic performance and the relationship is mostly explained by linking PA to cognitive performance as well as to brain structure and function. Also, studies suggest that there is a linkage between physical activity and mental health. However, there has been very few studies testing the association between PA and academic performance of Chinese students and to investigate whether a mental health mediation role is valid to explain such a relationship. Methods: The Shanghai Children's Health, Education and Lifestyle Evaluation in 2014 recruited 17,318 children aged 6–sh;11 years through multistage cluster sampling. Time spent in moderate to vigorous physical activities (MVPA) was measured by CLASS questionnaire validated in Chinese population. Students' academic performance was rated by their head teachers using a modified Oliviero Bruni’s Teacher school achievement form. Mental health was determined by Strengths and Difficulties Questionnaire. Sampling weight was calculated by inverse probability weighting and implemented in all analysis to ensure representativeness. Results: Shanghai primary school students spent an average of 93.9 min of MVPA per day. After adjusting for gender, age, health status, family income and parents' highest education levels, MVPA was significantly associated with higher academic performance (Coefficient = 0.21, 95%CI: 0.11, 0.31) and lower total difficult scores (Coefficient = -0.41, 95%CI: -0.47, -0.35), which indicated lower mental health abnormalities. Sobel-Goodman Mediation Tests showed mental health was a significant mediator in the association between MVPA and academic performance (Z=25.6, p=0.0000), which contributed to 30% of this relationship. Further analysis of SDQ sub-domains showed that hyperactivity, peer problem, prosocial behaviors, emotional symptoms and conduct problems contributed to 32.7%, 11.9%, 9.8%, 5.7% and 4.9% of this relationship between MVPA and academic performance. Conclusion: There was a significant positive association between the PA levels and academic performance of Chinese primary school students. Mental health has a mediation role in this relationship.

SO.04.9
ELEMENTARY SCHOOL CHILDREN'S PHYSICAL ACTIVITY AND PSYCHOSOCIAL BELIEFS IN PHYSICAL EDUCATION: RACIAL DIFFERENCES
OBJECTIVES: Children are not as physically active in physical education (PE) classes as they are recommended by the national physical activity (PA) guidelines. Race has been documented as one of the demographic variables that plays an important role in affecting children's PA and beliefs. Few research has discerned the racial differences in children's PA and psychosocial beliefs, particularly in PE setting. Therefore, the purpose of this study was to investigate whether children's PA and psychosocial beliefs differed as a function of race. METHODS: Participants were 174 elementary school children (86 girls; 49% Black, 32% White; Mean age = 10.37) from two Minnesotan schools. Children's PA were objectively assessed via ActiGraph GT3x+ accelerometers during three PE sessions, and their psychosocial beliefs were assessed via a battery of validated questionnaires at the end of the third PE session. Children's mean percentages of time spent in sedentary behavior, light PA, moderate-to-vigorous PA (MVPA) and beliefs were used as outcome variables. RESULTS: A series of one-way ANOVA results indicated that race significantly impacted children's sedentary behavior, $F(2, 171) = 3.33, p = 0.04$; but not their light PA, $F(2, 171) = 1.99, p = 0.14$, nor MVPA, $F(2, 171) = 2.76, p = 0.06$. Post-hoc analysis showed that black children (41%) were less sedentary than their white counterparts (46%). Black children's MVPA was slightly higher than white children, but did not reach significant level. MANOVA showed that children's outcome expectancy, $F(2, 171) = 5.23, p <0.01$, and social support, $F(2, 171) = 4.74, p = 0.01$, were significantly different between groups. The two beliefs of black children (10.0, 4.5) and children of other ethnicities (10.4, 4.7) were significantly higher than those of white children (9.3, 4.2), respectively. CONCLUSIONS: The findings suggest that children from different races had varying levels of PA, outcome expectancy, and social support. Black children were less sedentary and had higher beliefs than their white counterparts. It may be important for physical educators to notice the differences, and adopt appropriate strategies to improve their beliefs and PA for certain racial groups.

SO.05: Nutrition in Infants, Mothers and Pregnancy (Oasis)

SO.05.1
RELATIONSHIP BETWEEN PHYSICAL ACTIVITY INTERVENTIONS DURING PREGNANCY AND MATERNAL AND FETAL OUTCOMES: A SYSTEMATIC REVIEW

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objectives: Although clinical recommendations call for regular participation in physical activity (PA) during pregnancy, this period is marked by a decline in PA for a majority of women. It has been suggested that PA may help prevent excessive gestational weight gain (GPG), gestational diabetes, gestational hypertension and macrosomia. This systematic review assesses the effects of PA interventions during pregnancy on maternal and fetal clinical outcomes. Methods: Four international databases (PubMed, CINAHL, Medline, ScienceDirect) were searched for quantitative peer-reviewed studies published up to August 2017 and reporting on the association between PA interventions during pregnancy and clinical outcomes. Data were extracted from studies retained using a standardised grid. Results/findings: Six articles from four countries met the inclusion criteria. Five were randomized controlled trials and one was a non-randomized controlled trial. Three studies had <100 participants and three had between 115 and 124 participants. Three of four studies with gestational weight gain (GPG) as primary outcome showed lower GPG among the intervention than the control group. PA interventions were related to a reduction in gestational diabetes in one of three studies. Two studies investigated risk for gestational hypertension but found no intervention effect. Findings related to a relationship between PA interventions and birth weight varied across studies. Conclusions: Despite limitations in terms of sample sizes, studies on PA
interventions during pregnancy generally indicate that such interventions are promising in terms of promoting better health outcomes among mothers.

SO.05.2
ASSOCIATIONS BETWEEN MATERNAL PRE-PREGNANCY WEIGHT AND PREGNANCY-RELATED FACTORS AND CHILD BIRTH WEIGHT
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SIG: Children and families

Purpose: There is increasing evidence that maternal pre-pregnancy weight and weight gain during pregnancy are associated with offspring weight and childhood health. The goal of this study was to examine associations between maternal demographic, mother body mass index (BMI), gestational diabetes, and gestational weight gain with offspring birth weight among a racially and socioeconomically diverse population. Methods: Cross-sectional analysis of maternal factors and offspring weight. Child births were extracted from Stony Brook Medicine's Health Intent platform from January 2015 to April 2017. Data from electronic health records (EHR) included mother's pre-pregnancy weight, mother's final weight (kg), and diagnoses coded during pregnancy. After excluding cases with missing pre-pregnancy weight, pre-pregnancy type 1 and type 2 diabetes, pre-eclampsia/eclampsia, children with birth weight <2500 g or >4819 g, and gestational weight gain >45 kg, a total of 3441 mother/offspring dyads were analyzed (mean pre-pregnancy weight: 69.35 kg; mother mean age: 30 years; white: 63%). Multivariate regression was used to examine association between independent variables and child birth weight. All the variables were simultaneously included in the model and adjusted for age, race, and Medicaid participation (yes/no). Results/Findings: Based on pre-pregnancy weight, there were 2.5% underweight, 48% normal weight, 27.6% overweight, and 21.7% obese mothers; about 11% were diagnosed with gestational diabetes. Greater pre-pregnancy BMI was associated with greater offspring weight (p=0.000) in a dose response manner. Greater gestational weight gain was also associated with offspring weight (p=0.000). Mother being = 18 years was associated with lower offspring weight (p=0.006), but mother being 31-40 years (p=0.004) was associated with higher offspring weight. Gestational diabetes, race, or insurance type were not significantly associated with offspring weight. Conclusions: There is clear indication that mother's pre-pregnancy BMI and gestational weight gain are important factors in offspring birth weight. Our findings support implementing nutrition and physical activity interventions to prevent overweight and obesity during preconception and pregnancy, as well as understanding the long term effects of these interventions on child weight trajectory.

SO.05.3
FOODFLIP®: CONSUMERS' PERCEPTIONS ON INTERPRETATIVE NUTRITION RATING SYSTEMS USING A SMARTPHONE APP.
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SIG: E- & m-health

Objective: With the growing burden of obesity and diet-related diseases, it is essential that Canadians have the tools they need to enable the selection of healthier foods. However, many consumers find it difficult and time-consuming to identify healthier foods using the Nutrition Facts table (NFT) found on food packages. This study explores consumers’ perceptions of interpretative nutrition rating systems (INRS) on deliverance of nutrition information using a food information smartphone app, FoodFlip®. Methods: This study was part of a larger survey examining consumer perceptions of interpretative nutrition rating systems (INRS) on food products. A nationally representative commercial sample of 2000 Canadians was randomized to one of four INRS treatments: traffic light, star rating, 'high-in' label or NFT (control) and asked to scan or enter a minimum of 20 products into FoodFlip®, containing healthfulness ratings for ~15,000 packaged products, from a list of food products provided to them with varying levels of
healthfulness. After completing the app task, participants were asked a series of 7-point Likert-scale questions on app use in relation to the specific INRS as well as had the opportunity to provide opinions on the app. Results: Of the survey sample of 1997 participants, 95% (n=1907) completed the app task, with similar number of participants in each treatment group. The mean age was 40 ± 12 years with no significant differences in gender, ethnicity, body mass index and education between the treatment groups. The median time spent using the app to search for 20 food products was 12.5 minutes. The star rating ranked significantly lower in comparison to the other treatment groups in terms of usefulness, believability, and understanding. The star rating and control (NFt) ranked significantly lower than the traffic light or the 'high-in' labels for the ability to compare the healthiness of products. Conclusion: This study is the first in Canada to explore consumers’ perceptions of different nutrition rating systems with easier-to-understand and accessible nutrition information for packaged foods delivered through use of a smartphone app. Future studies will investigate FoodFlip® with an easy to understand nutrition rating system in enabling healthier food purchases by Canadians.

SO.05.4
ASSOCIATIONS OF PARENTAL FEEDING PRACTICE TO CHILD APPETITIVE TRAITS AMONG TODDLERS IN INDONESIA.

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SIG: Children and families

Purpose: The research aims to investigate the relationships of parental feeding practices with child eating behavior in the context of a setting with child underweight and overweight. Methods: A cross sectional survey with 238 mother-child dyads was conducted in Special Region of Yogyakarta province, Indonesia in 2016. We collected data on measures of parental feeding practices (PFP) using an instrument that included both coercive and structural aspects (Vaughan et al 2016) and translated versions of the Child Eating Behavior Questionnaire that was validated for the context. Measurement models were used to test the construct validity of each scale using Confirmatory Factor Analysis (CFA). Structural equation models were used to examine the association between PFP, child eating behaviors identified as "avoidance behaviors" and child BMI. Results/ findings: The sample consisted of 25.2 percent underweight and 7.6 percent of overweight/obese children. Both CFA's provided adequate model fit indices. The structural model provided good fit to the data (CMIN/DF 1.24; CFI/TLI 0.933/0.924 ; RMSEA 0.032). Significant paths were found between Child Control (CC) with Slowness to Eat (SE) and Food Fussiness (FF), -0.25 and -0.38 respectively. Emotional Regulation was associated with SE, 0.52. Food reward (FR) was associated with Satiety Responsiveness (SR) and Emotional Undereating (EU), 0.22 and 0.37 respectively. Restriction was negatively associated with FF (-0.21). Both SR and SE were negatively associated with Child BMI (-0.21 and -0.18). Conclusions: Most studies on PFP have been among samples with significant proportions of overweight or obese children and the concern has been prevention of obesity. In this poor economic setting with significant issues of underweight, the association of PFP with child eating behaviors are mostly related to structural aspects of PFP, rather than coercive behaviors. Child control, emotional regulation and food reward behaviors mostly associated with avoidance child eating behaviors that lead to lower BMI. There is a need to identify interventions that can modify these parental behaviors to impact on underweight and stunting among toddlers in such settings.

SO.05.5
EXPLORATION OF MOTHERS’ ENGAGEMENT WITH AN MHEALTH PROGRAM TO PROMOTE HEALTHY INFANT FEEDING PRACTICES TO PREVENT EARLY OBESITY: THE GROWING HEALTHY PROGRAM

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Purpose Mobile health (mHealth) interventions have great potential to promote health. To increase consumer engagement with mHealth programs, understanding factors that influence engagement in different people is necessary. The Growing healthy program is one of the first obesity prevention programs delivered through a smartphone app. The program provided advice and suggestions, consistent with national guidelines on infant feeding from birth until 9 months of the baby's life. The objective of this study was to explore factors that influenced mothers' engagement with the Growing healthy app. Methods The study used a sequential mixed methods design. Upon completion of the 9 month program, participants' engagement level with the app was measured through a developed Engagement Index (EI) tool using the app metrics (i.e. app access, push notifications opened, pages viewed). Participants were categorised as poorly or highly engaged based on their EI score. Semi-structured one-on-one telephone interviews were then conducted with a purposeful sample of participants with either high or low levels of engagement to explore factors that influenced their behaviour using the app. The interview guide explored the perceptions of features of the app (i.e. usability, delivery of the program, quality, design and navigation) as well as participant characteristics which are known to affect engagement. Interviews were thematically analysed. Results Of the 225 participants, 18 participants were interviewed based on purposeful sampling and data saturation. Participants defined as having high engagement with the program were more likely to be first-time mothers and indicated that they perceived the app content to be trustworthy, the app design and layout helped with ease of navigation and those who regularly opened the push notifications. Participants defined as having low engagement were more likely to have experience from previous children, felt they had sufficient knowledge on infant feeding and the app did not provide further information or experienced technological issues such as app dysfunction due to smartphone system upgrades. Conclusions/implications The findings of this study provided insights for future research on factors that contributes to engagement in mHealth intervention. To maximise engagement with mHealth interventions and their effectiveness, researchers should explore differences in consumer needs.

Objective In the United States, 13% of the population is food insecure, and one in seven Americans receive food assistance from the Supplemental Nutrition Assistance Program (SNAP). SNAP (called food stamps prior to 2008) improves short term food security, but its effect on long-term food security is unknown. Nutritional knowledge is an important predictor of diet quality and healthy weight, however less is known about the relationship between parental nutritional knowledge and food security of children as they transition to adulthood. The goal of this study is to examine the relationship between nutrition assistance program participation and parental nutritional knowledge during childhood with food insecurity and obesity risk in young adulthood. Methods: Data for this study come from the 1997-2015 waves of the Panel Study of Income Dynamics (PSID) including the Child Development Supplement (CDS), and Transition into Adulthood Supplement (TAS). The PSID is a nationally representative, multigenerational household panel survey. The study sample includes a balanced panel of 2,796 families whose children were age 0-12 years in 1997. We created a ‘parental nutritional knowledge’ index based on five nutrition knowledge questions. To examine the relationship between food stamp receipt (in 1996-2000) and parental nutritional knowledge (in 1999) with food security and weight status outcomes in 2015 we estimated multinomial and logistic multivariable, fixed-effect regression models controlling for individual and family covariates. Results: Individuals who are food insecure during childhood have a higher risk of obesity in young adulthood (26% vs. 21%), while those who are persistently food insecure have an even
larger disparity compared to those who are never food insecure (33% vs. 18%). In adjusted models, among low-income individuals with persistent food insecurity, food stamps participation during childhood reduces risk of obesity from 36% to 34%, p=0.001. Among low-income, food insecure children, food stamp participation increased the chances of becoming food secure in young adulthood from 50% to 54%, p=0.88. Parental nutritional knowledge analyses will also be presented. Conclusions: Food insecurity during childhood has long-term implications for health, however, participation in nutritional assistance programs may mitigate that relationship and lower the risk of obesity in young adulthood.

SO.05.7
EXPLORING THE ROLE OF PRIMARY CAREGIVERS AS FOOD AND NUTRITION GATEKEEPERS WITHIN LOCAL FOOD ENVIRONMENTS
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SIG: Policies and environments

Objective: Caregivers play a pivotal role in food-related decisions for very young children. There is a need to explore the use of food environments within the daily lives of people raising or caring for young children and their implications for early childhood dietary intake. This research aims to explore and understand the experiences of caregivers in making food access and provision choices within local food environments and their influence on dietary intake in early childhood. Methods: Semi-structured in-depth interviews were undertaken with twenty primary caregivers of young children between four and five years of age. Participants were purposively sampled from the Logan region of South-East Queensland, Australia. Interview questions were guided by the Socio-Ecological Model to elicit key information regarding diverse environmental, social, and individual factors contributing to food access and purchasing behaviours. Interviews were audio recorded and transcribed verbatim. Data analysis on transcripts was undertaken inductively using thematic analysis guided by The Framework Method. Results: Four key concepts associated with food behaviours were identified including 1) the relationship between food literacy, use of time and food habits/routines; 2) the interplay between children's food behaviours and paternal/partner agency; 3) food acquisition, provision and consumption behaviours and strategies; and 4) structural and environmental determinants. Findings suggest there are an array of competing demands between caregivers (primarily women) trying to acquire and provide food for their family, meet their family's needs and/or navigating their children's food requests and behaviours, within the context of different food environments. Women's ability to act as food and nutrition gatekeepers is essential to this, that is, to act in the family's best interest to make optimal food decisions. Conclusions: Findings reveal a diversity of factors that contribute to and influence the use of food environments by caregivers as nutrition gatekeepers. This study highlights the importance of qualitative research in progressing our knowledge of food-related behaviours within food environments and may assist to identify policy, environmental and behavioural avenues required to improve early childhood dietary outcomes.

SO.05.8
ASSOCIATIONS BETWEEN HOUSEHOLD CHAOS AND PARENTAL STRESS MANAGEMENT WITH FAMILY MEAL FREQUENCY, PERCEIVED MEAL PREPARATION BARRIERS AND HEALTHFUL HOME FOOD AVAILABILITY
Fulkerson JA¹, Telke S¹, Larson N¹, Berge J¹, Sherwood NE¹, Neumark-Sztainer D¹. University of Minnesota, Minneapolis, MN.

SIG: Children and families

Purpose: Parents often report interest in having more frequent and healthful family meals, which potentially benefit family nutritional and weight-related health. Research indicates busy schedules make family meals challenging, but little is known about other household characteristics that may be influential, such as chaotic environments and parental perceptions and management of stress. The present study objective was to examine how household chaos and parental stress management are associated with outcomes of
family meal frequency, perceived barriers to cooking and healthful home food availability in families with children. Methods: Cross-sectional associations of household chaos and parental stress management with outcomes were examined among 819 households with children at the time a parent in the population-based Project EAT (Eating and Activity in Teens and Young Adults) cohort completed the 2015-2016 follow-up survey. Linear regression models examined associations between household chaos (four Hubbub scale items (e.g., can't hear yourself think in our home, it's a real zoo in our home), M=8.4, SD=2.5, range=4-16, a=.79), and an index of parental stress (<1=stress managed, >1=stress unmanaged; M=1.07, SD=0.9) with family meal frequency, perceived meal planning barriers (a=.74) and healthful home food availability (a=.68). All multivariate models adjusted for parent gender, age, race, body mass index, public assistance, children (number and age of oldest), and living with a significant other. Results/findings: Household chaos scores were positively associated with number of children in the household (p<0.0001). Scores for household chaos and parental stress index were significantly correlated (r=0.32, p<.0001). In multivariate models, family meal frequency was inversely associated with household chaos (<0.001) and parental stress index scores (p=0.003). Perceptions of meal preparation barriers were positively associated with household chaos (p<0.001). Healthful home food availability was inversely associated with stress index scores (p=0.01). Conclusions: Household chaos and parental perceptions and management of stress independently contributed to explained variance of the family meal and home food environment beyond the effects of the number of children in the home and other demographic characteristics. Interventions to assist with parental stress management and promote a calmer home environment may increase family meal frequency and the quality of children's home food environments.

SO.05.9 CROSS-SECTIONAL ASSOCIATIONS BETWEEN MATERNAL PARENTING STYLES AND FOOD INTAKE OF AUSTRALIAN PRE-SCHOOL CHILDREN, AND POTENTIAL MODERATORS OF THESE ASSOCIATIONS. Burnett A J1, Lamb K E1, Lacy K E1, Worsley A1.1Deakin University, Geelong.

SIG: Children and families

Introduction: In Australia, almost a quarter of pre-school children are estimated to be overweight or obese, with poor diet a key contributor. Mothers are a primary influence on pre-school children's food intake. This study examines associations between maternal parenting style and pre-school children's food intake and whether variables related to time pressure influence these relationships. Methods: This cross-sectional study included 4152 children aged 4-5 years from the Longitudinal Study of Australian Children (Wave 1). Parents reported their child's frequency of consumption (not any, once, >once) of eight healthy and unhealthy food and drink items over the past 24 hours. Maternal parenting styles were classified as authoritative, authoritarian, permissive, or disengaged based on warmth and control. Parenting style and food intake associations were examined using multinomial regression, adjusting for potential confounders. Interactions between parenting style and family structure and mother's employment status were examined. Results: Children of authoritative mothers consumed sugar sweetened beverages (SSBs) less frequently (once vs. not any: RRR=0.63, 95%CI [0.51-0.78]; >once vs. not any: RRR=0.58, 95%CI [0.46-0.73]), and fruit and vegetables more frequently, than children of disengaged parents. Furthermore, children of authoritarian parents consumed cold savoury snacks (once vs. not any: RRR=0.65; 95% CI [0.54-0.78]) and takeaway foods (once vs. not any: RRR=0.77, 95%CI [0.63-0.94]; >once vs. not any: RRR=0.39, 95%CI [0.17-0.90]) less frequently than children of parents with a disengaged parenting style (once vs. not any: RRR=0.65; 95% CI [0.54-0.78]). Family structure moderated the association between parenting styles and SSB and fruit consumption. Compared to children of disengaged parents, children of permissive parents had a lower consumption of SSBs in one-parent households but not two-parent households, and children of authoritarian parents had a higher consumption of fruit if from two-parent households but not one-parent households. Conclusions: These findings suggest that authoritative and authoritarian parenting styles may be associated with aspects of healthy eating among children. However, the number of parents in the household may influence these relationships. Further research is required to examine the influence of other potential moderators of parenting style/food consumption relationships such as household time and resource limitations.
SO.06: Sedentary Behavior and Physical Activity Studies in Adults (Grand Ballroom)

SO.06.1
SIGNAGE INTERVENTIONS FOR STAIR CLIMBING TO REDUCE CVD RISK; OVER 700,000 REASONS FOR CAUTION.
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Stair climbing is a vigorous lifestyle activity that improves cardio-respiratory fitness, lipoprotein profile and body composition to reduce cardio-vascular disease (CVD) risk. Increased stair climbing at work is currently promoted to improve population health. Despite some positive reviews, consistent effects of point-of-choice stair climbing interventions in public access settings have not been replicated in the workplace. Heterogeneity between studies, recently estimated as I² = 97.5%, hampers any attempts to estimate effects with meta-analysis. Here, pooled data from workplace studies in the UK and Spain with common methods (n = 719,905) estimated the effects of signage interventions for stair usage. Pedestrian movement within buildings influences stair choices, independent of any intervention and this movement was controlled for in analysis. Stair climbing and stair descent were separated in analyses; no evidence demonstrates that stair descent reduces CVD risk. Methods: Automated counters measured stair and lift usage throughout the working day. Point-of-choice signage interventions employed previously successful campaigns, further refined in focus groups. In the UK, minute-by-minute measures of choice estimated effects of momentary traffic at the choice-point (n = 426,605). In Spain, measures of traffic every 30 minutes estimated effects for ‘busyness’ of the building (n = 293,300). Analyses employed hierarchical regression with bootstrapping, in which effects of pedestrian movement were added to effects of intervention alone. Findings: Significant intervention effects on stair descent (3 out of 4 analyses) were more frequent than effects on stair climbing (1 out of 4 analyses). Where effects of signage occurred, they were at least an order of magnitude smaller that the effects of pedestrian movement. Momentary traffic at the choice-point reduced stair climbing whereas ‘busyness’ of the building generally increased it. Conclusions: Signage interventions at work are more likely to increase stair descent than climbing. Failure to control for pedestrian movement will compromise any estimates of effectiveness. It seems unlikely that these interventions will increase stair climbing with the resultant reductions in CVD risk in the population.

SO.06.2
AN EXPLORATORY STUDY OF THE INTERACTIVE EFFECTS OF THE BUILT ENVIRONMENT AND SOCIAL NORMS ON CYCLING PARTICIPATION
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SIG: Policies and environments

Purpose Participation in physical activity (PA) is beneficial for physical and mental health. Accordingly, research into the factors that influence PA participation is warranted. The ways that the built environment and perceived social norms independently influence cycling participation is well established; however, how these factors interact to influence cycling participation is yet to be explored. Thus, the aim of this study is to explore the interactive effects of the built environment and perceived social norms on participation in transport-related and recreational cycling participation. Methods Data was collected using a self-administered online questionnaire from 228 office workers in Metropolitan Melbourne, Australia. Valid and reliable measures were used to assess each participant’s commuter and recreation-related cycling participation in the last week, perceived built environment, perceived social norms towards cycling, and the objectively measured land-use mix, residential density and street connectivity of the suburbs in which they live and work. Multiple binary logistic regression analyses were conducted to explore the interactive effects
of the built environment and perceived social norms on commuter and recreation cycling participation. Because of the exploratory nature of this study all interactive effects were considered significant at p<0.10. Results There was a significant interactive effect between the workplace built environment and perceived group norm on participation in transport-related cycling (p=0.06). There were no other significant interactive effects observed between components of the built environment and perceived social norms on recreational or transport-related cycling participation. Conclusions The interactive effect found in this study provides some evidence that the workplace built environment interacts with perceived group norms on the decision to cycle for transport, whereby positive perceptions of the workplace built environment can somewhat compensate for a less supportive group norm perception. However, the findings did not support that the neighbourhood built environment and perceived social norms interact to influence the decision to cycle for recreation or transport. These findings contribute to the knowledge of how multiple factors may reciprocate to influence individual's decision to cycle.

SO.06.3
EMBODIED PERCEPTION OF LOCOMOTOR CHALLENGE IN OVERWEIGHT PEDESTRIANS DETERS PHYSICAL ACTIVITY.
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Often perception of the environment rather than objective measures is linked to physical activity within it. Although we 'believe' that we see a consistent world, perception is embodied in that our ability to act on the world influences our perception. Explicit perception of stairs is exaggerated, with greater exaggeration when resources are depleted. This exaggerated perception of steepness promotes avoidance of climbing when an alternative such as an escalator is available. Overweight pedestrians avoid stairs more than those who are healthy weight. Data from three studies tested whether stairs appear steeper in explicit awareness to overweight individuals. Methods: For explicit estimates, participants verbally reported stair angle in degrees and performed a visual matching task for the perceived cross-sectional angle of the stairs. In addition, participants adjusted an unseen plate to parallel the slope of the stairs with their hand. In study one, participants self-reported their BMI (n=269) whereas in study two clearly overweight and healthy weight pedestrians were recruited using BMI silhouettes (n=171). These participants estimated the steepness of stairs in a train station. In study 3 (n=52), BMI was measured objectively and DXA scans used to estimate fat and fat free mass (FFM). Participants estimated the steepness of lifesize displays of stairs in the laboratory before and after a weight loss programme. Findings: In all three, increased BMI was associated with greater explicit estimates of stair steepness. Further, this exaggeration was related to fat mass that would be carried up the stairs rather than FFM that would do the carrying. After a weight loss programme, it was changes in fat mass, rather than FFM, that were related to changes in explicit estimates of steepness. Conclusions: Increased stair climbing in the built environment is one public health approach to increase daily energy expenditure in the population. Embodied perception of locomotor challenge may run counter to public health attempts to encourage lifestyle physical activity in overweight pedestrians. It is unknown whether making individuals aware of their exaggerated perception could counteract the biasing effects on behaviour.

SO.06.4
WALK SCORE® AND JAPANESE ADULTS’ PHYSICALLY-ACTIVE AND SEDENTARY BEHAVIORS
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SIG: Policies and environments

Purpose. Walk Score® is a free publicly accessible tool that evaluates how conducive a location is for residents' walking. Several studies have shown associations of Walk Score® with walking behaviors. However, these studies have been conducted in limited contexts including U.S.A, Australia, Canada, and
France. In addition, the role of Walk Score® in sedentary behaviors such as car driving and TV viewing time has not yet been explored. The current study aimed to examine associations of Walk Score® with purpose specific walking and sedentary behaviors in the context of a non-Western country, Japan.

Methods. This study used cross-sectional survey data from a part of the Healthy Built Environment in Japan (HEBEJ) project. In 2011, adults living in urban and rural areas in Japan (n=1,072) reported their walking and sedentary behaviors. Participants reported their walking in the past week for three specific purposes: for commuting; for errands; and for exercise. They were also asked about two specific sedentary behaviors in the past week: TV viewing and car driving. Walk Score® was obtained manually for each participant’s address. Logistic regression models (adjusted for covariates) were used to examine the associations of Walk Score® with purpose-specific walking and the two sedentary behaviors. Results. There were significant positive associations of Walk Score® with specific types of walking and with one sedentary behavior. Each 10-point increase in Walk Score® (range: 0-97) was associated significantly with a 34% (95%CI: 1.25, 1.42) higher odds of any walking for commuting; with a 6% (95%CI: 1.01, 1.11) higher odds of any walking for errands; with a 36% (95%CI: 1.23, 1.50) higher odds of meeting physical activity recommendations by walking for commuting; and, with a 10% (95%CI: 0.83, 0.97) lower odds of driving a car for more than one hour per day. Conclusions. This is the first study found Walk Score® to be related to walking and driving behaviors among Japanese adults. Walk Score®, a freely available web-based tool, can be useful for local urban designers and policy makers to promote active living in the context of non-Western environments.

SO.06.5
OBJECTIVELY MEASURED SEDENTARY TIME IN CHINESE ADULTS
Wen Xu1. Zhejiang University, Hong Kong.

SIG: No, this does not fit in any of the above mentioned special interest groups

Objective The purpose of this study is to investigate the time spent in sedentary behavior in Chinese adults using smart bracelets and novel algorithms to identify sedentary behaviors. Methods 3561 Chinese adults aged 18–86 (2205 men and 1356 women) who were the users of a brand of smart bracelet in 2015 were recruited. The average wear duration is 29.9 days and average daily wear time was 22.7 hours. An algorithm was used based on the collected raw data of accelerometer and gravity component of the acceleration signal to identify the mode of activities and determine sedentary time. Results The average sedentary time in men was 587 minutes, accounting for 62.5% of the total monitored waking time, slightly higher than 566 minutes and 60.1% in women. Participants in the 18–29 year groups spent more time in sedentary behaviors than 40–59 year old adults. The average time spent in sedentary behavior of obese men was 613 minutes (65.2% of waking wear time), which was significantly longer than men with normal weight (587 min, 62.5%) and overweight men (582 min, 62.0%). Logistic regression results showed that male, young, and obese participants had higher odds of having long sedentary time compared with female, middle aged, and adults with normal weight Conclusion Chinese adults spend nearly 10 hours in sedentary behavior. Sedentary duration is longer in male, elderly, and obese adults compared with female, middle-aged, and normal weight adults.

SO.06.6
THE EFFECTS OF REDUCING OCCUPATIONAL SEDENTARY BEHAVIOUR ON EMPLOYEE MOOD AND PRODUCTIVITY.
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SIG: E- & m-health

Purpose: Occupational sedentary behaviour (SB) is a public health concern associated with negative physical and psychological health consequences (1, 2). Reducing SB in office workers can be challenging due to the need to complete desk-bound work. There is evidence to suggest sit-stand workstations can reduce SB without negative effects on productivity (3), but are costly for companies to implement The aim
was to evaluate the effects of a mobile app-based intervention targeting reductions in occupational SB, delivered with and without sit-stand workstations, on employee mood and productivity. Methods This 8-week feasibility cluster randomised controlled trial recruited desk-based office workers (n=56), aged 18-65 years, from three worksites in Northern Ireland. Following baseline measures, worksites were randomised to one of three groups: mobile app; mobile app and sit-stand workstation; or control. The "Worktivity" app, developed using the Behaviour Change Wheel (4) encouraged office workers to reduce sitting by self-monitoring SB and setting 'sit-less' goals. The app also delivered 'sit-less' nudges, educational prompts and progress reports. Mood and work productivity were measured at baseline, four and eight weeks. Productivity was measured daily for five consecutive days using ecological momentary assessment via text-message/e-mail where participants responded to a question relating to work productivity. Mood was measured using the Brunel Mood Scale (BRUMS). Results The intervention will conclude in December 2017 and findings will be available for ISBNPA 2018. As this is a feasibility trial, analysis will be mainly descriptive. Investigations will be exploratory to provide estimates of key parameters and inform the design of a definitive trial. Conclusions This study represents the first investigation of the effects of an app intervention, designed to reduce occupational SB, on employee productivity and mood. Findings are expected to inform the development of a larger-scale m-health intervention to reduce SB in office workers.

SO.06.7
6-MONTH WORKPLACE INTERVENTION USING SOFTWARE PROMPTS TO INCREASE AND SUSTAIN ELECTRIC SIT-STAND DESK UTILIZATION
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SIG: Implementation and Scalability

Purpose: To determine if software prompts are an effective computer-based behavioral intervention to increase the utilization of electric sit-stand desks. Methods: This 6-month study integrated electric sit-stand desks with computer software to measure continuous data regarding the time desks were in a sitting or standing position during active computer use for 285 office workers in Australia. During the 3-month baseline phase, we collected electric sit-stand desk usage for all participants. For the 3-month intervention period, all participants received computer software prompts as reminders to change their desk position. The frequency of the reminders could be changed based on individual preferences and provided real-time desk usage statistics. The two primary outcomes that were measured continuously during active computer use included 1) the time desks were in a sitting or standing position and 2) the number of desk position changes per hour. Secondary data were provided to complete pairwise comparisons of difference in means from baseline to intervention. Results/Findings: The software prompt reminders showed a daily increased mean difference in time the desk was in a standing position by ~77% (21 minutes) and reduced mean difference in time desk was in a sitting position by ~13% (32 minutes). Further, the reminders had a mean increase of 1 desk position change every 2 hours. Conclusions: The computer-based intervention was an effective method to increase electric sit-stand desk usage. With the intervention, participants (during active computer use) spent increased time with their desk in a standing position, reduced time in a sitting position, and increased their position changes per hour. Users reported that the software reminders were 80% helpful in reminding them to increase their sit-stand desk usage. The main implications of this study are that we are now able to continuously collect sit-stand desk usage data and computer prompts are effective at increasing the time desks are used in a standing position. Future studies should incorporate a motivation component that will encourage workers to compete against each other for increased sit-stand desk usage.

SO.07: Older adults Physical Activity and Nutrition (Salon 1-2)

SO.07.1
THE IMPACT OF A TAILORED DIETARY INTERVENTION COUPLED WITH ORAL REHABILITATION ON THE NUTRITIONAL STATUS OF OLDER PATIENTS: A PILOT STUDY.
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University Belfast, Belfast.

SIG: Ageing

Purpose: Research shows that replacing missing teeth alone is not enough to engender dietary behaviour change among the older adult population, highlighting the need for dietary intervention. One approach proven to change food behaviours in the long-term and is novel to this population is that of habit-formation. Consequently, the aim of this research is to develop and test a habit-based tailored dietary intervention, in conjunction with oral rehabilitation, and examine its impact on positive dietary habit-formation amongst partially dentate older adults. Methods: This research comprises 3 distinct phases: (i) the development of the habit-based tailored dietary intervention using desk-based and qualitative research; (ii) a pilot study (non-randomised); (iii) an RCT Only Phase (iii) findings are discussed in this abstract. Participants were recruited from the Centre for Dentistry at Queens University Belfast. They received an adaptable tailored dietary intervention focusing on 3 domains (fruit and vegetables (FV), wholegrains (WG) and healthier proteins (PR)) as they met with the researcher 4 times over fortnightly intervals. At each time point participants completed questionnaires on behavioural intention, behavioural frequency and the Self-report Habit Index. At baseline and final visits, participants were assessed with further questionnaires, anthropometric measures and a food diary. An interview was also conducted at the end of the intervention which used thematic analysis. Results: The eight participants with a mean age of 72.5 years achieved a high behavioural frequency adherence to FV (38.7 of 42 days), WG (24.7 of 28 days), and healthier PR (12.3 of 14). Changes in their food intake not only correlated with their positive habit intentions scores but also with changes in their automaticity of feeding behaviours. Even when subsequent dietary goals were added, previous habit goals were maintained. Participants were overwhelmingly positive and strongly accepted the tailored dietary intervention. Conclusions: This pilot study demonstrated positive findings for feasibility of the tailored dietary intervention and allowed iterative changes to be made before phase (iii). Positive dietary changes in this population group following the intervention could potentially support a paradigm shift in the dental management of the expanding older population.

SO.07.2

MOTIVATING OLDER PEOPLE TO MOVE MORE: PARTICIPANT IMPRESSIONS OF A PHYSICAL ACTIVITY INTERVENTION COMBINING HEALTH COACHING AND ACTIVITY TRACKERS

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SIG: Ageing

Objective: Health coaching and pedometers are effective in increasing physical activity across many age groups. We are currently trialling an innovative intervention that combines these two approaches with an assessment of fall risk to evaluate the effect on physical activity among people aged 60+. This study evaluated participant impressions of the physical activity promotion strategy, six months after intervention commencement. Methods: Design: Process evaluation of intervention group data from an ongoing cluster randomised controlled trial. Participants: Intervention group participants who had completed 6 months of the physical activity promotion intervention involving telephone-based health coaching, activity trackers and fall risk assessment. Measures: Participants completed a survey that measured: a) overall program benefit (score/10 with higher scores indicating more benefit); b) usefulness of health coaching (score/10 with higher scores indicating greater usefulness); c) usefulness of activity tracker/pedometer (score/10 with higher scores indicating greater usefulness); and d) proportion of participants who would recommend the program to others. Analyses: Descriptive statistics were used to summarise the participant responses. Results: One hundred and thirty four participants with a mean age of 74 (SD 10) were included in the analyses. Eighty-one of the participants were female (60%). The mean rating of program benefit was 7.5 (SD 1.8), with the main benefits being the health coach support to meet goals and stay motivated, increased awareness and use of the activity tracker to monitor activity and provide motivation. One hundred and eleven (83%) participants took part in the health coaching and the mean rating of overall benefit was 8.1 (SD 1.2). Support, encouragement, motivation and tailoring of exercises were the main
comments associated with the health coaching. The activity tracker/pedometer was rated 8/10 (SD 1.1) for usefulness, with most participants viewing it as a good motivator and reminder. Overall, 111 (83%) participants stated that they would recommend the program to others. Conclusion: Overall, the physical activity intervention was well received and perceived to be helpful by participants. Most participants appreciated the support gained from regular contact with a health coach and viewed the activity tracker/pedometer as helpful in providing feedback to keep them active.

SO.07.3
EFFECT OF MOTIVATION CYCLES THEORY ON LONG-TERM WEIGHT LOSS AND MAINTENANCE
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SIG: No, this does not fit in any of the above mentioned special interest groups

The main purpose of the study was to evaluate the influence of fluctuations in motivation level on effective weight-loss and long-term weight maintenance. Current motivation-focused research is centered around self-determination theories and application of Motivational Interviewing principles toward successful weight-loss and maintenance. Our approach is grounded in an observation that individual motivation levels fluctuate depending on various factors. We have identified six main stages of adherence towards weight-loss goals: Motivation, Hyper-motivation, Plateau, Regression, Observation (helplessness), New surge of motivation. Our observations revealed that during the plateau, regression and helplessness stages are accompanied by a negative emotional state, which might lead to regression to old behavioral habits around food and physical activity. Most people aiming to lose weight do not account for these naturally occurring currents. We hypothesized that if a person is informed of those fluctuations and its defined stages throughout the process, they can effectively address them. We decided to test our theory by introducing this theory as part of a web-based, 9-week weight-loss program. Three years after introducing this concept, we have invited graduates to answer our questionnaire. The questionnaires contained a series of questions regarding the success of weight-loss maintenance and the implementation of the Motivation Cycles Theory. Results: We have polled 420 individuals. Weight maintenance after the program was 31% over 12 months, 18% for 6-12 months, 24% between 3-6 months and 27% less than 3 months. Interestingly, the ability to maintain weight-loss correlated with application of Motivational Cycle Method. In the first group 65% of participants successfully applied the principles while in the other groups 50%, 42% and 31%, respectively. Conclusions: Most of motivational theories today are aimed at identifying the primary motivation and strengthening them along with introduction of positive behavioral changes around food and exercise. Our preliminary results show that decrease in motivation to adhere to a certain protocol is inevitable, however preparing individuals interested in long-term results and supplying them with tools to address it can be crucial in successful weight-loss maintenance.

SO.07.4
EFFECT OF SQUARE DANCE TO REDUCE RISK FOR CORONARY HEART DISEASES AMONG OLDER ADULTS IN CHINA: A RANDOMIZED CONTROLLED TRIAL
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SIG: Ageing

Effect of Square Dance to Reduce Risk for Coronary Heart Diseases among Older Adults in China: a Randomized Controlled Trial Purpose: Square dance is commonly practiced in the Chinese mainland as a kind of social events to enhance quality of community life and personal well-being. It is also one form of physical activities and therefore might improve health and prevent diseases. However, evidence on its health effects is scarce. The present intervention study was a randomized controlled trial (RCT) and aimed to evaluate effectiveness of square dance to reduce risk for coronary heart disease (CHD) among Chinese elderly. Methods: Participants were recruited from four communities in an eastern city in China and then randomly assigned into intervention and “wait-list” control groups. The participants in the intervention
group attended specially designed 1-hour square dance sessions five times a week for 12 consecutive weeks, whilst those in the "wait-list" control were asked to keep their current physical activity habits during the same time period. Outcomes consisted of important indexes of CHD, including body weight, waist circumference, body mass index (BMI), basal heart rate, blood pressure, and standing balance ability, measured at Weeks 0, 5, 9, and 13 (four times). Repeated measures ANOVA (group and time as two factors, gender, age, height as covariates) and intention-to-treat analysis were adopted. Results: A total of 150 adults were invited, 60 met our selection criteria and participated in the study (age: 40-60 years, female=40). Of them, 34 were randomly assigned in the intervention group and the other 26 in control, and all completed the study. There were no significant between-group differences in all measures at baseline. Participants undertaking square dance had significant decrease on weight, waist circumference and BMI, and significant increase on balance ability. However, changes in basal heart rate and blood pressure were not significant between the two groups. Conclusion: Square dance is effective to reduce body weight-related risk factors of CHD, suggesting the potential of square dance in the prevention of CHD among older adults. Further studies are warranted to confirm the results and examine its long-term effect. Keywords: disease prevention, square dance, aerobic exercise, elderly, coronary heart disease

SO.07.5
USING INTERVENTION MAPPING TO ADAPT A PHYSICAL ACTIVITY INTERVENTION FOR SINGLE, CHRONICALLY IMPAIRED OLDER ADULTS
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SIG: E- & m-health

Objective: Especially for single older adults with chronic diseases, sufficient physical activity (PA) and social connectivity are beneficial to their health and independence. As the majority of industrialized societies ages rapidly, interventions targeting this group are called for, preferably relatively low-investment interventions. This study describes how an existing, proven effective PA-intervention was adapted to the requirements of this vulnerable population regarding PA and social connectivity. Methods: The Intervention Mapping Protocol was used to systematically adapt an evidence-based intervention comprising computer-tailored advice. Process data from the original intervention was assessed, a literature study was performed, and quantitative as well as qualitative data were derived from health care professionals (questionnaires (n = 10)) and target population (focus group interviews (n = 14)). The outcomes were systematically integrated into the adapted intervention by consecutively performing a needs assessment, defining a logic model of change and selecting theoretical methods and practical applications. The selected methods and applications were presented to the focus groups in an iterative process: their input was used to fine-tune the final intervention program and to develop an adaption-, implementation- and evaluation-design. Results/findings: The needs assessment revealed that the performance objectives were comparable to the original intervention. However, due to specific characteristics of the target population, the importance and operationalization of psychosocial determinants differed from the original intervention, resulting in refined change objectives. Although the core of the intervention and its theoretical methods and practical applications could remain the same, the refinement of the logic model of change resulted in alterations of the program components and intervention materials. An implementation study is planned to evaluate the effectiveness on physical activity and social connectivity of the adapted intervention. Conclusions: Adapting existing evidence-based interventions is an intensive process in which the Intervention Mapping protocol provides systematic guidance. The protocol enabled the researchers to adapt an intervention to a specific target population, while retaining the crucial intervention components by carefully examining which elements can be modified without decreasing effectiveness. This study provides practical insights that are useful when adapting PA interventions to the needs and situational differences of single older adults with chronic diseases.

SO.07.6
PHYSICAL ACTIVITY AND RISK OF MYOCARDIAL INFARCTION: AN ANALYSIS OF LIFESTYLE BEHAVIOURS IN A LARGE POPULATION-BASED COHORT
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Myocardial infarction (MI) is responsible for 200,000 hospital admissions per year in the United Kingdom (UK). Physical inactivity, an unhealthy diet, smoking, and alcohol consumption are major modifiable lifestyle risk factors for MI. Here we examined the independent associations of these four lifestyle behaviours with incident MI and all-cause mortality in UK adults. Methods: We followed a total of 349,337 participants (mean age 56 years) from the prospective UK Biobank Study (recruitment 2006-11). To assess physical activity (PA), questions on the baseline touchscreen questionnaire about walking, moderate PA and vigorous PA, which are similar those found in the International Physical Activity Questionnaire, were used to estimate metabolic equivalent (MET) minutes/week of PA during work and leisure time. Participants were linked to cause-specific hospital admission and death records. Cox regression models were used to calculate adjusted relative risks and 95% floated confidence intervals (FCI) for the associations between PA, smoking, alcohol consumption, or fruit and vegetable intake with incident MI or all-cause mortality. Results/findings: During an average of 7 years follow-up, 3955 participants had experienced a first MI event, and 7230 had died. The greatest reduction in MI risk occurred in those who met PA guidelines (600-999 MET-minutes/week) when compared to inactive participants (<120 MET-minutes/week (RR=0.75, 95% FCI 0.69-0.81). No additional benefit was observed for higher levels of PA. Those who were most active (=8000 MET-minutes/week) saw the greatest reductions in risk of death (RR=0.74, 95% FCI 0.67-0.83). Healthier levels of all four lifestyle behaviours led to reduced risk of death (ptrend <0.001). Conclusions: Using a large cohort and robust methods, these findings confirm previous research examining associations of individual lifestyle behaviours with incident MI and all-cause mortality. Overall, healthier behaviours reduced the risk of incident MI and all-cause mortality.

SO.07.7
EFFECTS OF TAI CHI EXERCISE ON CARDIO-PULMONARY FUNCTION AND BALANCE ABILITY IN THE ELDERLY: A META-ANALYSIS
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SIG: Ageing

Objective: To objectively evaluate the effects of tai chi exercise on cardio-pulmonary function and balance ability in the elderly by means of retrieval, screening and meta-analysis of Chinese literatures. Methods: Databases such as CNKI, VIP and WanFang Data were electronically searched to collect the randomized controlled trials about the effects of tai chi exercise on cardio-pulmonary function and balance ability in the elderly, published from January 1990 to August 2017, and the relevant references of the included articles were also manually searched. According to the inclusion and exclusion criteria, the literature was screened, the data were extracted and the quality of the included studies was assessed. Then meta-analyses were performed by using RevMan 5.3 software. Results: After searching and screening, 7 studies about the effects of tai chi on cardio-pulmonary function and 7 studies about the effects of tai chi on balance ability were included in the last analysis, evaluation and summary. Conclusions: Tai Chi can effectively improve cardio-pulmonary function and balance ability in the elderly.

SO.08: Nutrition and Diet Studies (Salon 3-4)

SO.08.1
TRENDS IN SUGARY DRINKS IN CANADA, 2004-2015: A COMPARISON OF MARKET SALES AND DIETARY INTAKE DATA
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SIG: Policies and environments
Objective Consumption of sugary drinks contributes to weight gain, and is a significant risk factor for chronic diseases. Sales data and dietary recall data are often used to examine trends in sugary drink intake and to evaluate policies, such as sugary drink taxes. However, the correspondence between these sources is unexamined for most populations. The current study examined trends in sugary drink sales data using two well-established sources, with comparisons to national intake estimates between 2004 and 2015 in the Canadian context. Methods Sales data for sugary drinks sold in Canada from 2004 to 2015 was purchased from GlobalData (GD) and Euromonitor (EM). Sugary drinks included 10 beverage categories containing free sugars: carbonated soft drinks, fruit drinks, sports drinks, energy drinks, sugar-sweetened coffee, sugar-sweetened tea, flavoured water, flavoured milk and alternatives, drinkable yogurt, and 100% juice. Analyses examined sales volumes for all sugary drinks, and by beverage category, with adjustment for population growth. National intake estimates were drawn from the 2004 and 2015 Canadian Community Health Survey (CCHS) Nutrition, based on existing analyses of the same beverage categories. Results In 2015, according to market sales data, purchased volume of sugary drinks ranged between 356mL (GD) and 443mL (EM)/person/day among Canadians. In contrast, national intake of sugary drinks was estimated as 277mL/person/day that year. Both GD and EM indicated that per capita sugary drinks sales decreased from 2004 to 2015, although the magnitude of this change differed: -23% (GD), -17% (EM). Despite this difference, data showed similar trends by sugary drink category, including for decreases for carbonated soft drinks (-32% GD, -27% EM), fruit drinks (-39% GD, -29% EM), and 100% juice (-20% GD, -10% EM). The overall decreases in sugary drink sales were less than decreases estimated from CCHS dietary recalls (-30%). Simultaneous Similar to previous research, dietary intake data appears to underestimate sales of sugary drinks. Sales estimates from different sources were similar—including trends over time—and substantially higher than estimates from national dietary recall data, which may be due to wastage and intake underreporting. The implications for evaluating population-level policies will be discussed.

SO.08.2
FOCUSED ATTENTION AND LATER FOOD INTAKE.
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: There is initial evidence that focusing attention on a meal can reduce subsequent snack intake and therefore may be a useful behavioural strategy to reduce energy intake. We conducted two laboratory studies that aimed to replicate this finding and understand why focused attention reduces later food intake. We hypothesised that focused attention during lunch would improve memory for the earlier consumed meal and that this would reduce subsequent snack-food intake. Methods: In Study 1, 108 participants (52.8 % female, BMI M = 25.75 kg/m2) were randomly allocated to eat a standard sized fixed lunchtime meal whilst listening to instructions that encouraged them to carefully attend to the meal as they ate it (focused attention condition), or a control condition. To determine whether the effect of focused attention is influenced by meal size, in a second study participants (N = 147, 100% female, BMI M = 25.15 kg/m2) were given either a small or a standard lunch. In both studies, after three hours participants were offered an ad libitum snack to consume and then completed assessments of their memory for the recent lunch. Results: In study 1, there was no significant difference between conditions in the amount of snack food eaten, F(2,105) = 0.14, p = 0.89, ?;2 = 0.002. Similarly, no significant difference was observed in Study 2, irrespective of the size of the lunch F(1,143) = 2.79, p = 0.10, ?;2 = 0.02. In both studies focused attention did not improve memory for the lunch and snack intake did not correlate with any measure of meal memory. Conclusions: Two studies failed to replicate the effect of focused attention on later snack intake. The failure to replicate previous observations may reflect a failure to improve memory for the meal in the focused attention condition. Therefore, further research is needed to understand whether focused attention can be used to reduce energy intake and justify weight-loss interventions that actively promote focused attention while eating.

SO.08.3
WHICH WARNING LABEL DESIGN IS MOST APPROPRIATE FOR THE BRAZILIAN POPULATION?
RESULTS FROM A RANDOMIZED CONTROLLED EXPERIMENT  
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SIG: Implementation and Scalability

Purpose: Brazilian researchers have developed a new warning label that is modelled on the internationally recognized symbol for an alert. This black-and white triangular design accommodates larger text and presents a starker contrast to the colors of the food product on which it appears. Our study compared this Brazilian triangular warning label (BT) with the existing Chilean octagonal warning label (CO) to examine which of the two models was more visible, and better at capturing consumer attention, improving consumer understanding, perceptions, and purchase intentions. Methods: A representative sample of 2419 Brazilian adults recruited from an online panel, was randomized to one of four study groups: (1) no-label control; (2) BT with the text 'A lot of [X nutrient]'; (3) BT with the text 'High in [X nutrient]'; or (4) CO with the text 'High in [X nutrient]'. Participants evaluated images of nine food products. An objective understanding score was calculated based on correctly identifying elevated quantities of nutrients. A 7-point Likert scale assessed label visibility, attention (only tested in BT1, BT2 and CO groups), perceived healthfulness of the products and purchase intentions. Differences were compared using ANOVAs and chi-square tests. Results/findings: There were no significant demographic differences across the four study groups (mean age of total sample was 38.1 years, 50.5% were female). While there were no significant differences between groups for label attention, BT1 and BT2 labels were significantly more visible than CO (p= 0.013). Participants in BT1, BT2 and CO groups had significantly higher objective understanding scores and lower evaluations of product healthfulness, and had lower intentions to purchase products compared to the control (p<0.05). There were no significantly differences between the three label groups when responses across all products were combined, although BT2 performed significantly better than BT1 and CO on selective products. Conclusions: BT design was more visible than the CO model and there was some suggestion that the BT2 design ['High in X nutrient'] was the better performing of the three models. All designs of warning models performed better than the no-label control.

SO.08.4
MEASURING THE EFFECTS OF FREE SUGAR REDUCTION STRATEGIES ON NON-COMMUNICABLE DISEASES IN CANADA
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SIG: Policies and environments

Purpose: To quantify the health effects of three scenarios: 1) lowering the total sugar content of Canadian prepackaged foods; 2) lowering the free sugars content of Canadian prepackaged foods; and 3) reducing the caloric share coming from ultra-processed food and beverage products (UPP), on deaths related to chronic diseases. Reformulation is an equitable approach to improving population health as it applies to all foods and it can benefit often overlooked segments of the public including those with low health literacy or income. Methods: The reformulation of products =15% of the total sugar Daily Value (DV) (100g/day) and of a free sugar DV (50g/day) to be below 15% DV, are modelled along with effects of reducing intakes of UPP using the University of Toronto Food Label Information Program (FLIP) database and the NOVA system for classifying the type of food processing. Consumption patterns and health outcomes are measured using dietary intake data analyzed using the Canadian Community Health Nutrition Survey (CCHS 2015), and the Preventable Risk Integrated ModEl (PRIME) comparative risk assessment model. Results: (Pending- Under review with Dr. L’Abbe- text possibly to be replaced) Preliminary analysis demonstrated that reformulation of pre-packaged foods and beverages to make them lower in total and free sugar resulted in lower free sugar levels and a moderate decrease in calorie contents for some food subcategories. Further results from this trial will show the impact on calorie and free sugar consumption with reformulations focused on free sugar contents and changes in dietary intakes to reduce consumption of ultra-processed products. Conclusion: Canadian policies have traditionally focused on total sugar rather
than free or added sugar, but the potential effects of this has not been evaluated. This research will have high relevance for future policy directions in Canada and elsewhere, by providing the evidence needed to demonstrate the population health benefits of reducing sugar levels in the Canadian food supply and reducing intakes of UPP.

SO.08.5
FEASIBILITY AND EXAMINATION OF TWO DIETARY ASSESSMENT METHODS IN CHILDREN WITH SPECIAL NEEDS
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SIG: Children and families

Objective: There is an increased prevalence of obesity in children with special needs. Accurate dietary assessment is a critical component of weight management, but difficult to obtain in all populations. The purpose of this study was to examine the use of two novel methods of dietary assessment in a sample of children with and without special needs. Research questions: 1) Examine feasibility and acceptability of two innovative dietary assessment methods (24 hour recall by FaceTime and a mobile food record application [mFR]) in children with and without special needs. 2) Compare dietary patterns based on macronutrient intake between methods. Methods: Correlational pilot study. Twelve children (4-18 years old) diagnosed with Down syndrome, spina bifida and no chronic illness used a study supplied iPad equipped with mFR to obtain digital image recordings pre and post all meals/snacks for 24 hour period and on following day completed a 24 hour food recall via FaceTime for 6 paired days. Parental assistance used as needed. Dietary patterns and daily average intake of carbohydrates, fats and proteins (grams and % of total intake) were compared between methods. Descriptive and independent samples t-tests conducted.

Results: 100% of sample successfully completed both methods for the 6 days. Discrepancies of intake recorded between methods was evident for Kcal and protein. Each method had pros and cons. mFR captured food intake not identified by 24 hour recall, but inhibited ability to estimate food details (i.e. portion size and food density). 24 hour recall by FaceTime highlighted the child's challenges with remembering food ate and lack of knowledge with preparation details and estimating portions sizes. Parents were often not knowledgeable of all food consumed by the child. Conclusion: Protocol was feasible and both methods received positive reviews by child and parent. Each method added value to dietary assessment in children with and without special needs. Combining the two methods could increase accuracy of dietary assessment, with an added component of convenience and novelty for children and families. Further testing in a larger sample is recommended.

SO.08.6
DIET DURING DEPRESSION: FOOD AND NUTRIENT INTAKES AMONG INDIVIDUALS WITH MAJOR DEPRESSIVE DISORDER
Dash S R1, 13, Opie R S1, 2, Marx W1, 2, Szymbek-Gay E A8, Ruusunen A1, 3, Hodge A4, Castle D5, Berk M1, 6, 7, O’Neil A1, 9, Jacka F N1, 10, 11, 12, Itsiospolous C2, 1 Deakin University, Food and Mood Centre, IMPACT Strategic Research Centre, VIC; 2School of Allied Health, College of Science, Health and Engineering, La Trobe University, Melbourne, VIC; 3Department of Psychiatry, Kuopio University Hospital, Kuopio; 4Cancer Intelligence and Epidemiology Division, Cancer Council Victoria, Carlton, VIC; 5St Vincents Hospital, Fitzroy, VIC; 6Orygen, The National Centre of Excellence in Youth Mental Health, Parkville, VIC; 7The Florey Institute of Neuroscience and Mental Health, Parkville, VIC; 8Deakin University, Institute for Physical Activity and Nutrition (IPAN), School of Exercise and Nutrition Sciences, Geelong, VIC; 9School of Population Health, The University of Melbourne, Parkville, VIC; 10Department of Psychiatry, University of Melbourne, Parkville, VIC; 11Centre for Adolescent Health, Murdoch Children’s Research Institute, Parkville, VIC; 12Black Dog Institute, Randwick, NSW; 13Baker IDI, VIC.

SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Surprisingly few data exist of major food/nutrient intakes for people with Major Depressive
Disorder (MDD) and adherence to dietary guidelines. This study aimed to examine major food group and key nutrient intake in a sample of individuals with MDD and assess diet quality against the Australian Guide to Healthy Eating and selected Nutrient Reference Values. Methods: Individuals with current MDD (n=74) recruited from the community completed a validated Food Frequency Questionnaire. Median food/nutrient intakes were compared by severity of depression [above/below median Montgomery Asberg Depression Rating Scale, (MADRS) scores] and sex, and the proportion who met Australian food/nutrient guidelines was estimated. Results: Participants reported consuming a relatively high fat (37.0% of total energy, 16% total energy from saturated fat), low carbohydrate (40.0% of total energy) diet, with a high proportion of energy from discretionary items (43.0% of total energy). A small proportion met minimum recommendations for fruit (18.9%), vegetables (4.1%), and wholegrains (20.3%); fewer than half met the recommended intakes for fibre, folate, potassium, magnesium and retinol. A greater proportion of men consumed the recommended amount of dairy compared to women (45% vs 14.8%, p = 0.01), however, no other significant differences in intakes of major food groups or key nutrients were observed based on severity of depression or sex. Conclusions: In common with the Australian population, individuals with MDD appear to consume a relatively low-quality, nutrient poor diet. The high-fat, low carbohydrate (and low fibre) diet observed in this sample has been associated with disruption to biological pathways that underpin depression. These findings highlight the need to improve dietary intakes at the population level, but also point to the need for dietary guidance for individuals with MDD.

SO.08.7
DIETARY PATTERNS AND DEFECATION STATUS IN JAPANESE WOMEN: A CROSS-SECTIONAL STUDY
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SIG: E- & m-health

Objective It has been reported that the fecal volume is associated with dietary fiber intake and shows a negative correlation with the risk of colorectal cancer. It may be possible that the fecal volume, form, color, and odor can assess health or nutritional status. Therefore, we investigated the relationship between dietary pattern and defecation status in Japanese women. Methods Our cross-sectional study included 330 Japanese women (24–sh;80 years; 60.4 ±smn; 12.1 years) who participated in nutrition and exercise intervention study. Dietary intake was assessed using a self-reported dietary history questionnaire. Defecation statuses included the fecal volume (options; 1 (0.5 pieces in model of feces) to 8 (4 pieces) ), color (1 (yellow) to 6 (dark brown) ), form (1 (separated hard lumps) to 6 (watery) ), odor (1 (odorless), 2 (normal), 3 (odor) ) and gas odor (1 (odorless), 2 (normal), 3 (odor) ) were assessed using a self-reported questionnaire. Dietary patterns were extracted by principal component analysis on the basis of the energy-adjusted intake of 52 food and beverage items. Principal component scores of each dietary pattern were categorized into tertile (Q1, Q2, Q3) and then defecation status were compared among tertile groups. Results Three major dietary patterns were identified by principal component analysis. The first dietary pattern was characterized by high intakes of vegetables, mushrooms, seaweed, soy products and potatoes, and the second was characterized by high intakes of fish, meat and alcohol, and the third was characterized by high intake of noodles. When defecation status was compared among tertile of each dietary pattern, the first dietary pattern was associated with fecal color (Q1: 4.0 ±smn; 0.8, Q2: 3.7 ±smn; 0.9, Q3: 3.7 ±smn; 1.0, P<0.05). The second dietary pattern was associated with fecal volume (Q1: 4.6 ±smn; 1.7, Q2: 4.4 ±smn; 1.6, Q3: 4.1 ±smn; 1.7, P trend<0.05). The third dietary pattern was associated with gas odor (Q1: 2.1 ±smn; 0.6, Q2: 1.9 ±smn; 0.6, Q3: 1.9 ±smn; 0.7, P trend<0.05). Conclusion Our findings suggest that an individual's defecation status varies with their dietary pattern. It was suggested that dietary contents could be deduced from feces status.

SO.09: Influencing settings for Nutrition in Children and Adults (Drawing Room)

SO.09.1
A SOCIO-ECOLOGICAL APPROACH TO UNDERSTANDING WHY ADULTS GIVE FOOD TREATS TO CHILDREN
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**SIG: Children and families**

**Purpose:** Research indicates 'treat' foods given to children for non-nutritive reasons, such as rewarding a child for good behaviour, can cause negative long-term effects (e.g., the development of emotional eating and potential obesity-promoting eating habits). However, the snack food literature has failed to draw firm conclusions between snack food intake and obesity. There is currently a significant lack of research which formally considers 'treats' separately to snacks and specifically factors that motivate parents and caregivers to provide 'treat' foods to children. Developing strategies which support caregivers' provision of healthy food to children, requires a deeper understanding of adults' 'treat' provision behaviour. This paper considers the complexities surrounding adults' 'treat' giving and determines how different factors influence these behaviours according to the levels of Bronfenbrenner's Socio-Ecological Model (SEM).

**Methods:** Using Ireland as an example, with the 3rd highest levels of obesity in Europe, ten focus groups with a diverse range of caregivers (e.g., parents, grandparents, and professional caregivers) from different socio-economic status cohorts, who cared for children of all ages, were conducted. Following verbatim transcription of the ten focus group audios, thematic content analysis was used to analyse the focus group transcripts according to the Theoretical Domains Framework, to develop codes and themes which were then mapped on to Bronfenbrenner's SEM.

**Results:** Distinct variations of 'treat' giving behaviours were found according to the caregivers' role (e.g., parent, grandparent or teacher). The main themes for parents and grandparents were emotion driven 'treating', habitual 'treating', and 'treating' according to individualised internal rules. Participants showed External Locus of Control relative to the obesogenic environment as a cause of their 'treat' food giving behaviour, perpetuated by the school and sports club culture. As such, clustering of themes was found primarily within the Individual and Organisational layers of the SEM.

**Conclusions:** Specific individual, interpersonal, school and community level factors were found to account for why caregivers provide 'treat' foods to children. These findings are particularly novel, as to date, there has been no research which considers why adults give food 'treats' to children, providing a foundation for interventions to reduce unhealthy food consumption in children.

**SO.09.2**

**EXPLORING CHILDCARE SERVICE LUNCHBOX NUTRITION GUIDELINES: A CROSS-SECTIONAL STUDY**

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**SIG: Early care and education**

**Purpose:** Childcare is a priority setting for the promotion of healthy eating, as a result the Australian government has developed accreditation standards requiring childcare services to support children to consume foods in care that are consistent with national dietary guidelines. In response, many services have developed lunchbox nutrition guidelines outlining foods that are recommended to be provided by parents, together with service procedures to support their implementation. This study aimed to describe the current content of such guidelines and to assess their alignment with the Australian Dietary Guidelines.

**Methods:** A cross-sectional study was conducted within a local health district in New South Wales, Australia. All 191 services, where parents pack lunchbox food for their children to consume in care, were invited by telephone to provide a copy of service lunchbox nutrition guidelines. A dietitian extracted descriptive information on the content of guidelines, the nature of any listed foods (recommended or not recommended) and reviewed included food recommendations according to dietary guidelines.

**Results:** Documentation relevant for inclusion in the analyses was received from 73 services. Seventy-one percent (n=52) of guidelines included information on service procedures which referred to methods by which information on healthy lunchboxes is provided to families (84%, n=44), methods staff monitor lunchboxes (64%, n=33), and ways staff give feedback to parents on lunchbox contents (56%, n=29). Seventy-two
percent (n=53) of guidelines listed specific food items as "recommended" or "not recommended" for packing in lunchboxes. An average of 49 food items were included in "recommended" lists (range 4-115) and 20 foods in "not recommended" lists (range 3-86). Thirty-nine percent (n=25) of service "recommended" food lists and 4% of "not recommended" food lists included at least one item that did not align with Australian dietary guideline food recommendations. Conclusions: Considerable variation was observed in service procedures, and scope of childcare lunchbox nutrition guidelines, with a large proportion including recommendations that were inconsistent with national dietary guidelines. The findings highlight the need for interventions to support the implementation of childcare service lunchbox nutrition guidelines in order to assist parents in providing healthier food for children in childcare settings.

SO.09.3
A SURVEY TO DETERMINE THE NUTRITION POLICIES AND PRACTICES OF SECONDARY SCHOOLS IN NEW SOUTH WALES, AUSTRALIA
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SIG: Policies and environments

Purpose: Research indicates that school nutrition policies and practices can impact on students' learning outcomes, health and wellbeing. Frameworks, such as the CDC Comprehensive Framework for Addressing the School Nutrition Environment and Services, are used internationally to guide the design of comprehensive school nutrition programs. However, a number of barriers may impede the implementation of these programs. This study aims to identify the current implementation gap between recommended and current nutrition policies and practices within secondary schools in NSW, Australia. Methods: A cross sectional survey was designed using the CDC Framework and adapted for the Australian context. The survey covered seven key school nutrition policies and practices (school nutrition policy, healthy canteens, school fundraisers, access to drinking water, classroom rewards, food and beverage marketing, and learning opportunities) (12 items) and perceived implementation barriers (9 items). Principals from Catholic secondary schools in NSW were invited to complete a 20-minute Computer-Assisted Telephone Survey. Descriptive statistics were used to describe characteristics of the school nutrition environment and key implementation barriers. Results/findings: Twenty-three of fifty-eight Principals completed the survey (40%), of which a third of schools reported having a current school nutrition policy. All schools reported access to drinking water (100%) and nutrition learning opportunities in the curriculum (100%). However, only one school (4%) reported that staff had participated in nutrition-related professional development in the last year, and 91% reported the availability of sugary drinks within their school canteen. Additionally, 74% reported using energy-dense food and drinks for fundraising activities whilst only 4% reported using fruit and vegetables. Key implementation barriers to implementing healthy eating strategies included placing other priorities first (39%) and lack of resources and funding (17%). Conclusions: The findings suggest that there is considerable scope to improve the implementation of policies and practice in secondary schools to improve student nutrition. Priority should be given to gaining executive support to work in partnership with secondary schools to support a comprehensive approach towards implementing nutrition policies and practices. The provision of resources and funding to support the implementation of healthy school canteens, healthy fundraising ideas and professional learning opportunities is warranted.

SO.09.4
TERTIARY EDUCATION INSTITUTIONAL FOOD ENVIRONMENTS CONTRIBUTE TO UNHEALTHY EATING
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SIG: Policies and environments

Objective: Young adults are gaining the most weight in Australia. A majority of 18 to 24-year olds are engaged in tertiary education. A meta-analysis of studies in North America, Belgium and the United Kingdom revealed that two thirds of students gain weight during their first year at University and at a rate
greater than the general population. Strategies and policies have been created for school food environments and in some workplaces but no policies exist for tertiary education facilities in Australia. The aim of this study was to audit the food environment in a large urban university (>60,000 students) and to assess how compliant it would be with benchmarks recommended by the State Health Ministry for their facilities. Methods: All beverages on sale across the campus were assessed for their sugar content. Vending machines at all sites were audited. All recipes for menu items prepared by the major food service operator were assessed for their nutritional content. The State benchmarks used to assess the food supply were that no sugar-sweetened beverages should be available, and 75% of foods sold should be healthy - referred to as "everyday" foods. The less healthy foods that have high saturated fat, excessive sodium and added sugars are known as "occasional" foods and should not exceed 25% of items available. Results: A total of 246 beverages were counted of which 149 were sugar-sweetened and 63% of these had high sugar levels (>7.5g/100ml). Vending machines sold 167 different food items with 1158 slots. It was determined that only 14% of snack foods for sale were "everyday" foods and were mostly nuts and tuna or low fat cheese and crackers. Only 51% of the menu recipes were classified as healthy by the benchmarks. Among the most available "everyday" foods were salads, sandwiches and wraps and some pizzas. Conclusions: This university food environment was dominated by sugar-sweetened beverages and vending machines with unhealthy choices. Half the freshly prepared menu items were those recommended for "everyday" consumption. Clearly there is room for improvement to provide young adult students with a less obesogenic food environment to enable healthy eating behaviours.

SO.09.5
OPTIMIZING SWEDISH SCHOOL MEALS FOR SUSTAINABILITY, NUTRITIONAL ADEQUACY, AFFORDABILITY, AND CULTURAL ACCEPTABILITY: A HOLISTIC APPROACH USING LINEAR PROGRAMMING
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SIG: Children and families

Purpose: Commitment to the 2015 Sustainable Development Goals will require fundamental changes in food consumption globally. This demands that future consumers have a better understanding of, and access to, nutritious and sustainable foods. This study aimed to optimize and develop affordable, nutritious, and culturally acceptable Swedish school meals, with reduced environmental impact. Methods: Prices, amounts (weights) and carbon dioxide equivalents (CO2eq) on all foods and drinks purchased by three schools in Sweden during the school year of 2015/2016 were obtained. The optimization was achieved through linear programming with amounts of the individual food items as the decision variables. The objective function was the minimal deviation from currently provided meals as a measure of acceptability. The optimized food basket was constrained by 30% of the daily estimated energy requirements, recommended nutrient intakes, and amounts of CO2eq, of which the latter were reduced in a step-wise manner. Results: Nutritional adequacy alone, without the application of a CO2eq constraint, was achieved by average deviations of 2-3% with only 7-10 foods either removed, reduced, or increased. With increasing reductions in CO2eq, the number of foods removed increased and the average deviation increased, without increasing the cost. A majority of the foods being removed were of animal origin, primarily meat and cheese. The optimized model suggested to replace the energy from these foods largely with potatoes, fish, milk, and cereal products. With the applied method, it was possible to model cost equivalent and nutritionally adequate school meals that were 40% lower in GHGE (in line with national targets), but only deviated 2-6% from currently provided lunches. Conclusions: It is possible to attain school meals that are affordable, nutritionally adequate and lower in greenhouse gas emissions without making unrealistic deviations from children’s usual food intake at lunch time. Optimizing school meals provides us with an invaluable opportunity of promoting healthy and sustainable dietary habits in children from an early age in favor of both human and planetary health.
CONSUMER PERCEPTIONS OF BARRIERS TO USING NUTRITION LABELS IN BRAZIL AND THEIR EVALUATION OF A NEW WARNING LABEL MODEL

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Purpose: This qualitative study investigated barriers to using Brazil’s current nutrition labels and assessed consumers’ opinions on a new, front-of-package, warning label (a black triangle against a white background, displaying the nutrients that are above recommended levels). Changes in consumers’ purchase intentions for products displaying the new warning label (WL) were also assessed. Methods: Thirteen focus group discussions with 101 adult participants, and an expert panel discussion with ten professionals were conducted using a piloted interview guide. All discussions were audio taped and transcribed verbatim. Transcripts were analyzed using a mix of inductive and deductive content analysis techniques. Results/findings: A few participants reported using current labels, with most using it only to check the expiration date of the product. The biggest barrier to using labels was that it was too technical to interpret - both in terms of the language used and the numeric form in which nutrient information was presented. The other barriers cited were: (1) lack of time to understand the information presented, (2) difficulty seeing or locating relevant information (lack of standardization of the labels), and (3) lack of incentive to seek out nutrition information on familiar products. When presented with the new WL, participants were indecisive about how these labels would affect purchase behavior. Their responses ranged from “I will stop eating this”, at least as their immediate response to label implementation, to “I will continue eating this”, particularly when the product was highly liked. Participants believed that the new WL would allow consumers to make more informed food choices, reflect on what they were purchasing, and seek out additional information when needed. The new labels would also help parents teach children how to make healthier decisions and therefore promote food literacy within the family. The terms “Calories”, “Sodium” and “Sweetener” were elected to be displayed on the label and “High in” was chosen as most appropriate indicator of elevated content. Conclusions: The proposed WL would overcome some of the barriers of the existing labels and allow for more informed food choices, although factors such as taste will still compete to affect food purchase behavior.

TREATS ARE A TOOL OF THE TRADE: A QUALITATIVE EXPLORATION OF THE MEANING AND ROLE OF TREATS AMONG GRANDPARENTS WHO PROVIDE INFORMAL CARE FOR THEIR GRANDCHILDREN AGED 1-5 YEARS

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Purpose: In Australia, 23% of children aged under 5 years are regularly cared for by grandparents, making them the largest informal care providers. Previous research suggests grandparents use maladaptive feeding practices such as using food as a reward and to regulate emotions. Traditionally, grandparents are viewed as being indulgent, spoiling their grandchildren with treats. These practices have potential implications for child health. This study aimed to explore the definition, meaning and role of treats among grandparents who provide informal care to their grandchildren aged 1 –sh; 5 years and to identify any incongruence between grandparents’ beliefs and behaviours. Methods: A phenomenological paradigm was utilised for this qualitative study. Semi-structured individual- and focus group-interviews (45-60mins) were conducted with South Australian grandparents who care for one or more grandchild/ren aged 1-5 years, to explore the situations in which they use treats with their grandchild/ren. Interviews were digitally recorded, manually transcribed and coded using NVivo software. Results/findings: Thematic analysis revealed three themes: (1) the functional role of treats; (2) grandparent role, responsibility and identity and (3) Rules regarding treat provision. Functionally, grandparents use treats for behaviour modification, as an
educational tool, and to express love. They believe they are entitled to occasionally be indulgent, as they do not claim the same role or responsibility as parents (role differentiation) and wish to foster a unique and special relationship with their grandchild (grandparent identity). They juggle this intrinsic desire to treat grandchild with the rules of the parent and the wellbeing of the grandchild. They tend to set their own rules regarding treats, based mostly on their personal health beliefs. Conclusions: Treats play an important role in the grandparent/grandchild relationship. Grandparents have a holistic view of treats and balance their own desires with those of their grandchildren and parents. Treats are a way for grandparents to differentiate their relationship from others and to be remembered as a valued elder. Health professionals are encouraged to recognise the connection that treats have in grandparent's identity. Interventions tailored for this group could enhance the grandparent/grandchild relationship around food and support grandparents’ desire to be educators and valued elders.

SO.10: Nutrition and Physical Activity in Early Childhood (Lounge)

SO.10.1
UNDERSTANDING NATIONAL POLICIES FOR THE PREVENTION OF EARLY CHILDHOOD OBESITY AMONG SIX NATIONS

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SIG: Policies and environments

Objective: No international comparison studies have been conducted regarding national-level policies and responsibility for early prevention of childhood obesity. The aim of this study was to explore and compare the national-level entities and policies relating to early prevention of childhood obesity among six countries that have faced high prevalence of childhood obesity. Methods: Six countries were selected based on income, population and being majority English-speaking: United Kingdom, Republic of Ireland, United States of America, Canada, New Zealand and Australia. An ecological framework was used to identify policies relating to the early prevention of childhood obesity. Policies identified were obtained using online searches, starting with specific policies on the prevention of early childhood obesity, then obesity in general, and finally the prevention of non-communicable disease policies were searched. The search for policies was cross-referenced against the recommendations of the WHO Ending Childhood Obesity Report. Strategies within each policy document were grouped into five categories based on what they are addressing: social determinants of health, food environment, physical activity environment, health services and family or individual lifestyle. Results: National-level responsibility for the early prevention of childhood obesity is different in each country, but for the most part the national role is to lead and establish partnerships between regional authorities. Overall the paradigm is consistently skewed towards downstream and midstream approaches, though the food and physical activity environment is mentioned to varying degrees in all six countries. A broader identification of the role of the social determinants of health in the early prevention of childhood obesity, and strategies to address this, is not a common theme in these policy documents. Conclusions: Understanding the ways in which different national entities engage with the prevention of early childhood obesity can identify real-world evidence of efficacy and potentially successful novel approaches, but they must be interpreted within their own context. A complex systems approach provides a mechanism to integrate the social determinants of health into national level obesity prevention policy and provide leadership for regional level authorities to plan locally.

SO.10.2
IF YOU BUILD IT, WILL THEY COME? THE INFLUENCE OF PERCEPTIONS OF SAFETY AND NEIGHBORHOOD COHESION ON YOUTH UTILIZATION AND PHYSICAL ACTIVITY ON RENOVATED GREEN SCHOOLYARDS

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Purpose: Evidence suggests that park renovations in underserved urban communities promote increased utilization and physical activity (PA) among community members (Cohen et al., 2015; Tester & Baker, 2009). Further, youth at schools with renovated schoolyards are more active than those at schools with poorer quality play environments (Anamaththen et al., 2011). However, perceptions of safety in high-crime neighborhoods may be a barrier to utilization of renovated schoolyards (Colabianci, Maslow & Swayampakala, 2011), particularly during out-of-school (OST) hours. The current study examines youth's utilization and PA on newly renovated green schoolyards in three diverse low-income urban neighborhoods during OST. In addition, the influence of perceptions of safety, gang activity, community cohesion was investigated. Method: Behavioral mapping (Cosco, Moore, & Islam, 2012), which incorporates the Child Activity Rating Scale (Durant et al., 1993), captured utilization and PA during OST in three green schoolyards in Chicago (total observations N=1,202) in spring 2016. To compare utilization across schools of varying sizes, a weighted variable was created that accounted for total students per school. Parent and community member perceptions of school and neighborhood safety and cohesion were captured via surveys (Buckner, 1998; Janssen, 2014; Samson, Raudebush, & Earls, 1997). Results: Over one-third of children were walking or running when observed on the schoolyards. Males were more active than females (t(1200)=4.31, p<.001). There were no significant differences in PA by ethnicity or by school. Utilization differed by school, with the largest school demonstrating the lowest overall weighted utilization. Levels of utilization were lowest at schools with significantly higher reported levels of gang activity (F(2, 59)=8.85, p<.001) lower community cohesion (F(2, 57)=11.30, p<.001), and fewer safe places to play in the neighborhood (F(2, 54)=8.49, p<.01). In contrast, levels of utilization were highest at schools with significantly better ratings of school-community engagement (F(2, 59)=3.41, p<.05). Conclusions: Promoting green schoolyard utilization may be more challenging in high-crime urban neighborhoods where concerns persist regarding safety and gang activity, and there are low levels of neighborhood trust and support. Efforts to increase community cohesion and neighborhood safety may help overcome these barriers and promote optimal benefits from built environment interventions.

SO.10.3 IMPACT OF AN OUTDOOR NATURE BASED PROFESSIONAL DEVELOPMENT PROGRAM ON EARLY CHILDHOOD EDUCATOR PRACTICES

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SIG: Early care and education

Purpose: Natural outdoor experiences are associated with children developing a sense of identity, autonomy, psychological resilience, self-regulation, gross motor skills and healthy behaviors. Considering a large proportion of children spend a significant amount of time in early childhood education and care services, they provide an ideal setting for interventions to increase children's physical activity. This study evaluated the effectiveness of an 'Outdoor Nature Based Play' Professional Development (PD) program on educator's physical activity practices. Methods: Participants included educators from ten long day care centres taking part in the Play Spaces & Environments for Children's Physical Activity (PLAYCE) Study in Perth, Western Australia (WA). The 'Outdoor Nature Based Play' PD program involved a two-hour evening education and skill training workshop for educators, delivered by Nature Play WA. Pre and post workshop visits to each centre enabled workshops to be tailored to each service's needs and delivered practical advice for incorporating new knowledge (and post-workshop Action Plans) into service practices. Educator reported physical activity and outdoor nature play practices (intentions and beliefs, enjoyment and confidence and, promotion and feedback) were measured at baseline and 3-months post PD, using established items. Results: Baseline data has been collected from seven centres (52 educators). Less than 20% of educators reported confidence in providing nature based outdoor play opportunities for children. To date post PD data has been collected from two centres. Over 75% of educators reported strong agreement that they had increased their knowledge of the benefits of nature play for young children, the role of educators in promoting nature play, how to overcome barriers to outdoor learning and centre
policies and, their confidence in creating practical and fun outdoor-based activities at their centre. Remaining post PD intervention data is being collected with final analysis to be completed May 2018. Conclusion: If this ‘Outdoor Nature Based Play’ PD program is found to be effective, it will provide a cost-effective and sustainable strategy for improving children’s physical activity and wellbeing whilst attending care. In collaboration with our partners Nature Play Australia there is potential to scale up this PD program nationally.

SO.10.4
EFFECTIVENESS OF AN ORGANIZATIONAL DEVELOPMENT INTERVENTION TO INCREASE PHYSICAL ACTIVITY OF CHILDREN IN CHILDCARE CENTERS
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SIG: Early care and education

Objective A large proportion of German children spends a considerable amount of time at childcare. Therefore, childcare centers are considered to be an ideal setting for strategies aimed at increasing physical activity levels of young children. The main objective of the QueB study was to develop, implement and evaluate an organizational development intervention targeting the physical activity environment and offers of childcare centers. Methods The QueB intervention comprised of staff in-house coaching, 3 inter-institutional workshops and self-evaluation tools (Kita-Check-App, Goal Attainment Scaling). This 1-year intervention was implemented in 12 childcare centers in South Germany. Activity levels of children and educational staff were assessed via pedometers pre- and post-intervention. Post-intervention questionnaires were answered by one key person of each childcare center to assess the subjective benefit and self-reported effects on the childcare centers. Results There was a significant increase in step count of children between the baseline and first follow-up after the start of the intervention. There was no significant change in step count of educational staff. But 8 out of 12 key persons agreed or fully agreed that their team is doing more for the staff’s physical activity than before. All 12 agreed or fully agreed that their team is doing more for the children's physical activity. 9 out of 12 agreed or fully agreed that their childcare center could strongly benefit from the project. Further and more detailed outcomes will be presented. Conclusions The results indicate that the examined organizational development approach is an effective strategy for increasing physical activity of children in childcare centers, but not for the physical activity of educational staff. Further analyses are conducted to gain deeper insight into the mechanisms (facilitators/barriers) of the intervention for the purpose of transferring it to other childcare centers.

SO.10.5
CHILDREN’S VEGETABLE CONSUMPTION IN FINNISH PRESCHOOLS IN RELATION TO EARLY EDUCATORS’ PRACTICES AND OPINIONS
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SIG: Early care and education

Objective: There are mixed results about the associations between early educators’ mealtime practices and children's food consumption in preschool. The purpose of this study is to explore these associations in a context where predominantly healthy foods are served to children, Finnish preschools. Methods: This study is a part of the cross-sectional DAGIS study (www.dagis.fi), which was conducted in 66 preschools in 2015/2016 in Finland. Altogether 378 early educators and 864 preschoolers aged 3-6 years participated in the study. Encouragement to eat fruit and vegetables, role modeling at lunch, rewarding with food, opinion about the food in preschool, and opinion about the adequacy of vegetables were reported by early educators. Lunchtime serving style was observed by researchers. Early educators kept food record of children's food consumption on 2 preschool days. Data on the children who had eaten all 3 served meals (breakfast, lunch, and afternoon snack) at preschool on at least one day was used (n=581, 67%). Multilevel linear and logistic regression analyses were conducted. Child's age, gender, and early
educators' education level were used as confounders. Results: Allowing children to serve themselves vegetables/salad during lunch was associated with higher vegetable consumption. Also, early educators' opinion that there was enough vegetables available to children was associated with higher vegetable consumption among the children. Conclusions: Allowing children to serve themselves vegetables seems to be a favorable practice and it should be considered when trying to promote children's vegetable consumption in preschool. Also, the amount of vegetables available to children should be taken into account.

SO.10.6
PHYSICAL ACTIVITY AND ADIPOSITY IN PRESCHOOL AGED CHILDREN: A CROSS-SECTIONAL STUDY
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SIG: Children and families

Purpose: In adults and school aged children physical activity is inversely associated with adiposity. However, in children =5 years, this association remains unclear, with few studies using objective measures of physical activity and most assessing adiposity via body mass index (BMI) only. Therefore, the study aim was to determine if objectively-assessed physical activity is associated with measures of adiposity in children =5 years. Method Cross-sectional study of a subgroup of 317 children (mean age 3.9±smn;0.4 years) participating in an Australian birth cohort study (n=1074 infants). Participants wore an accelerometer for seven days. Mean duration and time accumulated in bouts =1 minute of light-intensity (LPA, 101–sh;1679cpm), moderate- to vigorous-intensity (MVPA, = 1680cpm) and total physical activity (LMVPA, =101cpm) (hours/day) were computed. Adiposity was assessed by BMI, waist circumference, triceps and subscapular skin fold, and %body fat from bioelectrical impedance analysis. Linear regression was used to evaluate associations between physical activity and adiposity adjusted for accelerometer wear time and maternal education. Results: Each hour spent in MVPA was associated with -1.0 %body fat (95%CI:-2.0 to -0.01), -0.3 triceps skin fold z-score(95%CI: -0.5 to -0.03), and -0.4 subscapular skin fold z-score (95%CI: -0.7 to -0.1), and each hour of MVPA accumulated in bouts =1 minute was associated with -1.6 %body fat (95%CI:-3.06 to -1.1), -0.5 triceps skin fold z-score (95%CI: -0.9 to -0.07), and -0.6 subscapular skin fold z-score (95%CI: -1.1 to -0.2). Each hour spent in LPA was associated with 0.3 higher BMI z-score (95%CI: 0.06 to 0.5), and each hour of LPA accumulated in bouts =1 minute was associated with 1.3 higher %body fat (95%CI: 0.2 to 0.8), 0.4 triceps skin fold z-score (95%CI: 0.04 to 0.7), 0.4 waist circumference z-score (95%CI: 0.02 to 0.7) and 0.5 BMI z-score (95%CI: 0.2 to 0.8). LMVPA variables were not associated with any measure of adiposity. Conclusions: In preschool aged children, MVPA was associated with decreased adiposity whereas LPA activity was associated with increased adiposity. LPA may be more analogous to sedentary time in children =5 years. Activity accumulated in bouts =1 minute may be important in young children whose physical activity is intermittent.

SO.10.7
PHYSICAL ACTIVITY, GROSS MOTOR SKILLS AND SCHOOL READINESS IN SOUTH AFRICAN PRESCHOOL CHILDREN FROM LOW-INCOME SETTINGS
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Objective: School readiness (SR) is an important predictor of academic outcomes. Physical activity (PA) and gross motor skills (GMS) have been associated with academic achievement and are therefore potential targets for intervention. Previous research in South Africa found improvements in SR following a GMS intervention. The aim of this study was to test relationships between PA, GMS and SR, as well as comparing SR in urban and rural low-income settings. Methods: PA, GMS and SR were assessed in a sample of preschool children (3 to 6-years-old) from urban (N=53) and rural (N=63) low-income settings in South Africa. SR was assessed using the cognitive subsection from the Herbst Early Childhood Development Criteria test consisting of tasks believed to underlie cognitive SR. GMS were assessed using the Test of Gross Motor Development-2. PA was objectively measured using hip-worn Actigraph GT3X+ accelerometers worn 24 hours a day for 7 days. Group differences were investigated using Mann-Whitney U tests and multiple linear regression analyses to test the relationships between PA, GMS and SR in each setting. Results: The urban group had better SR (p<0.001). GMS and MVPA did not differ between groups, but children in both groups displayed satisfactory GMS (Murban = 53.63, Mrural = 54.87, 85% classified as average or above for their age) and high levels of total PA (Murban = 415.73min, Mrural = 480.47min) and daily MVPA (Murban = 108.86min, Mrural = 111.95min). Regression analyses revealed GMS were positively associated with SR in the urban (β = 0.446, p < 0.001) and rural (β = 0.265, p = 0.035) group. MVPA was negatively associated with SR in the rural (β = -0.251, p = 0.021) and not the urban group. No other associations between SR and PA were identified. Conclusions: Rural children are at higher risk for poor SR than urban children. These findings replicate previous research suggesting an association between GMS and SR. The negative association with MVPA in the rural group suggests that high levels of PA are not necessarily associated with good cognitive outcomes. Longitudinal data are required to understand the mechanisms of positive and negative associations.

SO.11: Children and Parenting Physical Activity Studies (CES 2-3)

SO.11.1
PREDICTORS OF STATIONARY CYCLING EXERGAME USE AMONG INACTIVE CHILDREN IN THE FAMILY HOME
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SIG: Children and families

Purpose: The use of exergames may be one viable way to increase child physical activity, but investigation of long term motivation, and prediction of adherence has seen little research attention. The purpose of this study was to follow-up on a previously published randomized controlled trial focused on exergame and traditional recumbent cycling among children aged 10-14 (Rhodes et al., 2017) to now examine its effects on 1) intermediary motivational variables and 2) predict use over three months. Similar to many exergame trials, our trial showed the exergame group reported significantly higher use early (first week), though both conditions declined in bike use over time and had no significant differences. Our present study used self-determination theory and the theory of planned behavior as motivational frameworks. Methods: Seventy-three insufficiently active children were recruited through advertisements within the community/schools and randomized to either an exergame condition (n = 39) or a standard bike condition (n = 34). Weekly bike use was recorded in a log-book and motivational variables were assessed after a familiarization session and at six weeks. Results: Exposure to exergames conferred higher affective and instrumental attitudes, perceived behavioral control, intention, and intrinsic motivation compared to the comparison condition (p < .05), but this difference was not present by the six-week point of the trial. Children who had higher intention to use the bikes and extrinsic regulation were more likely to use the bikes from six weeks to three months (p < .05), but no assessed psychological variable could account for use during the first six weeks. Conclusion: The results demonstrate that single-exposure research designs may not accurately reflect the motivations for longer term exergame play. Further, parent consumers of exercise equipment for the family home may benefit from considering how much their children would enjoy using the equipment.
after repeated exposures.

SO.11.2
WHICH SCHOOL-BASED HEALTH PROMOTION INTERVENTIONS DO STAKEHOLDERS IDENTIFY AS MOST PROMISING FOR RETURN ON INVESTMENT MODELING? FINDINGS FROM STAGE 1 OF A SEQUENTIAL EXPLORATORY MIXED-METHODS STUDY

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SIG: Implementation and Scalability

Purpose: Childhood obesity and associated lifestyle risk factors, such as unhealthy eating, physical inactivity, and sedentary behaviour pose a significant public health problem with heavy economic burden. Schools are ideal settings for health promotion, as they reach most children. It is unclear, however, what interventions are favoured by key stakeholders, and their associated return on investment (ROI). This sequential exploratory mixed-methods study aims to: Stage 1) qualitatively identify and prioritize school-based health promotion interventions based on key stakeholder perspectives (i.e., researchers, policymakers, practitioners); Stage 2): quantitatively calculate ROI for interventions identified in Stage 1. This presentation will report on results from Stage 1, which addressed the research question: what interventions do stakeholders prioritize for ROI modeling, and what considerations influence their choices?

Methods: The qualitative component (Stage 1) of this study is guided by community-based participatory research, with roots in ethnography. Multiple data generation strategies were employed: (1) individual open-ended surveys completed electronically by stakeholders, (2) document analysis of effective school-based health promotion interventions from a published systematic review, (3) world café-style focus group with deliberative group processes to prioritize interventions. Textual data from survey responses, document analysis, and the world café-style focus group were analyzed using latent content analysis.

Results/findings: Through survey responses (n=19), document analysis (n=67), and world café-style focus group (n=39 participants in world café), seven school-based health promotion intervention types were prioritized for inclusion in the ROI modeling. These seven types included: comprehensive school health, school/board nutrition policy, universal school food program, increased availability of healthy foods, daily physical education, increased physical activity during school hours, and changing foods sold & served in schools. Stakeholders also identified 92 specific interventions across the 7 intervention types and highlighted five key considerations that influenced their choices when prioritizing interventions: research/evidence based, sustainable, equitable, feasible, and whole school/comprehensive. Conclusions: This research identified school-based health promotion interventions prioritized by key stakeholders, and therefore served as a foundation to meaningfully direct ROI modeling. This is an exemplar of integrated knowledge translation, which promotes increased research uptake to ultimately prevent childhood obesity, improve associated health behaviours, and reduce health care costs.

SO.11.3
OBESITY PREVENTION IN EARLY LIFE: THE EFFECTIVENESS AND ACTIVE INGREDIENTS OF INTERVENTIONS DELIVERED BY HEALTH PROFESSIONALS

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SIG: Implementation and Scalability

Purpose: In 2014, over 41 million children worldwide were overweight/obese. Several factors, identifiable during the first 1,000 days, are associated with the development of overweight/obesity. The number of interventions delivered during this period is increasing, however, results are mixed. Furthermore, it is not known which components of these determine effectiveness as few studies to-date have focused on the discrete behaviour change techniques used. It is therefore difficult to understand the most effective, transferable, intervention components. Health professionals can play an important role in childhood obesity...
prevention in part due to the large number of routine contacts they have with parents. This review aims to synthesise the evidence for the effectiveness of health professional-delivered interventions which aim to reduce the risk of overweight and obesity in children under the age of two. Methods: The systematic review included randomized, including quasi-randomized, controlled trials of interventions delivered by health professionals to pregnant women/primary caregivers of healthy infants less than two years old. Eligible studies were identified through systematic searches of 11 major electronic databases (including grey literature), 3 trial registry databases, and cross-checking reference lists of full-texts retrieve. Intervention details are being extracted according to the TIDieR reporting guidelines. Intervention procedures are being coded using the Behaviour Change Technique Taxonomy (v1), intervention functions using the Behaviour Change Wheel, and theories employed using the Theory Coding Scheme. The methodological quality of studies is being assessed using the Cochrane Collaboration tool for assessing the risk of bias and generalisability of studies assessed using an external validity checklist. All procedures are being conducted independently by two reviewers. A meta-analysis will be conducted using Review Manager; if data are not sufficiently homogenous, a narrative synthesis will be employed. Results/findings: 16,044 records identified, 8,043 abstracts screened, and 109 full-texts reviewed (provisional). This review will provide evidence for the effectiveness of interventions delivered by health professionals, and explore what behaviour change theories and/or techniques are associated with intervention outcomes. Conclusions: By better understanding what works (or not), early life obesity prevention interventions can be optimised/re-developed. Furthermore, the findings will have implications for the conduct, reporting, and translation/scalability of interventions.

SO.11.4
ADHERENCE TO RECOMMENDATIONS FOR LIFESTYLE BEHAVIOURS IN CHILDHOOD AND MENTAL HEALTH IN SUBSEQUENT YEARS: A PROSPECTIVE STUDY OF CANADIAN CHILDREN

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SIG: Children and families

Purpose: Mental health disorders are a problem of epidemic proportions, affecting one in five Canadians throughout their lifetime. Studies have shown approximately half of all lifetime cases of poor mental health emerge before age 14. While general associations of diet quality, physical activity, sleep, and sedentary behaviour with mental health disorders have been established, this prospective study is the first to examine the independent (and cumulative) associations of meeting established recommendations with mental health diagnosis in adolescence. Methods: A population-based prospective study (N=3436) was conducted, linking survey data from the 2011 Children's Lifestyle and School Performance Study with administrative health data. Mental health diagnosis was defined by medical diagnosis from 2011 to 2014 or before 14th birthday according to ICD-9 CA or ICD-10 codes. Lifestyle behaviours were measured with the Harvard Food Frequency Questionnaire and self- and parental proxy reports, expressed as meeting recommendations (yes/no) for 1) vegetables and fruit, 2) grains, 3) milk and alternatives, 4) meat and alternatives, 5) saturated fat, 6) added sugar, 7) sleep, 8) screen time, and 9) physical activity. Mixed-effects negative binomial regression models adjusting for demographic confounders and caloric intake were used to determine the independent and cumulative associations. Findings: Across the sample, 14.1% had an incident mental health diagnosis between age 10/11 and 14. Further, 7.1%, 65.4%, and 27.6% met 1 to 3, 4 to 6, and 7 to 9 of the lifestyle recommendations, respectively. Children who met 7-9 lifestyle recommendations had 46.9% (p=0.004) lower incident rate ratios (IRR) of mental health physician diagnoses in subsequent years compared to those who met 1-3 recommendations. For every additional lifestyle recommendation met, the IRR of mental health diagnoses decreased by 14.0% (p<0.001). Conclusions: Findings indicate that mental health disorders in childhood may be reduced through compliance to healthy lifestyle recommendations, with greater reductions as more recommendations are met. Thus, health promotion initiatives that focus on modifying multiple health behaviours in childhood may have a greater effect in reducing the burden of mental health than those that target a single behaviour.

SO.11.5
HOW SOCIAL SUPPORT AND SELF-EFFICACY ARE CHAIN WHEN PREDICTING PHYSICAL ACTIVITY: THE ROLE OF CHILDREN AND PARENTS’ PERCEPTIONS
Objective: Although the effects of self-efficacy and social support on health outcomes are well established, it is crucial to find out if these predictors are chained in a specific way, with either self-efficacy prompting support receipt (cultivation hypothesis) or with support receipt prompting self-efficacy (enabling hypothesis). The associations remain unknown in the context of parental-child dyadic processes explaining child physical activity (PA). Methods: Data were collected at baseline (T1) and at 7-8 months follow-up (T2) among parent-child dyads (N = 596). Children reported measures of self-efficacy, social support provision from parents, and their PA. Parents reported their perceptions of child's self-efficacy and parental social support provision. Mediation analyses estimating direct and indirect effects were controlled for potential confounders on both the mediator (T2) and the dependent variable (T2). Results: When children's predictors were the only ones considered as predictors in the equation, the enabling effect of child's perception of parental social support provision on child's self-efficacy and cultivation effect of child's self-efficacy on child's perception of parental social support provision were confirmed. When only parental predictors were accounted for, cultivation effect was supported for the parental perception of child's self-efficacy on parental social support provision. Conclusions: Both mechanisms were found to facilitate children PA. Importantly, if parents perceived their children as self-efficacious, they provided them with more parental social support and thus children were more physically active. PA facilitating interventions for children should emphasize the role of parental perceptions of child self-efficacy, as it triggers parental support.

SO.11.6 INCREASED CONSUMPTION OF WHOLE GRAINS IN LOW-INCOME CHILDREN AFTER A 4-MONTH HOME DELIVERY INTERVENTION

Tester June1, Leak Tashara2.1UCSF Benioff Children's Hospital Oakland, Oakland, CA; 2Cornell University, Division of Nutritional Science, Ithaca, NY.

Objective: Consumption of whole grains over refined grains is beneficial for glucose control and diabetes prevention, but is low in high-risk populations. The Food Overcoming our Diabetes Risk (FoodRx) study was a pilot intervention aimed at increasing consumption of fiber-rich foods in low-income obese children with prediabetes. We hypothesized that home deliveries of whole grains, vegetables, and beans/legumes would increase child liking and intake of these foods. Methods: Sixty low-income families with a child (8-17 yrs) whose Hemoglobin A1c was 5.7-6.4% within the past year were recruited. Fresh vegetables, beans/legumes, whole grains (e.g. brown rice), and whole grain products (e.g. 100% whole grain crackers) were delivered to their homes for 16 weeks. Deliveries were scaled to household size, including at least 1 oz equivalents/day of whole grains per household member. At baseline and follow-up, children provided liking scores for 10 whole grain foods included in the deliveries and completed three 24-hour diet recalls. Liking was measured using the following scale: never tried, do not like, like a little, and like a lot. Dietary intake was analyzed for total, refined, and whole grains. Paired t-test was used to compare baseline to follow-up values. Results: Forty-seven children (mean 12.9 yrs) had baseline and follow-up data. Of the list of 10 whole grain foods, children had tried an average of 6.3 at baseline and 7.8 at follow-up (paired t-test p<0.001). The sum of items (out of a possible 10) that they identified as liking (either 'a little' or 'a lot') compared to these delivered items that they either had still never tried or did not like increased from 5.5 to 6.5, p<0.001. Whole grain consumption increased by 47% from 1.7 to 2.5 oz eq/day (p<0.001). (The daily recommendation is 3.0 oz eq/d). Refined grains trended downwards and total grains trended upwards (0.6 and 0.3 oz eq, respectively), though these differences were not significant. Conclusion: These data suggest that this home delivery model led to an increase in liking of whole grains and whole grain products. This meaningful increase in whole grain consumption among these high-risk children has implications for diabetes prevention strategies.
Objective: This study aimed to determine the relationship between maternal and infant objectively measured physical activity, and to examine the diurnal interactions between these behaviours while accounting for potential covariates. Methods: Mothers and infants (n=152 pairs; infants aged 3-24 months) were recruited and physical activity was measured using a wrist worn accelerometer (Axivity AX3, Axivity Ltd, Newcastle-upon-Tyne, UK) for 3-7 days. Mothers completed sleep diaries recording bed-time and wake-time for themselves and their infant; and reported times during which their infant was not in their personal care for each day during the measurement period. Significant correlates of infant physical activity, as well as the interactions between mother's physical activity, day of the week, sleep status, and caregiver status, were included in panel regression analyses with infant physical activity as the outcome. Results: There was an equal distribution of boys and girls, and their age ranged from 2.6 and 24.5 months. The majority of mothers (73%) did not spend any time apart from their infant. During weekdays, the combined effect of mother's physical activity (b=0.11) as well as the interactions between mother's physical activity with caregiver status (b=0.17), and sleep status (b=-0.04) on infant physical activity was b=0.24; while during weekend days this association was b=0.21; and was largely moderated by the interaction between the mother being with the infant and her activity levels (b=0.23), but partly attenuated by mother's physical activity independent of other variables (b=-0.04). For each hour of the day for both mother and infant, peaks of physical activity were higher when the mother was not the primary caregiver. Conclusions: Infant physical activity levels were strongly associated with their mother's activity levels particularly during the week, yet this relationship was made stronger when mothers were being active while looking after their infant. Mothers should be encouraged to be active as much as possible when looking after their children, and to provide infants with as much opportunity to be active as possible.
Improving the implementation of obesity prevention policies and practices in the early childhood education and care setting

Dr. Jannah Jones, Hunter New England Population Health

Supporting early childhood education and care services to implement evidence-based policies and practices which support child nutrition and physical activity in care has the capacity to make an important contribution in reducing the health burden of excessive weight gain in early childhood. Despite this, many services fail to implement such policies and practices and few trials have been conducted to examine the strategies that may be most effective in improving implementation. This presentation will describe the findings of a systematic review examining the effectiveness of strategies aimed at improving the implementation of obesity prevention policies and practices by early childhood education and care services. The presentation will also describe the design, application of implementation framework, findings and key learnings of a multi-component intervention to support the implementation of obesity prevention policies and practices in the early childhood education and care setting.

Reconceptualizing precision in public health

Dr. Dana Lee Olstad, University of Calgary

Current models of precision public health are rooted in a biomedical perspective of health. This talk will outline a framework for precision public health that, in contrast to its current formulation, is consistent with public health principles. In this reconceptualized formulation of precision public health, social position and its context-specific interacting dimensions, determinants, and health consequences constitute the central locus of study.

Impact evaluation of a multilevel multicomponent childhood obesity prevention on diet and food-related behaviors among low-income African American children

Angela Trude
B’more Healthy Communities for Kids (BHCK) was a group-randomized controlled trial implemented among 9-15 years old in 28 low-income areas of Baltimore. We evaluated the impact of BHCK on food purchasing and sugar consumption (sugar sweetened beverage (SSB) and sweets (i.e. cookies, cakes, pies, donuts, candy, ice cream, sweetened cereals, and chocolate beverages)) in youth (n=357) using multilevel models. Consumption and food purchasing frequency were assessed pre- and post-intervention using the Block Kids FFQ and self-report survey, respectively. Analyses were stratified by age (younger: 9-12 (n=114) vs older: 13-15 (n=243)). Intervention youth increased their purchasing of healthier foods and beverages by 1.4 points more than comparison youth ($\beta = 1.4$; 95% CI: 0.1; 2.8). There was a 3.5% decrease in kcal from sweets for older intervention youth, compared to the control group ($\beta = -3.5$; 95% CI: -7.76; -0.05). No impact was seen on SSB.
Inequalities in children’s physical activity and interventions

Rebecca Love, Centre For Diet And Activity Research, University of Cambridge

Physical inactivity is socially patterned, mirroring inequalities in associated health outcomes. Given that physical activity tracks across the lifespan, childhood offers a critical time to intervene and change behaviour before patterns become entrenched. Despite the promise of schools as a universal context to reach the majority of children irrespective of background characteristics, the potential of school-based interventions to positively and equitably impact children’s physical activity behaviour remains uncertain. Even where interventions successfully improve overall behaviour across a population they also may inadvertently increase inequalities by not equally benefiting subgroups within the population. It is unclear whether advantaged and disadvantaged children benefit equally from interventions and accordingly it is possible current efforts are exacerbating inequalities. Children’s physical activity research to date has had a limited focus on inequalities. I will present research that attempts to fill these research gaps through mapping the consideration for, and evidence of, differential effects within children’s physical activity promotion research, and the results of analyses investigating the effectiveness and equity of school-based interventions.
SIG Sessions

Jun 04, 13:45 - 14:45: SIG Presentations

SIG 1: E- + M-HEALTH (Concord 1)
"Pitch Perfect"
Background: e- & mHealth is a crowded space. Being able to successfully pitch your project is imperative to convince funders and stakeholders your idea is worth supporting. However pitching is not a natural skill for many scientists. In this session we will:
learn from the experts what makes a great pitch
hear about some of the latest e- & mHealth projects, as a range of SIG members pitch their projects (selected from application prior to the conference)
the most successful pitch, voted by the audience, will win a prize.

SIG 2: Policies + Environments (Concord 2-3)
The Policies and Environment SIG will offer a general membership meeting. At which time we will engage in an activity to build research collaborations.

SIG 3: Children + Families (Oasis)
The Children and Families SIG will facilitate the meeting beginning with an informal chat with fellow members over beverages, followed by two main activities:
1. Panel discussion: A panel of leading experts in the field of children and families research (Prof Stewart Trost, Prof Tony Okely and Prof Man Chin A Paw) will talk about the current state of children and families research and future directions. There will be opportunities for SIG members to interact with the speakers.
2. Award presentations for the conference podium and poster awards.

Jun 05, 13:45 - 14:45: SIG Presentations

SIG 4: Cancer Prevention + Management (Concord 1)
The Cancer Prevention and Management SIG will:
- Provide an update of SIG activities
- Introduce new members
- Call for nominations for SIG roles (Co-Chair to replace Laurien Buffart, Secretary, Newsletter co-ordinator/s, webinar co-ordinator)
- Facilitated brief pitches of top SIG posters, followed by a group content discussions, and ECR awards

SIG 5: Early Care + Education (Concord 2-3)
The Early Care and Education SIG will facilitate three main activities:

1. “Successful Funding of our Work: Hot Topics from the Field”
   Speakers: Valerie Carson, PhD – University of Alberta (CA); and Serene Yoong, PhD – University of New Castle (AU)
2. “Speed Networking” where SIG members will have the opportunity to learn more about others in this group and to simulate networking and collaborations through brief, facilitated conversations with several other members.

3. Brief business meeting including introduction of new SIG leaders and recognition of research award presentations (oral & poster)

**SIG 6: Implementation + Scalability (Oasis)**
After the kick-off meeting last year, the I&S SIG has been working on different projects (Review project, Delphi study, Webinar on Frameworks, and Study about barriers for engaging in Implementation Science). During this meeting, we would like to briefly update you about the SIG’s activities since last year’s conference. After that we invite you to take part in a focus group discussion to gain an international perspective on the barriers and facilitators to conducting dissemination and implementation (D&I) research. ISBNPA members will be invited to take part in a short survey before the conference to guide the discussions.

**Jun 06, 14:00 - 15:00: SIG Presentations**

**SIG 7: Theories of Motivation (Concord 1)**
The Theories of Motivation SIG session will consist of:
1) short presentations by leading experts in motivation and behaviour change. For instance, Professor David Lubans will present the SAAFE principles for teaching PE lessons, and their alignment with theories of motivation. This will be used to generate a discussion about the application of theory to real world challenges of motivating young people to be active.
2) Award presentations: SIG abstract award finalists will give a presentation of their work, and the winners will be announced.

**SIG 8: Socioeconomic Inequalities (Concord 2-3)**
The Socioeconomic Inequalities SIG session will start with the presentation of the abstract prizes. The session will follow with a discussion of best practice around considering socioeconomic inequalities in behavioural nutrition and physical activity research. Finally, the session will conclude with an interactive activity to help shape the position statement that the SIG is currently working on.

**SIG 9: Ageing (Oasis)**
The Ageing SIG meeting will have some ignite talks which are short presentations (maximum of 5 slides in 5 minutes) on current projects or thought pieces. For the first time, the SIG will award prizes for presentations at the conference and the best image of positive ageing from Hong Kong.
#LANCERHEALTH: USING TWITTER AND INSTAGRAM AS A TOOL IN A CAMPUS WIDE HEALTH PROMOTION INITIATIVE; A MIXED METHODS APPROACH

Santarossa S, Woodruff S.J., University of Windsor, Windsor, ON.

**Purpose:** The present study aimed to explore using popular technology that people already have/use as a health promotion tool, in a campus wide social media health promotion initiative, entitled #LancerHealth.

**Methods:** During a two-week period the university community was asked to share photos on Twitter and Instagram of "What does being healthy on campus look like to you?", while tagging the image with #LancerHealth. All publically tagged media was collected using the Netlytic software and analyzed.

**Results:** Text analysis (N = 234 records, Twitter; N = 141 records, Instagram) revealed that the majority of the conversation was positive and focused on health and the university. Social network analysis, based on five network properties, showed a small network with little interaction. Lastly, photo coding analysis (N = 71 unique image) indicated that the majority of the shared images were of physical activity (52%) and on campus (80%).

**Conclusions:** As digital media continues to become a popular tool among both public health organizations and those in academia, it is important to understand how, why, and which platforms individuals are using in regards to their health. This campus wide, social media health promotion initiative found that people will use popular social networking sites like Twitter and Instagram to share their healthy behaviours. Online social networks, created through social networking sites, can play a role in social diffusion of public health information and health behaviours. In this study, however, social network analysis revealed that there needs to be influential and highly connected individuals sharing information to generate social diffusion. This study can help guide future public health research in the area of social media and its potential influence on health promotion.

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THE USE OF SMART PHONE-BASED PHYSICAL ACTIVITY MONITOR APPLICATION IN INCREASING STEP COUNTS AND PERCEIVED BEHAVIORAL CONTROL OF COLLEGE STUDENTS ON ENGAGING IN PHYSICAL ACTIVITY

Mahmudiono Trias, Muliah Nafijah, Department of Nutrition, Universitas Airlangga, Surabaya, East Java.

**Background:** One of the most effective ways of preventing overweight and obesity is by making exercise and physical activity as our regular lifestyle. In order to increase physical activity, one could be motivated through nutrition education. Purpose: The purpose of this study was to analyze the effectiveness of nutrition education and health application implementation to increase the physical activity of university students. Methods: This was a randomized controlled trial with 3 groups. The treatment Group I was given nutrition education intervention and health application, the treatment group II was given health application only while the control group was given brochure about the importance of physical activity. Nutrition education was delivered in four sessions every week for one month aligning with the tenet of the theory of planned behavior (TPB). The sample in this study was 58 respondents, which drawn through simple random sampling technique. Perceived behavioral control was measured using questionnaire develop by Ajzen while physical activity was estimated using step counts from smartphone app "Pacer". Analysis
statistics used include paired T-test, one-way ANOVA, Wilcoxon sign test, and Kruskal-Wallis test. Result: The age of respondents ranged from 18-22 years. Respondents were mostly female and mostly live in boarding house. There were differences in perceived behavioral control variables (p=0.045) among the group in which treatment group I had higher perceived behavioral control after treatment compared to group II (p=0.027) and control group (p=0.032). The average score for perceived behavioral control increased 9 points in group I as compared to only 1 point increase in group II and III (p=0.045). The average step count was also statically significant when we compare group I and group II (p=0.023) indicating that the use of smartphone PA monitoring app along with nutrition education give the better results than the use of app alone. Conclusions: In the conclusion of this research highlight that combines nutrition education and use of health application could increase participant's perceived behavioral control to engage in physical activity.

P1.01.03
EFFECTS OF EXERGAMING ON COLLEGE STUDENTS’ SITUATIONAL INTEREST AND ENERGY EXPENDITURE
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SIG: E- & m-health

Purpose: Recently, the effects of exergaming on individuals' physical activity (PA) and health-related outcomes have been investigated from various perspectives. However, few study is available to examine adults’ situational interest in the exergaming. Therefore, this study aimed at examining the effects of exergamings on college students' situational interest and energy expenditure compared to traditional treadmill exercise. Methods: Sixty college students (30 males; Mean age = 23.6) participated in three separate 20-minute exercise sessions: 1) Xbox 360 Kinect Reflex Ridge; 2) Xbox 360 Kinect Just Dance; and 3) moderate-intensity treadmill walking (4.0 mph). Participants' situational interest was evaluated by a validated Situational Interest Survey (Chen et al., 1999) at each end of exercise session. The survey is a 14-item questionnaire including five sub-constructs: novelty, challenge, attention demand, exploration intention, and instant enjoyment. PA was assessed by the ActGraph GT3X+ accelerometer and the total energy expenditure was calculated using PA intensity duration into metabolic equivalents (METs). Results: Participants had greater energy expenditure in traditional treadmill exercise session (Mean = 6.3, SD = 2.1) than they did in Just Dance (Mean = 3.0, SD = 1.5) and Reflex Ridge (Mean = 3.7, SD = 1.4). There were significant differences for situational interest among three exercise sessions (novelty: F(1, 59) = 371.2, p < 0.001, Partial eta-squared = 0.863; Challenge: F(1, 59) = 125.3, p < 0.001, Partial eta-squared = 0.680; attention demand: F(1, 59) = 248.1, p < 0.001, Partial eta-squared = 0.808; exploration intention: F(1, 59) = 242.3, p < 0.001, Partial eta-squared = 0.804; instant enjoyment: F(1, 59) = 70.6, p < 0.001, Partial eta-squared = 0.545). Specifically, post hoc Bonferroni comparisons indicated greater novelty, challenge, attention demand, exploration intention, instant enjoyment (p < 0.001) in the two exergaming sessions than treadmill exercise session. Conclusion: Although traditional exercise session led to more energy expenditure than exergamings, exergaming may offer a more enjoyable and interesting experience for players. Moreover, exergaming may attract participants' greater attention and exploration intention than traditional exercise, providing implications for maintenance and sustainability of PA behavior.

P1.01.04
A SINGLE-ARM FEASIBILITY STUDY OF GLYCOLEAP, A MOBILE LIFESTYLE MANAGEMENT PROGRAM FOR PEOPLE WITH TYPE 2 DIABETES
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SIG: E- & m-health

Objective: Forecasts predict that without successful interventions, the lifetime risk of developing Type 2 Diabetes (T2DM) in Singapore will be one in two by 2050. Using relevant dimensions of the RE-AIM
evaluation framework, this feasibility study will assess the potential effectiveness and scalability of GlycoLeap—a 24-week lifestyle management program for adults with T2DM delivered through a smartphone application—as an add-on to standard care. This is the first study in Singapore to explore the possible adoption of a comprehensive mobile health (mHealth) program to improve health outcomes in adults with T2DM. Methods: This on-going study is a 24-week, single arm, pre- and post-intervention evaluation involving 100 T2DM patients recruited from a community healthcare facility. The Reach, Effectiveness, Implementation, and Maintenance dimensions of the RE-AIM framework will be evaluated. Reach is measured as the percentage of those who consented to participate out of all patients approached. Effectiveness is defined as the percentage point change in HbA1c (primary outcome) and percentage weight change (secondary outcome) between baseline and post-intervention. Implementation (i.e. program fidelity) will be assessed by the following process measures: total number of online health lessons completed and weekly number of blood glucose measurements, weight measurements, food logs, and messages sent to health coaches. Maintenance will employ post-intervention user satisfaction surveys to predict the sustainability of GlycoLeap. Results: Preliminary results reveal that 13.2% of patients approached (n=785) consented to participate (Reach). During the first 12 weeks of intervention, the first 40 users achieved an average percentage weight loss of 3.19% (Effectiveness). On average, the 40 users completed 2 out of 12 lessons, logged 1.86 blood glucose measurements (meeting 46.5% of recommendation), 1.88 weight measurements (exceeding recommendation by 1.88×es); 2.71 food logs, and sent 3.33 messages to their health coach weekly (Implementation). Conclusions: Preliminary results suggest the potential for GlycoLeap as a highly scalable add-on to standard care. If confirmed with the full sample, a randomized controlled trial of effectiveness and cost-effectiveness should be pursued.

P1.01.05
TELEPHONE-DELIVERED HEALTH COACHING: WHO STICKS WITH THE PROGRAM?
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SIG: E- & m-health

Purpose: Free broad-reach lifestyle programs, such as the Get Healthy Service (GHS) offered by telephone, are a good option for equitable service delivery. Previous evaluations have identified that client retention in the GHS coaching program (to 10 or 13 calls) is low and important to address in order to improve cost-effectiveness of the service. We evaluated the rates of withdrawal over the GHS program (per call) and examined the extent to which this varied between different segments of the population and client reasons for withdrawal. Methods: Data was analysed from all clients enrolling in GHS health coaching between March and June 2017 (n=1107, some clients were still receiving coaching at time of data analysis). Hazard ratios (HR) for withdrawal from health coaching were examined for age, sex, ethnicity, education, employment and Body Mass Index (BMI) using Cox Proportional Hazards models. Differences were examined separately, then adjusted for each other. Results: On average, the withdrawal rate was 44.8% over 5.8 calls. Significantly (p<0.05) higher withdrawal was seen with age <50 years (HR [95%CI] =2.0[1.6, 2.3] versus ≥50 years, p<0.001), full-time employment (1.5[1.3, 1.9] versus not working, p=0.001) and obesity (1.3[1.0, 1.7] versus BMI <25 kg/m2, p=0.044). Other differences were modest and non-significant (HR = 0.9 to 1.2). With adjustment, results were similar. Of the 494 recorded reasons for withdrawal, the most common was the system having exhausted all contact attempts (327; 66%). Most reasons related in some way to client availability (346; 70%); some were about a lack of client interest (116; 23%); and very few concerned program dissatisfaction (19; 4%). Conclusions: Withdrawal from coaching was high. Consistent with the major withdrawal reason being inability to contact participants, the strongest predictors of staying in the GHS coaching were being older and not being in full-time employment. Our service delivery partners are interested in examining whether flexible delivery and client-led graduation protocols in the coaching program can reduce withdrawal.

P1.01.06
DEVELOPMENT OF A COMPLEX INTERVENTION TO IMPROVE QUALITY OF DIET IN PREGNANT TEENAGERS: THE BABIES, EATING AND LIFESTYLE IN ADOLESCENCE STUDY (BELLA)
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Purpose: Teenage pregnancy has a high risk of poor outcomes for mother and baby. Teenage girls have the poorest diets of any population group in the UK, a recognised determinant of poor pregnancy outcome. Pregnant teenagers trust advice from their midwives, but midwives feel they do not have time or opportunity to discuss diet and nutrition or the confidence and knowledge to do so. This study aimed to develop a complex intervention that uses the relationship between pregnant teenagers and their midwives to deliver support to improve diet quality in pregnant teenagers.

Methods: The study used an innovative Person-Based Approach to intervention development in conjunction with Social Cognitive Theory to design format and content of the intervention. Interviews were conducted with pregnant teenagers and their health and social care practitioners regarding diet and lifestyle, and what form of support they might find helpful. Content analysis was then used to identify guiding principles for the design of the intervention, which were mapped onto appropriate behaviour change techniques to produce an outline intervention design.

Results/findings: A total of 106 young women and 49 practitioners were interviewed. Findings suggest that pregnant teenagers find it difficult to prioritise a healthy diet for themselves and their baby; they often feel isolated and not in control of their own lives. Pregnant teenagers and their midwives lack a reliable resource for immediate support with eating healthily. Midwives felt that it was their role to support young mothers with diet in pregnancy, but were anxious about initiating conversations and felt they lacked clear guidance.

Conclusions: An effective intervention to improve pregnant teenagers’ dietary quality must empower and motivate teenage mothers and their midwives, provide an engaging and easy to use 24-hour source of information and support, and enable connections with other young mothers. The proposed intervention therefore comprises training in skills to support behaviour change for midwives and a digital support tool that is relevant to improving dietary quality and appropriate for the needs of the pregnant teenagers. The resource will be introduced by the midwife to support pregnant teenagers between appointments.

SIG: E- & m-health

P1.01.07
USING WEARABLES FOR PHYSICAL ACTIVITY PROMOTION – DEVELOPMENT AND PILOT TESTING OF A TEAM CHALLENGE INTERVENTION USING CONTINUOUS REAL-LIFE MONITORING
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SIG: E- & m-health

Objective: This study pilot tested a real-time intervention that aimed to monitor and promote physical activity (PA) continuously in real life using consumer wearables and a purposively developed smartphone application. Methods: Forty healthy adults were allocated to intervention (n=20) and control (n=20) and received wearables at baseline. Intervention participants additionally received a purposively developed smartphone application and were randomized into 4 competitive teams of equal size. They were prompted (via push notifications and messages through the app) to participate in the 6-week intervention, comprising 2*3 distinct real-time challenges (1. Steps challenge, 2. stair climbing challenge, 3. lunchtime dash) on weekdays. Ranking of teams was displayed in a real-time Leaderboard and teammates were able to send supportive messages through a controlled chatroom. Step data was collected objectively using the wearables, and assessed at baseline and at the end of the 6-week monitoring. A participant was considered valid if he/she contributed =1,500 steps/day for =4 days during both assessments. Main
outcomes were the difference in mean steps/day and the number of participants achieving ≥10,000 mean steps/day. Results: Of 40 participants, 12 (6 from each group) were excluded due to invalid step data during assessments. Participants were on average 28 years old (IQR: 23-35), were predominantly female (57%) and of Chinese ethnicity (75%). 85.7% (intervention: n=11, control: n=13) of them continued using the wearables over the 6-week monitoring period and contributed 142 (intervention) and 148 (control) valid days, respectively. The mean steps/day at baseline were 9,922 (Intervention) and 11,298 (control). Control and intervention participants decreased mean steps/day by -1,424 and -76, respectively. The difference between groups was 1,348 steps/day (p=0.236) in favour of the intervention group. At the end of the monitoring period, more intervention (45.5%, 5/11) than control (38.5%, 5/13) participants achieved ≥10,000 mean steps/day (p=1.0). Conclusion: The integration of wearables and apps for continuous real-life monitoring of PA and real-time interventions was feasible, but lack of adherence to using the wearables was substantial even before the intervention started. The implementation of more comprehensive behaviour change strategies may improve adherence and effectiveness in future interventions.

P1.01.08
INTEREST IN DIGITAL HEALTH BEHAVIOUR INTERVENTIONS AMONG BREAST, PROSTATE AND COLORECTAL CANCER SURVIVORS IN THE UNITED KINGDOM: A CROSS SECTIONAL STUDY
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SIG: E- & m-health

Purpose: Digital interventions show potential in health promotion among cancer survivors. There is little evidence about the degree of interest cancer survivors have in digital interventions in the United Kingdom (UK). As part of a larger study, we surveyed UK cancer survivors to identify the proportion interested in lifestyle information delivered via an app and explored sociodemographic and health behaviours associated with interest. Methods: Adults (>18 years) with a primary diagnosis of breast, prostate or colorectal cancer in 2012/2013 from 5 hospital sites across London/Essex were surveyed. This study comprises Wave 1 data (surveys returned between February 2015-20th January 2016). Participants provided their demographic information, physical activity, dietary, smoking and alcohol behaviours and indicated their interest in lifestyle information delivered via an app. Responses were dichotomised for interest in app-based interventions (not at all vs. a little/somewhat/very/extremely interested) and for health behaviours (meeting vs. not meeting current UK recommendations). Analyses were conducted using binary logistic regression. Results: 2035 participants responded to the survey (39% response rate); 1445 provided complete data for this analysis. Mean age was 65 years old (range 26-95; SD=12) and the sample was 60% female (N=864/1445). 25% (N=357/1445) were interested in app-based interventions. Unadjusted analyses showed that increasing age (odds ratio [OR]=0.92, 95%CI: 0.91-0.93) was associated with decreasing interest and that being female (OR=1.97; 95%CI: 1.52-2.55) and more highly educated (e.g. degree-educated vs. no formal qualifications) (OR=3.79; 95%CI: 2.61-5.52) was associated with increasing interest. Furthermore, not meeting recommendations for physical activity (OR=0.52; 95%CI: 0.41-0.67), fruit & vegetable consumption (OR=0.72; 95% CI: 0.56-0.93) and total fat intake (OR=0.67; 95% CI: 0.53-0.86) was associated with decreasing interest. However, in analyses adjusted for age, gender and education level, significant associations only remained for decreasing age and higher education. Conclusions: Almost a quarter of breast, prostate and colorectal cancer survivors are interested in lifestyle information delivered via an app, but a ‘digital divide’ remains around age and education. Research is needed to carefully design apps with these groups in mind (e.g. co-design) and determine how beneficial apps can be best presented to all individuals to overcome this divide.

P1.01.09
APPLYING THE COM-B MODEL AND BEHAVIOUR CHANGE WHEEL TO DEVELOP A FACEBOOK INTERVENTION TO IMPROVE CALCIUM INTAKE AMONG YOUNG ADULTS
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Purpose: Young adulthood is a critical time to make lifestyle changes as this period involves gaining independence and entering a new physical and social environment. Calcium intake is often low in this age group. The aim of this study was to conduct qualitative research to inform the development of a social media intervention to promote calcium intake among young adults using the COM-B model which incorporates Capability, Opportunity and Motivational behavioural enablers. Methods: Focus groups were conducted with the target group, young adults aged 18-25 years. Questions were developed to explore attitudes, perceptions, knowledge (capability), barriers (opportunities) and motivation. All focus group discussions were transcribed and analysed using NVivo. Thematic analyses of focus groups data from which information relevant to the COM-B components was extracted. To achieve the target behaviour of increasing calcium intakes, the needs for changing young adults' capability, opportunity and motivation were deducted. Results: The main capability required was to increase knowledge (psychological) of the importance of calcium in the diet and their requirements. Goal-setting and self-monitoring of behaviour, recipes to assist with meal planning and educational posts to raise awareness of the health benefits, recommended serving size and different sources of calcium, were identified as methods to improve capability. Opportunity was reported as the availability in their environment, financial affordability (physical); and influences from their surroundings (social). Facebook posts that provide tips on purchasing appropriate products while concurrently reducing cost and food wastage would address this need. In addition, Facebook posts that include culturally appropriate recipes may engage their social circle. Finally, motivation was seen as having an engrained habit due to cultural or parental influences (automatic); and following current social norms, beliefs and personal preferences (reflective). Facebook posts to try and create a new norm among the community and videos that include enticing recipes will be used to help address motivation. Conclusion: The insights gathered from the focus groups provided data that could be mapped to the COM-B framework for intervention development. Further qualitative research with the target audience will be conducted to finalise the intervention.

P1.02: SIG Early Care and Education (Grand Foyer)

P1.02.01
FACTORS ASSOCIATED WITH TIME-TO-PREGNANCY: A MULTIETHNIC ASIAN PROSPECTIVE COHORT

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SIG: Early care and education

Purpose: Falling fertility has been a global public health concern. However, limited studies have been performed to investigate factors affecting fecundability among Asian women. We examined multiple factors that were potentially associated with time-to-pregnancy (TTP) in an Asian prospective cohort. Methods: We studied 442 Asian (Chinese, Malay, Indian) women who were planning to conceive and enrolled in the Singapore PREconception Study of long-Term maternal and child Outcomes (S-PRESTO) cohort from 2015-2017. Face-to-face structured interviews and measurements were conducted preconception. Pregnancy occurring within one year from recruitment was ascertained through ultrasound scan. TTP was measured in menstrual cycles. Multivariable discrete-time proportional hazards modelling was used to determine the association of socio-demographic and lifestyle factors with TTP, as estimated by fecundability ratios (FRs) and 95% confidence intervals (CIs). Results: The 442 women contributed 2538 cycles and 152 pregnancies. After 6 and 12 menstrual cycles, 34.2% and 45.8% women reported a pregnancy, respectively. Older age (=35 vs. 30-34 years; FR 0.43 [95% CI 0.23-0.81]), lower education
level (primary/secondary vs. tertiary levels; FR 0.58 [0.38-0.91]) and higher body mass index (≥27.5 kg/m² vs. 18.5-22.9 kg/m²; FR 0.53 [0.30-0.94]) were associated with longer TTP. Malay ethnicity (reference group: Chinese; FR 1.86 [1.08-3.16]) and multiparity (reference group: nulliparity; FR 1.59 [1.09-2.32]) were associated with shorter TTP. No associations with TTP were observed for last contraceptive used, cycle regularity, cycle length, age at menarche, alcohol intake, smoking exposure, physical activity and multivitamin intake. Conclusions: Among socio-demographic and lifestyle factors associated with a longer TTP in Asian women, higher preconception weight are modifiable factors and therefore serve as intervention targets to enhance female fertility and reduce time to conception.

P1.02.02
IS BODY MASS INDEX ASSOCIATED WITH SOCIAL-EMOTIONAL WELLBEING IN CHILDREN THAT ACHIEVE AND DO NOT ACHIEVE THE 60 MINUTE PHYSICAL ACTIVITY GUIDELINE?
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SIG: Early care and education

Purpose: Previous studies examining associations between child weight status and social-emotional wellbeing have reported inconsistent findings. These studies grouped children into weight status categories rather than examining body mass index (BMI) and did not investigate potential effect modifiers, such as gender and physical activity (PA). This study examined associations between BMI and social-emotional wellbeing in active and inactive boys and girls aged 7 years. Methods: Data is from wave four of the Millennium Cohort Study. Children wore an ActiGraph accelerometer for 7 consecutive days and measures of stature and body mass were taken. BMI was calculated from stature and body mass (kg/m²²). Parents/carers reported child gender, ethnicity (classified as white British or other) and income (classified as above or in poverty), and completed the Strengths and Difficulties Questionnaire (SDQ). Six-thousand-eleven children (3073 girls) had valid accelerometry data and complete survey data on the variables of interest. Accelerometer data was used to classify children as active (<60 mins moderate-to-vigorous intensity PA; MVPA) or inactive (=60 mins MVPA). The main outcome variables were scores for total difficulties, emotional, conduct, hyperactivity-inattention and peer relationship problems, and prosocial behaviours. Adjusted linear regression analyses examined associations between BMI and SDQ scores. Analyses were conducted separately for active and inactive boys and girls. Poverty income, sedentary time and accelerometer wear-time were included as covariates. Results: In this sample, 21% were below poverty level income, 90% were white British, 17% were overweight, 50% achieved the MVPA guideline, and 5% had an abnormally high total difficulties score. Among inactive boys (n=1084), BMI was positively associated with peer problems (B=0.08, p<0.001) and total difficulties (B=0.14, p<0.05). Among active (n=1144) and inactive girls (n=1929), BMI was positively associated with prosocial behaviour (B=0.05; p<0.05), and peer problems (B=0.05 p<0.001), respectively. Conclusions: This study demonstrates that BMI negatively influences children’s social-emotional wellbeing. Our results revealed that gender and MVPA level influence the association between BMI and social-emotional wellbeing among UK children aged 7 years. Further research examining the concurrent effect of diet and MVPA on child weight status and social-emotional wellbeing is needed.

P1.02.03
IMPLEMENTATION OF A NATIONWIDE SCHOOL REFORM – DETERMINANTS OF INFLUENCE FOR IMPLEMENTATION OF 45 MINUTES DAILY PHYSICAL ACTIVITY IN DANISH PUBLIC SCHOOLS: RATIONALE AND STUDY DESIGN.
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SIG: Early care and education

Purpose: Physical activity (PA) is associated with a multitude of health benefits. However, a large number of Danish children do not meet the global recommendation on physical activity (PA). Schools play a crucial
role in children's everyday life, since most of the waking hours are spend in this institutional setting. In 2014, the Danish Government initiated a new public school reform with involvement of 45 minutes PA on average per day for all school classes. The purpose of the present study is to assess school implementation and differences in uptake of a policy-driven initiative to enhance children’s PA level.

Methods: The study is based on a quasi-experimental design to evaluate the school reform as a natural experiment, using a mixed-method approach. Up to 30 schools are enrolled in this study, including more than 2000 children aged six to sixteen years. Accelerometer and survey data collected at the schools before 2014 are compared with new data collected in 2017/18 using the same standardized methods. Quantitative and qualitative measures are used to evaluate the implementation of the reform. Geographic Information System, field observations and questionnaires aimed at children, parents, teachers and principals are used to evaluate components related to built environment, school community, children’s PA trends, parents' educational- and PA level, school specific PA initiatives, types of PA used in class and PA policies. Up to 12 representative schools are further selected for in depth analyses, including focus group interviews with teachers and principals. Results: Based on qualitative analyses this study aims to provide fundamental knowledge on how schools can implement 45 minutes daily PA. Results from the statistical analysis will provide knowledge on how school staff, health policies and the physical environment influence children’s PA level during school hours. Conclusion: The school reform provides a unique opportunity for evaluating the influence of an ambitious nation-wide policy-driven school-based PA promotion initiative. The present study has the potential to provide new knowledge of decisive determinants for successful implementation of PA in public schools.

P1.02.04

PHYSICAL ACTIVITY AS A MEDIATOR OF THE ASSOCIATIONS BETWEEN PERCEIVED PHYSICAL ENVIRONMENTS AND ADIPOSITY IN CHINESE YOUTH

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SIG: Early care and education

Objective: Chinese youth have showed the alarmingly high rate of obesity and low rate of engagement in sufficient physical activity (PA). Environmental supports are important for creating changes in PA and obesity. This study examined whether PA mediated the relationship of physical environments related to PA with adiposity (body mass index (BMI)). Methods: A cross-sectional study was conducted in 661 Chinese youth (41.3% males) aged 13-18 years. Four environmental settings related to PA were measured with the questionnaire, including the home, neighborhood, school, and convenient facilities (on a frequently traveled route (e.g., to and from school) or within a 5-minute walk/drive from your school of home). Perceived physical environments related to PA were assessed two indicators for each setting: perceived availability of environmental resources (yes or no for each statement) and perceived importance of environmental resources (5-Likert scale from not at all important (1) to very important (5)). The validated Chinese version of Physical Activity Questionnaire for Older Children (PAQ-C) was used to access students’ PA. Mediation analysis was completed using bootstrap methods. Results: The prevalence of overweight was 11.8% including 1.5% obese respondents. Four environments related to PA (i.e., neighborhood environment, school environment, and perceived importance of the home environment and the convenient facilities) did not show the significant associations with neither PAQ-C nor BMI, thus, they were excluded from the final models. Home environment (βa; = 0.16), convenient facilities (βa; = 0.10), and perceived importance of the school environment (βa; = 0.16) significantly predicted the PAQ-C score which indicated the higher engagement in PA. Perceived importance of the neighborhood environment predicted the PAQ-C with marginal significance. PAQ-C negatively predicted BMI (βa; = -0.13). The percentage of the total effect of three physical environments related to PA (i.e., home environment, convenient facilities, perceived importance of the school environment) on BMI mediated by PAQ-C was 37.5%, 72.2%, and 45.7%, respectively. Conclusion: Findings suggest that PA is a mechanism by which several environmental correlates may affect youth’s adiposity. Planning for improvement in environments is a health strategy to achieve favorable effects on PA and weight status.

P1.02.05
FEEDING PRACTICES OF FAMILY CHILD CARE HOME PROVIDERS THAT COULD INFLUENCE SELF-REGULATION OF THE 2-5 YEAR OLD CHILDREN IN THEIR CARE: DIFFERENCES BY ETHNICITY AND SELF REPORT VS. OBSERVATION

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SIG: Early care and education

Objective: Caregivers play an important role in shaping children's eating behaviors via their feeding practices. Certain feeding practices can influence children's self-regulation of hunger and satiety. However, there is limited research on the feeding practices of child care providers especially family child care providers (FCCP) who care for children in their homes rather than in centers. The purpose of this analysis is to describe feeding practices of FCCP that could influence children's self-regulation, examine differences by provider ethnicity, and compare differences between self-report and observations on FCCP feeding practices.

Methods: In a randomized trial with FCCP (n=64 so far) baseline surveys and two-day in-home observations measured FCCP socio-demographics and behaviors including 9 feeding practices related to children's self-regulation. We calculated the frequency of such behaviors from self-report (surveys) and observations (lunch meal). Differences in feeding practices by provider's ethnicity were tested by Man-Whitney test. Agreement between reported and observed FCCP feeding practices was compared by percent agreement. Results: FCCP were all female, mean age 50.4 years; 87.5% Hispanic, 17.2% no high school education, 25% income < $25K. Many FCCP implemented feeding practices that did not support self-regulation (details will be provided on poster). There were ethnic differences in the observations with Hispanic FCCP more likely to pressure a child to eat than non-Hispanic FCCP (p=.034); and Non-Hispanic FCCP more likely to provide second helpings to a child even when the child didn't ask for more (p=.004). Further ethnic differences may prove significant when the full sample size is reached. Generally, self-reported surveys yielded higher frequencies of negative feeding practices than 2-day observations. Two of the feeding practices that could be compared (observation vs. survey), showed 25%-agreement on whether FCCP served second helpings only after a child requested seconds and asked if the child was still hungry and 31% agreement on whether the provider asked if the child was full before removing the plate when a child ate less than half their meal. Conclusion: These findings related to FCCP feeding practices that could influence self-regulation of young children's eating have implications for future intervention development, measurement refinement, and training of FCCP.

P1.02.06
CHILD CARE CENTRE ADHERENCE TO INFANT PHYSICAL ACTIVITY AND SCREEN TIME RECOMMENDATIONS IN AUSTRALIA, CANADA AND THE UNITED STATES: AN OBSERVATIONAL STUDY

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SIG: Early care and education

Objective The aim of this study was to compare adherence to physical activity and sedentary behaviour recommendations within the 2011 Institute of Medicine Early Childhood Obesity Prevention Policies as well as screen time recommendations from the 2013 American Academy of Pediatrics for samples of infants in child care centres in Australia, Canada, and the United States (US). Methods This cross-sectional study used data from: the Australian 2013 Standing Preschools (N = 9) and the 2014-2017 Early Start Baseline (N=22) studies; the 2011 Canadian Healthy Living Habits in Pre-School Children study (N=14); and the American 2008 (N=31) and 2013-2017 (N=31) Baby Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC) trials. Data were compared on the above infant recommendations. Percentages were used to describe compliance to the recommendations and chi-square tests to determine whether compliance differed by country. Results Child care centres were most...
compliant (74%-95%) with recommendations to: provide daily indoor opportunities for infants to move freely under adult supervision, daily tummy time for infants less than 6 months of age, indoor and outdoor recreation areas that encourage infants to be physically active, and discourage screen time. Centres were least compliant (38%-41%) with adhering to recommendations to: limit the use of equipment that restricts an infant's movement and provide education about physical activity to families. Compared with Canadian and US centres, Australian centres were less compliant (46%) with the recommendation to engage with infants on the ground each day, to optimize adult-infant interactions and to limit the use of equipment that restricts the infant's movement. Canadian centres were less compliant (39%) with the recommendation to provide training to staff and education to parents about children's physical activity. US centres were less compliant (25%-41%) with the recommendations to provide daily opportunities for infants to explore their outdoor environment, limit the use of equipment that restricts the infant's movement and provide education to families about children's physical activity. Conclusions Assisting child care centres on limiting the use of equipment that restricts an infant's movement, and providing education about children's physical activity to families may be important targets for future interventions.

P1.02.07
UNDERSTANDING PRESCHOOLERS' PHYSICAL ACTIVITY: A MIXED-METHOD APPROACH
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SIG: Early care and education

Purpose: The preschool setting provides numerous opportunities to promote physical activity (PA). However, limited studies have examined PA patterns and influencing factors in preschools in Asia. This study aimed to investigate PA and its determinants among children in Singapore preschools. Methods: Using a mixed-method approach based on the socio-ecological model, this study recruited parent-child dyads from six preschools in Singapore. Parents reported children's socio-demographic characteristics and the time their children spent in preschools. PA was objectively measured using wrist-worn accelerometers for seven consecutive days. Valid accelerometer data was defined as =3 days (including =1 weekend day) with =480 minutes waking time/day. Daily time spent in moderate to vigorous PA (MVPA) was estimated using validated cut-points. The System for Observing Play and Leisure Activity in Youth (SOPLAY) was used to assess children's PA engagement during different periods throughout the school day and the preschool's PA environments. Teacher focus group discussions (FGDs) were conducted to understand the barriers towards PA in preschools. Descriptive analyses of quantitative data and thematic analysis of FGDs were performed. Results: Of the 85 participating children (mean age 4.4±smn;1.1 years), 73 provided parent-reported and 53 provided valid accelerometer data. Children spent an average of 543 (±smn;163) mins/day in preschools and accumulated 37.7 (±smn;21.5) mins/day of MVPA (weekend: 42.7±smn;32.7; weekdays: 35.1±smn;25.3mins/day, p=0.02). As part of SOPLAY, 138 scans observing 698 students were made across five preschools. Across all scans, 23.6% of children engaged in MVPA. A higher proportion of children engaged in MVPA outdoors compared to indoors (46.7% vs 18.2%, P<0.01). FGD's identified barriers towards PA in preschools related to individual-level factors (e.g. children's preferences), school-level factors (e.g. lack of supportive physical school environment, lack of manpower, school curriculum), and broader environmental factors (e.g. hot weather). Conclusion: Preschool children in Singapore engage in limited MVPA, especially on school days. Considering the large amount of time they spend in preschools, our findings suggest that changes in existing preschool environments and curricula, as well as overcoming manpower related barriers may be important to reach adequate PA levels of young children in Singapore.

P1.02.08
THE CULTURE OF CHILDREN’S MEALTIMES: FINDINGS OF AN OBSERVATIONAL STUDY IN EARLY CHILDHOOD EDUCATION AND CARE CENTRES
Objective: Establishing healthy eating behaviours in early life has the potential to have lifelong outcomes for health. The majority of Australian children aged less than five years attend early childhood education and care (ECEC) services for two or more days per week. National regulatory standards govern all aspects of health and education in the ECEC sector, including nutrition, and national guidelines supporting nutrition in ECEC settings are available with a view to introducing lifelong healthy eating behaviours. Whilst mealtimes are provided for all children attending services, little is known about how guidelines are interpreted, how mealtimes are enacted or what impact eating in child care has on children's eating behaviours. The purpose of this study was to explore children's eating behaviours and interactions with educators' and peers during mealtimes in ECEC settings. Methods: Two in-depth qualitative case studies were undertaken at long day care centres in Brisbane, Australia guided by Constructed Grounded Theory. One centre provided food from a foodservice, and food was brought from home at the other centre. Using field notes and video-recorded observational data of children's mealtimes, continuous and iterative analysis was undertaken to develop a code book and sort categories of codes into themes. Results: Emergent themes identified the existence of routines and rituals comprising a unique culture for each centre. Roles associated with caregivers, educators and directors determined the food served to children, and tension around these roles was observed. During mealtimes, educators were observed either eating with the children and/or providing supervision, social interaction, extending learning opportunities and guidance to choose what or how much to eat. Children participated in their community of peers during mealtimes, sharing information and stories, and at times, engaging in active subversion. Conclusions: Findings from this research have implications for public health and education associated with the uptake of nation-wide nutrition guidelines in ECEC services in Australia and Internationally. The mealtime community, where children gather with a shared understanding of the expectations of how the mealtime will be conducted, contributing their own unique beliefs and experiences, can provide an important communication pathway connecting children with their educators and caregivers.

P1.02.09 LESSONS LEARNED AT CHILDREN'S MEALTIMES: EDUCATOR, CAREGIVER AND CHILDREN'S PERSPECTIVES OF EATING IN EARLY EDUCATION AND CARE SERVICES

Objective: Establishing healthy eating habits early in life is acknowledged as the foundation to the development of lifelong healthy lifestyle habits. Early Childhood Education and Care (ECEC) settings have been identified as ideal behaviour settings for public health nutrition intervention. Whilst children participate in mealtimes while attending ECEC services, and for many, these are their first mealtime experiences outside of the home, little is known of how mealtimes are enacted or what impact eating in ECEC may have on children's eating behaviours. This research aimed to explore the perceptions of educators, caregivers and children in relation to mealtimes at ECEC services. Methods: An in-depth case study of two long day care services was undertaken in Brisbane, Australia focusing on 3-5 year old children. One service provided meals for children and the other centre provided food from home. Guided by a Constructivist Grounded Theory approach, semi-structured interviews were conducted. Food elicitation techniques were used during interviews and included: sharing and discussing mealtimes with children, and showing photographs of children eating during mealtimes at ECEC during interviews. Data included voice-
recorded interviews, transcriptions, and field notes. Continuous and iterative analysis was undertaken to
develop a code book and identify key themes. Results: Perspectives of the main actors in this study:
educators, caregivers and children revealed many similarities and also different priorities. Local rules,
routines and rituals were developed by educators and communicated to children and caregivers. Key
themes that emerged for all included: local ECEC culture, socialisation, child agency and food preference
development. An emphasis on social aspects of eating, including sharing stories, was important to
children, while opportunities for extended learning about food, culture and expectations for social
behaviour were identified by educators. Parents reported children were influenced by peer food choices
and guidance from educators and parents. Conclusions: Harnessing mealtime routines in ECEC and
utilising communication pathways to the home has potential to positively influence lifelong health outcomes
by expanding and enriching learning opportunities to promote healthy eating in partnership with caregivers.
These perspectives highlight existing knowledge, gaps and possibilities and better inform professional
learning for educators and health professionals.

P1.02.10
PROMOTING PHYSICAL ACTIVITY, HEALTHY EATING, AND PHYSICAL LITERACY AMONG
PRESCHOOLERS ATTENDING CHILDCARE CENTERS: PROCESS EVALUATION OF THE HEALTHY
START-DÉPART SANTÉ INTERVENTION USING THE RE-AIM FRAMEWORK

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SIG: Early care and education

Purpose: The Healthy Start-Départ Santé randomized controlled intervention was developed to promote
physical activity, gross motor skills and healthy eating among preschoolers attending childcare centers.
This process evaluation aimed to report the reach, effectiveness, adoption, implementation and
maintenance of the Healthy Start-Départ Santé intervention. Methods: The RE-AIM framework was used
to guide this process evaluation. Data were collected across 140 childcare centers who received the
Healthy Start-Départ Santé intervention in the provinces of Saskatchewan and New Brunswick, Canada.
Quantitative data were collected through director questionnaires at 10 months and 2 years after the initial
training and analyzed using descriptive statistics. Qualitative data were collected throughout the
intervention. Results/findings: The intervention was successful in reaching a large number of childcare
centres and engaging both rural and urban communities across Saskatchewan and New Brunswick.
Centres reported increasing opportunities for physical activity and healthy eating, which were generally
low-cost, easy and quick to implement. However, these changes were rarely transformed into formal
written policies. A total of 87% of centers reported using the physical activity resource and 68% using the
nutrition resource on a weekly basis. Implementation fidelity of the initial training was high. Of those
centers who received the initial training, 75% participated in the mid-point booster session training. Two-
year post-implementation questionnaires indicated that 47% of centers were still using the Active Play
Equipment kit, while 42% were still using the physical activity resource and 37% were still using the
nutrition resource. Key challenges to implementation and sustainability identified during the evaluation
were consistent among all of the RE-AIM elements. These challenges included lack of time, lack of
support from childcare staff and low parental engagement. Conclusions: Findings from this study suggest
the implementation of Healthy Start-Départ Santé may be improved further by addressing resistance to
change and varied levels of engagement among childcare staff. In addition, further work is needed to
provide parents with opportunities to engage in Healthy Start-Départ Santé with their children.

P1.02.11
PREGNANT WOMEN'S KNOWLEDGE OF CARBOHYDRATE CONTENT AND STANDARD SERVING
SIZES OF COMMON FOODS.
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Wales.
Objective: Normal maternal metabolic adaptations in pregnancy increase the risk of hyperglycaemia, gestational diabetes mellitus and thereby adverse health outcomes for mother and infant. Modifying consumption of the types and amounts of foods rich in carbohydrate help regulate blood glucose levels. In order to make appropriate dietary choices, pregnant women need to be equipped with knowledge regarding which foods contain carbohydrate and appropriate serving sizes. The aim was to examine pregnant women's knowledge of carbohydrate and standard serve sizes and frequency of provision of nutrition education from health professionals. Methods: 108 pregnant women (mean (95% CI) 17-18 (12-22) week's gestation; aged 30-59 (18-41) years) completed an online survey, containing a validated carbohydrate knowledge questionnaire (PedCarbQuiz). In addition, women were presented with an online buffet containing photographs of 12 foods differing in carbohydrate content, each with 8 different portion sizes displayed. For each of the buffet food items, participants were asked to select the portion size that they believed was equal to one standard serve size, according to the Australian Guide to Healthy Eating. Results: Participants achieved a mean score of 25.8 (SD: 5.9) out of 36 points for identification of foods that contain carbohydrate and a mean score of 2.5 (SD: 3.2) out of 12 points for identifying the grams of carbohydrate contained in specific food portions. The percentage of participants who correctly identified one standard serve size of the foods within the grains and cereals food group (n=5 food items) ranged from 25-83%. For energy-dense, nutrient-poor foods (n=5) the range was 16-60%. One standard serve of potato was correctly identified by 54% and 14% correctly identified a standard serve of fruit salad. Only 52% of participants indicated that they had received nutrition advice during pregnancy, with 18% having received advice from a general practitioner, followed by a midwife (14%) or dietitian (9%). Conclusions: Pregnant women had sub-optimal knowledge in relation to carbohydrate content and standard serving sizes of commonly consumed foods. This could exacerbate hyperglycaemia in pregnancy. Dietitians need to play a more active role in providing women with nutrition education in pregnancy.

P1.02.12 - SHORT-LISTED FOR THE BEST POSTER PRESENTATION AWARD BY AN EARLY CAREER RESEARCHER
INVESTIGATION ON ENERGY EXPENDITURE OF DAILY PHYSICAL ACTIVITIES AMONG CHILDREN AND ADOLESCENT STUDENTS IN XI'AN
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SIG: Early care and education

Purpose: To provide the basis for the development of daily physical activity (PA) standards of young people in our country by testing the energy expenditure (EE) of PA among children and adolescent students in Xi'an and analyzing the characteristics of them with different genders, BMI classifications and grades. Methods: A total of 300 healthy children and adolescent students aged 10-17 years in Xi'an were randomly selected and enrolled in the survey (150 boys, 150 girls). The subjects were divided into primary, middle, and high school group according to the grade, and divided into normal weight, overweight and obese group based on the BMI calculated from their height and weight. Wearing Actigraph GT3X triaxial accelerometer for one week, recording the result of daily steps and EE. The results were compared by independent sample t-test with a significance level of P<0.05. Results: In general, the average number of steps taken by children and adolescent students in Xi'an during the school days were significantly higher than that on weekends (10907 vs 8830). Boys were walked more steps than girls during school days (11918 vs 10209), weekend days (10152 vs 8081) and the average number of steps per week (11472 vs 9671). There was no significant difference among the standard weight group, overweight group and obesity group during school days and weekend days, but the obesity group was significantly lower than the standard weight group in the average number of steps per week (9683 vs 10609). The school days, weekend days and the average number of steps per week in middle school group were significantly higher than that in primary school group (11482 vs 10580; 10788 vs 7505; 11311 vs 9776), the number of steps during weekend days in high school days were significantly lower than middle school group (9804 vs 10788), and there was no significant difference between other results. Conclusions: Children and adolescent...
students in Xi'an obviously have insufficient physical activity both on school days and weekend days; Their energy expenditure level of physical activity is affected by genders, ages, BMI and study pressures; Children and adolescent students, especially girls and obesity students, should reduce sedentary time and participate more activities, especially during weekend days.

P1.02.13
CENTRE-BASED CHILDCARE PHYSICAL ACTIVITY POLICIES AND PRACTICES IN AUSTRALIA: A CROSS SECTIONAL STUDY
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SIG: Early care and education

Purpose: Childcare services are an ideal setting for the implementation of policies and practices to promote physical activity behaviours of children attending childcare services. This study aimed to i) describe the physical activity policies and practices of childcare services and ii) examine differences between such policies and practices, and their service socioeconomic status (SES) (high vs low) and geographic (major cities vs rural/regional) characteristics. Methods: Nominated supervisors of 309 childcare services located in the Hunter New England region of New South Wales, Australia participated in a telephone survey. This cross sectional survey took place in May to June 2017. Survey items assessed time scheduled for physically active play; frequency of fundamental movement skills (FMS) sessions; access to portable physical activity equipment; existence of a written physical activity policy; and annual achievement of service physical activity objectives. Results: Ninety-six percent of services reported providing opportunities for child initiated free physically active play for at least 30% of daily opening hours. Daily FMS sessions were delivered by 63.8% of services. All (100%) services reported having portable play equipment that were accessible for children. Forty-two percent of services reported having a written physical activity policy while more than two thirds of services reported on physical activity objectives as part of their annual quality improvement process. Active playtime, (OR 1.00, 95% CI 0.28-3.61, p=1.00), provision of daily FMS (OR 0.87, 95% CI 0.54-1.40), and existence of written physical activity policy (OR 1.21, 95% CI 0.76-1.93, p=0.43) did not differ between services located in low or high SES areas. There were also no difference in the implementation of these policies and practices between services located in major cities or rural/regional areas. Conclusions: This study highlights opportunities for improvement in the implementation of physical activity policies and practices in childcare settings. Prioritising the provision of implementation support in areas where there are low adherence of policies and practices (e.g. having a written physical activity policy) may be one way to improve physical activity in young children.

P1.03: SIG Children and Families (Grand Foyer)

P1.03.01 - SHORT-LISTED FOR THE BEST POSTER PRESENTATION AWARD BY A STUDENT
THE LONGITUDINAL RELATION BETWEEN SOCIAL SUPPORT AND PHYSICAL ACTIVITY IN HISPANICS
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SIG: Children and families

Purpose. Hispanics have lower levels of leisure-time physical activity (PA) than non-Hispanic whites. Social support has been identified as a determinant of PA for most populations, but the research has been primarily cross-sectional, with limited longitudinal research on Hispanic populations. Given that the correlation between social support and PA has been mixed for different Hispanic sub-groups, it is
important to study the longitudinal relation in Hispanics. The purpose of this study is to assess the longitudinal associations of social support with PA in Hispanics on the Texas-Mexico Border. Methods. This analysis used data from the Cameron County Hispanic Cohort representing a major city on the Texas-Mexico Border. We used two time-points for this analysis. Sallis's Social Support for Exercise scale was used, which includes questions on family participation in, family punishment for, and friend participation in PA. A modified Godin Leisure-Time Exercise Questionnaire was used to collect self-reported intensity, frequency and duration of PA. Time to follow-up, as well as Time 1 gender, age, language acculturation, waist circumference, and marital status were included as covariates. We used a cross-lagged panel model in MPlus to assess the association between social support and PA over time, controlling for covariates. Results. The sample was N=587, with most individuals identifying as Mexican-Americans, females, with less than 11 years of education. Fully adjusted cross-lagged panel models indicated that time 1 friend support was associated with time 2 PA (adjusted Rate Ratio [RR]=1.02, 95%CI=1.00-1.04) However, time 1 family support (adj.RR=1.01, 95%CI=0.99-1.03) and family punishment (adj.RR=0.99, 95%CI=0.91-1.09) were not significantly associated with time 2 PA in the fully adjusted model. Furthermore, time 1 PA was not significantly associated with any of the time 2 social support variables. Conclusion. As expected, the directionality of the relation appears to be from social support PA, rather than from PA to social support. Friend social support seems to be more important for PA in Mexican Americans than family social support. This is an important consideration when developing interventions to increase PA in this population, particularly because familismo is typically considered to be a strong value in these communities.

P1.03.03
WALKING DISTANCE TO/FROM SCHOOL IS ASSOCIATED WITH OBJECTIVE PHYSICAL ACTIVITY, BUT NOT WITH PHYSICAL FITNESS IN JAPANESE CHILDREN
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SIG: Children and families

Purpose: The purpose of this study was to examine the associations of walking distance (WD) to/from school with physical activity and physical fitness in Japanese children. We hypothesized that children with longer WD to/from school would have higher physical activity and better physical fitness. Methods: This cross-sectional study was conducted from 2003 to 2008. After excluding participants with missing data, a total of 633 participants (315 boys and 318 girls; mean age, 9.3 ±smn; 0.5 years) were investigated on their mode of school commute, anthropometry, physical activity, and physical fitness. The modes of school commute were investigated by asking the following questions in Japanese: 1) "How do you usually travel to/from school?" 2) "How far is your walk to/from school?" Step counts and moderate-to-vigorous physical activity (MVPA) on weekdays were measured using a uniaxial accelerometer. Physical fitness was assessed by the following tests: hand grip, sit-ups, sit and reach, side-to-side steps, 20-m shuttle run, 50-m dash, standing broad jump, and softball throwing. Participants were divided into three groups (sex-specific tertiles 1, 2, and 3) based on walking distance, and the relationships of WD to/from school with anthropometry, physical activity, and physical fitness were analyzed using analysis of covariance adjusted for school. Results: In total, 89.9% of boys and 90.9% of girls walked to/from school. The WD to/from school in tertiles 1, 2, and 3 were 1.0 ±smn; 0.4, 2.0 ±smn; 0.1, and 3.6 ±smn; 1.3 km/day, respectively, for boys, and 0.7 ±smn; 0.3, 1.9 ±smn; 0.2, and 3.6 ±smn; 1.3 km/day, respectively, for girls. For boys, the step counts and MVPA on weekdays were significantly lower in tertile 1 than in tertiles 2 and 3. In girls, there were significant differences among the three tertiles regarding step counts and MVPA on weekdays. In both boys and girls, there were no differences among the tertiles for any physical fitness variable. Conclusions: WD to/from school is associated with physical activity on weekdays. In contrast, this study suggested that WD to/from school is not associated with physical fitness.

P1.03.06
PHYSICAL FITNESS INTERVENTION PROGRAM IMPACTED THE COGNITIVE FUNCTIONS OF CHINESE MIDDLE SCHOOL STUDENTS
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Objective Not meeting the recommended amount of moderate and vigorous physical activity (MVPA) has many implications on child development. The current study examined the impact of a 9-month physical fitness intervention program on cognitive functions in middle-school Chinese students, using a pre- and post-test quasi-experimental design. Methods Study participants were seventh grade students enrolled in four middle schools in China. Two schools served as intervention sites and two school served as control sites. The physical fitness intervention program offered the participants a minimum of 210 minutes of MVPA a week with 50% of the time allocated to high intensity exercises. Program activities included aerobic exercises, ball games, agility and strengthening activities. The outcome measures were Raven’s Standard Progressive Matrices for fluid intelligence and the Adolescent Attention Test for attention control (attention allocation, attention span, attention stability and attention switching). Physical activity was measured by 7-day accelerometry. General Linear Model (GLM) IBM SPSS version 24) was used to test the differences in the change scores of the outcome measures with adjustment to age, gender, pubertal stage, family income, and pre-test score of the outcome measure between the intervention and control groups. Results Three hundred and two students (53% males) completed the pre- and posttest. The average age of the participants was 12.77 years (SD 0.56) and 84% had a pubertal stage of 3 or lower at the pre-test. Results of GLM analysis revealed a statistically significant difference in Raven's fluid intelligence scores (F= 8.80, p= .003, adjusted R2=.23) between the intervention and control groups. There were also significant differences in the attention allocation (F=5.93, p= .02, adjusted R2=.13) that favored the intervention group. No significant difference was found in the change scores of the attention span, attention width, and attention stability between the treatment groups. Conclusions A physical fitness oriented intervention program significantly improved some measures of cognitive functions in middle school students.

ULNA LENGTH FOR WEIGHT STATUS ASSESSMENT!

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Purpose Assessing weight status is challenging in children when no clinical alternative to standing height measurement is available. Height from ulna length can be calculated from reliable and reproducible linear regression formula however, its effect on weight status has not been explored. The study aimed to ascertain if Body Mass Index (weight (kg)/height (m2)), determined by a calculation of height from ulna length, was reliable in identifying overweight and obese children. Methods In this exploratory study of 20 participants aged 2-16 years, weight status from the control, BMI from standing height was compared to BMI with height determined from ulna length, using two different methods. Method A arm extended or method B arm across chest, both measured with a disposable paper measuring tape. Results Intra and inter reliability was high on both ulna measures with intraclass correlation (0.99). Both techniques provided similar results, respectively between mean difference in height (0.055m, P=0.001 and 0.051m, P=0.001) and BMI (-1.65kg/m2, P<0.001, and -1.51kg/m2, P<0.001). In assessment of weight status for overweight and obese, there was 100% agreement between weight status determined by standing height and weight status determined by ulna length. Conclusions Ulna length, measured with paper tape, provides a convenient, simple alternative method of height measurement, viable for use in assessing weight status for overweight and obesity in children. The method can be reproduced in most clinical areas and with those who have physical limitations or infectious risk where a standing height cannot be obtained. It should not be used to replace standing height when available, but can be used to reduce barriers to assessment of weight status on children, in health care facilities. It is recognised that the findings of this exploratory study
prove a reliable method for assessment of weight status in children for overweight and obesity in the absence of standing height, however limited numbers suggest the need for larger studies. Finally, by sharing the results of these findings and further research, policy and practice change in paediatric health facilities could improve assessment and early intervention and potentially reducing the rise in rates of childhood obesity.

P1.03.09
WHAT’S FOR LUNCH? THE CONTENT OF LUNCHES CONSUMED AT HOME AND AT SCHOOL BY DUTCH PRIMARY SCHOOL CHILDREN.
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SIG: Children and families

Objective: To investigate differences in content of lunches consumed by Dutch primary school children according to the place of consumption and educational position of their parents. Methods: We conducted a cross-sectional study among Dutch primary school children aged 4-12 years based on data of the 2012-2014 Dutch National Food Consumption Survey (VCP). Demographic characteristics were obtained through a questionnaire. Diet was assessed with two nonconsecutive 24-h dietary recalls. Non-parametric tests were used to investigate the difference of the lunches between place of consumption and educational position. Results: The most consumed products at lunch among 406 primary school children were bread, dairy products, juices and carbonated drinks. Fruit and vegetable consumption was very low. Consumption of carbonated drinks and water were higher among children who consumed their lunch at school (p<0.01), while consumption of dairy products was higher at home (p<0.001). Carbonated drinks were more likely to be consumed by children with a lower educational position (p<0.001), while consumption of sweet bread toppings was higher in children with a higher educational position (p<0.05). Conclusions: The current content of the lunches consumed by Dutch primary school children leaves room for improvement, especially regarding fruits and vegetables. The statistically significantly higher consumption of sugary drinks at school is worrisome as currently more children in the Netherlands are transitioning to having lunch at school.

P1.03.10
OBJECTIVELY MEASURED PATTERNS OF SEDENTARY TIME IN CHINESE PRESCHOOLERS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Sedentary behaviors bring many negative impacts on health across all age groups including young children. Understanding patterns of sedentary behaviors is essential for developing strategies to counter the sedentary lifestyle. In China, assessing sedentary behaviors of young children mainly rely on proxy-report, and objective data are rare. This study aimed to objectively measure the patterns of sedentary behaviors in Chinese preschoolers. Methods: 239 preschoolers (57% boys; mean age = 4.4 ±0.4 years) from six kindergartens participated in this study. Participants’ sedentary time (ST) was measured by wearing an accelerometer (ActiGraph GT3X) for seven consecutive days. Accelerometer data were collected at 1-second intervals. The cut-off point for sedentary behavior was set as 100 counts per minute. ST was calculated as daily ST (average of seven days), weekday ST, and weekend ST separately. Differences of ST between sexes and between weekdays and weekend days were examined by independent sample T test and paired sample T test, respectively. All analyses were conducted in SPSS 20.0 and significance levels were set at 0.05. Results: For the overall sample, participants spent 581.9 ±0.4 min/day being sedentary. ST is significantly higher on weekdays than on weekend days (602.2 ±0.4 min/day vs. 528.7 ±0.4 min/day, P < 0.01). No sex differences were found for daily, weekday, and weekend ST. When stratified by sexes, both boys (598.5 ±0.4 min/day vs. 581.9 ±0.4 min/day, P < 0.01) and girls (565.4 ±0.4 min/day vs. 535.7 ±0.4 min/day, P < 0.01) had significantly higher ST on weekdays than on weekend days.
525.6 ±smn; 83.9 min/day, P < 0.01) and girls (606.9 ±smn; 69.3 min/day vs. 532.6 ±smn; 75.6 min/day, P < 0.01) spend more time on sedentary behaviors on weekdays than on weekend days. Conclusions: Chinese preschoolers spend approximately 10 hours daily being sedentary. Weekday/weekend differences on ST are evident for both sexes. Interventions for reducing the ST during weekdays are more promising for promoting active lifestyle in Chinese young children.

P1.03.11
HEALTHY TOGETHER SCALE-UP: EFFECTIVENESS OF INTEGRATING A FAMILY EDUCATION PROGRAM INTO COMMUNITY ORGANIZATIONS ACROSS CANADA
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SIG: Children and families

Objective Healthy Together© (HT) is a family education program to promote healthy weights for children (0-18 years) and their families. Initial evaluation of HT with 10 sites showed improvements in indicators of healthy eating and physical activity knowledge. The purpose of this project is to scale-up a revised format of HT to expand the reach and impact by enabling integration of HT into pre-existing core services offered by community organizations (CO) across Canada. The aims of the evaluation of the scale-up phase are to document: 1) the effectiveness of HT in supporting families in increasing physical activity and healthy eating, and 2) monitor the quality and sustainability of HT to meet diverse community needs. Methods CO in diverse communities were invited to deliver the HT program and facilitators were trained by the HT team. Facilitators were provided with a program tool-kit (with 30 session plans) and access to web-based resources. Data were collected from program participants after completing 15 HT sessions using questionnaires. Directors at CO participated in semi-structured telephone interviews. Quantitative data were analyzed using descriptive statistics and qualitative data were content analyzed. Results Thirty community organizations are delivering HT. At the time of abstract submission, data has been collected from 6 HT programs (80.4% response rate). Family caregivers/parents (n=23) reported positive changes to their family's diet with 65.2% reducing their family's intake of sugary drinks and 69.5% increasing fruit and vegetable consumption. Directors (n=3) reported that the HT model and resources facilitated its integration into pre-existing services, and that the HT goals aligned with their organizational policies/practices. One director made further changes to policies (by writing measurable healthy eating and physical activity outcomes into the organization's work plan and no longer serving sugary drinks) to continue promoting healthy eating and physical activity to families who accessed their services. Conclusions Although preliminary, our results suggest that scale-up of the HT program has led to improvements in healthy eating and physical activity. The HT program holds potential to be a sustainable program in communities and offer long-term support for healthy weights for children and families.

P1.03.12
‘WE NEVER REALLY GO OUT JUST TO EAT’: EXPLORING ADOLESCENTS’ NON-CORE FOOD CONSUMPTION IN SPECIFIC PHYSICAL AND SOCIAL EATING ENVIRONMENTS.
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: British adolescents consume high volume of non-core foods, i.e. foods high in fat and sugar, especially outside of home. Understanding adolescents' perspectives on eating in various contexts can highlight mechanisms in the environment for intervention. Taking a qualitative approach can identify factors that adolescents perceive important in physical and social eating environments. We aimed to explore why adolescents consume non-core foods in these physical and social environments, as well as factors they attend to in these settings. Methods: Eighteen face-to-face interviews were conducted with 14-16-year-old adolescents from UK secondary schools in different socio-economic areas. A purposive sampling approach was used to obtain information on topics of preferences for eating contexts and patterns of food consumption and influencing factors while eating there. Digital recordings were
transcribed, text organised using NVivo, and thematic analysis was applied to interpret data. Results: Adolescents discussed eateries as the prominent eating environment, where they preferred eating because of exciting food options, choices not available at home (home restriction) and increased opportunity for socialising. Adolescents’ choice of an eatery depended on physical aspects of the food outlet e.g. convenience, perceived food costs and the amount of open space within the outlet. Convenience became more important when adolescent ate with friends due to a functional way of eating, i.e. adolescents prioritised activities such as going shopping/cinema and chose convenient ‘fast’ foods, simply to fuel themselves and continue their activities. The choice of eatery and food consumed there was also affected by social aspects of the environment, i.e. peer conformity, parental level of authority and norms relating to (un)healthy eating, i.e. adolescents had fixed ideas about eating healthily with parents and unhealthily with friends. Conclusions: Findings suggest an interplay between the physical and the social environment in eateries. Nudging strategies altering the physical food environment should be introduced, i.e. reduction in portion sizes and altering the position of food items, when a quick and functional way of eating takes places. However, considering the social drivers of food choice in adolescence, they should be complemented with ways to target social-environmental aspects, e.g. peer conformity and norms of (un)healthy eating.

P1.03.13
SPECIAL CONSIDERATIONS WHEN ASSESSING ACTIVE TRANSPORT OF PRESCHOOLERS FROM GPS AND ACCELEROMETER DATA
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Accelerometers can assess children's physical activity, but lack contextual information including information about active travel. The aim was to assess the accuracy of using the Personal Activity Location Measurement System (PALMS) to process GPS and accelerometer data and identify preschool children's mode of travel in a large urban city. Methods: 73 children completed a task based protocol in their neighborhood wearing a Q-Starz GPS monitor and Actigraph accelerometer: including pedestrian, a stroller, and car trips. Study staff recorded the activities and corresponding time in a truth file. GPS, accelerometer and truth file data were processed using the PALMS system at 30 second increments with pre-set cut-points for mode of transport: stationary: <1, pedestrian trip 1-10, bicycle trip 10-25, and vehicle trip >25 km/hr for adults. No stroller thresholds have been determined. Accuracy, sensitivity and specificity of the PALMS output compared to the truth file were computed. Receiver Operating Characteristic (ROC) curve analysis identified best thresholds for stroller rides. Mean counts per minute (CPM) in each activity were calculated. Results: The children's average age was 4.7 (SD 0.8) years old; 57.5% were male; 38.4% black, 47.9% white, 5.5% Asian, and 8.2% multiple/other; 34.2% were Hispanic. Trips identified as Bicycle were excluded (<0.6% of data). When including all other data points, the accuracy of identifying a vehicle trip was 74%, pedestrian trip 58%, and stationary time 91%. This increased to 76%, 71% and 91% respectively when limiting analysis to PALMS identified outdoor time. PALMS identified pedestrian time was 45.4% child walking, 34.7% stroller ride, and 19.9% misclassified when compared to truth. ROC identified a cut-point of 5.5 km/hr to differentiate stroller ride from all other modes of travel (sensitivity 0.94, specificity 0.16). The mean CPM for each mode of travel: vehicle 286.7, stroller 866.5, child pedestrian 915.0, and stationary 843.7. Conclusion: For preschoolers, faster pedestrian trips may represent stroller rides, which are a different mode of travel resulting in less activity than child walking. Assessing only accelerometer CPM may not adequately differentiate walking vs stroller rides for young children. Speed via GPS may provide additional information but is not very specific.

P1.03.14
BODY AREAS SATISFACTION EXPLAINS BODY MASS VIA PHYSICAL ACTIVITY AND HEALTHY EATING IN ADOLESCENTS FROM GENERAL POPULATION: A LONGITUDINAL STUDY
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Objective: Satisfaction of one’s appearance is among key cognitive determinants of healthy behaviors, such as healthy eating and medium to vigorous physical activity (MVPA). In turn, they may help prevent overweight and obesity. This study tested the relationships between body areas satisfaction and body mass index (BMI) mediated by healthy or unhealthy eating and medium to vigorous physical activity in a non-clinical sample of adolescents. Methods: Data were collected three times, with a 2-month interval between Time 1 (T1) and Time 2 (T2), and 11-month interval between T2 and Time 3 (T3). Adolescents (N = 1254) aged 13-18 filled out The Multidimensional Body-Self Relations Questionnaire, assessing body areas satisfaction, and answered the questions evaluating their eating behaviors and physical activity. Body weight and height were measured objectively. Results: Unhealthy eating (T2) and MVPA (T2) mediated the relationship between body areas satisfaction (T1) and BMI (T3). No mediating effects of healthy eating (T2) were found. Conclusions: Higher levels of body areas satisfaction predicted unhealthy eating (but not healthy eating) and MVPA, which in turn predicted adolescents’ lower BMI. Maintaining normal weight status in adolescents is crucial for physical and mental health. Thus, body satisfaction should be carefully considered in screening for adolescents at risk to become overweight or obese.

P1.03.15
LINKING EFFECT TO PROCESS IN EUROPEAN PRESCHOOL CHILDREN’S SNACKING BEHAVIOUR IN A KINDERGARTEN-BASED, CLUSTER RANDOMISED CONTROLLED TRIAL: THE TOYBOX-STUDY
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SIG: Children and families

Purpose The study aim was two-fold: (1) evaluating the effectiveness of the ToyBox-intervention on preschoolers' snacking behaviour, and (2) examining whether a higher level of intervention implementation of the ToyBox-intervention was related to more favourable effects. Methods The ToyBox-intervention was a cluster randomised controlled trial with a pre-test post-test design. A Food Frequency Questionnaire was filled out by the parents of 4,970 preschool children (51.4% boys, mean age: 4.74±smn;0.44 years) from six European countries (Belgium, Bulgaria, Germany, Greece, Poland, Spain) both at baseline and follow-up. Kindergarten teachers implemented the healthy snacking component of the ToyBox-intervention for six weeks, with a focus on (1) environmental changes in the classroom (e.g., providing a magic snack plate), (2) consuming healthy snacks in the classroom, and (3) educational classroom activities. Preschoolers’ parents received newsletters, tip cards and posters to promote healthy snacking. Multilevel repeated measures analyses were conducted for the total sample and for the six intervention countries separately to assess intervention effects on preschoolers' snacking intake (e.g., fresh fruit, raw vegetables, chocolate, milk-based desserts, salty snacks, ...). Furthermore, a process evaluation score for teachers and parents was calculated based on process evaluation questionnaires. This process evaluation score was then linked to the snacking outcomes. Results No significant intervention effects on the different outcomes of preschoolers’ snacking intake were found in the total sample (all p>0.05). In Spain, children from the intervention group showed a larger decrease in daily intake of milk-based desserts from baseline to follow-up, compared to children from the control group (p=0.009). No significant intervention effects were found in the other countries. For some food items, a low to medium process evaluation score of both parents and teachers showed positive effects compared to the control group. Conclusions The snacking behaviour component of the ToyBox-intervention had no overall effect on preschoolers' snacking intake. For some food items, not entirely implementing the intervention according to the intervention protocol already induced some small, positive effects. It is important to find a perfect balance between the feasibility of the intervention and implementing it as planned.
Cycling dominated as children's preferred mode of transport to school although less than one in ten participants had lower scores in fundamental cycling skills (10.6% to 12.5%). Most traffic-related confidence improved significantly after CST with the exception of increased rate of cycling to school after Traffic-Free: 72.1% to 70.3%, p=0.029). Cycling habits and preferences did not change related to traffic. 

VIGOROUS PHYSICAL ACTIVITY IN PARENT-CHILD DYADS

**Objective:** In children, cycling to school is a less common mode of transport to school compared to walking in most developed countries. Only 2% of New Zealand children cycled to primary school in 2010-2014. Traffic safety is a key concern regarding cycling for transportation, particularly in children. Cycle skills training (CST) in a traffic free and light traffic environment is a promising approach to improve children's cycling-related skills and knowledge. This study examined the effects of short-term CST (1-6 weeks) on cycling-related knowledge, confidence and behaviours in children. Methods: Children (n=429; 11.0±smn; 0.9 years; 52.1% boys; 3 schools) participated in either playground-based CST (Traffic-Free CST; n=164) or playground-based plus on-road CST (Traffic-Free+OnRoad CST; n=265) in Dunedin, New Zealand in 2015-2016. Children completed pre-training and post-training surveys and practical skills assessment. Data were analysed using McNemar tests and paired t-tests. Results: At baseline, 36.6% of children cycled =1/week, 7.7% cycled to school and 40.3% preferred cycling to school. Both types of CST significantly improved children's cycling-related knowledge (Traffic-Free: 80.8±smn; 10.8% to 90.8±smn; 10.3%; Traffic-Free+OnRoad: 84.2±smn; 9.4% to 95.0±smn; 5.9%; both p<0.001) and self-perceived confidence to cycle in the parks/playgrounds (Traffic-Free: 61.3% to 74.8%, p=0.001; Traffic-Free+OnRoad: 81.1% to 90.6%, p<0.001) and on the road (Traffic-Free: 25.3% to 38.8%, p=0.010; Traffic-Free+OnRoad: 51.7% to 67.4%, p<0.001) but not to school (Traffic-Free: 46.9% to 50.5%, p=0.791; Traffic-Free+OnRoad: 72.1% to 70.3%, p=0.029). Cycling habits and preferences did not change significantly after CST with the exception of increased rate of cycling to school after Traffic-Free+OnRoad (10.6% to 12.5%). Most Traffic-Free+OnRoad CST participants were competent in most fundamental (99.5±smn; 3.1%) and advanced practical cycling skills (88.7±smn; 15.2%), whereas Traffic-Free CST participants had lower scores in fundamental cycling skills (85.0±smn; 20.4%; p<0.001). Conclusion: Cycling dominated as children's preferred mode of transport to school although less than one in ten children cycled =1/week, 7.7% cycled to school and 40.3% preferred cycling to school. Both types of CST significantly improved children's cycling-related knowledge and self-perceived confidence to cycle in the parks/playgrounds and on the road but not to school. Cycling habits and preferences did not change significantly after CST. The results of this study provide evidence for the effectiveness of CST in improving children's cycling-related knowledge, confidence and behaviours in a traffic free and light traffic environment.
children usually cycled to school. CST with or without on-road training improved children's cycling-related knowledge, and self-perceived confidence to cycle on playgrounds and on the road but not to school. Traffic-Free+OnRoad CST had positive but small effects on increasing cycling to school. To achieve behavioural change, additional interventions may be necessary targeting schools, parents and/or built environment.

P1.03.20
EFFECTS OF CYCLE SKILLS TRAINING ON CYCLING-RELATED KNOWLEDGE, CONFIDENCE AND BEHAVIOUR IN ADOLESCENT GIRLS
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SIG: Children and families

Objective: Cycling to school is less common than walking in most developed countries and less common in adolescent girls versus boys in some countries. In New Zealand, only 3% adolescents cycle to school. Encouraging cycling to school among adolescent girls could be an effective strategy to promote physical activity in this group. Cycle skills training (CST) improves children's cycling knowledge and skills and could help to address traffic concerns regarding cycling for transportation. This study examined the effects of short-term CST (1-6 weeks) with or without on-road training on cycling-related knowledge, confidence and behaviours in adolescent girls. Methods: Girls (n=117; age: 13.9±0.7 years) participated in either playground-based CST only (Traffic-Free CST; n=43) or combined playground-based and on-road CST (Traffic-Free+OnRoad CST; n=74). Participants completed pre-training and post-training surveys about cycling-related knowledge, confidence and behaviour, and practical cycling skills assessment (fundamental and advanced skills). Data were analysed using paired t-test and McNemar tests. Results: At baseline, few adolescents cycled >1/week (11.1%) or to school (2.6%). Both types of CST improved adolescents' knowledge (Traffic-Free: 82.9±13.0% to 88.9±9.5%, p=0.001; Traffic-Free+OnRoad: 85.9±8.8% to 93.6±6.4%, p=0.001). Traffic-free CST improved adolescents' confidence to cycle in the parks/playgrounds (very confident: 41.9% to 60.5%; p=0.034), but not on the road or to school. Traffic-Free+OnRoad CST improved adolescents' confidence to cycle on the road (very confident: 23.3% to 30.2%; p=0.572), but did not significantly improve their confidence to cycle to school (very confident: 25.4% to 31.5%; p=0.146). Cycling habits and preferences did not change significantly after CST (all p>0.05). Traffic-Free+OnRoad CST participants were competent in most fundamental (97.8±7.6%) and advanced practical cycling skills (97.6±5.7%), whereas Traffic-Free CST participants had lower scores in fundamental skills (81.4±29.2%; p<0.001). Conclusions: CST with or without on-road training improved cycling-related knowledge but did not change substantially cycling behaviours in adolescent girls. CST with on-road training component improved adolescent girls' confidence to cycle on the road, but not to school. Future interventions should utilise CST with on-road training component and should be tailored to adolescents' needs and preferences. Additional interventions targeting parents, schools and built environment changes may be necessary to achieve behavioural change.

P1.03.20
ASSOCIATIONS BETWEEN OBJECTIVELY EVALUATED PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR BETWEEN PRIMARY SCHOOL CHILDREN AND THEIR FATHERS OR MOTHERS
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SIG: Children and families

Purpose: The purpose of this study was to examine associations between objectively-evaluated physical activity (PA) and sedentary behavior (SB) between primary school children and their fathers or mothers.
The relationship between parental support and children's PA was also examined. Methods: Objectively-evaluated times spent in PA and SB were assessed for 7 consecutive days using a triaxial accelerometer (Active style Pro: HJA-350IT) in first to sixth grade girls (n=202, 9.4±2.5 years) and boys (n=166, 9.4±2.5 years) and their parents (fathers: n=123 and mothers: n=321). Metabolic equivalents (METs) were used to categorize the minutes of SB (=1.5 METs) and moderate-to-vigorous PA (MVPA, =3.0 METs). Parental support was self-reported by the children and their parents. Results: After adjustment for children's gender, grade, body mass index z-score, paternal or maternal age, and school, objectively-evaluated MVPA in children was positively correlated with maternal MVPA (<0.001). Paternal or maternal SB and paternal MVPA were not correlated with SB or MVPA in children. On the other hand, percentage of MVPA (%MVPA) in children who spent more time with their mothers on weekends was significantly lower than that in children who spent less time (%MVPA: 8.4% vs 9.3%) (p=0.034). Children whose mothers watched their sports events had a significantly higher percentage of MVPA than those whose mothers did not (%MVPA: 8.9% vs 8.2%) (p=0.009). There were no associations between children's MVPA and paternal supports. Conclusions: The findings of this study demonstrate the significance of maternal MVPA and involvement. Developing a better understanding of factors related to children's PA and identifying determinants of activity behaviors will help PA interventions.

P1.03.21
PREVALENCE OF OVERWEIGHT AND OBESITY AMONG ADOLESCENTS IN PUBLIC AND PRIVATE SCHOOL IN TWO SENATORIAL DISTRICT OF OSUN STATE, NIGERIA.
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SIG: No, this does not fit in any of the above mentioned special interest groups

The study finds out the prevalence of overweight and obesity among adolescents in public and private school. Obesity is the most serious long term health problem currently facing adolescents and its prevalence increasing worldwide including developing countries. Adolescent is an important growth and development period which has implication for future nutritional status and food consumption. Cross sectional study was carried out among age 11-19 years in both public and private school in urban area of the state. The data was collected using pretest self-administered questionnaire. Anthropometric measurement was also used to examine their nutritional status. Obesity status were determined using BMI cut off point, the overweight was found to be 3.06% among female and 0.6% among male whereas prevalence of obesity was 0.46% in female and non among male. 62.6% snack daily, fruit consumption pattern was low 84.9 % take fruit once daily, 14.4% twice daily while only 0.6% take fruits thrice daily especially after meal, Majority of the respondents mothers had secondary education (13.26%) while 9.53% had tertiary education which was a good pointer that mothers of the respondents were literate. 43.7% spend between 4-5 hours watching television daily after school. Positive association exists between the lifestyle and nutritional status of the respondents. Education effort to improve nutrition knowledge can be incorporated into course curriculum and as well as physical and health education should be made compulsory in all primary and secondary schools and also focus on various components within the system when implementing preventive measure on obesity. Key words: Prevalence, Overweight, Obesity, Adolescent

P1.03.22
ACTIVE COMMUTING TO SCHOOL AMONG HIGHER SECONDARY SCHOOL STUDENTS IN NEPAL: FINDINGS FROM A CROSS-SECTIONAL STUDY
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SIG: Children and families

Purpose: Participation in physical activities declines dramatically during adolescence and many young people are not meeting the guidelines. This study was carried out to identify the factors associated with active commuting to school among higher secondary school students in Banke district, Nepal. Methods: A cross-sectional descriptive study was conducted in September 2013 among 405 students studying in
grade 11 and 12 from randomly selected seven higher secondary schools in Banke. Self-administered questionnaire based on International Physical Activity Questionnaire was used. Results: Almost half of the 405 students walked to school while around 36% were using bicycles to reach to school. The remaining 14% were using sedentary means of transport like motorbikes, bus or rickshaws. Students studying in public schools (OR: 2.15, 95% CI: 1.06-4.350), family support for engaging in physical activity (OR: 3.518, 95% CI: 1.38-8.97) and students living at less than 30 minutes walking distance from school (OR: 3.280, 95% CI: 1.67-6.44) were more likely to use active means like walking or cycling. On the other hand, female students were less likely to use such active modes of transport (OR: 0.53, 95% CI: 0.28-0.99). Conclusion: Active commuting to school was found high in the study area. Family support for engaging in physical activity was the strongest predictor of active commuting to school. Hence, engaging parents and encouraging them to support their children to walk or cycle to school can be important to promote physical activity in such settings.

P1.03.23
RANDOMIZED CONTROLLED TRIAL OF AN INCENTIVE-BASED PHYSICAL ACTIVITY PROGRAM TARGETING BOTH CHILDREN AND ADULTS (FIT-FAM)
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SIG: Children and families

Objective: Despite widespread awareness that physical activity (PA) improves general health and reduces disease risk, many working adults and their children in Singapore exhibit low levels of PA. Since children are known to influence the behaviors of their parents, we aim to test whether a strategy that rewards children for meeting activity goals, but only if their parents reach an identical goal, can effectively increase parents activity levels. Methods: This on-going study is a 12-month, two-arm randomized controlled trial involving 322 parent-child dyads. Parents are full-time employees and the children are aged 7–11. In the Child-Based Incentive (CBI) arm, children earn SGD$5 each week that they log ≥10,000 daily steps for ≥4, ≥5, and ≥6 days in months 1–3, 4–6, and 7–12, respectively. In the Family-Based Incentive (FBI) arm, rewards for FBI children are identical but contingent on their paired parent achieving the targets also. The number of steps taken at baseline, month 6, and month 12 will be measured by accelerometers and assessed as the primary outcome. Other measures of accelerometry, such as duration of moderate to vigorous PA and total volume of PA, will be evaluated as secondary outcomes. The percentage of participants meeting weekly targets, average daily steps, and average number of days in a week with ≥10,000 steps will be evaluated from pedometer data as secondary outcomes. We hypothesize that FBI parents will show greater PA compared to CBI parents throughout the study. Results: Preliminary pedometer data show that, although child outcomes are similar, FBI parents are more likely than CBI parents to achieve the step targets throughout the study. On average, FBI parents walk more daily steps (10,352 vs 8,721) and achieve the 10,000 target on more days in a week (4.53 days vs 2.55 days) than CBI parents. Final outcomes will be available in mid-2018 upon study completion. Conclusions: Preliminary results suggest that family-based reward schemes may be an effective strategy for increasing PA of both children and parents. If confirmed, this novel incentive strategy can be adopted as part of a broader, comprehensive strategy for improving overall health.

P1.03.24
PHYSICAL ACTIVITY-RELATED INJURY AND ITS ASSOCIATED FACTORS AMONG MIDDLE SCHOOL STUDENTS IN SHANTOU, CHINA
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Most researchers have reported that sports injury were common among school-aged
adolescents underlying the fact that the Chinese government has been making great efforts to strengthening the youth sports in the past decades. Nevertheless, studies about epidemiological characteristics of physical activity-related injury (PARI) are finite and the evidence between potential risk factors and injury events from middle school students is also limited. This study aimed to obtain better understanding about the epidemic of PARI and identify important factors associated with injury experiences that could help us to take prevention and intervention measures. Methods: The students graded 7-8 (junior) and 10-11 (senior) from five middle schools in Shantou selected via the method of cluster random sampling were invited to complete the questionnaires during September and October, 2015. The questionnaire was comprised of socio-demographics, habitual level of physical activity (PA), sleep duration, individual safety awareness and exercise behavior, and PARI experiences in the past 12 months. Independent-sample t-tests, Pearson chi-square (nonparametric) tests and multivariate logistic regression model were performed to estimate the risk factors of PARI events. Results: A total of 3082 participants completed the valid questionnaires, with an overall PARI incidence rate of 25.1%. Boys and junior school students are more likely to experience injury than girls and senior ones respectively. The majority of the injured experienced a withdrawal time of PA or class due to the injuries. Boys tended to easily experience multiple injuries (= 5 episodes) than girls and were more likely to require medical care. Boys, junior school students, sports team members, and those with lower safety awareness and without any chronic conditions were at higher risk for PARI. Moreover, disharmony relationship between parents, and exercising in wet floor or with sickness frequently would also elevate the likelihood of injury, especially those with longer duration. Conclusions: PARI was prevalent among middle school students in Shantou. Focused and effective actions should be taken thereby, with a full consideration of the risk factors presented in the study above, to reduce PARI occurrence and optimize the benefits of PA among school-aged adolescents.

P1.03.25
TRENDS AND CORRELATION OF PHYSICAL FITNESS AMONG PRESCHOOL CHILDREN IN CHINA FROM 2005 TO 2015

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SIG: Children and families

Purpose: Over the past 10 years, the physical growth of Chinese children has accelerated, and the children's physical fitness, activity behaviors have also been changing. It is of great significance to study the trends in physical fitness among children aged 3-6 years old, and identify the factors associated with the change of children's physical fitness. Method: We recruited children aged 3-6 years old in China Macao from 6 kindergartens in 2005 and 2015. Physical fitness indicators include height, weight, standing long jump, overhand throw, shuttle run, sit and reach, walking balanced beam, two-leg continuous jump. The items of the questionnaire include child birth conditions, children's physical activity and sedentary entertainment, the educational levels and exercise behaviors of parents, etc. Finally, 1068 and 1050 children participated in this study in 2005 and 2015, respectively. General linear model was used to analysis the physical growth,learned behavior and time on children's physical fitness. Result: 1. The height, weight of children didn't observed obvious changes from 2005 to 2015. The lower limb strength, running speed, coordination and flexibility of children improved significantly among some age groups from 2005 to 2015 (P<0.05). 2. After the adjustment of age and gender, the effects of height and weight on standing long jump, sit and reach, shuttle run were less than time effects. 3. Participating in physical education (PE) clubs was associated with the improvement of standing long jump and shuttle run, and participating in PE clubs interacted with time. The interaction coefficient (βa; ) of participating in PE clubs*Time 2015 for standing long jump was 5.827 (P<0.05), and for shuttle run, βa; =2.254 (P<0.05). Participating in PE clubs interacted with sedentary entertainment time. Less sedentary entertainment time and participating in PE clubs could significantly improve the performance of overhand throw. Conclusion: The physical fitness of children in Macao has changed significantly during the past 10 years. The changes in height and weight were not the main reason for the change of physical fitness. The behaviors, including participating in PE clubs and less time of watching TV or playing the computer, were associated with children's physical fitness.
DETERMINANTS OF FRUIT AND VEGETABLE INTAKE, PHYSICAL ACTIVITY, AND SEDENTARY BEHAVIOUR AMONG GRADE 5-8 STUDENTS FROM NORTHERN ONTARIO
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SIG: No, this does not fit in any of the above mentioned special interest groups

Determinants of Fruit and Vegetable Intake, Physical Activity, and Sedentary Behaviour among Grade 5-8 students from Northern Ontario E Dufour, T Paton, & SJ Woodruff PURPOSE Increasing fruit and vegetable intake (FV) and physical activity (PA), and reducing sedentary behaviours (SB) among children are important public health approaches as health behaviours developed early in life may persist into adulthood. The purpose of this study was to examine the determinants of FV, PA, and SB among students in grades 5-8 from Northern Ontario (Canada). METHODS Students (N=872; 44% male; 9-15 years) from 34 schools within the catchment area of one geographically remote Public Health Unit within Northern Ontario completed the Northern Fruit and Vegetable Program Evaluation survey in May, 2016 through web-based and paper based surveys, in both French and English. Three logistic regression analyses were used to determine if the odds of better health outcomes were associated with ethnicity, school location, and/or an interaction between ethnicity and school location, along with gender and grade. RESULTS/FINDINGS Females (PA), grade 7 (FV, PA, SB), and grade 8 (FV, SB) students had worse health behaviour outcomes. More specifically, the odds of participants having a higher FV was lower among (1) those living in remote locations compared to urban locations (OR = -1.299 (95% CI: -2.336, -0.240), p <0.05) and (2) Indigenous, compared to White, participants (OR = -0.674 (95% CI: -1.336, -0.0120), p = 0.05). The logistic regression analyses for PA and SB did not result in any statistical differences based on ethnicity or school location. CONCLUSION Although some statistically significant findings pertaining to FV existed among students in northern communities in Ontario, the health behaviours of all participants within this study were concerning. In the future, health interventions are needed to address low FV, PA, and SB of children and adolescents. Support through funding opportunities (pertaining to increasing the amount of FV provided to schools) is needed, and it is necessary to advocate for more PA and SB education.

P1.03.27
WAIST-WORN ACCELEROMETER-DERIVED BEHAVIORAL PATTERNS PROVIDE INSIGHT INTO SEX DIFFERENCES IN THE ACCUMULATION OF MVPA AND SB
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SIG: Children and families

PURPOSE: Waist-worn accelerometers are widely used to measure moderate to vigorous physical activity (MVPA) and sedentary behaviors (SB) in youth. Clinical studies suggest that patterns, not just volume, of MVPA and SB may be important for cardiometabolic outcomes. However, little is known about how patterns differ between boys and girls. The aims of this study are to: (1) assess which pattern measures provide additional information about how activity is accumulated above volume metrics; and (2) investigate sex differences in pattern metrics. METHODS: Children (N=202; mean age (yrs)=9.6 ±smn; 0.9 SD; 49% boys) with at least 4 days of valid (>10hr) waist-worn accelerometer (Actigraph GT1M) data were included. Data were averaged across all valid days and the following metrics were calculated for MVPA and SB: total volume (minutes), duration and number of bouts in MVPA guidelines (MVPA bouts lasting at least 10 minutes), and distribution/dispersion of MVPA and SB. Independent samples t-tests were used to examine relationships between metrics by sex. RESULTS/FINDINGS: Boys had greater volume of MVPA, minutes in MVPA guidelines (>10min bouts), number of MVPA guideline bouts, and energy expenditure (METs) in guideline bouts than girls (p's<0.05). Boys accumulated more of their MVPA in longer events than girls (p's<0.05). Girls had more SB breaks (transitions), transitions per hour, and greater distribution of SB throughout the day than boys (p's<0.05). Girls had shorter SB events and accumulated less of their SB in longer bouts than boys (p's<0.05). CONCLUSIONS: More nuanced metrics derived from waist-worn accelerometer data differed by sex among children. Consistent with prior literature, boys had more MVPA
than girls; however, the pattern metrics further elucidate that boys tend to accumulate both SB and MVPA in longer bouts throughout the day. There were no sex differences in SB volume, but differences in the patterns of SB suggest girls may accumulate SB in a more health-beneficial manner than boys. Future research will assess how these pattern metrics change during the transition to adolescence and assess their associations with cardiometabolic health. In addition, these measures could help inform the development of tailored intervention strategies to increase MVPA and limit SB.

P1.03.28
LONGITUDINAL ASSOCIATIONS BETWEEN PHYSICAL ACTIVITY AND ACADEMIC ACHIEVEMENT AMONG PRIMARY SCHOOL-AGED CHILDREN

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SIG: Children and families

Purpose: Studies among primary school-aged children have shown physical activity may be positively associated with academic achievement. However, these studies have primarily been cross-sectional, relied on subjective measures, and failed to consider the influence of sex and physical activity intensity. The purpose of this study was to address these limitations by examining longitudinal associations between objectively measured light- and moderate- to vigorous- intensity physical activity and academic achievement among primary school-aged children, separately for boys and girls. Methods: Participants were 567 children aged 6 to 8 years who participated in the Healthy Active Preschool and Primary Years Study. Physical activity was assessed using accelerometry. Academic achievement was assessed by data linkage with nationally-administered standardised test results for reading, writing, language, spelling and numeracy (Year 3 results; age approx. 9 years). Data were stratified by sex and analysed using linear regression, adjusted for accelerometer wear time, age, socioeconomic position and clustering by centre of recruitment. Results: Physical activity during early primary school was negatively associated with later academic achievement in some domains. Among boys, moderate- to vigorous- intensity physical activity was associated with lower scores in spelling (B=-30.18; 95%CI:-53.87,-6.48) and language (B=-29.14;95%CI=-51.73,-6.54). No associations were seen for light- intensity physical activity for boys. Among girls, light- intensity physical activity was associated with lower scores in language (B=-30.44;95%CI=-57.97,-2.90). No associations were seen for moderate- to vigorous-intensity physical activity for girls. Reading, writing and numeracy test results showed no association with physical activity for either sex. Conclusions: Physical activity during early primary school appears to be associated with few academic outcomes in middle primary school. Associations were mostly for language and in a negative direction, in contrast to previous literature showing primarily positive associations. However, those studies were mainly cross-sectional; the current study was longitudinal. This suggests the potential academic benefits of physical activity may be acute and provides a possible explanation for these unexpected results. Different intensities of physical activity also appear to influence academic achievement differently for boys and girls. Given few longitudinal studies of the association between physical activity and academic achievement, further research is needed to confirm these findings.

P1.03.29
ACCELEROMETER-ASSESSED PHYSICAL ACTIVITY LEVELS OF CHINESE YOUTH WITH INTELLECTUAL DISABILITIES: A PILOT STUDY

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: There is a lack of objective data on physical activity (PA) levels in Chinese youth with intellectual disabilities. This pilot study aimed to provide initial data on objectively assessed PA levels of this population. Methods: Participants of this study were 55 students with intellectual disabilities recruited from Grades 3 to 11 of a special education school. PA levels of participants were measured by ActiGraph GT3X+ accelerometers for seven consecutive days. Cut-off points developed for Chinese youth were applied to calculate time spent in light (LPA, <2800 counts/min), moderate (MPA, =2800 counts/min but <4000 counts/min), and vigorous PA (VPA, =4000 counts/min). Descriptive statistics were conducted to
analyze the daily time spent in LPA, MPA, and VPA. Comparisons between genders were performed by independent sample T test. Differences between weekdays and weekend days were compared using paired sample T test. All analyses were conducted in SPSS 18.0. The significance levels were set at 0.05. Results: 36 participants (26 boys and 10 girls; mean age = 14.9 ± 2.6 years) who provided valid accelerometer data were included in final data analysis. Daily LPA, MPA and VPA time are 160.2 ± 45.5 min/day, 20.2 ± 8.6 min/day and 16.9 ± 11.2 min/day, respectively. Only 15.4% of boys and 10% of girls meet the PA recommendation of 60 minutes of MVPA per day. Gender differences were not found for all PA variables. For the overall sample, participants accrue more VPA time on weekdays than on weekend days (18.4 ± 9.6 min/day vs. 13.0 ± 9.8 min/day, P < 0.05). This trend for VPA is also found in boys (19.8 ± 13.5 min/day on weekdays vs. 14.1 ± 9.8 min/day on weekend days, P < 0.05), but not in girls. Conclusions: This study indicated that PA levels of youth with intellectual disabilities in China are extremely low, especially on weekend days. Time-specific investigations of correlates of PA are warranted to inform tailored PA promotion strategies for this population in China.

P1.03.30
ASSOCIATIONS BETWEEN ACTIVITY PATTERNS AND CARDIO-METABOLIC RISK FACTORS IN YOUTH
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SIG: Children and families

Objective: Patterns of activity accumulation (e.g., bouts and breaks) across the activity spectrum may be important for health. Studies to date have mainly focused on investigating the associations between patterns of sedentary time (SED) or moderate-to-vigorous physical activity with adiposity outcomes. This study examined associations between activity patterns across the full activity spectrum and cardio-metabolic risk factors in youth. Methods: Accelerometer and health data from 1502 youth aged 7-15 years from three studies (Commando Joe's, LOOK, and Transform-Us!) were pooled. Time accumulated in short (=5 min) and long (=10 min) SED bouts, as well as breaks in SED time, were calculated. The amount of time accumulated in short (=1 min), medium (=5 min), and long (=10 min) light (LPA), moderate (MPA), and vigorous (VPA) physical activity bouts, were also determined. Health outcomes assessed included adiposity, blood pressure, HDL-C, LDL-C, triglycerides, and a combined cardio-metabolic risk score (CMR-score). Separate regression models, adjusted for school, sex, age, puberty, socio-economic status, accelerometer wear time, and time spent in the intensity of interest (e.g. SED time for SED bouts), were used to examine cross-sectional associations between activity patterns and cardio-metabolic risk factors. Results: Short and medium LPA bouts were detrimentally associated with BMI, waist circumference, HDL-C, triglycerides, and CMR-score. In addition, short LPA bouts were detrimentally associated with systolic blood pressure. Short and medium MPA bouts were detrimentally associated with BMI and waist circumference. Short and long VPA bouts were beneficially associated with diastolic blood pressure. Long VPA bouts were beneficially associated with HDL-C. No associations between any SED patterns and CMR-factors were found. Conclusions: These results suggest that physical activity patterns might be associated with cardio-metabolic risk factors in youth. However, further evidence, considering the impact of combined intensities on cardio-metabolic risk factors, is needed to better understand the health impact of youth activity patterns across the activity spectrum. This will inform future public health guidelines and the development of interventions.

P1.03.31
EFFECT OF PHYSICAL ACTIVITY AND EXERCISE ON TEENAGERS' COGNITIVE ABILITY AND ACADEMIC PERFORMANCE: A SYSTEMIC REVIEW
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SIG: Children and families

Background: Lack of physical activity in China youth is a serious problem today. The situation that parents and teachers attach importance to students' intellectual development and despise sports activities has not
fundamentally changed. Fortunately, recent studies have shown that the participation in physical activity can improve students' cognitive functions and academic performance, but these studies have not been systematically examined. This study was to evaluate the effects of physical activity and exercise on the academic performance of teenagers through a systematic review.

Method: Academic data-based systems including Web of Sciences, MEDLINE, SportDiscus, and Academic Research Premier were searched using the key words of "cognitive ability," "academic performance", and "physical exercise.". In total, 158 articles were screened, and 43 articles were included in the final review.

Analysis/Results: The effect of physical activity on the cognitive ability and academic performance of teenagers was gradually being recognized in 1960s and 70s (JN Oliver, 1958; Corder, 1966; Ismail, 1967). It was noticed that before 2000, most of the studies (60%) were based on the arousal theory of environmental psychology (Hinkle, Tuckman & Sampson, 1997), and the methods of the research were basically using the questionnaire survey method. Starting from 2000, many studies (about 45%) began to be influenced by the theory of embodied cognition (Schuberth & Koole, 2009), and the research methods also added the related techniques of neuroscience, such as MRI, EEG and MEG, fMRI, and other related technologies such as PET, SPECT, NIRs and Oct (Buddle, Voelcker & Pietrassky, 2008; Best, 2012). Overall, most studies (70%) have found that the level of physical activity and exercise in teenagers is positively correlated with their cognitive ability and academic performance. However, some research results show that the level of physical exercise is not related to teenagers' academic performance or even negatively correlated.

Conclusions: Most of the research results show that physical activity and exercise helps teenagers improve their cognitive ability and improve their academic performance to some extent. These results will undoubtedly benefit the publicity and implementation of the National fitness Program in China, and also provide new ideas and methods for the development of sunshine Sports in China.

P1.03.32
SEASONAL VARIATION IN PHYSICAL LITERACY AMONG CHILDREN AGED 8-12 YEARS
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Purpose: Research suggests a relationship between seasonal variation (SV) and children's physical activity (PA) levels, with children being more active during the summer months compared to the school year. Physical literacy (PL) is also a significant determinant for participation in PA. As such, PL protocols, such as the Canadian Assessment of Physical Literacy (CAPL) have begun to emerge as a means to assess and improve children's PL skills. Although, while SV and PL skills have both been identified as important factors influencing children's PA levels, it has yet to be determined whether or not a relationship exists between the two. Thus, the purpose was to examine whether or not a relationship exists between SV and PL skills.

Methods: From 2014-2016, 1278 children (ages 8-12 years; 52% male) from Southwestern Ontario (Canada) were measured for PL using the CAPL protocol. SV was calculated by the month of the data collection (Dec-March; April-June; July-Aug; Sept-Nov). A General Linear Model (GLM) analysis was calculated to determine overall CAPL scores with season, gender, grade, and location of site (urban/rural/suburban). Based on significance, Tukey's pairwise comparisons were done on season.

Results/Findings: The mean CAPL score was 60.5 (SD 11.2). The GLM analysis indicated a significant effect of season, F(3, 1262)=5.20, p< 0.001. Post hoc analysis indicated that CAPL scores measured during Winter (M=61.3) and Spring (M=60.5) was significantly higher than Summer (M=54.4) and Fall (M=57.5). Conclusion: The results suggest that there is a relationship between SV and PL skills. Yet, PL and PA levels peak at different times of the year. One possible explanation may be that throughout the school year, children are improving their PL skills in physical education classes, thus having the highest PL towards the end of the school year (Winter and Spring), which in turn leads them to be more physically active during the summer months as they now have the requisite skills. Although, further research is needed to determine if PL is a reason for this increased summer PA or if it is due to other factors like more time/nicer weather.

P1.03.33
DEVELOPING A HOME-BASED OBESITY PREVENTIVE PROGRAM ADDRESSING INFANCY: ASSESSMENT OF CURRENT PRACTICES AND ORGANIZATIONAL CAPACITY
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: The overall aim of the Healthy Childhood Study is to develop and test a primary overweight and obesity preventive programme within the structure of home health visitors across Danish municipalities addressing the child's first year of life. The aim of the present study is to assess current practices and variations in capacity and readiness for implementing and sustaining such a programme among health visitors. Methods: Interviews with health visitors and managing health visitors from a total of twenty Danish municipalities were carried out over telephone during fall 2017. The interview guide was semi-structured and guided by a nationally developed theoretical model to assess implementation capacity in Danish municipalities supplemented by the organizational readiness for change model by Lehman et al. (2002). Beyond covering important themes related to capacity and readiness for implementing a future intervention, the guide also included questions on health visitors existing experiences with early primary overweight and obesity prevention. Findings: Three main themes were derived from the interviews. The first theme was related to capacity and readiness for implementing early overweight and obesity prevention among health visitors in Danish municipalities. The majority of the health visitors highlighted the importance of prioritising and working with primary overweight and obesity prevention among infants. Further, health visitors highlighted the first year in a child's life as a period where parents are highly motivated for change in practices or behaviours for the health of their child. Potential barriers mentioned included lack for time, economic resources and political priority. The second theme covered health visitors' current experiences with primary overweight prevention. Here only few reported previous experience and emphasized a need for specific tools and knowledge on how to conduct primary overweight prevention. The third theme covered health visitors' input to a future intervention where one consistent input was the importance of having a closer relation with families e.g. by more frequent visits. Conclusions: The findings are central for ensuring that the future intervention is relevant and applicable to the context of health visitors in Danish municipalities. This is crucial for ensuring successful implementation and prolonged sustainability.

P1.03.34
WHOLE GRAIN KNOWLEDGE AND PERCEPTIONS AMONG LOW-INCOME CAREGIVERS: FINDINGS FROM A PILOT STUDY
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SIG: Children and families

Purpose: Few studies have intervened on type 2 diabetes risk among low-income children by providing whole grain (WG) foods. The Food Overcoming our Diabetes Risk (FoodRX) pilot study was a 16-week program where low-income families received weekly deliveries of WG foods, as well as vegetables and legumes/beans. We examined changes in caregiver WG knowledge and perceptions about the relationship between WGs and child health. Methods: Sixty low-income caregivers with at least one child at risk for type 2 diabetes were recruited to participate in the FoodRX pilot study. In addition to the weekly food deliveries, caregivers received WG recipes and general information about WGs. To assess WG knowledge, caregivers were asked "which is a whole grain food" for 6 different pairs of foods (e.g., brown rice or white rice). To assess caregiver perceptions about the relationship between WGs and child health they were asked if "getting enough whole grains can help my child" have a 1) healthy weight, 2) healthy heart, and 3) reduce risk of type 2 diabetes (strongly disagree, disagree, neutral, agree, strongly agree). Descriptive statistics were calculated (individual characteristics and USDA 18-item Household Food Security Module) and changes in WG knowledge and perceptions were analyzed using paired t-test. Results: Caregivers (n = 48) were mostly female, racial/ethnic minority (71% Hispanic and 25% Black), and on average 43 years old. Regarding household food insecurity, 47.5% of households were food secure, 37.5% were food insecure without hunger, and 15% were food insecure with hunger. From baseline to follow-up, WG knowledge significantly improved (p = 0.0001), as did responses to the following questions: "getting enough whole grains can help my child have a healthy weight" (p = 0.041) and "getting
enough whole grains can reduce my child's risk of type 2 diabetes" (p = 0.020). No significant changes were observed from baseline to follow-up for the “getting enough whole grains can help my child have a healthy heart” question (p = 0.139). Conclusion: Findings suggest that by delivering WG foods to low-income families and providing WG recipes and general information, caregivers' knowledge and perceptions improve.

P1.03.35
PREVALENCE AND CORRELATES OF PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR AND THEIR CLUSTER AMONG CHINESE CHILDREN AND YOUTH
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SIG: Children and families

Background: Lacking evidence on the prevalence and correlates of physical activity (PA) and sedentary behaviour (SED) and their co-existed clusters among Chinese children and youth inhibits the simultaneous interventions' implementation. Thus, the purpose of this study is to examine the prevalence and correlates of PA and SED and their clusters. Methods: Large sample study was conduct from October to December in 2014 using multi-stage stratified and random cluster sampling method. 78516 students who were in grade 1-12 from 711 schools in Shanghai participated in the survey and 71404 students finished the self-report questionnaire (response rate = 90.9%). After excluding the ineligible data, 49458 eligible participants (50.2% for boys) were categorised into elementary, middle and high school groups. Clusters were dichotomized into Non-risk (both meet PA and SED guideline) and Risk (do not both meet PA and SED guideline or either of them) groups. Descriptive analyse and Chi-square test were used to report the prevalence of behaviours. Logistic regression was conducted to explore the predictors of behaviours. Results: 18.4% and 2.9% of young people achieved the PA and SED guideline, respectively. Boys (21.1%) were more active than girls (15.7%) (p < 0.001). With grade increased, the proportion of meeting the PA and SED guideline both declined (p < 0.001). Only 1.1% of young people who both met the PA and SED guideline, while decreased with grade raised (p <0.001). Boys were more likely to meet the PA guideline (OR = 1.43, CI:1.37-1.50). Compared to high-school youth, elementary-school children (OR = 6.07, CI: 5.63-6.54) and middle-school youth (OR = 2.56, CI: 2.36-2.78) had greater chance to meet PA guideline; but only elementary-school children were about 4 times (OR = 3.72, CI: 3.19-4.34) as likely to meet the SED guideline. Older young people had largely less chance to both met the PA and SED guideline (Middle-school: OR = 0.122, CI: 0.091-0.165; High-school: OR = 0.089, CI: 0.061-0.130). Conclusions: Majority of Chinese children and youth were physically inactive and sedentary. Gender and grade were important correlates of the active behaviours. Specific interventions must be the highly-prioritized for girls and older youth.

P1.03.36
INFLUENCE OF VARIOUS KINDS OF PARENTAL SUPPORT ON CHILDREN AND ADOLESCENTS' PHYSICAL ACTIVITY
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SIG: Children and families

Purpose: Parental support is essential to children and adolescents' moderate-to-vigorous physical activity(MVPA). Yet little is known about the relationship between parental support and MVPA among Chinese children and adolescents with a wider range of age. The purpose of this study is to explore various kinds of parental support (parental encouragement, PAEN; parental accompany, PAAC; financial support, PAFS; and parental model, PAMD) on influencing MVPA among Chinese children and adolescents. Methods: Large scale school survey was conducted in Shanghai metropolitan area from October to December in 2014, using multi-stage stratified and random cluster sampling method. 78516
students (grade 1-12, age 6-18) from 711 primary, secondary and upper secondary schools participated in the self-report questionnaire survey, and final 61429 participants (boys 50.7%; mean age 11.8 years) were included in analyses. Descriptive statistics and Chi-square were used to report the level of MVPA. Logistic regression was used to examine the association between parental support and MVPA. Results: 19.4% of young people met the PA guideline with gender difference (Boy vs Girl: 21.4% vs 17.4, p < 0.001). Boys with high parental encouragement, accompany, finance and model showed higher percentage of MVPA, as was seen in girls (all p < 0.001). Compared to those who received low parental support, boys (OR: 1.21-1.60) and girls (OR: 1.27-1.63) with high parental support both exhibited higher ratio of MVPA. Boys in each grade who had high parental support were more likely to reached MVPA (OR for PAEN: 1.24-2.02; OR for PAAC: 1.19-3.06; OR for PAFS: 1.01-2.12; OR for PAMD: 1.29-2.98). Similar results were observed in girls (OR for PAEN: 1.13-2.93; OR for PAAC: 1.16-3.25; OR for PAFS:1.06-2.47, except for grade 4 and 6; OR for PAMD: 1.27-2.64). Conclusions: The percentage of Chinese children and youth who met MVPA was low, while boys were more physically active than girls. Parental support had distinct important influence on children and adolescents' MVPA, which differed across the grades. Specific grade-related interventions combined with various kinds of parental support should be warranted to promote MVPA in China.

P1.03.37
AN EXPLORATION OF PARENTS’ PERCEPTIONS OF NUTRITION LITERACY AND THE RESOURCES REQUIRED TO ENHANCE IT IN CHILDREN

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SIG: Children and families

Purpose: The concept of nutrition literacy (NL) has been defined and interpreted in a variety of different ways by researchers and professionals (Velardo, 2015). Interestingly, there is a paucity of research related to how parents understand NL and what resources are needed to enhance it within the family unit. The purpose of this study was to: (1) explore parents' understanding of NL and its importance in their families; and (2) identify parents' perceptions of the resources required at both family and community levels to improve children's NL. Methods: Parents of children < 16 of age, living in Ontario, Canada, were recruited via social media to take part in the study. Participants completed an online questionnaire containing Likert-scale (n = 3) and open-ended (n = 4) questions related to NL. Quantitative data collected via Likert-scale questions were analyzed using descriptive statistics, and qualitative data collected via open-ended questions underwent thematic analysis (Braun & Clarke, 2006). Findings: Participants (n = 79 parents, MAge = 39.4) were predominantly White (77.2%), female (91.2%), and married (79.7%). Less than half of participants (44.3%) were familiar with the term NL. The primary themes from participants' responses to the question "What does NL mean to you?" were declarative (i.e., knowledge of facts and information) and procedural (i.e., knowledge of skills and strategies). After reviewing a definition of NL, all participants agreed (29.1%) or strongly agreed (70.9%) that NL was important, and most (83.6%) believed that it could be improved in their families. The themes for family-level resources needed to improve NL among children were professional advice, practical skills, kid-friendly recipes, and information on food and environment. In terms of community-level NL resources/opportunities, themes that emerged were food regulation and policy, accessible community programming, and school-based policies and curriculum. Conclusions: Several resources and opportunities were identified by parents as required, in both home and community environments, to enhance NL among children. The importance and potential implications of designing family-focused interventions containing such resources and opportunities will be discussed, along with recommendations for future research related to NL-related school curricula and education policies.

P1.03.38
CHILDREN’S PHYSICAL ACTIVITY LEVELS DURING ORGANISED SPORTS PRACTICES

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SIG: Children and families

Objective In addition to providing a number of social benefits, organised sports can enable children to
engage in health-enhancing physical activity. However despite participating in organised sports, children may not meet daily physical activity guidelines if they do not accrue any moderate to vigorous physical activity (MVPA) outside of organised sports, if their sport participation lacks frequency, or if sport sessions are low in MVPA. Only a limited number of studies have used observation or accelerometry measures to assess individuals’ physical activity levels in a small selection of organised sports. The purpose of this study was to measure the physical activity levels of children during practice sessions of four popular organised sports in Australia. Methods This study used a cross-sectional observational design. Participants comprised children from four local organised sports clubs in suburban Adelaide, South Australia. The sports examined were Australian Rules Football (AFL), girls’ netball, boys’ soccer and girls’ soccer. Each participant wore a waist-mounted GT3X or GT3X+ Actigraph accelerometer in either one or two of the practice sessions. Age-specific Evenson AG cut-points were used to determine the time participants spent in intensity zones. Results Participants typically spent 40–sh;50% of each sport practice session in moderate to vigorous physical activity (MVPA). Participants in the boys’ soccer teams spent significantly greater time in MVPA (mean = 47% of practice time, 95% CI = 37%, 57%) than participants in the girls’ netball teams (mean = 40%, 95% CI = 30 %, 50%), participants in the girls’ soccer teams (mean = 38%, 95% CI = 28%, 48%) and participants in the boys’ AFL teams (mean = 40%, 95% CI = 36%, 44%). The practice sessions contributed approximately half of the 60 minutes of MVPA per day recommended by physical activity guidelines for children and young people. Conclusions Results suggest that organised sports provide a supportive environment for physical activity accrual, however one practice session is insufficient for children to reach the amount of daily MVPA recommended in guidelines. Future research should explore how different coaching approaches influence MVPA by using experimental designs across a variety of sports, populations and settings.

P1.03.39
A MIXED-METHODS FEASIBILITY STUDY OF A TEACHER-FOCUSED MOVEMENT INTEGRATION INTERVENTION IN A UK SECONDARY/HIGH SCHOOL
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: The majority of adolescents’ daily sitting occurs during school hours. Evidence indicates that movement integration strategies, e.g. active lessons, can reduce sitting during school among primary/elementary students. Few studies have explored the implementation and outcomes of movement integration strategies in secondary/high schools. We investigated the feasibility, acceptability and preliminary effectiveness of a teacher-focused movement integration intervention for changing secondary students’ activity behaviour during school. Methods: Maths and English teachers (n=15) at one school were trained to integrate movement into existing lessons (incl. outdoor lessons). Training consisted of two, 2-hour sessions, separated by two weeks. In a mixed-methods evaluation, teachers and students participated in focus groups and completed questionnaires regarding the feasibility, acceptability, and costs of delivering/participating in lessons with integrated movement. Teachers provided feedback on the training. Baseline and follow-up measures of activity (accelerometry) and wellbeing were collected from 11-14 year-old students (n=91). Results: Teachers provided positive feedback on the training, indicating the sessions were relevant and helpful. All teachers completing the post-training questionnaire (n=9) reported they would recommend the training to other schools. Teachers had mixed experiences of delivering lessons with integrated movement - some reported the lessons were enjoyable for themselves and students, while others reported incidents of disruptive behaviour. Of the students who recalled receiving a lesson with integrated movement (n=44/91) the majority reported preferring them to desk-based lessons (71%) and wanted teachers to continue delivering them (91%). Time and financial costs associated with delivering/participating in lessons with integrated movement were low. Between baseline and follow-up, student’s activity level during school (expressed as average vector magnitude) decreased from 47.8mg to 45.2mg (p<.05). Conclusions: Delivering movement integration training to secondary school teachers is feasible, and led to (short-term) changes to lesson delivery. Active lessons were acceptable to students; further research is needed to ascertain wider secondary school teachers’ acceptability of delivering these lessons. Barriers to delivering lessons with integrated movement should
be addressed in future movement integration training, e.g., disruptive behaviour. Follow-up research will explore the feasibility of delivering the intervention to all subject teachers and further explore teachers' acceptability of delivering lessons with integrated movement.

P1.03.40
A GEOGRAPHIC ANALYSIS OF RETAIL FOOD OUTLETS SURROUNDING SCHOOLS, RECREATION/SPORT FACILITIES, AND CHILDCARE CENTRES IN ALBERTA, CANADA: DOES THE COMPETITIVE ENVIRONMENT CONTRADICT HEALTHY FOOD INTERVENTIONS IN THESE SETTINGS?
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SIG: Children and families

Purpose: Improving healthy food availability in activity settings for children, including schools, recreation/sport facilities, and childcare centres, is a recognized public health strategy. However, voluntary nutrition guidelines introduced for these settings have been poorly implemented in the province of Alberta, Canada. This research aimed to explore the healthfulness of competitive retail food environment surrounding these settings, which may support or pose barriers to the regional implementation of nutrition guidelines and other healthy eating interventions. Methods: Using public health inspection data for retail food outlet locations (n=4862) in two municipalities in Alberta (Edmonton and Calgary), we categorized the competitive environment as "Choose Most Often" (e.g. grocery stores), "Choose Sometimes" (e.g. coffee outlets), or "Choose Least Often" (e.g. burger outlets, convenience stores), aligned with Alberta Nutrition Guidelines for Children and Youth categories (Inter-rater reliability Cohen's kappa=0.72; p=0.05). Using 1000m circular buffers, the absolute and relative densities of each category in proximity to schools (n=673); recreation/sport facilities (n=63); and childcare centres (n=824) were calculated. Compounded exposure to unhealthy food availability will be characterized as the absolute density of "Choose Least Often" food outlets within overlapping buffers by two or more settings, comparing neighborhoods with relatively low and high socioeconomic levels (2016 Canadian Census). Results: Overall, 57% of food outlets were "Choose Least Often"; only 23% were "Choose Most Often". Preliminary findings in Edmonton show that the median density of "Choose Least Often", "Choose Sometimes", and "Choose Most Often" within 1000m buffers were similar for each activity setting. Access to "Choose Least Often" food outlets was 1.7-2.3 times more frequent than "Choose Most Often" food outlets in Edmonton. Ongoing analysis of compounded exposures as associated with neighborhood socioeconomic levels will help to further characterize competitive retail food environments surrounding activity settings. Conclusions: This research presents novel methods for assessing food outlet healthfulness, and evaluating children's compounded exposure to unhealthy food environments across multiple settings simultaneously. Preliminary results suggest that children's activity settings are located within food swamps characterized by high access to unhealthy food outlets. These competitive environments may interfere with the implementation and success of healthy eating interventions within activity settings for children.

P1.03.41
ACCELEROMETER UPTAKE AND WEARING ADHERENCE IN A POPULATION-BASED STUDY AMONG ASIAN PRE-SCHOOL CHILDREN
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SIG: Children and families

Objective: The use of accelerometers has become increasingly common for the measurement of physical activity (PA) and sedentary behaviour (SB) in population-based studies. However, uptake and adherence to wearing these devices remain a challenge. The purpose of the study was to describe the determinants of uptake and adherence to wearing accelerometers among Asian children. Methods: As part of the Growing Up in Singapore Towards healthy Outcomes (GUSTO) cohort study the ActiGraph™ wGT3X-BT accelerometer was used to collect PA and SB data among children at age 5.5 years. Participants were asked to wear an accelerometer for 7 consecutive days on their non-dominant wrist with non-removable straps. Children with =3 days of at least 12 hours of accelerometer data were considered to provide valid data. We used Student t-test and chi-square test to compare continuous and categorical variables. Results: 864 parents were approached and 685 (79.3%) of them agreed for their child to wear the accelerometer. Children who wore the accelerometer were slightly younger (mean ± smn; SD: 66.5 ± smn; 0.9 months vs 66.7 ± smn; 0.9; p<0.001) compared to those not wearing the device. No other differences were observed for sociodemographic characteristics. Normal weight children were also more likely to wear the accelerometer than children in other weight categories (underweight: 69.0%, normal weight: 81.5%, overweight: 71.4%, and obese children: 72.5%, p-value = 0.03). Valid data were provided by 580 (84.7%) participants, and 86% (n=496) of these wore for =7 days. Average wear time was 23.1 ± smn; 1.0 h/day. Maternal education was the only significant predictor of providing =3 days of valid data: children of mothers with university-level education were less likely to provide valid data than mothers with lower education background (=secondary: 86.2%, pre-university: 88.7% and university: 79.5%, p=0.02). Conclusion: Younger children and normal weight children were more likely to wear the accelerometer. Children of mothers with higher maternal education were less likely to provide valid data. Further research is warranted to examine the predictors of accelerometer uptake and adherence in population-based studies in order to develop effective strategies to improve wear time.

P1.03.42
BEHAVIORAL CHANGES IN HEALTHY LIFESTYLE PROGRAM AMONG MALAYSIAN ADOLESCENTS LIVING IN DAY-SCHOOL HOSTELS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: A 3-year teacher-led Healthy Lifestyle Program, using the "Healthy Eating and Be Active among Teens (HEBAT)" modules, was conducted to evaluate the changes in eating behaviors, physical activity, and body weight status of Malaysian adolescents living in day-school hostels. Methods: A total of 100 day-schools (50 intervention day-schools with 1885 students; 50 control day-schools with 2392 students) were randomly selected from six main regions of Malaysia to participate in this study. Students completed the Eating Behaviors Questionnaire (EBQ), Physical Activity Questionnaire for Older Children (PAQ-C) at Pre-intervention, Post-Intervention I (after completing Phase I of HEBAT modules), and Post-Intervention II (after completing Phase II of HEBAT modules). Body weight and height of the students were measured. Results: The mean breakfast, lunch, and dinner consumptions were found higher in the intervention group than the control group after the program (intervention vs. control: breakfast= 4.80 vs. 4.38 days/week; lunch= 5.55 vs. 5.17 days/week; dinner= 5.05 vs. 4.71 days/week). The mean summary activity score of the intervention group increased after the program (Pre-Intervention: 2.70; Post-Intervention II: 2.87) while it maintained in the control group (Pre-Intervention: 2.70; Post-Intervention II: 2.73). The percentage of low physical activity level of the intervention group decreased over time (Pre-Intervention: 25.5%; Post-Intervention II: 16.6%) while it maintained in the control group (Pre-Intervention: 24.9%; Post-Intervention II: 24.5%). The percentage of moderate physical activity level was higher in the intervention group compared to the control group after the program (intervention vs. control: 74.5% vs. 69.4%). The intervention group decreased their obesity rate (Pre-Intervention: 9.8%; Post-Intervention II: 6.3%) while control group maintained their obesity rate (Pre Intervention: 7.8%; Post Intervention II: 7.8%) after the
program. Conclusions: In short, this program is effective in increasing the main meals consumption and physical activity; and decreasing the obesity rate of the intervention group. A follow-up study is needed to evaluate the eating behaviors, physical activity, and body weight status of respondents for sustainability on the healthy lifestyle.

P1.03.43
ACUTE EFFECTS OF AEROBIC PHYSICAL ACTIVITIES ON ATTENTION AND CONCENTRATION IN SCHOOL-AGED CHILDREN
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: It is unknown whether or not a PA intervention can produce positive effects on students’ attention and concentration late in the school day (i.e., afternoon). Thus, the purpose of this study was to examine the acute effect of 30-min PE lessons on students’ attention and concentration late in the school day.

Methods: A total of 115 fourth- and fifth-grade students participated in this study with the mean age of 9.41 years old for fourth grade students (n=58) and 10.41 years old for fifth-grade students (n=57). One fourth-grade class and one fifth-grade class were randomly assigned to the intervention group, while the other one fourth-grade class and the other fifth-grade class were randomly assigned to the comparison group. The intervention took place after all classes attended a 30-min regular late afternoon academic lesson. The intervention students took the d2 Test of Attention before and after attending a 30-min aerobic PA-focused PE lesson, while the comparison students took the d2 Test of Attention before and after attending a 30-min lecture-typed PE lesson. The d2 Test is standardized paper and pencil letter-cancellation test that measures neuropsychology performance of the students in the areas of sustained and selective attention as well as concentration.

Results: 2 (pre-test vs. post-test) x 2 (Experimental Group vs. Comparison Group) ANOVA revealed a significant effect of time, but no significant effect of group for processing speed (TN), accuracy (E%), and concentration (CP). Further, the repeated measures ANOVA indicated that there was no significant interaction between time x es; group in TN and E%, but there was a significant level of the time x group intervention in CP, close to p< .05. Conclusion: It was concluded that after participating in both the 30-min aerobic PA-focused PE lesson and the 30-min interactive lecture typed PE lesson late in the school day, the students had greater improvement in attention and concentration, compared to after attending the 30-min regular academic lesson.

P1.03.44
DEVELOPMENT OF AN OBESITY PREVENTIVE PROGRAM ADDRESSING INFANCY: PARENTS’ PERCEPTIONS OF BARRIERS AND FACILITATORS FOR ADHERING TO ADVICE FROM HOME HEALTH VISITORS FAVOURING A HEALTHY CHILD WEIGHT DEVELOPMENT
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SIG: Children and families

Purpose: Childhood overweight and obesity is a major public health challenge and prevention needs to start already during infancy. Danish home health visitors cover almost all families with a new-born child. This leaves a huge potential for early prevention of childhood overweight and obesity. The purpose of this study is to examine Danish parents’ perception of barriers and facilitators for adhering to advice from the health visitors regarding a healthy weight development of their child.

Methods: Ten interviews with parents of infants less than one year of age were conducted within the home of the families. Interviews were conducted until saturation was met. Parents were strategically sampled representing variations across child’s age, socioeconomic position, migration status and geography. Interviews were based on a semi-structured interview guide. All interviews were recorded and transcribed verbatim and followed by a thematic analysis identifying themes within the posed research question. Findings: Parents generally experience visits from their health visitor very positively. Health visitors are emphasized as a confident and trustful relation and are mentioned as the key informant about infants’ health. We found variations in how
parents' adhere to advice favouring healthy weight development of their child. Generally, parents adopted a positive attitude towards the health visitor, also when she addressed behaviour or practice of the parents. However, parents expressed the importance of doing so in a non-stigmatising or finger pointing manner. Parents in disadvantaged families emphasized that information is not sufficient for achieving behavioural change. They expressed that learning new skills and competences are necessary for adapting new behaviours—e.g., through training like cooking together with the health visitor during home visits.

Conclusions: Parents generally have a confident and trustful relation to the health visitor and she constitutes the key informant to the families on child health. This leaves a potential for the structure of Danish health visitors for future primary and early obesity prevention. Adaptation of the future intervention program to the information provided by parents of infants will increase the chances of developing a relevant, successful and sustainable intervention.

P1.03.45
ACCELEROMETER-MEASURED SEDENTARY BEHAVIOR AND PHYSICAL ACTIVITY IN RELATION TO HEALTH-RELATED OUTCOMES AMONG HISPANIC CHILDREN
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SIG: Children and families

Purpose: School-aged children spend a majority of the day being sedentary (6-8 hours; Tremblay et al., 2011) but less than 5% of the time in moderate-to-vigorous-physical activity (MVPA; Basterfield et al., 2010). In the U.S., 42.6% Hispanic children are overweight or obese, and obesity prevalence is higher among Hispanic boy (43.7%) than Hispanic girls (41.5%) (Ogden et al., 2010). The purpose of this study was to examine the associations of accelerometer-measured physical activity and sedentary behaviors to health-related outcomes (i.e., weight status, cardiorespiratory fitness, quality of life [QOL]) among Hispanic children. The sex and grade differences were also examined. Methods: Participants were 374 Hispanic children (192 boys, 182 girls; M age = 9.64) recruited from six elementary schools in a U.S. state. Sedentary behavior and physical activity (light PA and MVPA) during school were measured by accelerometers for five consecutive school days. Weight status (body mass index [BMI]) and cardiorespiratory fitness were measured using the FITNESSGRAM® test battery, while QOL was measured using a standardized questionnaire. Results/findings: The results demonstrated that sedentary behavior was negatively correlated with cardiorespiratory fitness (r = -.16) and QOL (r = -.18), but positively associated with BMI (r = .22). MVPA was positively correlated with all health-related outcomes, but negatively correlated with sedentary behavior and light PA (r = -.42 and -.67, respectively). Hispanic boys demonstrated higher MVPA (F 1, 374 = 15.06; p < .01, ?;2 = .04) and higher cardiorespiratory fitness (F 1, 374 = 17.95; p < .01, ?;2 = .05) than Hispanic girls. Children in higher grade levels engaged in more sedentary behavior than those in lower grades (F 2, 374 = 55.03; p < .01, ?;2 = .23). Sedentary behavior significantly predicted cardiorespiratory fitness and BMI (explaining 7.6% and 6.4% of the variance, respectively), after controlling for sex and grade. MVPA was the only significant predictor of QOL (βa; = .36; R2 = 9.4%). Conclusions: The results indicate that it is important to promote MVPA and decrease sedentary behavior in schools to enhance health-related fitness and QOL among Hispanic children. Sex and grade differences should be considered when designing school-based interventions.

P1.03.46
THE DEVELOPMENT AND IMPLEMENTATION OF A PARENT-FOCUSED CHILDHOOD OBESITY INTERVENTION USING A COMBINED THEORETICAL FRAMEWORK
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SIG: Children and families

Purpose: The need for theory-driven research is well documented in the pediatric obesity intervention literature, and although researchers frequently cite the theories used in their studies, many do not disclose
which and how specific theoretical components are applied (Thomas, 2006). The purpose of this presentation is to provide a detailed overview of the theoretical framework and evidence-based strategies underpinning the development and implementation of "C.H.A.M.P. Families", a parent-focused intervention targeting childhood overweight/obesity. Methods: C.H.A.M.P. (Children's Health and Activity Modification Program) Families is a 13-week pilot intervention program for parents of children ages 6-14 with overweight and obesity (BMI = 85th percentile for age and sex). Participants (n = 14) attended eight 90-minute group-based education sessions focused on behavioral (e.g., healthy eating, physical activity, sedentary behavior), environmental (e.g., media literacy, school- and home-based environments), and social (e.g., family communication and cohesion, bullying, effective parenting) factors. All sessions took place at a local YMCA and were delivered by researchers, health professionals, and/or community organizations. Findings: The development and implementation of C.H.A.M.P. Families was grounded in Bandura's Social Cognitive Theory (SCT), a widely used theory in health promotion given its focus on the influence of social, personal, and environmental factors. Central determinants of SCT (knowledge, self-efficacy, outcome expectations, goals, perceived facilitators, and perceived impediments) were addressed in the design and implementation of the program, along with the use of evidence-based group dynamics principles (e.g., family goal setting, collective problem solving, strategies to enhance program and family cohesion) and motivational interviewing techniques (e.g., asking open-ended questions, reflective listening, affirmation, summarizing). The rationale for and use of specific SCT, group dynamics, and motivational interviewing constructs at each stage of program design and implementation will be discussed. Conclusions: There is a need to conduct research in the treatment of childhood obesity that extends beyond atheoretical conceptual models and includes transparent reporting related to which, and how, theories and constructs have been used or targeted in intervention planning and implementation. The detailed description of the theoretical foundation of C.H.A.M.P. Families will provide useful information for researchers who are planning or designing childhood obesity-related interventions involving parents.

P1.03.47
COMMERCIAL GROWING UP MILKS: USE IN FOUR ASIA PACIFIC COUNTRIES
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SIG: Children and families

Purpose: The commercial introduction of toddler or growing-up milk products (GUMs) are milk-based products, low in protein and supplemented with vitamins and minerals, targeted at young children from 12 to 36 months of age, with rising demand being driven by growth in the Asia Pacific region. The World Health Assembly deems the use of GUMs as unnecessary. Given the market growth and dearth of studies it is necessary to explore GUM feeding in young children. The aim of this study was to explore the use of commercial GUMs for children between 12 and 36 months in four Asia Pacific countries. Methods: Mothers of children between 12 and 36 months were surveyed, assessing dietary fluid preferences and most frequently consumed milk based products in the past month. A market research company database was used to survey across Asia Pacific urban cities including Bangkok, Thailand, Jakarta Indonesia, Singapore and Australian Capital Cities (ACC). Results/findings: More than one thousand women (n=1051) were surveyed (263 Bangkok; 275 Jakarta; 252 ACC; 261 Singapore). The mean age of mothers was 32.4 ± 5.3 years and the child's 23.6 ± 6.7 months. Completion of a post-secondary qualification (diploma/degree) by the mother was high (94% Bangkok; 78% Jakarta; 93% Singapore; 77% ACC). Reported feeding of GUMs more than once per month varied between countries with 86% in Singapore, 81% in Bangkok; 73% in Jakarta and 35% ACC. Many mothers offered GUMs more than twice per week (64% Bangkok; 55% Jakarta; 66% Singapore; 27% ACC). GUMs were reported as the most frequently fed milk based fluid for many in the Asian countries (60% Bangkok; 56% Jakarta; 74% Singapore; 19% ACC). Conclusions: This is the first study to explore commercial GUM feeding in and between countries. This study identifies the frequent feeding of GUMs by toddlers in three Asian capital cities (Bangkok, Singapore and Jakarta) and a lower reported feeding in ACC. The frequency of GUM feeding, contrary to the World Health Assembly recommendation, signals for the need for further research into the drivers for GUM feeding and its contribution to the diet.
P1.03.48
ASSOCIATION BETWEEN MODERATE AND VIGOROUS PHYSICAL ACTIVITY AND GROSS MOTOR COORDINATION IN PRESCHOOL CHILDREN
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SIG: No, this does not fit in any of the above mentioned special interest groups

Introduction: Adequate GMC is essential for children participating in age-related physical activities and seen to have an important role in maintaining sufficient level of physical activity (PA) during life course. The aim was examine the association between moderate vigorous physical activity (MVPA) and gross motor coordination (GMC) in early infancy (ages 3–sh;6). Methods The sample comprised 209 children aged 3–sh;6 years. GMC was assessed according to the Movement Assessment Battery for Children (MABC-2). The battery to assess GMC comprised the aiming & catching and balance components. The MVPA was measured by the accelerometer during 7 consecutive days (Monday to Sunday). Results: Our data showed that 31.3% had low GMC, 32.3% medium GMC and 36.0% high GMC. Multiple linear regression analysis showed that MVPA was positively association with GMC, adjusted for gender and SB. Conclusions: Preschoolers with high GMC spend more time in MVPA. GMC development should, therefore, be a key strategy in childhood interventions aiming to promote long-term PA.

P1.03.49
DAILY DIETARY INTAKE IN RELATION TOWARDS BODY MASS INDEX AND BODY FATNESS IN ADOLESCENTS AGED 15-17 YEARS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose : Examine daily dietary intake in adolescence is crucial to improve their nutritional status, especially to prevent obesity since 80% of obese adolescence are potentially become obese in adulthood. This study aims to investigate the relation of dietary intake with body mass index and percent body fat in adolescence. Methods : One hundred and fifty-six adolescents aged 15 –sh; 17 years were recruited randomly in this cross sectional study. The study was done in both rural and urban area in East Java Province, Indonesia. Daily dietary intake was collected using self administered 6-days food diary record for 2 weeks. The training was done before respondent's administered the food diary and also occupied with food photograph to ease estimation of food intake. Whilst measurement of height, weight and percent body fat were measured directly using stadiometer and body impedance analyzer by trained nutritionist. The data then analyze for frequency, percentage, mean, standard deviation, and independent t-test. Results : The finding of this study is that mean of daily energy intake of adolescence was 2131.2 kcal + 582.7. There was no difference of energy intake between rural and urban population, but there was a significant difference of mean fat intake in which higher in rural than urban population (p < 0.05; 84.3 gr vs 75.6 gr, respectively). In general, proportion of carbohydrate, protein and fat intake to total energy was 55%, 12%, and 33%. Further analysis found that energy intake was related to body mass index (p < 0.05; r = 0.167) as well as protein intake (p < 0.05; r = 0.187). In correlation with body fat percentage, energy, carbohydrate, protein, and fat intake were all associated to body fat percentage (p < 0.05; r = 0.237; r = 0.246; r = 0.266; 0.161). Conclusions : In conclusion, daily energy intake was contributed to body mass index and percent body fat of adolescents even tough the correlation was low. It is encouraged for adolescents to maintain their energy intake also distribution of carbohydrate, protein and fat should follow the recommendation as much as 55%, 15% and 30%.

P1.03.50
CHILE IS FAILING WITH ITS ADOLESCENTS: LOW OBJECTIVELY MEASURED PHYSICAL ACTIVITY
LEVELS IN ADOLESCENTS FROM TEMUCO, CHILE.

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SIG: Children and families

Objective: To describe objectively measured PA levels in adolescents from Temuco, Chile. Methods: 229 adolescents wore an ActiGraph GT3X+ accelerometer for 7 consecutive days. A minimum of 10 hours of wearing time and at least 3 days of accelerometer data with one weekend day were used to consider valid accelerometer data. Mean light, moderate, vigorous PA, and moderate to vigorous PA (MVPA) was calculated for a mean day, weekdays and weekend days. Non-parametric analyses were conducted to describe differences by gender. Results: In total 188 adolescents provided valid accelerometer data (age: 12.9±smn; 0.72 years; 58.0% women). On an average day, for the total sample, median light PA was 151.7 [129.5, 173.0] min/day, moderate PA was 25.3 [19.3, 31.8] min/day, vigorous PA was 10.4 [6.9, 15.1] min/day and MVPA was 36.9 [27.2, 44.3] min/day. On an average day, men showed higher PA levels than women at all intensities - Light PA: 159.8 [140.2, 186.9] vs 148.4 [125.4, 168.1] min/day, p=0.018; moderate PA: 28.0 [22.5, 35.7] vs 23.3 [17.8, 29.8] min/day, p=0.001; vigorous PA: 13.9 [10.0, 17.7] vs 8.6 [6.3, 11.4] min/day, p<0.001; MVPA: 41.9 [34.6, 55.3] vs 32.2 [25.0, 41.1], p<0.001. MVPA was higher in weekdays (41.0 [31.0, 50.7] min/day) than weekend days (23.7 [14.6, 34.3] min/day, p<0.001) for the total sample as well as in both men (47.2 [39.0, 61.0] vs 27.8 [17.4, 38.6] min/day, p<0.001) and women (37.1 [28.9, 44.3] vs 20.4 [13.8, 29.6] min/day, p<0.001). None of the participants met the PA guidelines of 60 min of MVPA each day and only 14.4% of them were physically active for at least 60 min on 3 or more days of the week. Conclusion: PA levels in adolescents from Temuco are low when compared with other international samples. Men were more active than women at all PA intensities during the whole week. Adolescents were more active on weekdays than on weekends, reinforcing the need for giving more options to be physically active by improving social and built environment across different settings.

P1.03.51
ASSOCIATIONS OF PHYSICAL ACTIVITY LEVELS AND SCREEN TIME WITH ORAL GLUCOSE TOLERANCE TEST PROFILES IN SINGAPOREAN WOMEN OF REPRODUCTIVE AGE: THE S-PRESTO STUDY

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SIG: Children and families

Purpose: Whether low physical activity (PA) levels and high sedentary lifestyle may impair glucose metabolism before pregnancy remains insufficiently documented, especially in at-risk populations such as Asian women. We examined the associations of PA and screen time with glucose levels of Singaporean women enrolled in a multi-ethnic Asian preconception study. Methods: Overall PA level (active vs
insufficiently active, as defined by IPAQ) and time spent in moderate (MPA), vigorous (VPA) PA, and screen time (television watching and handheld device use) were self-reported by 684 reproductive age women taking part in the Singapore Preconception Study of Long-Term Maternal and Child Outcomes (S-PRESTO) cohort. Blood glucose levels at fasting, 30-min and 120-min post-load in a 75 g oral glucose tolerance test were measured. Associations of PA and screen time with glucose levels were analysed using mutually-adjusted multivariable repeated-measure linear regression, and further adjusted for potential confounders including age, ethnicity and body mass index. Results: On average, women were 31.6±smn;3.8 y old and had a body mass index of 23.9±smn;5.3 kg/m²2; 72% were Chinese, 16% Malay, 9% Indian and 2% of mixed Asian ethnicities. Of the women, 67% reported being insufficiently active, and 36% and 26% reported watching =2 and =3 h/day television and handheld device time, respectively. Fasting, 30-min and 120-min glucose levels were not significantly higher in insufficiently active women (mean differences (95% CI) vs active women: 0.08 (-0.06, 0.21), 0.20 (-0.10, 0.49) and 0.22 (-0.13, 0.58) mmol/L). VPA, but not MPA, was associated with overall lower glucose levels, with no evidence for a differential association across time points. Compared to women having no VPA time, those engaging in =75 min/week had 0.15 (-0.02, 0.32), 0.39 (-0.001, 0.79) and 0.53 (0.06, 1.00) mmol/L lower fasting, 30-min and 120-min glucose levels, respectively (overall p-value=0.05). Times spent watching television and using handheld device were not associated with glucose levels (overall p-value=0.40 and 0.86, respectively). Conclusions: Overall PA and screen time were not associated with glucose levels in our sample of reproductive age Asian women. However, engaging in VPA may, independently from MPA and screen time, represent a modifiable factor to regulate glucose metabolism.

P1.03.52
EFFECTS OF SELF-EFFICACY MANIPULATION ON EXERCISE ATTITUDE AMONG CHINESE ADOLESCENTS
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SIG: Children and families

Objective: Attitude towards exercise can predict exercise behavior among adolescents, and self-efficacy was found to be associated with exercise attitude (Yan, 2012). The current study aims to provide the initial empirical evidence of the influence of self-efficacy manipulation on exercise attitude among Chinese adolescents. Methods: 44 Chinese adolescents (age = 14.27 ± .87 yrs), including 22 boys and 22 girls were randomized into a low-efficacy or high-efficacy condition. Those in the high-efficacy manipulation group were given positive bogus feedback on their exercise capability after a submaximal exercise test, whereas those in the low-efficacy condition were given negative feedback. We measured participants' self-efficacy before and after the exercise test. Their exercise attitudes were assessed after the exercise test. Results: The 2×es; time interaction effect on self-efficacy scores (F = 9.24, p< 0.010, h² = 0.18), such that the self-efficacy scores in the high-efficacy condition increased significantly (d = 0.27), whereas a significant reduction in the self-efficacy scores was observed in the low-efficacy condition (d = −sh;0.24). Therefore, exercise self-efficacy was successfully manipulated in the expected direction in both conditions, which resulted in significant change in participants' attitude towards exercise. Significant between-group difference was observed in four out of eight sub-dimensions of exercise attitude, namely, behavioral attitude (t = 2.34, p < 0.05), behavioral intention (t = 2.50, p < 0.05), affective experience (t = 2.10, p < 0.05), and behavioral control (t = 1.99, p < 0.05). In addition, overall exercise attitude was more positive among those experienced enhancement in exercise efficacy as compared with the counterparts whose efficacy beliefs in exercise had decreased (t = 2.07, p < 0.05). Conclusions: Our study has confirmed that efficacy beliefs can be manipulated among Chinese adolescents, and self-efficacy has an important influence on the attitude towards exercise among Chinese adolescents. We recommend that physical activity promotion programs should be tailored to enhance adolescents' self-efficacy beliefs and exercise attitude, which could potentially increase adolescents' participation in physical activity.

P1.03.54
POSITIVE SUBJECTIVE NORM AFFECTS SELF-EFFICACY ON PHYSICAL ACTIVITY AMONG
ADOLESCENTS IN BEIJING, CHINA
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SIG: Children and families

Objective: The purpose of this study was to investigate relationship between attitude, social support and self-efficacy to participate in physical activity (PA) among Chinese adolescents. Methods: Two middle schools from Chaoyang District of Beijing, were invited into the study. All students in grade 7 whose age ranged between 11-16 years were invited to participate. In total, 539 students completed questionnaire during class time. self-administered questionnaire collected information, including the level of parental education, perception on PA, perceived social support, perceived environmental factors and self-efficacy. Self-efficacy and its associated factors were assessed by spearman and correlation multiple stepwise regression analysis. Results: psychological perceived barriers and subjective norm on PA were significantly associated with adolescents' self-efficacy to participate in PA. Boys (n=286, mean age 12.33 years, SD = 0.58) who reported higher level of education of father(ßa=1.43, p=0.0126), more positive subjective norm from peers(ßa=1.18, p<0.0001), more positive perceived environmental factors of PA (ßa=0.34, p=0.0299) were with more positive self-efficacy. Positive subjective norm from parents(ßa=0.7038, p=0.0723) was showed as a barriers of self-efficacy of boys. Girls (n=225, mean age 12.21 years, SD = 0.49) who reported more positive subjective norm from family (ßa=0.42, p=0.0122) and less psychological barriers(ßa=0.12, p=0.0659) perceived more positive self-efficacy to participate in PA. However, psychological perceived benefits, subjective norm from teachers, parental modeling did not show significant association with self-efficacy on PA. Conclusions: Gender specific associated factors of adolescents' self-efficacy to participate in PA should be taken in consideration to design and implement interventions to enhance adolescents' self-efficacy on PA. Interventions should consider involving friends and addressing environmental surroundings. Intervention to improve girls' self-efficacy should focus on perceived barriers and normative beliefs from family members.

P1.03.55
PARENTAL FOOD-RELATED BEHAVIORS IN RELATION TO CHILDHOOD OVERWEIGHT/OBESITY: FINDINGS FROM A CROSS-SECTIONAL STUDY AMONG CHINESE ADOLESCENTS IN BEIJING
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SIG: Children and families

Objective: Childhood obesity increase dramatically over the years in China. Beijing ranks top in the prevalence of overweight and obesity among children and adolescents. Few measures exist to measure parental child-feeding behavior and food habits in China. The study aimed to investigate association between parental food-related behaviors and overweight/obesity among adolescents in Beijing. Methods: Two middle schools from Chaoyang District of Beijing, were invited into the study. All students in grade 7 aged between 11-15 years were invited to participate. In total, 539 students completed questionnaire during class time and bring parent questionnaire back home. We adapted a validated Child Feeding Questionnaire (CFQ) and Food Habit Questionnaire (FHQ) to measure the parental feeding behaviors and food habits. Students and parents both rated their weight description on a five-point scale, ranging from "very underweight" to "very overweight". Adolescents' Height and weight were measured. Self-reported height and weight of parents were collected. Overweight and obesity was defined by using the references developed by Working Group on Obesity in China (WGOC). Group comparisons were conducted using t-test, Kruskal–sh; Wallis ?:2 test or Mann–sh; Whitney U test. Structural equation model was used for multivariable analyses by AMOS 17.0. Results: The rate of overweight was 18.45% for boys and 6.51% for girls, and the rate of obesity was 16.99% for boys and 8.88% for girls. Mothers shows more concerns and...
perceived responsibility on adolescent's eating behavior. Parental feeding behaviors consistently were significantly related to the adolescents' Body Mass Index (BMI) and weight perception. Higher educational level and mum were more likely favorable parental eating behaviors. Parental BMI and parent diet behaviors were significantly related to child's BMI. Conclusion Parental feeding behaviors as well as parental food habit are associated with adolescents' weight status. Findings suggest effective intervention should involve families and target parent's feeding behaviors and food habits in order to develop supportive family environment for healthy eating among adolescents.

P1.03.56
MODERATING EFFECT OF GENDER ON RELATIONSHIPS BETWEEN CHILDREN'S PSYCHOSOCIAL BELIEFS AND PHYSICAL ACTIVITY IN ELEMENTARY SCHOOL PHYSICAL EDUCATION
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SIG: Children and families

OBJECTIVES: Boys are found to be more physically active than girls from early adolescence onward. The gender differences have been evident in physical education (PE) classes. Evidence is available regarding relationships between children's physical activity (PA) and their psychosocial beliefs, yet few studies have explored the moderating effect of gender on such relationships. Therefore, the purpose of this study was to investigate whether gender moderates the relationships between children's psychosocial beliefs and PA behavior (sedentary, light PA, and moderate-to-vigorous PA [MVPA]) in PE classes. METHODS: A total of 174 fourth and fifth grade children (86 girls; 49% African American, 32% White; Mean age = 10.37, SD = ±0.77) were recruited from two Minnesotan elementary schools. Children's PA behavior were objectively assessed via ActiGraph accelerometers during three PE sessions, and their psychosocial beliefs (i.e., self-efficacy, outcome expectancy, social support and enjoyment) were assessed via a battery of validated questionnaires (Gao, 2102) at the end of the third PE session. The outcomes were children's mean percentages of time spent in sedentary behavior, light PA, and MVPA, and psychosocial beliefs. RESULTS: Pearson correlation analyses revealed that girls' enjoyment (r = -0.21, p < 0.05) were significantly and negatively associated with their MVPA while boys' enjoyment (r = 0.30, p < 0.01) with their light PA. Boys' self-efficacy was moderately associated with their MVPA (r = 0.17, p = 0.06), approaching the significant level. Regression analyses indicated that girls' enjoyment was a significantly negative predictor of their MVPA, F (4, 81) = 1.57, p = 0.19, R2=0.07 while boys' enjoyment positively predicted their light PA, F (4, 83) = 2.26, p = 0.06, R2=0.10. CONCLUSIONS: The association between children's enjoyment and their PA behavior in PE is moderated by gender. The findings suggest that the more interesting activities are, the less active girls become. This may be due to their tendency to enjoy watching their counterparts rather than engaging themselves in the activities. Enjoyable activities may be offered to get boys involved in light PA; however physical educators may need to design the activities in a way that girls can also participate and enjoy.

P1.03.57
ATTITUDES AND BELIEFS UNDERLYING PHYSICAL ACTIVITY INTENTION OF ADOLESCENTS IN BEIJING, CHINA
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SIG: Children and families

Objective: This study aimed to investigate association between attitudes, beliefs about physical activity (PA), and intention to participate in physical activity among Chinese adolescents. Methods: Two middle schools from Chaoyang District of Beijing, were invited into the study. All students in grade 7 whose age ranged between 11-16 years were invited to participate. In total, 539 students completed questionnaire during class time. self-administered questionnaire collected information, including the level
of parental education, perception on PA, perceived social support, perceived environmental factors, physical activity intention and self-efficacy. Physical activity intention and its associated factors were assessed by spearman correlation and multiple stepwise regression analysis. Results: 55.97% of adolescents (mean age 12.28 years, SD = 0.55) did not report to participate in physical activity on regular basis either next week or next semester. Higher score in physical activity intention was associated with higher self efficacy ($\beta_a = 0.27, p<0.0001$), higher perceived benefits ($\beta_a = 0.10, p<0.0001$), lower barriers ($\beta_a = -0.07, p<0.0018$), more positive subjective norms from their family ($\beta_a = 0.18, p=0.0389$) and friends ($\beta_a = -0.13, p=0.0566$) more positive parental modelling ($\beta_a = 0.11, p=0.1253$) and better perceived environmental factors ($\beta_a = 0.20, p<0.0008$) The R squared of the regression equation is 0.53. Physical activity intention was associated with positive subjective norms from teachers ($r = 0.20, p<0.0001$) which was eliminated in multiple stepwise regression analysis. Conclusions: Interventions with a focus of increasing adolescents' physical activity should increase the belief of advantages of physical activity, as well as support from their family and peers, which are factors influencing physical activity intention. Longitudinal and experimental research is needed to confirm these findings and to investigate other factors.

P1.04: SIG Cancer Prevention and Management (Grand Foyer)

P1.04.01
INTEREST IN ADVANCING SURVIVORSHIP CANCER OUTCOMES TRIAL (ASCOT); CHARACTERISING CANCER SURVIVORS WHO WERE INTERESTED IN PARTICIPATING IN A TRIAL OF A LIFESTYLE INTERVENTION.
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SIG: Cancer prevention and management

Purpose: Health behaviours, including physical activity (PA) and diet have significant effects on cancer outcomes (AICR, 2007). This study is the first to explore demographics and health behaviours associated with interest in a lifestyle intervention for cancer survivors. Methods: ASCOT is an RCT in breast, colorectal and prostate cancer patients, diagnosed in 2012/2013 (Beeken, 2016). Patients were invited to answer a survey, and provide contact details if interested in information about a trial of a "lifestyle programme". In the survey patients reported their age, gender and ethnicity (dichotomised to White British and other), height and weight (to calculate BMI). The GLTEQ (Godin, 1985) was used to assess PA. Items adapted from the DINE, (Roe et al, 1994) were used to calculate a score for fibre and fat intake. Frequency items for fruit and vegetable consumption were converted to numeric values and summed to give total average daily intake. Patients were asked 'Do you smoke/chew tobacco at all nowadays?' (adapted from Craig et al, 2009). Alcohol was assessed using an adapted version of the AUDIT-C (Bush et al, 1998) to calculate average number of units consumed per day. Logistic regressions tested which variables described above were associated with interest (contact details were provided). Results: In Wave 1 (N=2035) 58% of the sample were interested in trial participation. Age and ethnicity were both significantly associated with interest in unadjusted analyses. With both variables included in the regression, only age remained significant with those interested being younger (OR 0.96, 95% CI 0.96, 0.97). Regressions, adjusted for age, show weekly hours of moderate-vigorous PA (OR 1.02, 95% CI 1.0, 1.05), fibre consumption (OR 1.01, 95% CI 1.00, 1.02) and average daily portions of fruit and vegetables intake (OR 1.07, 95% CI 1.02, 1.12) were associated with interest. All other demographics and behaviours were not significantly related to interest. Conclusions: Understanding the characteristics of those who choose to participate in trials of interventions targeting physical activity and diet will enable better interpretation of study results as well as informing the design of future studies (Adams, 2015).

P1.04.02
SYSTEMATIC REVIEW OF PHYSICAL ACTIVITY BASED BEHAVIOUR CHANGE INTERVENTIONS REACHING MEN WITH PROSTATE CANCER
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Objective Men who are survivors of prostate cancer report a variety of psychological and physical factors contributing to a lower quality of life. Physical activity can assist to mitigate these issues. This review aims to provide a summary of physical activity behavior change interventions targeting prostate cancer survivors. We aim to understand the feasibility of these interventions, and if possible to identify intervention and study characteristics associated with significant intervention effects. Methods Four databases (PubMed, CINHAL, PSyCINFO, and EMBASE) were systematically searched for randomised controlled trials containing at least one behavioral outcome relating to physical activity and prostate cancer published up until July 2016. Mixed cancer interventions were required to have a proportion of prostate cancer participants. Forward and backward, hand, key author citation searching, and known research were also considered. Results From a total of 13, 828 titles, the search resulted in 12 studies (6 prostate cancer only and 6 mixed cancer interventions) eight of which found positive results most often related immediately post-intervention aerobic activity. Prostate cancer only studies tended to focus on supervised interventions with some resistance training, whereas mixed cancer studies were more likely to promote home-based aerobic programs. Factors relating to efficacy were not conclusive due to the heterogeneity of studies, and lack of cancer based data within mixed cancer interventions. Future research focusing on intervention reach, maintenance of intervention effects, and resistance-training outcomes is needed. Conclusions There is preliminary evidence to suggest that a variety of physical activity behavior change interventions targeting men with a history of prostate cancer can be efficacious, at least in the short-term. Experimental studies are required to identify key intervention features.

A COMPARATIVE STUDY OF PHYSICAL ACTIVITY LEVELS AND SEDENTARY BEHAVIOUR PATTERNS BETWEEN DISEASE STAGES OF PROSTATE CANCER PATIENTS

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Purpose Despite the health benefits of exercise, studies demonstrated that only a minority of prostate cancer (PCa) patients performs sufficient physical activity (PA) according to the guidelines. It is unknown how these levels vary across disease stage of PCa. The primary aim of the present study was to compare PA levels and sedentary behaviour (SB) patterns between different disease stages in PCa (clinically localized disease versus clinical metastases disease). Methods A prospective cohort study in PCa patients across a wide range of disease stages was conducted. Inclusion criteria were: absence of psychological, familial, geographical or cognitive conditions which could hamper with the protocol, willingness to wear an activity tracker for 7 days and Karnofsky performance score >60. PA (by activPAL and Godin Leisure-time exercise questionnaire) and SB (by activPAL) was assessed. Physical performance was measured by the 400-m walk test and physical function by the EORTC QLQ-C30 questionnaire. Motivational readiness for PA was assessed according to the Trans theoretical model (TTM) of Behaviour change. The Mann-Whitney U test was used to compare results between groups. Results In total, 71 patients were included (38 clinically localized disease and 33 clinical metastases disease). Patient characteristics were well balanced between groups (age, marital, educational and work status). The overall median (range) age at time of inclusion was 68 (54-81) years in the clinically localized group and 71 (52-85) years in the clinical metastases group. No significant differences were observed between groups for PA, SB and for meeting PA guidelines. In the clinically localized disease group, 24% reported sufficient exercise levels according to the PA guidelines and 12% in the clinical metastases disease. Both physical performance and function was worse (p<0.05) in the clinical metastases group (median 290s, ±smn;84; 83 ±smn;22) compared to the clinically localized group (median 281s ±smn;33; 93 ±smn;11). No significant differences were observed between groups for motivational readiness for PA. Conclusion PA levels were insufficient
compared to the guidelines. Physical performance and function was worse in patients with more advanced disease stage. Therefore, disease stage adjusted interventions are required.

P1.04.04
EXERCISE PRESCRIPTION DOSE FOR CASTRATE-RESISTANT PROSTATE CANCER PATIENTS: A PROTOCOL FOR A PHASE I EXERCISE PRESCRIPTION DOSE ESCALATION TRIAL

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SIG: Cancer prevention and management

Purpose Castrate-resistant prostate cancer (CRPC) is considered the end-stage of the prostate cancer (PCa) disease spectrum. Nevertheless, survival can still be durable and is often achieved with second-line hormone therapy (e.g. abiraterone or enzalutamide) in asymptomatic/mildly symptomatic men. However, these novel drugs also negatively influence health-related quality of life (HRQoL). Exercise, as treatment strategy to improve HRQoL, has level 1 evidence for PCa patients receiving first-line hormone therapy. Specific exercise guidelines exist for CRPC patients, but are warranted because of advanced disease stage, reduced performance score and comorbidities. This study aims to determine the exercise prescription dose in CRPC patients receiving second-line hormone treatment. Methods CRPC patients receiving second-line hormone treatment at Ghent University Hospital are invited to participate in this phase I 3+3 dose escalation design (escalation to next exercise dose per 3 study patients). Exclusion criteria are; not able to walk 400 meters without help, <4 weeks since any major surgery, musculoskeletal, cardiovascular or neurological comorbidity that prevent the patient to participate in an exercise program, painful (>4 visual analog scale) or unstable (>6 Spinal Instability Neoplastic Score) bone metastases. The prescription start dose is 15min. aerobic training (50-80%HFmax. warm-up and cooling-down and 65-80%HFmax. core), 1 set with 8-10 reps. resistance training (50-60%1-RM, 8 exercises) and 1 set (30s.) with 2 reps. flexibility training (5 exercises). Factors determining compliance for the dose are tolerance and safety. Tolerance for the exercise prescription will be assessed with the Borg scale of perceived exertion after every exercise. Compliant for tolerance is a score =16. Safety will be assessed by the visual analogue scale (VAS) (assessed by the patient) for pain and the CTCAE criteria (assessed by a trained health care provider) for bone pain after every exercise. Compliant for safety is =3 VAS for exercise-induced pain and =." span="">

P1.04.05
KOREAN PROSTATE CANCER SURVIVORS’ PHYSICAL ACTIVITY PARTICIPATION, EXERCISE PARTICIPATION, EXERCISE BARRIERS, AND PREFERENCES

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SIG: Cancer prevention and management

Objective: To investigate the change in physical activity (PA) participation before and after cancer diagnosis in prostate cancer (PCa) survivors, and their exercise preferences and barriers. Methods: A total of 112 PCa survivors participated in this study. Questionnaires were administered to investigate the PA levels before and after cancer diagnosis, exercise preferences, and exercise barriers in PCa survivors. Results: Moderate- to vigorous-intensity PA levels were significantly lower after cancer diagnosis (vigorous PA: 41.9±smn;123.1 min/week vs. 4.6±smn;29.8 min/week, p<0.001; moderate PA: 159.9±smn;240.0 min/week vs. 56.8±smn;129.7 min/week, p<0.001) in PCa survivors. Of the participants, >97% were willing to receive exercise information and 82.9% were willing to participate in exercise programs. Perceived
exercise barriers were distinctly different according to each participant's age, PA level, and time since surgery. The two most prevalent exercise barriers among PCa survivors <65 years were lack of time (28.6%) and poor health (26.5%), whereas the exercise barriers for PCa survivors aged at least 65 years were lack of exercise facilities (21.4%) and lack of exercise information (17.9%). Furthermore, within 3 to 6 months after surgery, PCa survivors perceived poor health (29.5%) and pain at the surgery site (29.5%) to be the two most prevalent exercise barriers. At 6 months after surgery and beyond, PCa survivors perceived lack of time (21.3%) and poor health (14.8%) to be the two most prevalent exercise barriers.

**Conclusion:** This study showed the characteristics of PA participation among PCa survivors before and after diagnosis, along with their exercise preferences and barriers based on their characteristics.

**P1.04.06**
**PHYSICAL ACTIVITY LEVEL, PARTICIPATION IN PHYSICAL EDUCATION CLASSES AND EXERCISE BARRIERS IN CHILDHOOD CANCER SURVIVORS**

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**SIG:** Cancer prevention and management

**Objective:** Physical impairments during and after cancer treatments can lead to physical limitations or disability in childhood cancer survivors. Physical activity (PA) has been shown to mitigate or prevent obesity, diabetes, cardiovascular disease and low functional capacity in childhood cancer survivors. Despite these findings, childhood cancer survivors are less physically active compared to their siblings or healthy controls. To date, studies of physical activity and exercise for childhood cancer survivors have tended to focus only on adult survivors or patients under treatment. Therefore, the purposes of the current study are to explore and identify the PA, physical education (PE) class participation, and exercise barriers of childhood cancer survivors. Methods: One hundred twenty childhood cancer survivors (72 male, average age 14.57 ±smn; 3 years) were recruited and their PA levels, the pattern of PE class participation and exercise barriers were studied. In addition, in-depth interviews were conducted with 9 participants to further understand participants' PA behavior and exercise barriers. Results: Five percent of participants met PA recommendation, more than 60 minutes daily. A total of 65.8% had not participated in any strengthening exercise. Among the 97 participants who attend school, 81 cancer survivors (83.5%) participate in PE classes more than once a week. The perceived exercise barriers were lack of time (39 respondents), poor health (36 respondents), and reluctance to sweat (34 respondents). In-depth interview showed that late effects of cancer and its treatment, disability and lack of physical education teacher's knowledge on the disease were barriers to participate in PA and PE classes. Conclusions: Although PA and exercise improve physical health and function in childhood cancer survivors, most childhood cancer survivors in Korea do not meet the PA recommendation for children and adolescents due to distinct barriers to participate in PA and PE classes.

**P1.04.07**
**PERCEPTIONS OF PHYSICAL ACTIVITY AND DIET AMONG UK ADULTS DIAGNOSED WITH BREAST, PROSTATE OR COLORECTAL CANCER**

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**SIG:** Cancer prevention and management

**Purpose:** Many individuals with a diagnosis of cancer do not meet recommendations for physical activity (PA) or diet. Less is known about how these individuals perceive their behaviours. This study explored adherence to lifestyle recommendations, lifestyle perceptions, and whether adherence to recommendations influences these perceptions. Methods: Patients from NHS Trusts across London and Essex, diagnosed with breast, prostate or colorectal cancer in 2012/2013, were invited to complete a lifestyle survey. PA, fibre, fat, and fruit and vegetable (F&V) intake were assessed using validated questionnaires. Variables were dichotomised to indicate whether participants were meeting recommendations. Participants were asked how their current behaviours compared to their behaviours
pre-diagnosis, and if they thought they should be trying to change these behaviours. Logistic regressions controlling for socio-demographics and co-morbidities explored whether meeting recommendations was associated with whether individuals thought they should be trying to change. Results: Of those who completed the survey in Wave 1 (n=2035), a minority were meeting PA (28%), F&V (27%), and fibre (18%) recommendations. More reported meeting fat (54%) recommendations. Around half (51%) felt they did the same amount of PA as before their diagnosis, but 38% felt they did less and only 9% reported doing more. In contrast, 72% felt their diet was the same as before their diagnosis, only 5% felt it was less healthy, and 22% felt it was healthier. Half (50%) thought they should be more active, whereas only 29% thought they should eat healthier. Those not meeting PA recommendations were more likely to think they should be more active (OR=3.15, 95%CI 2.49, 3.98). Similarly, not meeting the recommendations for F&V (OR=1.82, 95%CI 1.41, 2.35), fat (OR=1.45, 95%CI 1.16, 1.82) and fibre (OR=1.38, 95%CI 1.01, 1.88) all increased the likelihood of thinking they should eat healthier. Conclusions: Although only a minority of participants were meeting dietary recommendations, most did not feel they should eat healthier. More participants thought they should be more active. Encouragingly, for both behaviours those not meeting the recommendations were more likely to think they should change. Interventions should seek to improve awareness of dietary recommendations among adults with a diagnosis of cancer.

P1.04.08
A META-ANALYSIS OF TAI CHI/QIGONG ON PHYSICAL HEALTH OUTCOMES OF CANCER PATIENTS
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SIG: Cancer prevention and management

Objective: Long term radiotherapy or chemotherapy induces many adverse side effects on physical health and greatly weaken the immune system and other bodily function of cancer patients. Taichi/Qigong as a type of non-pharmacological treatment becomes an option to improve the physical health of cancer patients. Thus, this meta-analysis aimed to quantitatively evaluate the effects of Taichi/Qigong on physical health outcomes of cancer patients. Methods: Studies on randomized controlled trials (RCT) using Taichi/Qigong as an intervention for cancer patients were retrieved from Medline, CINAHL, SPORTDiscuss, Cochrane Library, and PubMed. Meta-analyses were performed on changes in physical health outcomes such as physical fitness and biomarker. Random effects model was used to calculate the pooled mean difference with 95% confidence interval (CI). Results: A total of 8 RCTs were included in this review. Two of eight studies screened the effects of Taichi/Qigong on BMI and BFM of cancer patients. The mean difference (MD) for BMI and BFM change scores was -1.61 (95% CI: -us;5.30, 2.08), -us;0.69 (95% CI: -us;4.86, 3.48) respectively. Showing that Taichi/Qigong had no effects on the BMI and BFM of cancer patients. All eight studies assessed the effects of Taichi/Qigong on biomarker changes of cancer patients. Three studies examined the effects of Taichi/Qigong on CRP level and three studies assessed the Taichi/Qigong effects on cortisol level of cancer patients, the standard mean difference (SMD) was 0.62 (95% CI: -us;1.28, 2.52; Z score = 0.64; p = 0.52),0.14 (95% CI: -us;0.19, 0.47; Z score = 0.85; p = 0.4) respectively. Showing that the Taichi/Qigong exercise has no effect on CRP and cortisol level of cancer patients. Two studies examined the changes of insulin level, the SMD was -1.47 (95% CI: -us;3.01, 0.08; Z score = 1.86; p =0.06) screening that Taichi/Qigong has trend on reducing cancer patients' insulin level. . One study showed that Taichi/Qigong has positive effect on improving the 6-min walk test scores, handgrip strength and flexibility. Conclusion: This study concluded that Taichi/Qigong only had positive effects on physical fitness outcomes. But the findings need to be interpreted with caution due to limited studies and relatively small sample size.

P1.04.09
FACTORS ASSOCIATED WITH LOW ADHERENCE LEVEL WITH DASH DIET AMONG CHINESE GRADE ONE HYPERTENSIVE PATIENTS
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Objective: Worldwide, hypertension is one of the most common chronic diseases and bears a substantial public health burden. The Dietary Approaches to Stop Hypertension (DASH) diet is designed to prevent and control hypertension. The dietary plan is rich in vegetables, fruits and whole grains; and includes low-fat dairy products, fish, poultry and vegetable oils. This study examined the factors associated with high level of adherence with DASH diet among Chinese Grade 1 hypertensive patients in primary care settings. Methods: A multi-centre, longitudinal study conducted with 556 Chinese adults in Hong Kong aged 40-70 years who were newly diagnosed with Grade 1 hypertension and not taking anti-hypertensive medications were recruited. All participants attended clinic visit at 6 and 12 months with measurements of their blood pressure, body-mass index (BMI), and fasting lipid profile. Their dietary intake at these follow-up visits was measured by a validated Food Frequency Questionnaire (FFQ) that assessed dietary intake in eight food groups with a maximum score of 80. They were provided with visual aids like food photographs and cups/spoons for completion of the FFQ. We constructed a linear regression model to evaluate the factors associated with high adherence level with DASH diet among the study participants. We controlled for age, gender, smoking habits, alcohol drinking, level of education, employment status, monthly household income, family history of hypertension and the number of concomitant chronic diseases. Results: The average age of the study participants was 55.1 years (SD 5.4) and 51% were female. Multivariate linear regression models showed that older age (beta=0.201, 95% C.I. 0.035, 0.367, p=0.018), female gender (beta=3.479, 95% C.I. 1.097, 5.862, p=0.004), higher level of education (beta=1.798, 95% C.I. 0.540, 3.056, p=0.005) and physical activity level = 2.5 hours per week (beta=1.956, 95% C.I. 1.044, 2.868, p<0.001) were significantly associated higher level of compliance with DASH diet. Conclusion: These findings implied that younger subjects, male individuals, those with lower educational level and patients who performed less physical activity were at higher risk of low adherence with DASH diet. More intensive counselling efforts are indicated in these patient groups.

P1.04.10
ASSOCIATION BETWEEN COMPLIANCE WITH DASH DIETARY PLAN AND CONTROL OF LIPID PROFILE AMONG CHINESE HYPERTENSIVE PATIENTS
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SIG: Cancer prevention and management

Objective: unhealthy dietary habits, hypertension and lipid disorders are common in the general population that induce a substantial global burden of disease. They are recognized as significant risk factors of cardiovascular diseases, stroke and chronic kidney diseases. The Dietary Approaches to Stop Hypertension (DASH) diet has been proven effective to reduce blood pressure, yet its impact on lipid disorders was scarcely explored. This study evaluated the association between compliance with DASH dietary plan and fasting lipid profile among Chinese Grade 1 hypertensive patients in primary care. Methods: a prospective follow-up study with a consecutive sample of grade I hypertensive patients (mean age 55.2 years) in primary care clinic practices was conducted in the year 2013, and were followed up at 6 months and 12 months. All subjects were 40-70 years old; newly diagnosed with Grade 1 hypertension; and were not taking anti-hypertensive medications. We excluded subjects with medical conditions where dietary control could influence their lipid profiles, such as those with gout and diabetes. Their lipid profile measured at a fasting status was obtained at 6- and 12-months. Their adherence with DASH dietary plan was assessed by a validated survey that measured eight food groups, including grains; vegetables; fruits; dairy; meat, poultry, fish, and eggs; nuts, seeds, and legumes; fats and oils; sweets (a maximum score of 80). The association between adherence with DASH and the various batteries of lipid profile was examined by linear regression analysis controlling for potential confounder factors. Results: A total of 556 eligible patients were recruited into the study, and a vast majority were non-vegetarians (99.3%). A large proportion (83.1%) had no concomitant comorbidities associated with hypertension. Adherence with DASH diet was associated with a statistically significant reduction of total cholesterol (beta=0.001, p<0.05), Low-Density Lipoprotein (LDL)-cholesterol (beta=0.01, p<0.01) and triglycerides (beta=0.01, p<0.05). Conclusion: The adherence with DASH-based dietary plan was associated with optimal control of lipid
profile, and this could be included as a benefit in educational counselling sessions for hypertensive patients. Future studies could be performed to evaluate whether DASH dietary intake was also associated with optimal control of other clinical outcomes.

P1.04.11
COMPARISON OF PHYSICAL ACTIVITY CUT-POINTS FOR QUALITY OF LIFE IN BREAST CANCER SURVIVORS
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SIG: Cancer prevention and management

Objective: The study of moderate-to-vigorous physical activity (MVPA) and quality of life (QoL) in breast cancer survivors (BCS) has largely been based on accelerometer data processed using cut-points developed for healthy adults. We recently developed MVPA cut-points by examining the association between accelerometer activity counts and energy expenditure during walking in BCS compared to age-matched healthy controls. This resulted in significantly lower cut-points for MVPA (1,439 counts·dot;min-us;1) than Freedson's commonly used cut-points (1,951 counts·dot;min-us;1) for BCS compared to healthy controls. The purpose of this study was to (1) identify the prevalence of MVPA; and (2) identify differences between Freedson and BCS-specific cut-points in associations between PA and QoL in a large sample of BCS. Methods: BCS (N=675; Mage=62.9±smn;10.5) from two observational studies wore an accelerometer for seven consecutive days to measure PA and completed a battery of questionnaires including the Functional Assessment of Cancer Therapy (FACT) scales, demographic, and medical variables. Analysis of covariance (ANCOVA) controlling for age, education, months since diagnosis, disease stage, comorbidities, study cohort, and treatment type was used to analyze the data. Results: Significantly more BCS (n=412; 61.0%) were classified as meeting MVPA guidelines using BCS-specific cut-points compared to Freedson cut-points (n=241; 35.7%). Using the Freedson cut-points, meeting the MVPA guidelines was associated with higher physical well-being (PWB) (p=.004), functional well-being (FWB) (p=.008), FACT-General (p=.007), FACT-Breast (p=.007), and Trial Outcome Index (TOI) (p=.003) scores. Using the BCS-specific cut-points, meeting MVPA guidelines was associated with higher PWB (p=.004) and TOI (p=.029) scores only. Conclusions: MVPA and QoL patterns differed using the Freedson cut-points compared to our cut-points derived for BCS. Our cut-points suggest that BCS are likely to engage in greater levels of MVPA than previously documented using cut-points for the general population, where lower intensity PA may be more strenuous for BCS. Meeting MVPA guidelines based on BCS-specific cut-points derive fewer QoL benefits. BCS may need to perform higher intensity PA for FWB benefits, but not for PWB. Therefore, understanding the mechanisms underlying treatment-induced changes in physical function and fitness is warranted to accurately make PA recommendations and dosages needed for better health outcomes.

P1.04.12
ASSOCIATIONS BETWEEN LONELINESS AND HEALTH BEHAVIOURS IN BREAST, PROSTATE AND COLORECTAL CANCER SURVIVORS IN THE UNITED KINGDOM: A CROSS SECTIONAL STUDY

SIG: Cancer prevention and management

Purpose: Loneliness is associated with poorer health behaviours in older adults, and early evidence suggests that cancer survivors may be at particularly high risk of experiencing loneliness. The mechanisms that link loneliness and health outcomes remain unclear, but it is plausible that those with higher levels of loneliness have poorer health behaviours. This study aimed to quantify loneliness in a large sample of cancer survivors and, for the first time, explore associations between loneliness and health behaviours in this population. Methods: Adults (>18 years) with a primary diagnosis of breast, prostate or
colorectal cancer in 2012/2013 from 5 hospital sites across London and Essex completed a Health Behaviours after Cancer survey. Participants reported demographic characteristics (age, gender, marital status, highest level of education). Weekly hours of moderate-vigorous physical activity (MVPA) were calculated using the GLTEQ (Godin, 1985). Fibre and fat intake were calculated from the DINE (Roe et al, 1994). Fruit and vegetable was calculated as the total average daily intake. Smoking was reported using an item adapted from Craig et al, 2009, and alcohol was assessed using an adapted version of the AUDIT-C (Bush et al, 1998). Loneliness was measured using the 3-item short-form of the Revised UCLA Loneliness Scale (Russell, 1996) which was dichotomised to those experiencing loneliness versus not.

Results: 1896 cancer survivors in Wave 1 provided data on loneliness. 47% percent were breast, 28% prostate and 27% colorectal cancer survivors, mean age 66.7 years (SD 11.9). 37% of the sample reported feeling lonely. In simple models participants who reported feeling lonely had lower levels of MVPA (OR 0.96, 95% CI 0.93, 0.98), lower fibre consumption (OR 0.99, 95% CI 0.98, 0.99) and higher rates of smoking (OR 1.79, 95% CI 1.24, 2.60). However, after adjusting for demographic characteristics, only associations between MVPA and loneliness remained (OR 0.97, 95% 0.94, 0.99). Conclusions: This study found that loneliness was prevalent among cancer survivors and may be associated with lower levels of MVPA. Future studies should aim to address loneliness and explore the direction of associations with physical activity.

P1.05: SIG Ageing (Grand Foyer)

P1.05.01
TEMPORAL TRENDS IN THE CARDIORESPIRATORY FITNESS OF ASIAN ADULTS SINCE 1967
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SIG: Ageing

Objective: To estimate and compare temporal trends in the cardiorespiratory fitness (CRF) of Asian adults. We hypothesized that CRF had declined in recent decades. Methods: Data were obtained from a systematic search of studies (or published data allowing temporal trends to be calculated) that explicitly reported temporal trends (spanning a minimum of 10 years) in the maximal long-distance running performance of apparently healthy Asian adults (aged 18 years and older). Following the standardization to mean running speed, sample-weighted temporal trends were estimated at the country-sex-age-test level using best-fitting linear or polynomial regression models relating the year of testing to mean CRF. Post-stratified population-weighted mean changes in percent and standardized CRF were estimated. Results: Temporal trends were estimated for 1,834,143 adults between 1967 and 2016, using population-representative data from three high-income countries (Japan, Singapore, and South Korea) and one upper-middle-income country (China). Collectively, mean CRF declined by 1.6% per decade (95% CI: -us;1.5 to -us;1.8) or 0.15 SDs per decade (95% CI: -us;0.14 to -us;0.16), with declines observed in all four countries since the early-to-mid-1980s. The rate of decline was larger for men than for women, and larger for adults aged 18–sh;34 years than for adults aged 35–sh;59 years. Rates of decline differed among countries, with larger declines observed for China and Singapore than for Japan and South Korea. Conclusions: There has been a meaningful decline in CRF in Asian adults since the early 1980s, which is suggestive of a meaningful decline in population health. These declines are probably caused by trends in a network of environmental, social, behavioural, physical, psychosocial and physiological factors. More CRF trend data are needed from adults in other low-income and middle-income countries to more confidently determine true Asian trends.

P1.05.02
MODIFIED SPORT FOR OLDER ADULTS: AN EVALUATION OF A WALKING BASKETBALL PROGRAM
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SIG: Ageing

Objectives: Sporting organisations have begun to recognise older adults as a viable population group to target. Walking versions of football, rugby, netball and basketball have been developed over the past six years. Preliminary research in walking football from the UK has suggested that older adults can derive significant physical and social health benefits, as they enjoy it and it provides an opportunity to develop new friendships (Arnold et al., 2015; Reddy et al., 2017). As this modified sport for older adults' research area is in its infancy, this research will qualitatively evaluate a walking basketball program in the state of Victoria in Australia. Methods: The active older adult participants will be interviewed in focus groups, whilst the instructors will be individually interviewed from two basketball associations. Participants have been recruited via the State Sporting Organisation. Both types of participants will discuss their prior sporting history, the perceived benefits that they have derived from the program and their future intention to participate. Findings: A thematic analysis of the data will be performed and pen profiles will be constructed. Themes will be based on their perceived benefits and future intention to participate. Data collection will occur in November and December 2017, with the project concluding in April 2018. Fully analysed results will be ready for discussion at the 2018 Conference. Conclusions: Findings from the participants and instructors will play a critical role in the development and sustainability of modified sport, as their input is critical to provide a holistic understanding of modified sport for older adults. The results will hopefully support the walking basketball program, which could become an integral part of preventative health initiatives and policy for older adults.

P1.05.03
A QUALITATIVE EVALUATION OF BLUEARTH’S ACTIVE SCHOOLS PROGRAM
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objectives: Bluearth is a non-for profit charity who run Active Schools Programs. The Active Schools Program address the Health Promoting Schools Framework through a long-term, sustainable approach. The Active Schools Program is based on active participation, helping students build self-awareness, self-confidence and self-regulation through coordination and agility drills, skill activities and movement challenges and games. Previous research has demonstrated that the programs have had a positive effect on physical health and academic performance, for example improved insulin resistance, reduced increase in body fat and improved NAPLAN results (Telford et al., 2012; 2013). To date however, the programs have not been evaluated in schools located in socially disadvantaged communities and there has been very little qualitative and process evaluation of the programs. Therefore, the aims of this study are to 1) qualitatively evaluate Bluearth's Active Schools programs, b) elicit the views and experiences of the coaches, principals, teachers and primary school children. Methods: Seven primary schools from disadvantaged areas, based on the Socio-Economic Indexes for Areas (SEIFA), in Greater Melbourne and Geelong have consented to be involved in the project. To date, interviews with 3 coaches, 5 principals and 15 teachers have been conducted. As well as 9 focus groups with children. A flexible, semi-structured interview schedule was used, based upon the Social Cognitive Theory. Findings: A thematic analysis of the data will be performed and pen profiles will be constructed. Themes will be based on their perceptions, experiences and benefits/limitations with regards to the Active Schools program. Results will be presented separately for principals, teachers, coaches and children; verbatim quotes will be included for illustration. Data collection will be completed in February 2018. Fully analysed results will be ready for discussion at the 2018 Conference. Conclusions: Promoting physical activity is a major health challenge and is of importance to the health and well-being of individuals and communities. This research is the first to qualitatively evaluate Bluearth's Active Schools program. This is of significance to develop, revise and improve the programs, which can then be adapted for other schools.

P1.05.04
ASSOCIATION BETWEEN SLEEP QUALITY AND BONE MINERAL DENSITY IN CHINESE WOMEN VARY BY AGE AND MENOPAUSAL STATUS
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SIG: Ageing

Objective: This study aimed to examine the association between sleep quality and BMD in Chinese women vary by age and menopausal status. The findings will promote the understanding of potential risk factors of osteoporosis and related diseases and provide novel preventive approaches to them. Methods: A total of 1831 participants, aged 18 to 80 years, recruited from the baseline survey of a cohort study conducted in an urban area of Lanxi, Zhejiang, China, were analyzed. Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI). Global PSQI score>7 was indicative of poor sleep quality. Total and regional BMD is determined by the Dual-energy X-ray absorptiometry (DXA). Participants were categorized into three age groups (18-44 yrs old, 45-64 yrs old, and = 65 yrs old). Middle-aged (45-64 yrs old) women were further divided into three menopausal status groups (premenopausal, early postmenopausal and late postmenopausal). Multiple linear regression models were conducted to evaluate the associations between sleep quality and total and regional BMD. Results: The inverse relationship between sleep quality and total (βa; = -0.013, 95% CI -0.025-0.001) and legs BMD (βa; = -0.018, 95% CI -0.033-0.002) were only observed in middle-aged (45-64 yrs old group) participants after adjusting for potential covariates. When further divided middle-aged into premenopausal, early postmenopausal and late postmenopausal groups, and reran the regression models, the significant association between BMD and sleep quality were only observed in premenopausal and early postmenopausal groups. Conclusions: Poor sleep quality was significantly associated with lower BMD in middle-aged Chinese women. The relationship is more prominent in premenopausal and early postmenopausal groups. Our findings significantly implicate that improving sleep quality might be a preventive method of osteoporosis.

P1.05.05
OBJECTIVELY MEASURED LOW INTENSITY ACTIVITY BEHAVIOURS IMPROVE AFTER TOTAL KNEE ARTHROPLASTY IN PATIENTS WITH KNEE OSTEOARTHRITIS

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SIG: Ageing

Purpose: To assess whether time spent in the low intensity range of physical activity (=3METs) improves following total knee arthroplasty (TKA) and to determine whether any change in this behaviour is associated with patient-reported outcome measures (PROMs). Methods: Eighty nine participants (13 male and 76 female, aged between 55 and 80 years) scheduled for primary TKA wore an ActiPAL accelerometer for seven consecutive days (24 hours/day) pre-operatively and 6 months after TKA. In addition, PROMs: UCLA Activity index, Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), Knee injury and Osteoarthritis Outcome Scores (KOOS) and Oxford Knee Score (OKS) were used to assess health outcomes. Results: Six months after TKA, a greater proportion of participants waking day was spent walking (11.3% (9.1-12.4) compared to pre-operatively (8.3% (7.7 to 10.0)), p=0.001). Post-operatively, participants took more steps (mean (95% CI) (3669 steps/day (2969 to 4144) than pre-operatively: 2569 steps/day (2063 to 3075), p=0.001) and walked at a faster pace (35 steps/min (33 to 37)) vs (32 steps/min (30 to 33), p=0.005). Average daily time spent sitting also improved post-operatively as on average participants sat for 43 mins less per day after TKA (95% CI: -103.9 to 18.0). Pain (B: -0.355, 95%CI: -8.6 to 97.6, p=0.021) and functional ability (B: -0.413, 95%CI: -18.6 to 110.5,
0.007) as scored on the WOMAC were significantly related to postoperative walking time. Conclusions: After TKA, participants spent more time walking and at a faster pace and this was associated with less pain and improved functional ability. The potential health benefits of physical activity in the low-intensity ranges may be important for people with joint problems. The inclusion of light-intensity PA in PA recommendations for people with knee OA may be warranted.

P1.05.06
GAUSSIAN GRAPHICAL MODELS TO STUDY THE RELATIONSHIP BETWEEN FOOD INTAKE AND THE OCCURRENCE OF DEPRESSIVE SYMPTOMS
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SIG: Ageing

Objective: Interest on studying the relationship between food intake (FI) and the occurrence of depressive symptoms (DS) is increasing. FI data are usually collected by food frequency questionnaires (FFQ) leading to a large number of variables to be included in a statistical model. Two approaches have been adopted in order to deal with FI data: a priori, aimed to build scores by taking into account of clinical expertise (e.g. Mediterranean Diet Score), or a posteriori, by adopting classical statistical methods in order to shrink information in a few number of covariates (e.g. FA or PCA). Although the correlation structures assessed by such methods helps to better identify the similarity pattern between food groups (FG), they cannot completely unravel the understanding of the pairwise association between FI variables. We applied Gaussian Graphical Models (GGM) to describe the FI mechanism by studying the conditional independence structures among different groups. Methods: We used data from the Invecchiare In Chianti (InCHIANTI) study. DS were assessed by the CES-D score (cut-off >=20). 29 FG were determined on data collected by the EPIC FFQ. The sample was divided into 4 groups in accordance to the possible combinations of the occurrence of DS at baseline and three years later at follow-up: group 00 (Never Low Mood - NLM), 01, 10 and 11 (Always Low Mood - ALM). The Fused Graphical Lasso was applied to estimate the graph shared by all groups (common diet) and each single graph to highlight differences between 4 groups. Results: Data on 606 (age=72.2±smn;5.5, 310F) with MMSE=24 were considered. Groups were determined as: 00-NLM (n=414), 01 (n=82), 10 (n=33) and 11-ALM (n=77). The estimated common diet described a typical Italian FI behavior and revealed the key role of the olive oil. Estimated single graphs showed that NLM participants did not present particular dissimilarity compared to the common diet. ALM subjects were characterized by a behavior where healthy foods seem to be substituted by fats and sweets products. Conclusions: GGM could be useful to increase informative power to describe the role of DS on the FI mechanism.

P1.05.07
EFFECT OF SOUTHERN TRADITIONAL DANCE ON FALLS RISK AND BMI IN OLDER ADULT WOMEN: THAILAND ACTIVE AGING PROJECT.
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SIG: Ageing

Background: Aging-related declines in physiological attributes, particularly, strength and balance can lead to increased risk of falls and subsequently greater risk of injury and losing independence. Moreover, the aging engage in overweight and obesity due to reduce daily energy requirements and decreased physical activity. Those declines have substantial impact on an older adult's functional and cognitive abilities as well as the burden of the public health care cost and service systems in Thailand. The balance training program is an accepted prevention strategy to improve measure balance and mobility in older adults, but none of these studies has examined the effect of traditional dance programs on falls and BMI. This study aims to determine whether participation in southern traditional dancing: reduces falls risk and BMI in older...
adult women. METHOD: One hundred and six older adults women in Pha-nha and Krabi province, under Thailand Active Aging Project, were randomly assigned to southern traditional dance program (age 64.2±smn; 3.1 year-old). The southern traditional dance consists of different choreographies, which include slow and fast rhythmic and simple movements with rhythmic Thai southern songs. The program were conducted twenty-four week, 3 day per week. The fall risk were evaluated using up & go test and Berg Balance Scale. Test at baseline and 24 weeks later. Comparison of pretest and posttest scores using a one-tailed paired samples t-test. RESULTS: After 24 weeks, older adults women showed significant improvements in balance performance (-5.57, 95% CI -1.38 to -66) and reduction in fall risk performance (-3.29, 95% CI -2.15 to -68). Meanwhile, it was found that southern traditional dance program did not effect to BMI significantly. CONCLUSION: These results highlight the potential of Thai traditional dance program to promote physical activity in older adult women to improve balance and fall risk. As a community-based approach to fall prevention, traditional dance is one of Thai local wisdom to provide older women's opportunity for greater social engagement, thereby making a major encourage Thai older adult women taking part in physical activity and be active ageing.

P1.05.08 PREVENTING FALL RISK THROUGH LEISURE-TIME PHYSICAL ACTIVITY AMONG THAI OLDER ADULTS: RESULT OF THAILAND ACTIVE AGING PROJECT

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SIG: Ageing

INTRODUCTION: Physical activities perform a major roles to maintain physical independence for active aging in daily living and is to be the one means of attenuating age-related physical and preventing injury in older adults. Fall is the common cause leading to functional impairments and risk of mortality. By 2014, Thailand active aging project has been promoted all types of physical activity based on socio-environmental context. Unfortunately, leisure-time physical activity impacted on the fall risk have not been investigated in Thai older adults sample to date. To address the emerging evidence for leisure-time physical activity on their health risk, we examine the associate fall risk prevention and leisure-time physical activity among Thai older adults who engaged Thailand active aging project during 2014-2015. METHOD: community-dwelling older adults who engaged in Thailand active aging project were recruited from older adults cross 6 region of Thailand total 2,421 (69.1±smn; 7.8 year) during 2014-2015. LTPA was evaluated using GPAQ2 questionnaire and fall risk was measured by berg balance scale (BBS) and up & go test. Multinomial logistic regression analyzed relationship between LTPA and fall risk level. RESULTS: It was revealed that approximately 60% of the subjects had a low fall risk level. Thai older adults engaged in vigorous and moderate LTPA were more likely great chance to associate significantly with the low fall risk level than older adults engaged in low LTPA after adjusting for possible confounding factors. (OR = 0.43, 95%CI = 0.32, 1.75), (OR = 0.39, 95% CI = 0.51, 1.69) respectively. CONCLUSION: These results highlight the majority of community-dwelling Thai older adults participated in Thailand active aging project have been performing any pattern of leisure physical activity and low fall risk level. The finding in this study suggest that is to develop primary health prevention strategies for falls risk reducing among older adults should consider to promote leisure skills and increase in the accessibility to LTPA areas.

P1.05.09 GLYCEMIC CONTROL AND SELF-EFFICACY TOWARD PHYSICAL ACTIVITY AMONG DIABETIC ELDERLY, SURABAYA, INDONESIA

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Purpose : this study was aimed to assess the relationship between glycemic control indicated by HbA1C level and self efficacy in physical activity of elderly population with diabetes mellitus at Jagir Subdistrict, Surabaya, Indonesia. Methods: this research used cross sectional study design that involved 52 diabetic elders, aged between 65-90 years old whose regularly attended elderly health post (posyandu lansia) at Jagir Subdistrict, Surabaya. Samples who had physical disabilities were excluded from the study. Glycemic control was measured one time using HbA1C in basal condition. HbA1C were analyzed using ion-exchange HPLC method performed by Variant™ with calibrated retention time between 0.800-1.100. The self efficacy measurement was using Bandura’s social cognitive theory, which assess self judgement score in manage barrier and capability to do physical activity (accordingly consisted of 10 and 8 questions). Result: the prevalence of elderly with poor glycemic control (HbA1C =6.5%) was 76.9%. The average level of HbA1C among the elders subjects was 8.6±smn;2.34. Self-efficacy scores represented personal judgement on manage barrier and capability to do physical activity were respectively 52.7±smn;13.2 and 59.1±smn;26.7. Statistically test using Pearson correlation test showed that there was no relationship between glycemic control and neither self-efficacy in manage barrier nor capability to do physical activity (respectively p = 0.174 and p = 0.545). The self-efficacy was not directly effect the act to do the physical activity. The self efficacy level might differ by the time, affected by personal and environmental factors. The self-efficacy questions only described the subjects' motivation level at one time measurement, where at that time, not all subject have the same condition which influenced their decision in choosing their self-efficacy score. The HbA1C level was influenced by diabetes self care practices, and it were related to the motivation level described by self-efficacy. However, in this study, we were not assess the diabetes self care practice. Conclusion : there was no relationship between glycemic control measured by HbA1C level and self efficacy in physical activity of elderly in Jagir Subdistrict, Surabaya. Further research which measured self-efficacy over the period and also assess diabetes care practice in glycemic control management is needed.

P1.05.10
PROMOTING HEALTH LITERACY IN OLDER ADULTS THROUGH SELF-RELIANT WORKING GROUPS – RESULTS OF THE STUDY GEWINN
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Purpose The development of health literacy interventions is still at an early stage. The study GeWinn aims at strengthening health literacy and self-management competencies in people aged 60 years and above through a community based intervention. The intervention consists of 19 units spread over one year with different themes like nutrition and physical activity and is realized through self-reliant working groups of senior citizens with peer-moderation. The focus lies on finding, understanding, assessing and applying information, the exchange of experience and joint activities in the participants' community. 25 groups with 283 participants were implemented in February 2017 in 14 communities in Germany. Methods The intervention was evaluated with regard to their acceptance and impact in the fields of health literacy, nutrition, healthy behavior and self-management competencies with a questionnaire across three points of measurement. The evaluation of the results was conducted with descriptive analysis, for a comparison of means of two groups the t-test for dependent samples were used and to constitute the changes over three times of measures the analysis of variance was conducted. Results The dropout rate between the first and second time of measurement was 20.49%. Most dropouts left the intervention at an early stage. The results from the first to the second measurement show that the acceptance of the intervention is high: 87% of the participants would recommend the intervention to other people of the same age and 97% stated that they had fun. Furthermore, there was a raise in the consumption of fruits (t=-3.107 p=.002, n=209) and vegetables (t=-3.265, p=.001, n=210). 44.3% of the participants have an inadequate health literacy level. Further changes in the fields of health literacy and healthy behavior from the first to the third measurement will be presented. Conclusion The results indicate that the structure of the intervention is appropriate to
enlist older adults over a longer period in self-reliant working groups. Especially the social participation within the group is an important key factor for the acceptance of the participants and the establishment of sustainable structures. The results give guidance for the development of sustainable health literacy interventions for older adults.

P1.05.11
A QUALITATIVE EXPLORATION OF THE BARRIERS TO HEALTHY PHYSICAL ACTIVITY AND DIET IN YOUNG ADULTS WITH INTELLECTUAL DISABILITIES TRANSITIONING TO ADULTHOOD.
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SIG: Ageing

Purpose: The prevalence of obesity in the intellectual disability population is significantly higher than in the general population. The transitional period between adolescence and adulthood may be an increased risk period for unintentional weight gain for this population. During the final year of school, the school structure and social connectedness facilitate increased physical activity and healthier diet in this population, whilst home culture and a lack of social connectedness serve as barriers to healthy lifestyle behaviours. No research exists to explain the influences on physical activity and diet in this population post-transition from school. Thus, the aim of this study was to investigate the factors influencing physical activity engagement and diet 12 months post-transition from school. Method: Qualitative data were generated from 11 semi-structured interviews with young adults (9 males, 2 females) with mild-moderate intellectual disabilities who had left school 12 months earlier. All participants were recruited from a wider feasibility study. Data were analysed using inductive thematic analysis. Findings: 12 months post-transition from school, young adults' attitudes, physical and social environment play a key role in influencing physical activity and dietary habits. Four themes emerged from the analysis: Attitudes towards Physical activity, Transition from school, Social isolation and Health literacy. Themes are discussed in terms of constructs central to Social-Cognitive Theory. Conclusions: The transition from school to adulthood fosters changes to participants' lifestyle behaviours relating to obesity. Apathy for physical activity, lack of perceived time, increased time spent at home, social exclusion and a lack of health knowledge serve as barriers to healthy physical activity and diet in the population. These findings provide insight into young adults with intellectual disabilities' perceived understanding of factors influencing their physical activity and diet, and highlight a key risk period for weight gain prevention interventions for this population to target.

P1.05.12
OBJECTIVELY-MEASURED MOBILITY OF COMMUNITY-DWELLING PEOPLE AGED 80 AND OVER IS STRONGLY ASSOCIATED WITH GREATER USE OF SERVICES FOR COMMUNITY INTEGRATION AND SOCIAL SUPPORT: AN OBSERVATIONAL STUDY.
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SIG: Ageing

Purpose: To investigate the relationship between the objectively-measured mobility of community-dwelling older people and their use of formal and informal services. Most research to date into the relationship between mobility limitation and use of services is based on self-report or indirect assessments of mobility status. Research into the relationship between standardised performance-based mobility assessments and use of community services appears to be absent from the literature. Methods: An observational cross-sectional study of seventy community-dwelling volunteers aged eighty years or older. Study outcomes were the sum of formal and informal services used, expressed as both total hours per month (analysed with negative binomial regression) and the risk of using 5 hours of services (the median) or more per month (analysed with logistic regression). Predictor variables were common performance-based measures of mobility; usual gait speed, Four Square Step Test, Short Physical Performance Battery and de Morton Mobility Index. Results: Each predictor variable was significantly associated with service use as a
continuous or dichotomous variable. The strongest associations were with gait speed (IRR 0.05, 95%CI 0.01 to 0.18, p<0.001; OR 0.005, 95%CI 0.0003 to 0.07, p<0.001) and the Short Physical Performance Battery continuous scoring (IRR 0.29, 95%CI 0.15 to 0.56, p<0.001; OR 0.09, 95%CI 0.02 to 0.37, p=0.001). These relationships remained significant after adjusting for likely confounders including age, gender, nutritional risk status, cognition and negative affect. Conclusions: This study provides novel and strong evidence that the worse an older person's objectively-measured mobility scores the greater their use of community services to remain living in their community. Each of the five separate predictor variables (mobility measures) exhibited strong associations with the use of services, further strengthening the evidence of a general association. This objective evidence enhances previous knowledge based on self-report measures. These findings support the principle that strategies that enhance older people's physical mobility may in turn enhance an older person's independence, and impact on the care demands placed on individuals and governments.

P1.05.13
RESEARCH ON THE IMPACT OF FITNESS BEHAVIOR AND DIETARY NUTRITION ON THE HEALTH RELATED QUALITY OF LIFE OF THE ELDERLY WITH HYPERTENSION
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SIG: Ageing

Aging population and chronic diseases are the dual challenges human society facing. Under the background of combination of sport and medicine, the health-related quality of life and the status quo of fitness behavior were investigated with PRO scale and questionnaire on the aged with hypertension. The purpose of this study is to explore the impact of fitness behavior and dietary nutrition on the health related quality of life of the elderly with hypertension. In a random selection of 20 communities, 339 elderly people with hypertension were surveyed. Descriptive result indicates that the score of the overall health-related quality of life of the elderly with hypertension who had the fitness behavior and focused on dietary nutrition were higher than those without these behaviors. T-test result shows that it had significant statistical significance between the overall health-related quality of life of those who had the fitness behavior and those without fitness behavior (P<0.05); Pearson correlation analysis shows that there are very high correlation in statistical significance between the fitness behavior and the overall health-related quality of life of the aged with hypertension; The same is true of the relationship between the focus of dietary nutrition and the overall health-related quality of life of the aged with hypertension; Multiple linear regression indicates that age, sex, occupation, family income, fitness behavior, dietary nutrition, smoking, drinking tea are the main factors affecting the overall health-related quality of life of the aged with hypertension. It can be concluded that Fitness behavior and focus of dietary nutrition can effectively improve the health related quality of life of the elderly with hypertension; The fitness behavior characteristics of 1-2 times per week, longer than 15 minutes, and the subjective feeling of perspiring slightly and accelerating slightly of breathing and heartbeat had significant effect on the improvement of the health-related quality of life of the aged with hypertension.

P1.05.14
THE INTERVENTION EFFECT OF MOVEMENT PORTFOLIO MODEL ON THE ELDERLY WITH COEXISTENT HYPERTENSION AND DIABETES
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SIG: Ageing

The rapid growth of aging population and chronic diseases are serious challenges and problems to be solved in the world. The research purpose was to explore the current status of physical activity and test the intervention effect of Movement Portfolio Model on the elderly with coexistent hypertension and diabetes. The questionnaire, experimental method was adopted and the data was analyzed using descriptive statistics and T test. The test was conducted in community rehabilitation chamber and was carried out for 8 weeks with three times per week under the doctor's monitor. Blood pressure was tested before and after each intervention. Many blood indicators were tested before and after the entire intervention, such as
fasting glucose (GLUD), total cholesterol (CHOL), high density cholesterol (HDLX), low density cholesterol (LDLX), and triglyceride (TRIG). Descriptive statistics results show that the major reason affecting physical activity was that the conditions of their bodies are inappropriate to do exercises from their subjective feeling; The main purpose for them to participate in physical activity is to prevent and cure diseases. However, most old people took part in physical activity with much low intensity. Paired t-test results indicate that there are significant differences before, medium, and after intervention for systolic blood pressure (P<0.01) and diastolic blood pressure (P<0.01); There are significant differences between before and after intervention for cholesterol (p=0.001) which is the prediction index of hypertension and fasting glucose blood (p=0.010) which is the prediction index of diabetes. It can be concluded that the intervention effect of Movement Portfolio Model on the elderly with coexistent hypertension and diabetes was remarkably significant.

P1.05.15
DOES SELF EFFICACY TO ENGAGE PHYSICAL ACTIVITY AND SEDENTARY ACTIVITY RELATE TO BMI IN DIABETIC ELDERLY?
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SIG: Ageing

Purpose: Diabetic elderly need to control their BMI at normal level to maintain the blood glucose level. The purpose of this study was to identify the relation of self efficacy to engage physical activity and sedentary activity to body mass index in diabetic elderly. Methods: This was a cross sectional study included 56 elderlies who were eligible and agreed to participate in this study. Data were collected by interview and direct measurement for anthropometric data. The questionnaires consisted of demography data, nutrition knowledge, physical activity level, physical self efficacy, and physical activity barriers. Self efficacy to engage physical activity was measured using 10 questions portraying different levels of physical activity and subjects rated the strength of believe to do such activity. Body Mass Index (BMI) was calculated as weight (kg) divided by height (m) squared. The collected data then analyzed for frequency, percentage, mean standard deviation, chi-square, and pearson correlation. Results: The study revealed that approximately 89.3% elderlies were having low physical activity level and 58.9% have more than 3 hours’ sedentary activity in a day. Furthermore, 69.7% elderlies were having higher BMI; 14.3% were overweight and 55.4% were obese. Mean of physical self efficacy level was 59.1, while physical activity barriers was 52.5. The chi square analysis found that physical activity level related to body mass index (p < 0.000); pearson correlation analysis found that sedentary activity was related to body mass index (p < 0.005; r 0.274). Physical activity self-efficacy, physical activity barriers, and age of elderlies were not found to be related to body mass index. Further analysis found that physical activity barriers was associated with physical activity level (p < 0.005). Conclusions: Physical inactivity still become a major problem in diabetic elderly and it was correlate with the increase of body mass index. Lower level of physical activity might be mediated by higher sedentary activity. Motivating elderly to reduce barriers of doing physical activity is needed to improve their physical activity as well as nutritional status.

P1.05.16
CULTURAL VALIDATION AND MEASUREMENT PROPERTIES OF THE CHAMPS PHYSICAL ACTIVITY QUESTIONNAIRES IN CHINESE OLDER ADULTS
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SIG: Ageing

Purpose: One of the most extensively used instruments in assessing physical activity is the Community Health Activities Model Program for Seniors questionnaires (CHAMPS). It asks about recreation/exercise
related activities in the past four weeks, and a summary score can be obtained either as total energy expenditure (MET.) or as frequency of activities per week. This study aimed to cross-cultural validate the CHAMPS and to evaluate measurement properties of the CHAMPS among older adults. Methods: The English CHAMPS was translated into Chinese, synthesized and back translated by three independent speakers who are good at both English and Chinese. The suitability of original activity items were assessed in a focus group composed of ten older adults and two experts in sports and health science. Activity items were adjusted or replace by activities with similar MET. The final Chinese CHAMPS was tested in a cross-sectional study in 120 apparently healthy participants aged between 60 and 75 years. Validity was assessed using the Pearson correlations between four CHAMPS scores (i.e., MET. and frequency per week for all activities and MVPA, respectively) and physical performance (i.e., 8-ft up and go test, chair stand test, and 2-min step test), as well as 7 days' caloric expenditures tested by accelerometers. The test-retest reliability was assessed using 1-wk interval. Results: Five items were adjusted and four were replaced by activities that often reported in Chinese older adults. Up to now, 45 participants completed all tests. The preliminary results showed low but significant correlations between the CHAMPS scores and physical performance (r = .34 - .46) and MET from accelerometer (r = .48). Reliability coefficients (ICC) were high for MVPA (.88 for MET; .87 for frequency) and lower for all activities (.76 for MET; .74 for frequency). Conclusion: The on-going project suggests that the Chinese CHAMPS could have acceptable measurement properties, and could be suitable for use among Chinese older adults. This, however can be further confirmed when project is completed.

P1.05.17
EFFECTIVENESS OF LIGHT VOLLEYBALL INTERVENTION IN IMPROVING FUNCTIONAL FITNESS OF OLDER ADULTS IN HONG KONG
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SIG: Ageing
Purpose: Previous research has demonstrated improvements in physical health outcomes through participation in light volleyball (LVB) among older adults in China (He, 2009). This study examined the effects of a 15-week LVB intervention program in improving functional fitness among older adults in Hong Kong. Methods: Participants (N = 78) aged ≥60 yrs. or above living in community independently were assigned to one of the three groups: intervention (LVB), comparison [rouliqiu (RLQ)], and control (CG) groups. They completed functional fitness measures before and after the intervention. Results/findings: One-way MANCOVA was conducted to compare the posttest group differences on functional fitness scores with pretest scores as covariates. We found a significant group difference on posttest scores, F(16,84) = 4.92, p = .001, partial ?² = .47. Follow-up univariate ANCOVAs revealed significant group differences on posttest values for the chair stand test (F(2, 58) = 15.16, p = .001, partial ?² = .34), 2-min step test (F(2, 58) = 13.29, p = .001, partial ?² = .31), 8-foot up-and-go test (F(2, 58) = 14.25, p = .01, partial ?² = .33), and hand grip test (F(2, 58) = 13.48, p = .001, partial ?² = .32). Bonferroni pairwise comparisons revealed significant improvement in agility, cardiovascular endurance, and upper and lower extremity muscle strengths among participants in the LVB group comparing that in CG group. Participants in the LVB group demonstrated greater cardiovascular endurance, upper extremity muscle strength, and PA enjoyment than that of RLQ group. Conclusions: Hong Kong Government and health practitioners may consider LVB as an alternative in promotion of active ageing and prevention of chronic illness in the aging population. Keywords: older adults, physical activity, enjoyment, functional fitness, Chinese

P1.05.18
THE EFFECT OF AGEING (OR LACK THEREOF) ON THE RELATIONSHIP BETWEEN WALKING CADENCE AND INTENSITY AMONG 21-60 YEAR OLDS: THE CADENCE-ADULTS STUDY
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SIG: Ageing
Evidence supporting the strong relationship between walking cadence (steps/min) and intensity has been...
generated from predominately young adult samples. PURPOSE: To examine the effect of age on the relationship between walking cadence and intensity among 21-60 year olds. METHODS: Participants (n=156; 50.0% female; age=40.6±smn;11.5 years; BMI=25.4±smn;3.7 kg/m2; height=170.9±smn;9.2 cm) completed a treadmill-walking protocol comprised of 5-min bouts at incrementally faster speeds (0.8 to 9.7 km/h) with a 2-min rest between bouts. The test was terminated at the completion of the bout during which the participant began to run, achieved >75% of estimated heart rate maximum or reported a Borg rating of perceived exertion >13. Walking cadence was assessed by direct observation (hand tally; steps per bout divided by 5) and intensity (metabolic equivalents; METs) was determined using indirect calorimetry. The analytical sample was dichotomized by age (young: 21-40 year olds; and middle aged: 41-60 year olds. Segmented regression models with random coefficients were then used to quantify the cadence-intensity relationship for both groups separately. Optimal cadence thresholds corresponding to 3 and 6 METs were determined using the respective regression equations. RESULTS: Cadence thresholds (95% Prediction Intervals) corresponding to 3 METs for young and middle-aged adults were: 102.2 [45.9–sh;111.2] vs. 101.7 [54.9–sh;111.8] steps/min; and for 6 METs were (129.1 [121.4–sh;136.8] vs. 132.1 [122.0–sh;142.2] steps/min), respectively. CONCLUSIONS: Cadence thresholds representative of moderate and vigorous intensities were very similar for young and older groups. A subsequent analysis from the CADENCE-Adults study will determine whether this remains true in older adults (data collection ongoing for 61-85 year olds). Based on this analysis, it appears that cadences of 100 and 130 steps/min are reasonable heuristic thresholds (evidence-based, practical, rounded values) identifying moderate and vigorous intensity walking, respectively. These heuristic thresholds may be used to inform cadence-based physical activity intensity recommendations and/or accelerometer data processing and analytical techniques.

P1.05.19
WALKING PACE AND THE RISK OF STROKE: A NON-LINEAR DOSE-RESPONSE META-ANALYSIS OF 136,000 PARTICIPANTS IN 9 INDEPENDENT PROSPECTIVE COHORT STUDIES
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SIG: Ageing

Background and Purpose: Walking pace has been proposed as an indicator of stroke occurrence, but the findings from longitudinal studies on the association between walking pace and the risk of stroke are inconsistent. Thus, this meta-analysis aimed to quantitatively assess the association between walking pace and the risk of stroke. Methods: PubMed, EMBASE, and China National Knowledge Internet (CNKI) databases were searched for relevant studies through January 9, 2018. Additional studies were obtained from Google Scholar and the related reference lists. Prospective cohort studies that reported the relative risk (RR) and corresponding 95% confidence interval (CI) for the association of interest were included. Spline analysis (non-linearity=0.01). A threshold association was revealed by Spline analysis (pnon-linearity=0.01). When walking pace was lower than 4 kilometers per hour (km/h), the stroke risk would increase by 19% with a 1 km/h decrement in walking pace [RR=1.19 (95% CI=1.14-1.25)]. But, the risk of stroke was not appreciably changed when walking pace was greater than 4 km/h. The observed associations were consistent across stroke subtype and sex. Conclusions: Findings from this meta-analysis indicate that a walking pace below 4 km/h is associated with elevated risk of stroke. Because of its characteristics as a safe, cost-effective, and easy to assess and interpret predictive tool, slow walking pace may be considered as an indicator for stroke occurrence.

P1.05.20
OBJECTIVELY-ASSESSED NEIGHBOURHOOD CHARACTERISTICS AND WITHIN-NEIGHBOURHOOD WALKING FOR RECREATION IN HONG KONG CHINESE OLDER ADULTS
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SIG: Ageing

Objective Due to decreasing mobility with age, older adults are likely to spend more time in their neighbourhood than younger residents. As the neighbourhood can influence health-related behaviours such as physical activity (PA) at the population level, it is important to understand which neighbourhood characteristics may encourage older adult participation in various PA modes. The purpose of this study was to examine associations between objectively assessed neighbourhood characteristics and within-neighbourhood walking for recreation in Hong Kong (HK) older adults. Method Participants in the study were Hong Kong older adults (n = 909, age 76±smn:6 years) living in neighbourhoods stratified by walkability and socio-economic status to maximise the variability of neighbourhood built environment attributes. Neighbourhood environment characteristics were objectively determined using Geographic Information Systems (characteristics within 400 & 800 m street-network residential buffers) and environmental audits. Weekly frequency and minutes of within-neighbourhood walking for recreation were assessed using the Neighbourhood Walking Questionnaire for Chinese Seniors. Associations were examined using generalized additive mixed models with appropriate variance and link functions. Results Whether or not HK older adults chose to participate in walking for recreation was associated with more neighbourhood characteristics than frequency and duration of walking for recreation in those who chose to walk. Recreation facilities density, park area intersected by the 400 m buffer, presence of people, number of parks and number of activities in parks were positively and stray dogs and animals negatively associated with engaging in walking for recreation. For those who participated in walking for recreation, statistically significant positive associations were found between frequency and presence of people, traffic safety and traffic safety around parks. Weekly frequency and minutes of walking for recreation were negatively associated with public transport density. Conclusions The findings suggest that neighbourhood characteristics have a greater influence on whether or not HK older adults participate in neighbourhood walking for recreation than they do on the frequency and amount of walking in those that do participate. The negative associations of frequency and duration of walking for recreation with public transport density may reflect possible higher levels of air and noise pollution in these areas.

P1.05.21
SITTING LESS: PERCEPTIONS OF FEASIBLE STRATEGIES TO REDUCE SITTING AND ASSOCIATIONS WITH SITTING BEHAVIOUR IN OLDER ADULTS RESIDING IN RETIREMENT VILLAGES
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SIG: Ageing

Objectives: The objectives of the study were to 1) identify feasible strategies to reduce sitting in older adults; and to examine 2) how perceived ease and likelihood of adopting these strategies was predicted by sedentary behaviour (SB), breaks in sitting, and standing behaviour (controlling for age and number of health conditions); 3) how perceived ease and likelihood of adopting the strategies predicted reduced sitting over a 16 week intervention period. Methods: Seventy older residents (M (SD) age = 78.11 (8.42); 74.60% female; M (SD) = 8.97 (2.15) hours/day sitting) from 14 retirement villages in Western Australia who participated in a 16-week walking and sitting intervention took part. Participants completed questionnaires at baseline examining the perceived ease and likelihood of using 19 different strategies to reduce sitting. The participants wore ActivPal inclinometers for a 7 day period prior to rating these strategies to measure levels of minutes spent in SB/day, number of sitting breaks/day, and minutes spent standing/day. Post-intervention ActivPal data were also collected for those participants who had completed the post-intervention assessments by February 2018 (n=32). Descriptive statistics and hierarchical regression analyses were adopted to analyse the data. Results/findings: The strategies perceived to be
most feasible included ensuring that one leaves the house at least once a day, standing up when brushing teeth, standing when speaking on the phone, placing the waste bin out of reach, standing up when waiting for buses/trains, and placing the phone out of reach. Perceived ease and difficulty of using the strategies were not significantly predicted by any of the variables assessed via the ActivPal at baseline. Overall likelihood to adopt the strategies positively predicted changes in breaks in sitting ($\beta_a = .63$). Conclusions: Strategies perceived to be most feasible to reduce sitting related to the use of prompts/cues and restructuring the physical environment. Older adults who perceived strategies to be easy and who reported as being relatively likely to use them were more likely to increase their breaks in sitting over time. Future interventions designed to increase breaks in sitting in older adults can adopt strategies identified as feasible in the present study.

P1.05.22
A LONGITUDINAL INVESTIGATION OF WHETHER ORAL HEALTH STATUS HAS AN IMPACT ON FUTURE DIETARY INTAKE IN OLDER ADULTS IN NORTHERN IRELAND
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SIG: Ageing

Purpose/Objective: Evidence linking oral health status and diet in older adults is inconsistent and limited by the few studies conducted to date. This study aimed to investigate whether oral health status has an impact on future dietary intake in older Northern Irish (NI) men from the PRIME study. Methods: The study involved older men (n=1096, 63.49±smn;2.89 years) who underwent a dental examination at baseline (2001-2004). Oral health status was defined in three broad categories: dentate without dentures (n=552), dentate with dentures (n=465) and edentate with dentures (n=79). Dietary intake was assessed using a short food frequency questionnaire in 2015. The intake of major food groups and adherence to certain UK dietary guidelines were investigated. Associations between oral health status at baseline and diet 11-14 years later were assessed using regression models adjusted for potential confounders (age, socio-economic status, smoking, alcohol, BMI, diabetes and C-reactive protein). Results: After full adjustment, mean fruit intake (portions/day) was significantly higher in men who were dentate without dentures [1.13(95% CI: 1.05, 1.22, P=0.008)] compared to those who were dentate with dentures [1.07(95% CI: 0.98, 1.16)] and edentate with dentures [0.78(95% CI: 0.60, 0.98)]. Similarly, mean daily intake of nuts was significantly higher in men who were dentate without dentures [0.17(95% CI: 0.15, 0.19, P=0.02)] compared to those who were dentate with dentures [0.12(95% CI: 0.10, 0.15)] and edentate with dentures [0.10(95% CI: 0.04, 0.17)]. Other food groups (olive oil/rapeseed oil, vegetables, oily fish, wine, red meat and wholegrains) were not significantly associated with oral health status. Compared to dentate men without dentures, those who were edentate with dentures were 62% less likely to achieve the dietary guideline of 2 portions fruit/day [OR 0.38(95% CI: 0.17, 0.81; P=0.01)]. Conclusions: In older NI men, oral health status was associated with future dietary intake, as having dentures was associated with lower future fruit and nut intake. Therefore, oral health status should be considered within this age group when designing interventions to help improve nutritional status. Future studies are also required to investigate the impact of dentures on overall dietary quality and nutritional status.

P1.05.23
MONITORING THE LOCATION OF PHYSICAL ACTIVITY AND COMMUNITY PARTICIPATION IN AN OLDER POPULATION. A SCOPING REVIEW.
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SIG: Ageing

Abstract: Monitoring the location of physical activity and community participation in an older population. A scoping review. Purpose: Maintaining physical activity and community participation is important to maximise health and wellbeing in older people. To objectively measure the location of physical activity and community participation Global Positioning Systems (GPS) have been used in research. The purpose of this review is to, 1) Determine the extent to which GPS devices have been used to measure location of
physical activity and community participation of a population aged over 65. 2) Review the devices used to track location and methods of data analysis. 3) Identify specific facilitators and barriers preventing older people from engaging in physical activity within their community. Methods: This scoping review will use a systematic search strategy to identify both published scientific literature and grey literature of studies that recorded locational data in a population aged 65 years and over using CENTRAL, MEDLINE and EMBASE. Results: A narrative synthesis of results will be undertaken with descriptions of each study, a comparison of results and thematic analysis to identify barriers and facilitators for older people from engaging in physical activity within their community. Conclusions: The results of this scoping review will inform the methodology of a study to evaluate the activity patterns of older people within their environment and their motivations to use their preferred locations. The community activity and participation levels of older people will provide baseline data upon which future interventions that promote healthy ageing can be developed and evaluated.

P1.05.24
MIMIMUM EFFECTIVE DOSE OF EGG WHITE PEPTIDES ON ANTIFATIGUE EFFECTS IN MIDDLE-AGED MARATHON RUNNERS
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SIG: Ageing

Egg white peptide (EWP ; Kewpie Co., Tokyo, Japan) is produced by hydrolyzing egg white using neutral protease. Besides providing good amino acid balance and high protein-utilization efficiency, EWP contains functional ingredients for enhancing endurance, namely, antioxidant peptides. Reportedly, ingesting 7.5 g of EWP for 2 months significantly reduces subjective feelings of fatigue and plasma fatigue markers in middle-aged marathon runners; however, the minimum amount of EWP required to exert antifatigue effects remains unclear. Therefore, this study aimed to determine this amount in endurance training sessions of marathon runners. In this double-blinded, placebo-controlled study, we randomly assigned 49 middle-aged marathon runners to the following three groups: a control group (PL) and two experimental groups that were given EWP 2.5 and 5 g/day. All participants orally ingested drinks supplemented with different doses of EWP (0, 2.5, and 5 g/day, respectively). During the 2-month training session, we standardized and supervised the daily diet and training sessions of these groups. Using the 14-item Chalder Fatigue Scale (CFS), we assessed the physical and mental aspects of fatigue among participants. Then, we evaluated exercise-induced damage indicators by testing the serum concentrations of creatine kinase, lactate dehydrogenase (LDH), creatinine, aspartate transaminase (AST), and alanine transaminase in the blood samples of participants. The CFS scores revealed that the level of subjective fatigue regarding actual physical fatigue after the training session declined significantly in the 5 g/day group compared with that in the PL group. In addition, the serum LDH and AST levels substantially reduced only in the 5 g/day group after the training session compared with those before the training session. Ingesting EWP 5 g/day seemingly decreased the physical fatigue after lengthy training sessions of moderate intensity. Therefore, the results of present study indicated that the minimum effective dose of EWP on antifatigue effects was 5 g/day. The antifatigue characteristics of EWP suggest that the projected treatment could decrease fatigue resulting from endurance training, thereby facilitating the improvement of the quality of daily training.

P1.05.25
RESEARCH ON PHYSICAL FITNESS AND PHYSICAL ACTIVITY OF ELDERLY AGED 70 AND OVER IN SOME COMMUNITIES IN BEIJING URBAN AREA
Sun Jinqiu1, Tan Jingjing1, Su Jia1,1Beijing Institute of Sports Science, Beijing,Fengtai.

SIG: Ageing
Objective To understand the physical and physical activity of elderly people aged 70 years and over in Beijing urban area. Methods A structured questionnaire was used to investigate 276 elderly people aged 70 and over in some communities. The questionnaire is divided into four parts: basic questionnaire, ADL questionnaire, IADL questionnaire and elderly physical activity table. Results 1) The most important disease affecting the health of the elderly in the urban area of Beijing was cardiovascular disease, and 50.4% of the surveyed population had different degrees of cardiovascular disease. 2) Senior citizens in Beijing urban areas scored higher in their conscious health status, and 39.1% of the elderly thought their health was better than their peers. 3) The average ADL and IADL were 13.79 and 13.56, respectively. The primary problem with daily living ability is the lack of time to go to the bathroom. The primary issue in the ability of instrumental day-to-day activities is to handle housework on its own. 4) The elderly in urban areas of Beijing city do static activities every day, and the elderly women take 2 ~ 4 hours as the mainstay. The elderly go out every week to walk or walk in 5 to 7 days, the duration of 1 to 2 hours. Elderly people engaged in mild activity accounted for 40.9%, moderate activity accounted for 31.5%, laborious activities accounted for 25%, as the intensity of activity increased, the number decreased. 92.8% of the elderly do not exercise specialized muscle endurance and strength at all. Conclusion Due to the better economic, social and medical conditions and higher knowledge level, the elderly in urban areas of Beijing have better self-conscious health status, and their abilities of daily activities and instrumental activities of daily living are stronger. However, from the physical activity status, there is still a single activity, activities are not targeted, activity is not enough, do not exercise muscle strength and other issues. Targeted popularization of the concept and methods of strength exercises of the elderly and the development of exercise prescription for the elderly is imminent.

P1.05.26
RESEARCH ON PHYSICAL FITNESS AND PHYSICAL ACTIVITY OF ELDERLY AGED 70 AND OVER IN SOME COMMUNITIES IN BEIJING URBAN AREA
Sun Jinqiu¹, Tan Jingjing¹, Su Jia¹.¹Beijing Institute of Sports Science, Beijing,Fengtai.

SIG: Ageing

Objective To understand the physical and physical activity of elderly people aged 70 years and over in Beijing urban area. Methods A structured questionnaire was used to investigate 276 elderly people aged 70 and over in some communities. The questionnaire is divided into four parts: basic questionnaire, ADL questionnaire, IADL questionnaire and elderly physical activity table. Results 1) The most important disease affecting the health of the elderly in the urban area of Beijing was cardiovascular disease, and 50.4% of the surveyed population had different degrees of cardiovascular disease. 2) Senior citizens in Beijing urban areas scored higher in their conscious health status, and 39.1% of the elderly thought their health was better than their peers. 3) The average ADL and IADL were 13.79 and 13.56, respectively. The primary problem with daily living ability is the lack of time to go to the bathroom. The primary issue in the ability of instrumental day-to-day activities is to handle housework on its own. 4) The elderly in urban areas of Beijing city do static activities every day, and the elderly women take 2 ~ 4 hours as the mainstay. The elderly go out every week to walk or walk in 5 to 7 days, the duration of 1 to 2 hours. Elderly people engaged in mild activity accounted for 40.9%, moderate activity accounted for 31.5%, laborious activities accounted for 25%, as the intensity of activity increased, the number decreased. 92.8% of the elderly do not exercise specialized muscle endurance and strength at all. Conclusion Due to the better economic, social and medical conditions and higher knowledge level, the elderly in urban areas of Beijing have better self-conscious health status, and their abilities of daily activities and instrumental activities of daily living are stronger. However, from the physical activity status, there is still a single activity, activities are not targeted, activity is not enough, do not exercise muscle strength and other issues. Targeted popularization of the concept and methods of strength exercises of the elderly and the development of exercise prescription for the elderly is imminent.
Purpose: Advanced vascular ageing (VA) has been found in children with cardiovascular disease risk factors. Limited studies have examined the association between sedentary behavior, physical activity and carotid intima media thickness (cIMT) in adolescents. The purpose of this study was to examine the associations of daily total sedentary time (ST), steps and breaks in ST with cIMT in apparently healthy male adolescents, and to determine if total ST, the number of breaks in ST or steps could identify adolescents with VA. Methods: A total of 54 apparently healthy male adolescents (mean ±SD: age 15.6 ±0.7 yr.; BMI 23.0 ±4.8) wore a tri-axial ActivPAL accelerometer for 7 consecutive days. Daily total ST during waking hours, the number of breaks in ST and total daily steps were calculated. High-resolution ultrasonography was used to measure left and right far wall intima media thickness (IMT) of the common carotid artery (CCA). Advanced VA was defined as having a mean far wall cIMT greater than or equal to the 25th percentile for race and sex matched healthy 45 year old (Howard et al., 1993). Associations between daily total ST during waking hours, steps and cIMT were examined using univariate correlation and regression analysis. Logistic regressions were conducted to determine if daily total ST, the number of breaks in ST or steps could identify adolescents with VA. Results: Daily total ST during waking hours was positively associated with cIMT (r= 0.37, p=0.006) and daily steps (r=0.41, p=0.002) and breaks in ST (r= -0.28, p =0.045) were inversely related to cIMT. After adjustment for the number of breaks in ST, total ST during waking hours and steps were significantly related to cIMT (ßa;=0.02, p=0.032 and ßa;= 8.89x10^{-6}, p=0.018) when regressed using separate models against cIMT. The number of breaks in ST had significant odds ratio (OR=1.0745, p=0.035) when identifying adolescents with VA. Conclusion: The lower the number of breaks in ST, the higher the odds of advanced VA in apparently healthy male adolescents. Total ST and steps were significantly related to cIMT independent of breaks in ST.

P1.05.28
INFERENCING FACTORS OF WALKING BEHAVIORS IN COMMUNITY-DWELLING OLDER ADULTS: ADAPTATION OF SOCIAL ECOLOGICAL MODEL
Chen LH1, Yang MJ1, Yen CJ1, Wang YC2, Lin LL2. 1National Taiwan Sport University, Taoyuan City; 2Taipei City Nangang District Health Center, Taipei City.

Objective: To apply and adapt the social ecological model (SEM) to examine factors influencing walking behaviors in a community-dwelling older population in Taiwan. Methods: This was a three-phase study. First, an extensive literature review centering the SEM for physical activity followed by a qualitative interview with 24 key informants and a panel of experts meeting. Secondly, a group of 50 older community dwellers were recruited for a pilot study. Lastly, a total of 228 valid cases (55.09 ±16.64 years old) from Taipei City were surveyed and put into final analysis. Item-test was conducted for pilot study. The exploratory factor analysis and Cronbach’s alpha were used to assess the validity and internal reliability for the formal questionnaire. Multiple regression analysis was used to determine the relationship between influencing factors and different domains of walking behavior. Results: Four domains of walking behavior, namely, walking for transport (WTRAN), leisure-time walking (LTW), walking for health (WFH), and in total (TTAL) were defined in the first phase of study. Data collected from the second phase in pilot study demonstrated a well-accepted composite of questions. The “Influencing Factors for Walking Behaviors” questionnaire, adapting from the SEM, contained 6 sub-scales, 11 main factors and 79 items, was developed with the total explained variance for each sub-scale above 60% and internal consistency above 0.9, which indicating a good standing of validity and reliability. The average weekly time spent in WTRAN, LTW, WFH, and TTAL were calculated with values in WTRAN greater than LTW, and LTW greater than WFH. The interpersonal factors influenced WTRAN and LTW, while personal factors influenced WFH, and policy factors influenced TTAL for the older community dwellers. Conclusions: In an effort to promote habitual walking behaviors in responding to active “ageing in place” and engage a broader segment of...
older population, our findings suggest that a policy-supported, community-based interpersonal-focused walking program, such as walking groups, may be relatively effective in program delivery for a similar urban ethnic older population in Taiwan. (The study was funded by grants from the Taipei City Nangang District Health Center.)

P1.05.29
EFFECT OF AGE AND CHRONIC DISEASE ON FUNCTIONAL FITNESS IN OLDER ADULTS
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SIG: Ageing

Purpose: As aging process, older adults are at higher risk for developing chronic conditions such as hypertension, diabetes or arthritis. It is difficult to distinguish between the effects of age and chronic disease in the functional fitness performance in older adults. The purpose of this study was to determine the effects of age and chronic disease on functional fitness parameters in community-dwelling older adults.

Methods: Two hundred twenty-five older adults aged between 65-90 years (70 male;155 female) participated 6 functional fitness tests and a health-screening questionnaire. The functional fitness tests included the 30-second chair stand test for lower body strength(LBS), 30-second arm curl for upper body strength(UBS), chair sit-and-reach for lower body flexibility(LBF), back scratch for upper body flexibility(UBF), 8-feet up-and-go test for agility, 2-minute step test for aerobic endurance(AE). Results: One hundred and ninety older adults completed the test included 62 male and 128 female. There was a significant correlation between arthritis and agility (r=0.493,p=0,010), LBS (r=0.428,p=0,004), AE (r=0.383,p=0.025 ),compared other chronic disease with test performance. There was a significant correlation between age and the 6 test performance. Conclusion :Aging is the dependent risk factor of functional fitness, but disease maybe helpful in predicting loss of fitness. Therefore, older adults with chronic disease should do more targeted exercise to maintain or improve their functional fitness.

P1.05.30
LONGITUDINAL CHANGE IN PHYSICAL PERFORMANCE AMONG RURAL ELDERLY INDIVIDUALS IN A COMMUNITY-BASED EXERCISE PROGRAM
Yamatsu Koji1.1 Saga University, Saga.

SIG: Ageing

Background: Physical performance is a good predictor of health in older adults. Community-based exercise programs may have beneficial effects in the elderly. Therefore, the purpose of this study was to examine longitudinal changes in physical performance among older Japanese in a community-based exercise program. Methods: The participants included 231 nondisabled older Japanese (mean age in 2014: 74.9+/−6.8 years, males: 9.1%, mean usual gait speed in 2014: 1.21+/−0.22 m/s, mean handgrip strength in 2014: 26.5+/−6.4 kg) living in a rural area in Japan. This was a prospective cohort study with a follow-up of 3 years. All participants completed questionnaires once a year. Two types of physical performances tests (handgrip strength and usual gait speed) were measured every year. The physical performances tests were reported to be valid by a previous study. All participants continued to participate in the exercise program once every 2 weeks during follow-up. Findings: Among all participants, usual gait speed (m/s) was significantly increased (1.21+/−0.22 in 2014, 1.22+/−0.23 in 2015, 1.24+/−0.22 in 2016, 1.26+/−0.23 in 2017; p<0.01). Usual gait speed in females was significantly increased (1.21+/−0.23 in 2014, 1.22+/−0.24 in 2015, 1.24+/−0.23 in 2016, 1.26+/−0.24 in 2017; p<0.01), but did not improve in males. On further analysis, participants with lower initial gait speed (1.0 m/s or less) showed more improvement than participants with higher initial gait speed (lower: 13.8% increase from 2014 to 2017; higher: 8.3% increase from 2014 to 2017). Handgrip strength (kg) was significantly decreased in both sexes (males: 39.9+/−6.0 in 2014, 38.4+/−6.1 in 2015, 38.5+/−6.2 in 2016, 37.5+/−6.5 in 2017; p<0.01, females: 25.2+/−4.6 in 2014, 25.5+/−5.8 in 2015, 24.8+/−4.6 in 2016, 24.8+/−4.9 in 2017; p<0.01). Discussions: Usual gait speed was significantly improved with community-based exercise program participation in Japanese rural elderly individuals. However, handgrip strength did not improve with aging, despite continued participation in an exercise program. Acknowledgements: This study was supported in part by JSPS KAKENHI Grant

Jun 05, 10:20 - 11:35: Poster Presentations Grand Foyer

P2.01: SIG e- & mHealth (Grand Foyer)

P2.01.01
A SYSTEMATIC REVIEW OF ELECTRONIC AND MOBILE HEALTH (E- AND MHEALTH) PHYSICAL ACTIVITY INTERVENTIONS FOR AFRICAN AMERICAN AND HISPANIC WOMEN IN THE UNITED STATES: EVIDENCE FROM 2000 TO 2017

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SIG: E- & m-health

Purpose: In the United States, women of racial/ethnic minorities, particularly African American (AA) and Hispanic women, perform low physical activity (PA) levels and are disproportionately burdened by associated cardiometabolic disease conditions (i.e., obesity, cardiovascular disease, and type 2 diabetes). Electronic and mobile health (e- and mHealth) PA interventions represent a potential strategy to increase PA and reduce these PA-related health disparities. The purpose of this systematic review was to evaluate the quality and efficacy of e- and mHealth PA interventions among AA and Hispanic women. Methods: Using PRISMA guidelines, five electronic databases (i.e., PubMed, PsycINFO, CINAHL, Academic Search Premier, and SPORTDiscus) were searched to identify relevant studies. Studies were included if they were published in English language peer-reviewed journals between 2000 and 2017, employed an e- or mHealth delivery strategy to promote PA, focused primarily on AA or Hispanic women > 18 years old (i.e., > 80% of the study) or if study outcomes were stratified by sex and race/ethnicity, and reported PA outcome data. Studies were evaluated by two reviewers according to pre-defined methodological criteria and assigned a quality rating. Results: Ten studies met inclusion criteria for review. Six (60%) focused on AA women and four (40%) on Hispanic women. Eight (80%) were pilot studies; two (20%) were full-scale randomized controlled trials (both focused on Hispanic women). Six studies (60%) used websites as the primary method of intervention delivery, three (30%) used text messaging, and one (10%) used the social networking website Facebook. Nine (90%) identified a behavioral science theory underpinning study activities and seven (70%) reported cultural adaptation efforts. Seven (70%) used a subjective measure as the primary PA outcome, while three (30%) used an objective measure. Seventy-percent (n=7) reported significant within or between group differences favoring increased PA. Quality rating scores ranged from 4 to 13, out of 13 possible points (median = 5 points). Conclusions: Findings provide preliminary support for e- and mHealth PA interventions among AA and Hispanic women. These interventions have potential for broad-dissemination; however, future large-scale, rigorously designed, randomized controlled trials are needed to further explore their effectiveness among AA and Hispanic women.

P2.01.02
EXPLORING PROSTATE CANCER SURVIVORS PERCEPTIONS OF ONLINE CANCER BASED PHYSICAL ACTIVITY MESSAGES: IMPLICATIONS FOR COMPUTER-TAILORING

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SIG: E- & m-health

Objective Prostate cancer is one of the most common cancers diagnosed in men and contains ongoing issues post-diagnosis. Physical activity and lifestyle advice are recommended to improve quality of life in this sub-population. "Tailoring" to individual determinants, such as psycho-social, environmental, theoretical and demographical factors, are often used in health promotion increase the relevance of health messages. Tailoring is often used in distanced based interventions (print or e&mhealth) but what is less known are strategies to streamline which tailoring factors are important to the prospective intervention
user. Our objective was to provide commonly found cancer-based physical activity advice from cancer websites, and ascertain what aspects of the messages were relevant to men with prostate cancer to improve our capacity to tailor future e&mhealth intervention development. Method Participants were recruited through convenience sampling including flyers, support groups, and urologists. This survey was completed in addition to a qualitative interview. Participants were asked to provide written feedback on the language, tone, length, and content of four paragraphs containing messages relating physical activity which were matched aspects of theoretical determinants relating to the Social Cognitive Theory. Ethical clearance was granted from the University of Adelaide (H-2017-101). Results In total, 16 men with prostate cancer provided feedback. The language and tone of the messages were mostly acceptable, though some found the messages too ‘authoritative’. Feedback regarding message content was varied but most messages were too long. The More examples of advice for different fitness levels, and messages to take account preferences to exercise alone or with others, or comorbidities such as arthritis or pain were also noted. Conclusion Commonly used messages for physical activity and cancer found online were generally perceived as not relevant to the participants. Tailoring messages for activity preferences, comorbidities and fitness levels are recommended. Using feedback from the prospective intervention user may assist intervention developers to improve their tailoring strategy during development phases.

P2.01.03
SEDENTARY BEHAVIOR IS ASSOCIATED WITH ARTERIAL STIFFNESS IN MIDDLE - AGED AND ELDERLY WOMEN IN BEIJING CITY
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SIG: E- & m-health

Abstract Purpose Arterial stiffness refers to a non-inflammatory artery disease, can lead to the formation of serious cardiovascular and cerebrovascular diseases, which is a great threat to human life and health. Arterial stiffness caused by many factors. The evidence on the mechanisms explaining possible adverse effects of sedentary behavior (SB) on arterial stiffness is limited. The aim of this research is to explore the relationship between sedentary behavior and arterial stiffness in middle-aged and elderly women. Methods Study participants were 946 middle-aged and elderly women in Beijing city. The sedentary time was measured by Marshall et al's Workforce Sitting Questionnaire (WSQ). Arterial stiffness was tested with the Japanese Fukuda vs-1500 instrument Test items are age, height, weight, BMI. Multiple regression analysis was used to analyze the relationship between sedentary behavior and arterial stiffness. Results The average age of participating researchers was 55.4 ±11.75 years, height 157.86±5.3cm, body weight 60.96±9.28 kg, body mass index (BMI) 24.45±3.42 kg / m², the daily sitting time in the office was 4.67±2.06 h, the average time for daily watching television was 1.97±1.15h, the average arterial stiffness was 7.61±1.22. The results of the multiple regression analysis revealed that the relationship between the sitting time in the office and Arterial stiffness (B=-0.549, Sig=0.000, Adjusted R² =0.29). Conclusions Middle-aged and elderly women's sedentary behavior was significantly associated with arterial stiffness, with sitting time at office increase the risk of arterial stiffness will increase.

P2.01.04
ASSOCIATION BETWEEN CONSTITUTION OF THE TRADITIONAL CHINESE MEDICINE AND HEALTH-RELATED QUALITY OF LIFE: A POPULATION-BASED CROSS-SECTIONAL SURVEY IN CHINA
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SIG: E- & m-health

Objective: The association between constitutions of the traditional Chinese medicine (TCM) and health-related quality of life (HRQoL) was barely discussed. In present study, we aimed to explore association between nine TCM constitutions and both physical and mental HRQoL in Chinese. Method: A total of 3,327 adults aged 18-80 years were recruited in an urban area of China. The TCM constitutions were identified by a TCM physician. HRQoL characteristics were measured by the Chinese Short-form 36-item
questionnaire (SF-36). Face-to-face questionnaire survey was administered to obtain demographic information, medical history and behavioral risk factors. Adjusted linear and robust regression models were used to examine the association between TCM constitutions and HRQoL components. Results: Compared with normal constitution (Pinghe), abnormal constitutions were all negatively associated with all HRQoL scales except for Health Transition (HT). General Health scale was significantly associated with most types of constitution, while Role Emotional scale was linked with only one constitution. When stratified by gender, relationship between HT scale and multiple constitutions were still observed in male but not in female. A significantly negative effect of Yangxu constitution was observed on every HRQoL scale except for HT scale, while Yinxu constitution had no effects on HRQoL scales. Conclusion: HRQoL was negatively associated with almost all HRQoL scales. This study enhanced our understanding of the underlying influence of TCM constitution on physical and psychological quality of life, but the potentially relevant mechanism needed to be investigated in future.

P2.01.05
THE DIFFERENCES OF PHYSICAL ACTIVITY AMONG COLLEGIATE STUDENTS IN DIFFERENT AREAS OF MAINLAND CHINA AND ITS RELATIONSHIP WITH MENTAL HEALTH
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SIG: E- & m-health

The Differences of Physical activity among Collegiate Students in Different Areas of Mainland China and its Relationship with Mental Health ABSTRACT Purpose: The purpose of this study was to explore the differences in physical activity (frequency, intensity, different types of physical activity) among collegiate students(sample size 832)in different geographical locations in mainland China. The secondary objective was to explore the relationship between physical activity and mental health status. Methods: Data were collected by questionnaire and Pearson correlation, Independent sample t-test and ANOVA were used to explain the data. Results: There were significant differences for physical activity of college students in different geographical regions of mainland China (F=2.417, p=.025 for moderate intensity physical activity; F=3.721, p=.001 for vigorous aerobic exercise ; F=2.946, p=.008 for recreational sports ; F=3.243, p=.004 for muscular training ; F=3.973, p=.001 for stretching and flexibility activities), in which northwest collegiate students participated in different types of physical activity significantly higher than the other regions. There were significant differences between male and female collegiate students in vigorous aerobic exercise (F=5.527, p=.019) and muscle strength Training (F=60.341, p=.000), but male were higher than female collegiate students. There was significant difference (F=5.297, p=.022) in total inactivity, but female collegiate students were higher than male students. Freshman's physical activity was significantly higher than juniors, and there was no significant difference among other grades. Appropriate physical activity reached the best mental health status. Conclusion: Different regions of the physical activity of collegiate students were geographical differences in the participation of different types of physical activity varies, and the degree of participation of different types of physical activity varies with gender. The higher the physical activity level, the higher the mental health status. KEYWORD: collegiate students; physical activity; optimal mental health; Difference regions

P2.01.10
PHYSICAL ACTIVITY IS INDEPENDENTLY ASSOCIATED WITH BONE STRENGTH IN MIDDLE-AGED AND ELDERLY WOMEN IN BEIJING CITY.
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SIG: E- & m-health

Abstract Purposes Physical activity is believed to have the greatest effect on the skeleton. In middle-aged and elderly women, changes in hormonal balance, particularly declining estrogen levels, and reduced activity result in reduced muscle strength and reduced bone mineral density (BMD). Therefore, the aim of this research is to explore the relationship between the physical activity and bone strength of middle-aged and elderly women in Beijing city. Methods A total of 289 middle-aged and elderly women in Beijing city
were selected by random sampling method. The subject's height and weight were measured. By measuring the number of daily walking steps to test their physical activity. Korean AusterSonost 2000 was used to test the strength of the calcaneus in the left ankle. Multiple regression analysis was used to analyze the relationship between physical activity and bone strength. Results: The average age of the subjects was 55.3±11.75 (mean ±SD) years old, height 157.86±5.3 (mean ±SD) cm, body weight 60.97±9.28 (mean ±SD) kg and body mass index (BMI) 24.45±3.43 (mean ±SD) kg/m². The daily number of steps was 5427.62±4661.96 (mean ±SD), and the bone strength index was 79.67±10.63 (mean ±SD). The results of multivariate regression analysis showed that the relationship between physical activity and bone strength (B = 0.298, Sig=0.002, Adjusted R² = 0.080), physical activity and fracture risk factors (B = -0.309, Sig=0.002, Adjusted R² = 0.087).

Conclusions: Physical activity was associated with the bone strength index in middle-aged and elderly women.

P2.01.11
A REVIEW OF PREGNANCY SMARTPHONE APPS ASSESSING THEIR QUALITY, INCLUSION OF BEHAVIOUR CHANGE TECHNIQUES AND NUTRITION GUIDELINES
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SIG: E- & m-health

Objective: Smartphone apps are widely used, particularly in pregnancy, and can have a substantial influence on behaviour. Despite their popularity, no reviews have been conducted of the quality of pregnancy apps. Therefore, the aim of this review was to assess the quality of pregnancy apps and the behaviour change techniques and pregnancy-specific nutrition guidelines used. Methods: A keyword search was conducted in the iTunes app store followed by screening of app title, app store description, and the downloaded app to determine eligibility. To be included, the apps needed to be free, in English, specifically aimed at pregnant women and contain nutrition information. App quality was assessed using the Mobile Application Rating Scale (MARS), absence or presence of behaviour change techniques (BCT's) was assessed using the CALO-RE taxonomy and presence of nutrition guidelines was also reported. Results: 460 apps were identified in the initial key word search, with 400 excluded. Twenty-four iPhone apps have been included in data extraction and analysis to date. The mean overall MARS quality score was 2.87 out of 5 (‘1’ = inadequate and ‘5’ = excellent), the functionality sub-scale scored the highest (mean= 3.23) and aesthetics scored the lowest (mean= 2.62) followed by information quality (mean= 2.74) and engagement (mean 2.89). Eight BCT's out of a possible 40 were present across the apps and mean number of BCT's per app was 2.7. The most common techniques were providing information on consequences of behaviour to the individual (n=22, 92% of apps) and providing instruction on how to perform the behaviour (n=22, 92%). Mean number of pregnancy-specific nutrition guidelines per app was 3.5 and two apps scored 7 out of a maximum of 8 guidelines. Two apps contained no nutrition guidelines. The most common nutrition guidelines were related to fish consumption (n=18, 75% of apps). Conclusions: Although there is a large number of pregnancy apps available, few are of high quality and most contain only a small number of behaviour change techniques or pregnancy-focused nutrition guidelines. It is important to be aware of the limitations of apps in providing quality dietary advice during this key life stage.

P2.01.13
A COMPARISON STUDY OF ENERGY EXPENDITURE AND NUTRITION INTAKE IN AMATEUR ATHLETES IN LONG DISTANCE RUNNING
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SIG: E- & m-health

Objective: By analyzing the energy expenditure figures of each group (training group, marathon group and
cross-country running group) and their nutrition intake figures, some reasonable suggestions were given to solve the problem of nutrition intakes in daily training or competition. Methods: The energy expenditure data were collected by wearing 3-axis accelerometer (ActiGraph GT3X, USA) when 10 amateurs did 10km training, 6 amateurs did marathon competition, and 6 amateurs did 50-100 km cross-country running. They were asked to recall and record all the foods and beverages during competition or training. After measuring energy expenditure during their exercises, and recording the process of nutrition supplement, we compared the differences in energy expenditures of different groups, and analysis the relativity between energy expenditures and nutrition intakes. Results: (1) The energy expenditure figure of training group was 0.66±smn;0.10 Kcal/kg/km, which was observably less than those of marathon group(1.22±smn;0.32 Kcal/kg/km) and cross-country group(1.20±smn;0.18 Kcal/kg/km) (P0.01); however, there was no any obvious difference between the marathon group and cross-country group(p=0.05);(2) The calorie of supplement intakes was 756.17 ±smn;387.80 Kcal/kg/km, which was significant lower than the calories of energy expenditure (2331.61±smn;939.30 Kcal/kg/km) in 22 amateurs. However, there was a positive correlation between energy expenditure and supplement intake among the 22 amateur athletes(r=0.950, P < 0.01). Conclusions: (1) The energy expenditure level during daily training was obviously lower than which during competition in amateur runners;(2) The nutrition intake didn't meet the demand of energy cost during long distance running although the runners had followed the principle of "the more energy cost, the more supplement will need".

P2.01.14
EFFECTS OF A WEARABLE TECHNOLOGY-BASED PHYSICAL ACTIVITY/SEDENTARY INTERVENTION ON SLEEP QUALITY: THE ACTIVATE TRIAL
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SIG: E- & m-health

Introduction: The majority of postmenopausal breast cancer survivors experience significant sleep problems, which may compromise health-related quality of life and increase risk of comorbidities. Increasing physical activity is recommended as a way to improve sleep quality and duration in this population. We examined the effects of a 12-week wearable technology-based intervention (designed to increase physical activity and reduce sedentary behaviour) on the sleep quality of breast cancer survivors. Methods: Inactive, postmenopausal, post-primary treatment breast cancer survivors (N=83, mean age=62±smn;6 yrs) were recruited, and randomised to the ACTIVATE intervention or control arm. Objective wrist actigraphy (sleep-onset latency, total sleep time, sleep efficiency and wake after sleep onset) and subjective sleep quality (Pittsburgh Sleep Quality Index) were measured at baseline (T1) and end-of-intervention (T2). Results: At T2, significant improvements were observed within the intervention group for PSQI global sleep quality (mean within-group difference [Mw]= -0.7; standard error [SE] =0.36; p=0.04), subjective sleep efficiency (Mw = -0.34; SE=0.15; p=0.02) and Actigraph-measured wake after sleep onset minutes (Mw = -7.1; SE=3.5; p=0.04) compared to baseline scores. Compared to the control group, ACTIVATE participants had non-significant improvements for PSQI outcomes: global sleep quality (mean between-group difference [MB]= -0.8; effect size [d] = -0.11; p= 0.1), sleep efficiency (MB = - 0.3; d= -0.10; p= 0.22); perceived sleep quality (MB= -0.1; d= -0.35; p=0.52); sleep disturbance (MB = -0.01; d= -0.17; p=0.9); and accelerometer sleep measures: sleep latency minutes (MB = -0.6; d = -0.19; p=0.50); wake after sleep onset minutes (MB = -2; d= -0.20; p=0.67). Conclusion: We found some improvements in sleep quality following the delivery of a physical activity/sedentary behaviour intervention. The potential benefits
of this affordable and scalable intervention should be tested further, examining whether delivery over a longer duration has a beneficial effect on sleep quality.

P2.01.15
VALIDITY OF A FOOD DIARY APPLICATION RELATIVE TO PAPER-BASED FOOD RECORD AND 24-HOUR DIETARY RECALL AMONG ADULTS IN MALAYSIA
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SIG: E- & m-health

Purpose: Image-assisted dietary assessment methods can potentially improve assessment of dietary intake. This study aims to determine the validity of a food diary mobile application, called Individual Meal-based Assessment Snapshot (IMBASTM), relative to paper-based food diary and multiple 24-hour dietary recalls as the reference methods using the method of triads. Methods: Forty-six adults (13 males, 33 females) aged between 18 to 60 years participated in this cross-over study. Participants were randomly assigned into two groups (A and B), which employed IMBAS and a paper-based food diary, respectively, in the first 7 consecutive days. After the first week, the two groups switched their methods of recording diets with at least 5 days of wash-out in between. Two or three 24-hour diet recall interviews were taken on a day prior recording diet intake and/or a day after completing diet record using IMBASTM and paper-based food diary. All diet records were analyzed for energy and macronutrient intakes using an in-house and commercial nutrient analysis software (Nutritionist Pro). Results / Findings: Percentage differences between IMBASTM and 24-hour diet recalls were larger than percentage differences with paper-based food diary for energy (−8.4 ± smn; 26.3 vs. 0.5 ± smn; 27.6), carbohydrate (−8.3 ± smn; 32.8 vs. 2.8 ± smn; 31.9) and protein (−9.0 ± smn; 31.2 vs. −2.0 ± smn; 39.4). Significant differences were observed for mean intake of energy (kcal), carbohydrate (g) and protein (g) between IMBASTM and 24-hour diet recalls (all p< 0.05). No significant difference in nutrient level was observed between IMBASTM and paper-based food diary. Validity coefficients (VC) for IMBASTM ranged between 0.428 (fat) to 0.732 (energy). Paper-based food diary produced higher VC for energy (0.779), carbohydrate (0.864) and fat intake (0.650); while IMBASTM produced the highest VC for protein (0.710). Conclusion: This study showed that the IMBASTM food diary application could be used as a valid alternative dietary assessment method, due to its high validity coefficients compared to conventional paper-based food diary and 24-hour diet recalls.

P2.01.16
APPS AND WEARABLES TO MONITOR PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR: PRELIMINARY FINDINGS FROM A QUALITATIVE SYSTEMATIC REVIEW ON BARRIERS AND FACILITATORS
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SIG: E- & m-health

Purpose: Monitoring physical activity (PA) and sedentary behaviour (SB) using mobile phone applications (apps) and wearable technology (wearables) may improve PA and SB. So far systematic review evidence summarises quantitative studies investigating the acceptability, efficacy and effectiveness of apps and wearables related to physical activity and sedentary behaviour. Qualitative research can provide an in-depth insight into the barriers and facilitators of using apps and wearables. This systematic review aims to synthesise the qualitative literature on the barriers and facilitators of using apps and wearables to automatically monitor PA and SB in adults. Methods: This review is registered in PROSPERO.
Scientific databases including CINAHL Complete, MEDLINE, PsycINFO, SPORTDiscus, Cochrane Library and Scopus were searched for relevant studies published from 1st January 2012 to 1st September 2017. Studies were included if they 1) included adults who used an app or wearable to automatically monitor PA and/or SB 2) explored the barriers and/or facilitators of using such technology and 3) were published in English. Following double screening of 4,550 titles and abstracts, full-texts of potentially eligible papers were screened to identify studies using qualitative approaches to explore barriers and facilitators of using apps and/or wearables to automatically monitor PA and/or SB. Discrepancies were resolved through discussion or by consulting a third screener. Relevant excerpts (quotes and text) from the included papers will be extracted and analysed with thematic synthesis. The Critical Appraisal Skills Programme (CASP) Qualitative Research Checklist will be used to appraise included studies. Findings: Initial findings highlight barriers to using apps and wearables to monitor PA and SB are around the accuracy of the devices in detecting activity and the comfort and aesthetics of the device. Facilitators for using the devices include increasing individuals' motivation to be more physically active and self-awareness of PA levels. Results are to be confirmed as full text screening and data analysis is expected to be completed by July 2018. Conclusion: This presentation will discuss the preliminary findings of the thematic synthesis. The results of this work will be useful for those intending to monitor PA and/or SB using these technologies.

P2.01.17
PSYCHOMETRIC ASSESSMENT OF THE PSYCHOSOCIAL ENVIRONMENT SCALE IN PE CLASS
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SIG: E- & m-health

Background: The lack of physical activity among middle school students has become an indisputable fact in today’s world; meanwhile, the importance of PE class in PA promotion has got worldwide recognitions. Previous relevant studies have revealed positive relationships between the PE class environment and students’ PA level, however, there was no integrated assessment scale for the psychosocial environment in PE class. Purpose: This study aimed to develop the Psychosocial Environment Scale in PE class (PES), and investigate its psychometric properties among middle school PE classes. Methods: A cross-sectional study was conducted among 867 students (girl = 467; mean age = 13.5 yrs) which were recruited from 40 PE classes. Data were collected through Psychological Environment Scale(PES) which was revised from Class Psychological Environment Scale(CPES) and Class Atmosphere Scale(CAS). Estimates of the internal consistency of the PES were calculated using Cronbach’s alpha and test-retest reliability test(after 4 weeks) and the Validity of that were calculated using EFA. Results: Principal components factor analysis assigned the 47 items to three factors with eigenvalues above unity. Three factors named as Class Atmosphere, Teacher Support and Student Support respectively. These three factors accounted for 72.4% of the total variance. A varimax rotation revealed that all items had loadings above 0.4 on their a priori scales. The PES had good internal consistency(aha;=.989) and test-retest reliability(r = .661-.943). Conclusion: The PES can be a valid and reliable assessment tool for psychosocial environment in PE class.

P2.01.20
PILOTING MOBILE HEALTH TECHNOLOGY-BASED HIGH-RESOLUTION MEASURES OF PHYSICAL ACTIVITY, SLEEP, AND LOCATION WITHIN A LARGE PROSPECTIVE COHORT
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SIG: E- & m-health

Purpose: Obesity is an established driver of cancer risk, and substantial evidence has linked obesity to inadequate physical activity and sleep. Geographic contextual measures, including neighborhood walkability and access to green space, have been demonstrated to affect physical activity, sleep patterns, and obesity. These factors are typically measured in large prospective studies with questionnaires, which
have substantial error. Novel technologies, including global positioning systems (GPS) enabled smartphones and consumer wearable accelerometry devices, provide efficient, rigorous, objective, and low-cost measures of geographic context, physical activity, and sleep with high spatio-temporal resolution. However, managing, processing, and analyzing streaming high-dimensional data presents significant logistical and statistical challenges, especially within large prospective cohorts. Methods: This study assesses the relationship between dynamic measures of geographic context on objective measures of physical activity and sleep within the Nurses’ Health Study 3 (NHS3) cohort. NHS3 is a web-based, nationwide US-based, prospective open cohort with a current enrollment of ~45,000 male and female nurses aged 19-46 years old. We are deploying smartphone applications and wearable devices within a subsample (n=500) of NHS3. The custom application collects continuously recorded, high temporal resolution measures of geographic context (walkability and green space), and Fitbit Charge 2 devices collect minute-level physical activity and sleep over a seven-day monitoring period, four times over one year to capture seasonal variability. Results: We have assembled a study team made up of epidemiologists, data scientists, analysts, and app developers. We have developed and piloted the smartphone application and Fitbit protocol within study staff, and have created infrastructure to store data securely, code to parse data, and algorithms to merge and visualize information across datasets. All approaches are designed to be scalable for expansion to the full cohort. We are now beginning recruitment within NHS3. Conclusions: We have learned enormous lessons about the transdisciplinary process of bridging disparate fields and data typologies to incorporate mobile health technology into a large prospective cohort. This study will rigorously quantify contextual exposures, physical activity and sleep, and provide unprecedented perspectives on the influence of geographic contextual factors on these interdependent behavioral risk factors for obesity and cancer.

SIG: E- & m-health

Objective: As mobile technology was used in research studies to improve self-monitoring (SM) of diet and physical activity (PA) in diabetes and obesity, translation of this evidence-based intervention into clinical diabetes care requires integrating of mobile collected SM data into electronic health record (EHR) system. The study objective is to evaluate the feasibility of translating SM intervention through connecting mobile collected SM data into EHR. Methods: Chronicle Diabetes (CD) is a nationally used EHR system for diabetes educators. We developed an interface in CD that enabled educators to view patients’ smartphone and wristband collected SM of diet and activity information on a monthly calendar view, along with daily and weekly data. After iterative development and testing, we conducted a 3-month multi-site feasibility trial in Houston, TX and Pittsburgh, PA among overweight or obese diabetes patients who had a compatible smartphone with our chosen fitness tracker. All patients were randomized into 1) using a wristband fitness tracker with a companion app for SM + educator access to SM in CD system, or 2) usual diabetes care and education. Feasibility outcomes were evaluated using patient retention rate at 3 months, patients' ability to download the app in their smartphone and use the fitness tracker and app for SM, educators' ability to view connected interface, and our ability to collect outcome data on weight and HbA1c at baseline and 3 months and conduct preliminary efficacy analysis. Results: We recruited and randomized 60 patients, 30 from each site. Retention rates at 3-months are 93.3%. We were able to demonstrate feasibility through patients' and educators' ability to use the mobile and connected tools in the intervention group. Intention to treat analysis using linear mixed modeling showed that there was significant reduction on weight (F=5.32, p=0.025) and HbA1c (F=6.96, p=0.011) at 3 months for both groups, however, no group differences was detected (ps>.05). Conclusions: Our trial provided evidence to support the feasibility of using connected technology to facilitate translating evidence-based SM of diet and PA intervention into clinical practice in diabetes education programs. Future trials should be conducted to evaluate its effectiveness on improving diabetes outcomes.
MENTAL HEALTH AND PHYSICAL ACTIVITY: A TEST OF THEORETICAL FACTORS
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SIG: E- & m-health

Objective: University students are reporting increasingly high rates of symptoms of stress, anxiety, and depression. These mental health concerns lead to poor academic performance, and compromised lifestyle behaviors including low participation in physical activity. This is particularly concerning given the well-documented and established benefits of physical activity for the prevention and treatment of mental illness. It may be important to identify the mechanisms that could explain the relationship between mental health and physical activity. Based on theoretical evidence, perceptions of confidence, enjoyment, beliefs, and intentions are key factors in explaining physical activity. The purpose of this study was to examine these factors as mediators in the relationship between mental health symptoms and physical activity. Methods: Self-report cross-sectional data were collected from university students (N = 2891; 70% female; aged 21.01, SD = 3.5) to assess mental health symptoms, level of moderate-to-vigorous physical activity (MVPA), and perceptions of confidence, enjoyment, beliefs, and intentions to engage in physical activity. Multiple mediation was conducted using Preacher and Hayes’ (2008) SPSS macro PROCESS. Direct and indirect pathways were tested, including the bias-corrected confidence intervals produced via bootstrapping methods (k = 5000). Results: Mental health symptoms were significantly negatively related to minutes of MVPA (B = .09; p < .05). Based on bootstrapped multiple mediation analyses, this negative relationship was mediated by feelings of confidence, enjoyment, beliefs, and intentions to engage in physical activity. This model predicted 19% of the variance in MVPA. Conclusions: This research adds to the converging evidence that individuals with mental health symptoms participate in MVPA less frequently and highlights factors that may explain this relationship. Factors aligned with key theoretical tenets, such as perceptions of confidence, enjoyment, beliefs, intentions, accounted for the association. As such, these factors present potential targets for interventions aimed at increasing physical activity in university students presenting with mental health symptoms.

EFFECTS OF ACUPUNCTURE ON IMMUNOREGULATION DURING PROLONGED HIGH-INTENSITY TRAINING SESSION IN SOCCER PLAYERS
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SIG: E- & m-health

Objectives. This paper aims at estimating the effect of acupuncture therapy on modulate immune parameters during prolong high-intensity training in soccer players. Methods. 28 healthy male soccer players were recruited and randomly divided two groups, acupuncture group (AG) and sham acupuncture group (SG). All subjects had executed prolong, high-intensity training last 4 weeks. Acupuncture therapy had been implemented 3 times every week on bilateral Zusanli (ST 36), Hegu (LI 4), Shenshu (BL 23), and Chize (LU 5), therapy 12 times together. A special “placebo-needle” had been utilized in SG. During pre-test and post-test, used flow cytometry method and Enzyme-Linked ImmunoSorbent Assay (ELISA) method test T-lymphocyte (CD3+, CD4+, CD8+, CD4/CD8), and interleukin (IL-6, IL-10), respectively. Results. Compare pre-test to post-test, T lymphocyte (CD3+), T helper (CD4+), T cytotoxic/suppressor (CD8+), the IL-6, and the IL-10 have significant difference in sham group (SG), but just IL-6 has a statistical significance in acupuncture therapy group (AG); compare AG to SG, just IL-6 and IL-10 have significant difference. Conclusion. Prolong, high-intensity training session in soccer players cause by decreased immune functions, increase level of pro-and anti-inflammatory cytokines. Acupuncture therapy could facilitate to restore immune function, inhibition the soccer players immunity to further reduce.
P2.02.01
HOW DO CONSUMERS UNDERSTAND AND INTERPRET THE SERVING SIZE INFORMATION ON FOOD LABELS

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SIG: Policies and environments

Purpose: The food environment is complex and constantly evolving. Serve size labels aims to guide consumers to optimise healthy eating. However, food labelling can be confusing, especially with no standardised global guidelines to govern serving size information. This scoping review will investigate (i) how consumers perceive and interpret the serving size information on food packages and (ii) how the serving size information and changes thereof influence consumers' perceptions and interpretations (e.g. selection and consumption)

Methods: Electronic database searches of MEDLINE, The Cochrane Library, EMBASE, CINAHL, Scopus, PsycINFO and Business Source Ultimate between 2010 and September 2017 (11/09/17) resulted in identification of 2841 studies. Fourteen studies were considered eligible for inclusion after the screening process which was conducted by three independent reviewers.

Results: Five of the 14 studies reported poor understanding of serving size in relation to nutrition facts labelling and portion size. Consumer attitudes (measured in n=6) towards serving size labelling indicated that increasing labelled serving size influenced health perception and consumption-associated guilt, but was considered more representative and therefore preferred by consumers. Manipulation of serving size to increase perceived healthfulness influenced consumer product perception. Increased labelled serving sizes resulted in increased portion sizes in studies that included core and discretionary foods (n=3) and reported a reduction or neutral effect on discretionary food (n=3) portion size. Purchase intention was influenced by health framing through serving size modification in one study, but not influenced by a Front of Pack symbol system in another study.

Conclusion: The influence of labelled serving size on consumer attitudes and consumption-related behaviours is complex and sometimes counterintuitive. Labelled serving size has the potential to decrease consumption of discretionary foods, but can be influenced by health framing in serving size labelling, poor food literacy and demographic factors. The influence of labelled serving size on consumer attitudes and consumption-related behaviours of core foods is important but remains unclear due to the absence of studies specifically focusing on core food groups. Studies that investigated the impact of serving size labels within the home environment, across a broad demographic cross-section and particularly in relation to core foods are lacking.

P2.02.04
PSYCHOLOGICAL NEED DISSATISFACTION PREDICTS STUDENTS’ AUTONOMOUS MOTIVATION AND CONTROLLED MOTIVATION IN SECONDARY PHYSICAL EDUCATION

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SIG: Policies and environments

Purpose: Within the extant literature, no studies have examined students' need dissatisfaction in school physical education (PE) with motivation outcomes. The 15-item Psychological Need Dissatisfaction scale (PND) was adapted to a school PE context for measuring students' need dissatisfaction of competence, autonomy and relatedness, and examining their relationships with autonomous and controlled motivation.

Methods: Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted to provide validity support for the Chinese PND questionnaires. Data collected from a total of 331 Hong Kong secondary school students (52.6% male; mean age=14.02±smn;1.11) was for EFA. Another set of data for CFA included a total of 401 students (57.6% male; mean age=14.59±smn;1.01). EFA with a promax (oblique) rotation was performed to identify latent factors, and then CFA was used to examine factorial validity. Then, 144 students (52% males; mean age=14.06±smn;1.08) were recruited to complete the questionnaires. Multiple regression analyses were conducted to examine the associations between need
dissatisfaction and students' autonomous and controlled motivation in secondary PE. Results: EFA identified three factors for the need dissatisfaction scale. In CFA, the hypothesized three-factor model was examined for the 15-item of need dissatisfaction scale. Results indicated that it was a significant scaled $c^2 (74) = 162.31, p < .01$, but a good fit was found based on fit indices: TLI = .95, CFI = .96, SRMR = .04, RMSEA = .06, RMSEA 90% CI [.04, .07] after deleting one item of competence construct. Item scores loaded strongly on the intended factor (mean $\lambda = .76$, range = .60-.94). For the multiple regression analyses, dissatisfaction of competence and autonomy was significantly and negatively associated with autonomous motivation ($b_a = -.23$, $p = .01$ and $b_a = -.18$, $p = .03$ respectively) with 21% of variance explained the autonomous motivation. Dissatisfaction of autonomy were significantly and positively associated with controlled motivation ($b_a = 0.27$, $p < .01$) with 27% of variance explained the controlled motivation. Conclusion: We provided initial support for the validity of the PND scale. Dissatisfaction on competence and autonomy had significant negative impacts on students’ motivation in secondary PE. These findings would shed new lights on future planning on pedagogical and instructional strategies in secondary PE teaching.

P2.02.05
DEVELOPMENT OF A FOOD ENVIRONMENT PERCEPTION QUESTIONNAIRE FOR CHINESE RESIDENTS

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SIG: Policies and environments

Objective (i.e. geographic information system-based) and subjective (i.e. survey-based) measurements of food environment caught different dimensions and aspects of neighborhood food environment, and they have been associated with health outcomes by studies, respectively. Chinese had different cultures and behaviors on food and grocery shopping, however, few studies investigated food environment in China especially the perceptions on food environment for Chinese residents. To date, there were no survey-based questionnaires on food environment perception for Chinese. Thus, this study aimed to develop a questionnaire to assess perceived food environment in China. Methods: This study includes five steps: (1) Collection, inventory and arrangement of survey items through systemic literature review; (2) External expert review on selected survey items and structure of the questionnaire; (3) Revising the survey according to experts’ comments and suggestions; (4) Pilot testing and cognitive interviews among small sample of local residents; (5) Revising the survey and preparing the final version for validity and reliability testing. Results: Six experts in the field of nutrition, behavioral sciences, and epidemiology reviewed the initial version of the questionnaire. The pilot testing and cognitive interview were conducted among 14 residents. The final version contains 6 sections: food availability, food accessibility, food affordability, food shopping behaviors, diet behaviors (including outside eating and ordering take-out food behaviors) and opinions on food safety. Finally, the questionnaire has 36 core items which is composed of 93 sub-section items. Conclusions: This is the first attempt to develop a food environment perception survey questionnaire in China. In next step, we plan to conduct a large-scale investigation to evaluate the reliability of this questionnaire, and the study is ongoing. It is certain that this instrument will be helpful to investigate residents’ perceived food environment and will enhance our understanding on food environment in China.

P2.02.06
CARDIORESPIRATORY FITNESS WAS ASSOCIATED WITH LEVELS OF VIGOROUS PHYSICAL ACTIVITY AND BODY MASS INDEX IN CHINESE MIDDLE SCHOOL STUDENTS

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SIG: Policies and environments

Objective Increases in physical inactivity and overweight and obesity have been consistently observed in
Chinese school-age children in recent decades that were associated with declines in physical fitness. This study examined the relationships of cardiorespiratory fitness (CRF) with sedentary behavior, physical activity, and Body Mass Index (BMI) of Chinese middle school students. Methods: Study participants were middle school students (n=332) enrolled in 7th grade from three Chinese cities. CRF was assessed by 20-meter shuttle run. A 7-day accelerometry (Actigraph GT3X-Plus) was used to measure daily time spent in light physical activity (LPA), moderate physical activity (MPA) and vigorous physical activity (VPA), and sedentary behavior. Inclusion criteria of accelerometry data were: wearing accelerometer at least 10 hours day and having data for 5 or more days. Height and weight were measured without shoes and in light cloth. Body fat percent was measured with a bioimpedance analyzer. Physical maturation was also assessed. Multiple regression was used to test the association of CRF with sedentary behavior, LPA, MPA, VPA, and BMI. Gender, age, and pubertal stages were included as covariates. Test of statistical significance was set at alpha = .05 (2-sided test). Results: Average minutes of daily sedentary behavior, LPA, MPA, and VPA were 645.6 (SD 68.5), 137.3 (SD 45.1), 25.4 (SD 10.0), and 13.8 (6.3), respectively. Result of regression analysis (model adjusted r² .26) revealed that CRF was significantly related to gender (r .40), VPA (r .16), and BMI (.23). When BMI was replaced with body fat percent in the model, CRF was significantly associated with gender (-.30) and body fat percent (-.29; model adjusted r² .26). VPA was marginally related to CRF (p = .057). Conclusions: BMI, body fat percent, and VPA were predictors of CRF while LPA and MPA did not show significant relation with CRF in Chinese middle school students.

P2.02.07

DOES PORTION SIZE INFORMATION ON THE LABEL IMPACT FOOD CHOICE AND CONSUMPTION?

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SIG: Policies and environments

Purpose: The rise in overweight and obesity coincides with an increase in portion sizes. Consumers feel confused by conflicting messages about what and how much to eat. Labelled serving sizes is one source of information available to consumers, however many people find it hard to understand or interpret this information. The aim of this review is to investigate whether the labelled serving size information on food packages influences consumed amounts. Methods: Electronic database searches of MEDLINE, The Cochrane Library, EMBASE, CINAHL, Scopus, PsycINFO and Business Source Ultimate between 1980 and September 2017 (11/09/17) resulted in identification of 4,912 studies. Six studies were deemed eligible for inclusion through the screening process conducted by three independent reviewers. Results: The systematic review identified six studies that investigated the impact of the labelled serving size on food consumption. Changes in serving size labelling (n=3) resulted in positive health implications for consumers, whereby less discretionary foods were consumed, if serving sizes were smaller or if serving size information was provided alongside contextual information referring to the entire package. Two studies did not find significant differences between the conditions they tested and one study suggested a potentially negative impact, if the serving size was reduced. Conclusion: The labelled serving size likely influences consumption of discretionary foods. The impact of the labelled serving size seems to depend on whether the emphasis is put on the total energy per serving or the number of servings contained in a packet. Studies exploring the effect of serving size labels on intake of core foods or studies set in an ecological context are lacking in this review. The literature suggests that changes in the labelled serving size can impact on consumption and may result in unintended effects from a public health perspective. Further research is needed in both the experimental and ecological context to explore the effect of increasing/decreasing serving sizes of discretionary choices. If this were to occur, focus should be placed on total energy content per serving (if increased) or total number per serves depending on whether the serving sizes (if decreased).

P2.02.08

TELEVISION WATCHING, OTHER SEDENTARY BEHAVIORS, AND PHYSICAL ACTIVITY AMONG CHINESE ADOLESCENTS IN BEIJING

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SIG: Policies and environments

Background: Although there appears to be a plateauing of the obesity epidemic among children and adolescents in some developed countries, there is an alarming trend of overweight and obese children and adolescents in China and the capital city, Beijing ranks top. Insufficient participation in physical activity and excessive sedentary activities among Chinese adolescents are under-investigated. Methods Two middle schools from Chaoyang District of Beijing, were invited into the study. All students in grade 7 were invited to participate. In total, 539 students completed questionnaire during class time. Informed written consent was obtained from the schools, teachers, and students' parent/guardian. Participants completed a self-reported physical activity and sedentary behavior questionnaire. Multilevel logistic regressions were used to analyze associations between screen time and physical activity. Results Participants were 508 seventh-grade students, 285 (56.10%) males and 223 (43.90%) females, ranging in age from 11 to 15 (M=13.24, SD=0.56), with 97.5% aged between 13 and 14 years. Approximately 20% reached the physical activity recommendation of 60 minutes daily. Analysis of the distribution of physical activity indicated that 258 (50.19%) self-reported engaging in 5 days or more of moderate-to-vigorous physical activity (MVPA) in the previous week, with 76 (14.79%) engaging in 4 days, 99 (19.26%) engaging in 3 days, 39 (7.59%) engaging in 2 days, 17 (3.31%) engaging in 1 day, and 25 (4.86%) participants self-reporting that no MVPA was performed in the previous week. 8.86% watched TV =2 hours and 34.45% never did so. 33.86% spent screen (computer/ipad/ smart phone) time =2 hours and 6.10% never did so. Students who spent screen time 2 hours or more, were less likely to meet the recommendation of physical activity (OR=0.50, 95% CI 0.29 to 0.86). Sex differences were observed in moderate to vigorous physical activity (P<0.001, 25.96% for boys and 12.11% for girls), but not for screen time. Conclusion: Watching television is not a primary source of sedentary behavior in China’s context. Reducing other sedentary behavior, i.e., computer use, ipad, and smart phone use may be an effective strategy for improving physical activity participation, potentially leading to increased health and academic performance in adolescents.

P2.02.09
ADAPTING THE SCHOOL FOOD INITIATIVE FOR A LARGE URBAN SCHOOL DISTRICT IN COLORADO (USA) BY USING A COMPREHENSIVE NEEDS ASSESSMENT
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SIG: Policies and environments

Purpose LiveWell Colorado's School Food Initiative (SFI) offers school districts throughout the state of Colorado (USA) culinary, operations, and marketing training over the course of 18 months. The goal of the SFI is to provide food service staff with the skills-based training required to incorporate fresh/whole ingredients into school lunches. A previous multi-year evaluation of the SFI found it to be effective in small, rural districts throughout Colorado. However, the SFI had yet to be tested in large, urban school districts. In 2017, the SFI was tailored to accommodate the unique needs of Denver Public Schools, Colorado's largest urban school district serving approximately 90,000 students. Evaluation of this work will be presented. Methods The mixed methods evaluation began with a comprehensive needs assessment at baseline to determine the highest priority areas for intervention within the urban district. This included a Quantitative Menu Analysis (QMA) to examine the level of food processing in the current menu, interviews with key leadership to understand district policies and practices, and a survey with kitchen leaders to identify staff challenges. Pre-post measurement of the intervention, a 4-part kitchen manager training series, is currently underway to assess the degree to which the SFI impacts kitchen operations and food quality. Results At pre-assessment, QMA results indicate that 56% of the ingredients (n=600) were fresh/scratch. Leader interviews (n=4) and surveys (n=149) identified the need for training in the following categories: recipe accuracy and execution, time management, kitchen team interpersonal relations, and kitchen manager leadership skills. A pre/post evaluation, including implementation measures, of the strategies covered in the kitchen manager training series will be reported. Conclusions The SFI has shown to have impact on small, rural school district's ability to make improvements in culinary, operational and
marketing efforts. These improvements help school districts meet the United States Department of Agriculture (USDA) National School Lunch Program standards while also maintaining daily school lunch participation rates, demonstrating that students are accepting of the new, healthier options. This study further highlights SFI’s applicability to districts of all sizes within both urban and rural settings.

**P2.02.10**

**PHYSICAL EXERCISE INTERRUPTION IN CHINESE ADULTS: ASSOCIATED FACTORS FROM A NATIONAL SURVEY**

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**SIG: Policies and environments**

Objective: According to the different physical exercise patterns, to explore the prevalence and associated factors of physical exercise interruption in Chinese adults. Methods: Study data were extracted from a national cross-sectional survey in Chinese adults aged over 20 years in 2015. In the survey, 40,641 households were selected using probability proportionate to size (PPS) sampling. The household interview was adopted to collect data. A total of 81,828 participants were recruited in the survey, in which 32,878 (40.2%) participants reported the exercise habits. Of these, 5,133 (15.6%) participants (2631 males, 2522 females) who reported to have interruption of physical exercise were finally included into the analysis in the current study. Exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and path analysis were performed to explore the associated factors of such interruption in SPSS 19.0 and AMOS 17.0. Results: 1) Males had lower interruption rate than females. The decreased interruption rate was observed with increase of age, whilst, the increased interruption rate was detected with increase of attained education level. Participants with group exercise showed lower interruption rate than those with individual exercise. 2) Results of EFA showed that four factors were identified from the 14 study variables in relation to the development of physical exercise habit: healthy elements (including physical illness and sport injury), psychological factors (including sport experience, inert support, and perceived health benefit), social factors (including occupation, housework status, social economic status, leisure time, and physical education), and environments related to exercise (including sports venues and facilities, exercise guidance, peer support, and distance to exercise facilities). 3) Based on the four identified factors, the unstructured model on the interruption of physical exercise was developed using structure equation model. Model fit supported the findings of EFA. Four factors were significantly associated with physical exercise interruption with the coefficients at 0.52, 0.42, 0.57 and 0.22, respectively. Conclusion: The present study revealed the prevalence of physical exercise interruption in Chinese adults and its associations with four blocks of factors. Further interventions targeting these factors are needed to prompt people’s persistent exercise behaviors.

**P2.02.11**

**PSYCHOSOCIAL AND ENVIRONMENTAL FACTORS OF PHYSICAL ACTIVITY AMONG CHINESE ADOLESCENTS IN BEIJING: TOWARDS SOLUTIONS TO RISING OBESITY EPIDEMIC**

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**SIG: Policies and environments**

Background: Insufficient participation in physical activity have been observed among Chinese adolescents. The roles of social and environmental factors in shaping physical activity among Chinese adolescent is under-investigated. The purpose of the study was to apply health behavior theories to understand the psychosocial and environmental influences of physical activity participation among adolescents in Beijing. Methods Two middle schools from Chaoyang District of Beijing, were invited into the study. All students in grade 7 were invited to participate. In total, 539 students completed questionnaire during class time. Self-administered questionnaire collected physical activity as well as psychosocial and environmental factors. The target behavior was moderate-to-vigorous physical activity (any activity that is energetic but not
exhausting to any activity at a higher intensity that causes your heart to beat rapidly, and make you huff and puff) on a regular basis. Results Participants were 508 seventh-grade students (56.10% boys and 43.90% girls), ranging in age from 11 to 15 (M=13.24, SD=0.56), with 97.5% aged between 13 and 14 years. Approximately 20% reached the physical activity recommendation of 60 minutes daily and sex differences were observed (P<.001, 25.96% boys and 12.11% girls). The psychosocial and environmental factors-attitude, subjective norm, perceived behavior control, self-efficacy, parental modeling, family belief, parental support- had consistent associations with the physical activity intention and outcome (P<0.001). The most frequently mentioned pros were both physical health and non-health consequences (e.g., stay in good shape (74.60%), weight management (73.63%), make new friends (71.99%) , and make me good at PE (70.51%)), and cons were "sweating" (62.60%),"painful" (44.55%), and "tired" (34.19%). Mum (66.45%) and dad (66.24%) were most important referents, while about 18% agreed that mum/dad do not go with them for physical activity and 20% agreed that "mum/day thinks education/study is more important than physical activity". Only one quarter agreed that they are confident to participate in physical activity when having assignments or exams. Conclusion: Results support context-specific psychosocial and environmental factors in China. Targeting environmental factors that may promote opportunities for physical activity as well as adolescent decision-making in China's contexts may help promote physical activity, potentially leading to increased overall physical activity and decreased obesity epidemic in China.

P2.02.12 DETERMINANTS OF PARK-BASED PHYSICAL ACTIVITY AMONG ELDERLY IN A MIXED-CULTURAL SAMPLE

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SIG: Policies and environments

Purpose: With respect of "healthy aging" and "active aging" urban parks are important physical activity (PA) places for senior city residents. Based on a social ecological model, this study aimed to (1) examine the association of psychosocial correlates and perceived park environmental correlates with park-based PA of elderly; (2) evaluate the moderating effect of culture (city) on the associations of correlates with park-based PA of elderly. Methods: With a mixed-cultural sample consisting of participants from Leipzig in Germany and Hong Kong in China, a cross-sectional study including face-to-face survey was conducted in six parks in Hong Kong and Leipzig. Elderly visitors aged 60 and older who are physically active (HK: n=317, Mage = 69.96, SD = 6.81; Leipzig: n=311, Mage = 72.06, SD = 6.78) were recruited to report park-based PA, personal aspects, psychosocial aspects (self-efficacy, social support, perceived benefits, perceived barriers and enjoyment) and perceived park environmental aspects of PA (park safety, attractiveness, park features, park time distance). Descriptive analysis and multiple linear regressions were used to analyze data with SPSS 22.0. Results: When controlling for city, gender, marital status, education level and BMI it was revealed that except social support, all other correlates were significantly related to energy consumption of park-based PA. For psychosocial predictors, energy consumption of park-based PA was positively associated with self-efficacy, enjoyment, and perceived benefits, but negatively associated with perceived barriers. For perceived park environmental predictors, energy consumption of park-based PA was positively associated with perception of park safety, park attractiveness and park features, but negatively associated with perceived park time distance. When controlling for personal variables, psychosocial and environmental factors the examination of moderating effect of city on the associations of perceived park features and perceived park time distance with energy consumption was not significant in Hong Kong, whereas a significant positive relationship for park features and a negative relationship for park time distance with energy consumption occurred in Leipzig (R2=.27, p<.05). Conclusion: This study provides evidence that park-based PA of elderly is significantly influenced by perceived psychosocial and environmental characteristics. Moreover, an interaction of environmental factors and cultural conditions are indicated.

P2.02.13 ENCOURAGING HEALTHY NUTRITION IN PURCHASES IN AN ONLINE GROCERY SETTING USING
EXPERIMENTAL ECONOMICS (NUSMART)
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SIG: Policies and environments

Objective: To tackle rising rates of obesity and chronic diseases, effective strategies promoting healthier diets are needed. The Singapore Health Promotion Board utilizes the Healthier Choice Symbol, a front-of-pack label classifying certain foods as “healthier” options among products within the same category (e.g. Dairy Drinks). A competing approach labels healthier options across all product categories, like the UK’s Traffic Light System. To date, it remains unclear which strategy (within or across category labeling) is more effective in encouraging lower calorie purchases. This study is the first to quantify the difference in food purchasing patterns between these two competing approaches. Methods: A simple 'lower in calories' logo was designed and implemented in an online grocery store (NUSMart). Three different shopping conditions (arms) were tested: Arm 1) no logo labelling, Arm 2) within category labels, and Arm 3) across category labels. Arm 2 displays the logo on the 20% of products within each product category with the lowest calories per serving. Arm 3 displays the logo on the 20% of products across all categories with the lowest calories per serving. This ongoing study follows a 3×es;3 crossover design, with 168 participants exposed once to all three shopping conditions in random order, and where one of the three orders is actually delivered. The proportion of labelled products purchased (primary outcome), total calories and dollars spent (adjusted for household size, secondary outcomes), calories per dollar spent (secondary outcome), and calories per serving (secondary outcome) will be calculated using participants’ sales orders for analyses. Results: Preliminary data analysis (n=73) reveals that the within category approach is more effective in increasing demand for "lower calorie" products (Arm 2, n=23, 24.05%) than both the across category strategy (Arm 3, n=24, 16.6%) and control (Arm 1, n=26, 22.18%). Conclusions: The results from this study will provide insight into the efficacy of competing, category-dependent positive labelling strategies. These results will benefit policy-makers looking to encourage lower calorie purchases both locally and abroad.

P2.02.14
IMPACT OF FOOD FORTIFICATION ON CHILD GROWTH AND DEVELOPMENT DURING COMPLEMENTARY FEEDING
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SIG: Policies and environments

Impact of Food Fortification on Child Growth and Development During Complementary Feeding David Omondi Okeyo, MSc, PhD, MPH Chief Executive officer, Kenya Nutritionists and Dieticians Institute and Senior Researcher School of Public Health, Maseno University, P.O. Box 20436-00100, Nairobi. Email : jandigwa@yahoo.co.uk Abstract There appears to be increasing evidence of the relationship between infant feeding practices and growth during infancy. Effective complementary feeding has demonstrated observable positive effect on linear growth of a child within the first 24 months of life. It appears that improved complementary feeding is directly proportional to linear growth of a child. Fortification of commonly used food vehicles provides opportunity for increasing nutrient intake during infancy and has potential to improve growth and development dimensions. This review scanned through 186 articles and adopted mini-systematic review through common search engines mainly PubMed, BioMed Central and google scholar. The result based on articles which met the minimum selection criteria identified milk, iodine, maize meal porridge and vegetable oils as recurring fortification vehicles in the context of complementary feeding. Significant impact of fortification on linear and cognitive growth was demonstrated across the included empirical studies. However, the review reflects outcomes that still do not demonstrate direct cause and effect relationships and rather implied meaning. Key Words: Food, Fortification, Child Growth, Development, Complementary feeding

P2.02.15
EXPLORING YOUNG AUSTRALIANS’ EXPOSURE TO FOOD AND BEVERAGE ADVERTISING USING
WEARABLE CAMERAS
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SIG: Policies and environments

Purpose Advertising is influential in purchasing decisions, and this is problematic when the advertising is skewed towards unhealthy foods and drinks. This study aimed to explore the number and types of food and beverage advertisements that 18-30 year-old Australians are exposed to in their everyday environments. Methods The Measuring Young Adults’ Meals Study aims to investigate the eating behaviours of 1,000 18-30 year-olds in NSW, Australia. As part of this study, a sub-study of 200 participants are wearing an Autographer digital camera for three days. The camera captures images every 30 seconds that the participant is awake. Images are manually coded to identify the food and beverage (including alcohol) advertisements that the participant is exposed to during the study period. Advertisements are coded for setting, marketing medium and whether the food is considered core (the five food groups), discretionary (energy-dense, nutrient poor foods), miscellaneous (e.g. dietary supplements, tea or coffee) or brand (no product). Results To date, 40 participants had completed the study. The photographic data showed that participants were exposed to 393 food advertisements. The three settings where participants were exposed to the most food and beverage advertisements were in streets (18%, n=70), supermarkets (18%, n=69) and at home (18%, n=69). The most frequent mediums were signs (31%, n=123), on computers (18%, n=71) and price promotions, such as ‘buy one get one free (10%, n=38). The highest proportion of advertisements (45%, n=178) were for discretionary foods, and 26% (n=102) were for core foods. An additional 7% (n=28) were mixed (e.g. an advertisement with core and non-core foods). In total, 51% of advertisements (n=200) contained at least one discretionary food. Conclusions The food advertising environment that young adults inhabit is encouraging consumption of unhealthy foods. This is a significant public health issue since the overweight and obesity epidemic is rising. The Australian government should investigate regulatory actions to ban or restrict food and beverage advertising; shift advertising from discretionary to core foods or utilise new interventions to advocate for positive dietary behaviour directed at young adults.

P2.02.16
BARRIERS AND FACILITATORS TO IMPLEMENTATION OF CALORIE MENU LABELLING INTERVENTIONS IN FOOD SERVICE ESTABLISHMENTS: A MIXED METHODS SYSTEMATIC REVIEW
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SIG: Policies and environments

Purpose: Calorie menu labelling is continuing to gather public and legislative support as one of the potential environmental strategies for addressing the obesity pandemic. However, issues relating to implementation have been reported in countries where calorie menu labelling has been introduced on a voluntary or mandatory basis. The aim of this mixed methods systematic review is to synthesise the empirical evidence on the barriers and facilitators to implementation of calorie menu labelling interventions in food service establishments. Methods: This review will use the ‘best fit’ framework synthesis approach to synthesise qualitative, quantitative and mixed methods evidence. Peer-reviewed and grey literature will be accessed through PubMed, EMBASE, CINAHL, PsycINFO, Web of Science, Scopus, Google, Google Scholar, OpenGrey, RIAN, EthOS, ProQuest, WorldCat, Networked Digital Library of Theses and Dissertations, Open Access Theses and Dissertations, and public health organisation websites. Screening reference lists, citation chaining and contacting authors of all included studies will be undertaken. Only studies published in English will be included, with no restriction on study design or publication year. Study quality will be assessed using the Mixed Methods Appraisal Tool. A combination of deductive coding, using the Consolidated Framework for Implementation Research as the a priori framework and inductive analysis, using secondary thematic analysis, will be used. The overall process will assist in the construction of a new evidence-based conceptual model regarding the implementation of calorie menu labelling interventions in food service establishments. The new conceptual model will be assessed for bias
and a sensitivity analysis performed. Results: The review commenced in November 2017, with an anticipated completion date in June 2018. Preliminary results will be outlined during presentation of this abstract. Conclusion: Given the growing consensus that a systemic, sustained portfolio of obesity prevention strategies, delivered at scale, is needed to address the obesity epidemic, more understanding of the practical issues relating to implementation of such strategies is required. Findings from this review will be used to develop a set of best-practice guidelines for policy makers, public health workers and food service establishment owners to enhance the adoption, implementation and sustainability of calorie menu labelling interventions across countries world-wide.

P2.03: SIG Socio-economic inequalities (Grand Foyer)

P2.03.01
THE ODDS OF BEING FOOD INSECURE FOR U.S. HISPANIC IMMIGRANT HOUSEHOLDS
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SIG: Socio-economic inequalities

Objective Food insecurity, or inadequate sources of food to live a healthy active lifestyle, disproportionately affects Mexican Americans with rates as high as 23%, compared to national levels at 14% (Coleman-Jensen et al., 2015; Rabbitt et al., 2016). Food insecurity is associated with increased risk for poor health and compromised quality of life. Social and environmental determinants have been key predictors of food insecurity, including chaos in the home and lack of mealtime planning (Fiese et al., 2016; Evans, 2004). Low-income families are more likely to encounter chaotic (frenetic activity, high levels of noise, lack of structure) living conditions than middle-, upper-income families (Evans et al., 2005). Low-income families have also reported seldom or never planning ahead for meals, and mealtime planning was associated with greater nutrient value of home meals (Hersey et al., 2001). Therefore, this study seeks to replicate previous report documenting the relation between chaos, mealtime planning and food insecurity (Fiese et al., 2016) with Mexican American Immigrant families. Methods This study used the larger Multi-State Abriendo Caminos Intervention program data. Mexican immigrant mothers (N= 125) completed surveys at pre-intervention time points from Illinois and California sites. A series of logistic regression models were estimated to assess the association between household food insecurity (Nord, 2011), household chaos (Matheny et al., 1995) and mealtime planning (Fiese et al., 2012), controlling for demographic factors (U.S. and Mexico education level, marital status, household size, and income). The first model included only the socio-demographic variables. Models two and three also included the separate effects of family chaos and family mealtime planning, respectively. Results Forty percent of the households were classified as food insecure (5% very low food secure). The estimates for the logistic regression model suggest that families with less than $30,000 of household income are 70% more likely to be food insecure. Every unit increase in household chaos is also associated with 7% more likely chance of being food insecure. Conclusion Similar to the Fiese et al., 2016 study, food insecure households reported more chaos regardless of socio-demographic characteristics; though unlike the previous study mealtime planning is not a significant predictor.

P2.03.02
EFFECTS OF EPOCH LENGTH AND ACTIVITY CUT-POINTS ON PHYSICAL ACTIVITY ESTIMATES AMONG EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM PARTICIPANTS IN THE UNITED STATES
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SIG: Socio-economic inequalities

Objectives: The Expanded Food and Nutrition Education Program (EFNEP), a United States, federally-funded program, provides nutrition and physical activity (PA) education to low-income youth and their adult caregivers. The purpose of this investigation was to compare the effects of accelerometer epoch length and activity cut-points on estimates of time spent in different PA levels among a small sample of EFNEP
P2.03.03
ARE DIETARY INEQUALITIES AMONG AUSTRALIAN ADULTS CHANGING? A NATIONALLY REPRESENTATIVE ANALYSIS OF DIETARY CHANGE ACCORDING TO SOCIOECONOMIC POSITION BETWEEN 1995 AND 2011-13

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SIG: Socio-economic inequalities

Background: Increasing inequalities in rates of obesity and chronic disease may be partly fuelled by increasing dietary inequalities, however very few nationally representative analyses of socioeconomic trends in dietary inequalities exist. The release of the 2011-13 Australian National Nutrition and Physical Activity Survey data has, for the first time, allowed investigation of change in dietary intake according to socioeconomic position (SEP) in Australia using a large, nationally representative sample, compared to the previous national survey in 1995. Purpose: This study examined change in dietary intakes of energy, macronutrients, fiber, fruits and vegetables among Australian adults between 1995 and 2011-13, according to SEP. Methods: Cross-sectional data were obtained from the 1995 National Nutrition Survey, and the 2011-13 National Nutrition and Physical Activity Survey. Dietary intake data were collected via a 24-hour dietary recall (n=17,484 adults) and a validated dietary questionnaire (n=15,287 adults). SEP was assessed according to educational level, equivalized household income, and area-level disadvantage. Survey-weighted linear and logistic regression models, adjusted for age, gender and smoking status, examined change in dietary intakes over time. Results/findings: Dietary intakes remained poor across the SEP spectrum in both surveys, as evidenced by high consumption of saturated fat and total sugars, and low fiber, fruit and vegetable intakes. There was consistent evidence (i.e. according to = 2 SEP measures) of more favorable changes in dietary intakes of carbohydrate, polyunsaturated and monounsaturated fat in higher, relative to lower SEP groups, particularly in women. Intakes of energy, total fat, saturated fat and fruit differed over time according to a single SEP measure. There were no changes in intake of total sugars, protein, fiber or vegetables according to any SEP measures. Conclusions: There were few changes in dietary intakes of energy, most macronutrients, fiber, fruits and vegetables in Australian adults between 1995 and 2011-13 according to SEP. For carbohydrate, polyunsaturated fat, and monounsaturated fat, more favorable changes in intakes occurred in higher SEP groups. Despite the persistence of suboptimal dietary intakes, limited evidence of widening dietary inequalities is positive from a public health perspective.
AN EVIDENCE-INFORMED RESOURCE TO SUPPORT LAND USE FOR HEALTHY BUILT FOOD ENVIRONMENTS IN AUSTRALIA; TARGETING TOWN PLANNERS, URBAN DESIGNERS, COMMUNITY DEVELOPMENT STAFF, HEALTH PROFESSIONALS AND COMMUNITY MEMBERS

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SIG: Socio-economic inequalities

Objective The National Heart Foundation commissioned Edith Cowan University and HASSELL to expand their Healthy Active by Design website to incorporate a ‘Healthy Food’ design feature. The project provides online guidance to local government staff, elected members, planners and developers from public and private sectors. The scope of the design feature includes, (i) planning and design of food retail facilities, community amenities; and (ii) promoting availability and accessibility to healthy food, making for healthier communities. Land use guidelines to support food environments are currently under-developed in Australia. More research and advocacy to inform the policy agenda is urgently required. Methods A conceptual framework underpinned the scoping, including natural, built, economic and socio-cultural environmental considerations. Design outcomes included ‘Evidence’, ‘Advocacy Action Prompter’, ‘Case Studies’, ‘Policies’ and ‘Examples’ sections. Evidence identified in the literature was separated into ‘food retail facilities’, ‘community amenities’, ‘transport opportunities’, which examined the relationship between community food environment concepts, food purchasing and consumption behaviours. The Advocacy Action Prompter highlighted best practice evidence-based considerations to create healthy built food environments across existing design features. Case studies showcased local, national and international examples; links to relevant policies were included. Results Research indicates a higher proportion of healthy food outlets increase purchasing and consumption of healthy food. Conversely, people living in areas of greater disadvantage have poorer access to healthy food outlets and experience poorer health outcomes. Preservation of peri-urban agriculture and creation of food hubs support local/regional food systems. Farmers’ markets, edible landscapes and community gardens increase purchasing and consumption of fruit and vegetables, increase social connectivity and sense of belonging. Locating healthy food retail outlets on public transport routes, or increasing public transport routes to existing outlets, can reduce access barriers for local residents. The new design feature can be explored here: http://www.healthyactivebydesign.com.au/design-features/healthy-food?state_location=30 Conclusions This new resource supports target groups to prioritise healthy food access and availability via retail facilities, community amenities and transport opportunities. Thereby, creating neighbourhoods that support healthy eating behaviour. The resource is the first of its kind in Australia and is a leading example of cross-sector consideration of current and future population health.

P2.03.05 WHAT INTERVENTION ASPECTS DO ADOLESCENTS PERCEIVE AS MOST INFLUENTIAL?
EXPLORING PARTICIPANTS' EXPERIENCES OF A HEALTH PROMOTING INTERVENTION FOCUSING ON FOOD AND PHYSICAL ACTIVITY, SET IN A MULTICULTURAL AND LOW SOCIOECONOMIC AREA IN SWEDEN.

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SIG: Socio-economic inequalities

Objective: To explore the adolescents' experiences of participating in a health promoting school-based intervention regarding food and physical activity habits, with a focus on empowering aspects and opportunities for learning. Methods: The school was located in a Swedish low socioeconomic and multicultural area. The area was also characterized by a poorer self-rated health and a shorter life expectancy compared to the municipality average. Focus-group interviews were conducted with 23 girls and 20 boys, between 14 and 15 years in age. To triangulate, we also conducted a focus group interview with the adolescents' classroom teachers' (n = 4). The teachers had partaken in the intervention by for
example assist during intervention activities, and we aimed to investigate their perceptions regarding how they had observed the adolescents' experiences. The focus group interviews were conducted after two years of intervention, and they were audio recorded and transcribed verbatim. The transcriptions were
categorized using qualitative content analysis. Findings: A theme was generated that traversed with all the
categories: Unlocking one's potential: deciding, trying, and practicing together, in new contexts, using
reflective tools. The adolescents described that they valued influencing and deciding on intervention
components such as choosing intervention activities and group constellations. The adolescents also
reported that they appreciated collaborating with peers in active learning activities such as practicing
sports and preparing meals. The adolescents also expressed that acquiring new health information and
trying new activities was inspiring, and the use of pedometers and photo food diaries as helping them to
reflect over their health behaviours. These experiences were also observed by their classroom teachers.
Conclusions: To promote greater involvement and engagement as well as to stimulate learning, school-
based health promotion interventions targeting adolescents could enable active learning activities in
groups, use visualizing tools to facilitate self-reflection, and allow the adolescent participants to decide
over which intervention activities that are most useful to them.

P2.03.08
ADAPTATION OF MEASURES AND PROCEDURES TO ASSESS DIETARY BEHAVIORS AND
BEHAVIORAL CORRELATES AMONG FOOD PANTRY CLIENTS IN THE UNITED STATES
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SIG: Socio-economic inequalities

Objective To develop a dietary assessment measure and behavioral survey tailored to a food pantry
population across the United States. The study assessed patterns of dietary behaviors and factors related
to dietary quality, and piloted survey administration procedures suitable for food pantry settings. Methods
The survey was developed in four main phases. First, researchers discussed the primary constructs and
variables to be assessed and compiled a draft survey based largely on existing measures. The survey
included a dietary screener and measures of barriers to fruit and vegetable (FV) intake, FV self-efficacy,
attitudes about pantry FVs, home food availability, and perceived pantry food availability. Second, this draft
survey underwent cognitive interviewing with food pantry clients to assess comprehension and
interpretability of items among this lower-income population. Third, the survey was refined (e.g., some
questions simplified, others eliminated) and pilot tested with food pantry clients in pantries associated with
three large food banks across the United States (Atlanta, Buffalo, and San Diego). To identify necessary
procedural improvements, iterative feedback was sought from survey administrators. Fourth, the survey
underwent psychometric analysis (item response theory and classical test theory) and further refinement.
Correlations between scales and food groups were assessed with an alpha level of 0.05. Results Study
participants (n=246) were mostly female (68%), >55 years old (53%), had high school education (52%),
and yearly household incomes =$25,000 (88%). Final scales were unidimensional, item information curves
indicated adequate estimation of latent constructs, and Cronbach's alphas ranged from 0.71-0.90. Scales
were largely significantly correlated with daily intake frequencies of FV, "junk food," "fast foods," whole
grain foods, and sugar sweetened beverages, in the directions expected and with significant r2 ranging
from 0.02-0.24. Conclusions Dietary assessment typically does not adhere to a one size fits approach, and
surveys need to be modified accordingly and psychometrically tested to ensure that we have proper tools
to assess diet and related factors in specific populations. This survey provides a resource for researchers
and practitioners interested in assessing patterns of dietary behaviors and correlates among food pantry
clients, and may also be appropriate for other low-income populations.

P2.03.09
CULTURAL BACKGROUND AS A RISK FACTOR FOR POORER FUNDAMENTAL MOVEMENT SKILL
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SIG: Socio-economic inequalities

Purpose: Children’s fundamental movement skill levels (FMS) are lower than desired in many countries; additionally, few studies have investigated cultural associated variability of FMS within a country. A representative state survey of Australian students shows girls with low socioeconomic status were less competent in FMS compared with high SES peers and for boys, there was a strong association between low FMS and being from a non-English-speaking background. As FMS is predictive of physical activity, and Asian children have been reported as less physically active compared to Europeans, Asian children may be an important target group. This study aimed to compare the FMS of children from Culturally and Linguistically Diverse (CALD) backgrounds and examine the correlates of FMS in a CALD Australian sample. Methods: A total of 261 children (122 males) aged 9-to-11 years from schools in low socioeconomic areas were divided into two CALD samples based on language spoken at home: English-European (n = 105) and South-Western and Central Asian (n = 156). Height, weight, FMS (Test of Gross Motor Development-2), moderate-to-vigorous physical activity (MVPA; waist-worn ActiGraph accelerometer for 7-days) and cardio-respiratory fitness (20m multistage shuttle run test) were measured directly. Sex, age, language and perceived sport competence (CY-PSPP) were self-reported. Independent sample t-tests assessed age, BMI, FMS and perception differences by CALD group. Linear mixed model (accounting for school clustering) regression analyses examined influence of correlates on FMS (object control and locomotor). Results: Asian boys and girls had lower object control skills (35.5 v 37.2; CI [0.17,3.18]; p < 0.03). Fitness, physical activity and sport competence perception were each positively associated with object control skill (p < 0.05). However, adjusting for these variables (and age and BMI) did not remove the CALD group effect (B = -2.05, SE = 0.65, p = 0.002). There were no differences in locomotor skills. Conclusions: Asian-Australian children living in the same environment as other Australian children possessed lower object control skills. Given the important associations of FMS with fitness, physical activity and perceived sports competence, FMS development of Asian-Australian children living in Australia may require special attention.

P2.03.10
WALKING AS A COST-EFFECTIVE MEANS OF INFLUENCING ANTHROPOMETRY AND BLOOD PRESSURE IN BLACK SOUTH AFRICAN WOMEN
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SIG: Socio-economic inequalities

Objective In the context of a growing obesity pandemic in sub-Saharan African countries, little is known of how to lower risk of related diseases, particularly in black South African women who have the high prevalence of the disease in the region. Methods A randomised control trial of was conducted using 115 women employed at the University of Venda, Limpopo province. 49 of these participants were randomly selected into an intervention group, which walked for 30 minutes, 3 days per week for a period of 12 weeks on treadmills based in the university gym. The control group were asked to continue with usual activities. Baseline and follow-up simple anthropometry, blood pressure, body size discrepancy, and physical activity were collected in all participants. Results Body composition and blood pressure were significantly lowered in the intervention group, while these measures increased in the control group (all p<0.05). The results showed that most women in the study have a desire for thinness, a finding that was not changed at follow-up. Conclusion Our data demonstrate that acculturation is occurring in the study population, and that walking is an ideal and cost-effective tool to segue into lower disease risk.

P2.03.11
WHAT IS THE RELATIONSHIP BETWEEN SOCIAL CLASS AND OBESITY? A SYSTEMATIC LITERATURE REVIEW
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Purpose: Social class refers to real-life groups of people who share common class-based lifestyles, values, and identities. While objective measures of socioeconomic status (SES) are frequently studied, the literature examining obesity and self-perceived or subjective social status (SSS) has not yet been synthesised. The aim of this study was to systematically review the literature investigating the relationship between social class and obesity. Methods: The review was conducted in line with PRISMA guidelines. Five databases were searched: Medline (EBSCO), CINAHL (EBSCO), Scopus, Web of Science and ProQuest using terms for social class and adiposity. Eligible studies were those of observational design, published in English between 1989 and 2017, measuring SSS as the primary exposure, and adiposity or change in adiposity as the primary outcome. Abstract screening, quality assessment and data extraction were performed in duplicate, with discussion used to reach consensus on any discrepancies. Results: The search revealed 4690 unique studies for title and abstract screening. Ten studies met the inclusion criteria providing data on 106,265 participants (60,852 females). Three studies examined children and adolescents and the remainder examined adults. All studies were published from the year 2000 onwards. Two studies were of longitudinal design and the remainder were cross-sectional. Eight studies used a version of the self-anchoring ladder to assess social status, and two used a categorical variable on self-selected social class. The longitudinal studies assessed change in weight or BMI, while the cross-sectional studies assessed single measures of adiposity including waist, WHR or BMI. Nine studies also assessed objective measures of SES. There was a significant inverse relationship between SSS and weight and BMI change for females in the longitudinal studies, and between SSS and BMI and measures of central obesity in white females but not males in the cross-sectional studies. Social status influenced adiposity independently of objective measures of SES in several studies. Conclusions: There was a consistent finding of an inverse relationship between SSS and adiposity for women, but not men, particularly in developed nations. The concept of social class may influence obesity aetiology separately to SES, making it an important measure to include in future research.

P2.03.12
RELATION OF SOCIOECONOMIC STATUS AND RESIDENTIAL AREA TO PHYSICAL ACTIVITY AMONG JUNIOR HIGH SCHOOL STUDENTS IN TAIWAN
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Purpose: The purpose of this study was to understand the relation of socioeconomic status, residential area, and physical activity of students using ActiGraph wGT3X-BT. Methods: In order to measure their moderate to vigorous physical activity (MVPA), they were required to wear ActiGraph wGT3X-BT after class for 7 days. Based on the socioeconomic status and residential area, our study conducted an experiment in junior high school, and the number of respondents in the survey was 167, including 97 male students and 70 female students, who were surveyed separately. We analyzed the data to obtain basic information classified by different items as follows: grade (37 ninth-grade students, 92 eighth-grade students, and 38 seventh-grade students), residential area (86 urban students and 81 rural students), and socioeconomic status (66 students of high-level, 39 students of middle level, and 62 students of low level). The data were analyzed through independent sample T-test and one-way analysis of variance to examine the differences based on socioeconomic status and residential area. Result/findings: Four findings were discovered in our study as follows: 1) Students with middle and high-level socioeconomic status took more time on MVPA than did students with low-level socioeconomic status. 2) Students residing in the urban area took more time on MVPA than did students residing in the rural area. 3) Male students took more time on MVPA than did female students. 4) Ninth-grade students took more time on MVPA than seventh- and eighth-grade students. Conclusions: These results are consistent with the findings of Borraccino et al.’s study (2009), which showed that the higher the socioeconomic status, the higher the MVPA. Keywords: MVPA, socioeconomic status, residential area
P2.03.13 - SHORT-LISTED FOR THE BEST POSTER PRESENTATION AWARD BY A STUDENT
DO SCHOOL-BASED PHYSICAL ACTIVITY INTERVENTIONS HAVE EQUITABLE EFFECTS? A META-ANALYSIS OF CLUSTER RANDOMIZED CONTROLLED TRIALS WITH ACCELEROMETER-ASESSED DAILY PHYSICAL ACTIVITY
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SIG: Socio-economic inequalities

Objective: To determine if school-based physical activity interventions are effective at changing children's accelerometer-assessed moderate-vigorous physical activity (MVPA) across the full day, and if intervention effects vary by gender or socio-economic position. Methods: Six electronic databases were searched for school-based, cluster-randomized controlled interventions, aiming to increasing physical activity in children (6-18 years of age) across the full day, utilizing accelerometer measurements. All screening and data extraction stages were conducted in duplicate. Where relevant, missing data on mean and standard deviations for minutes of MVPA at all time points was requested directly from authors by email. Intervention effects were calculated using standardized mean difference for MVPA across the full day. Random effects meta-analysis models were run to investigate the main intervention effect, the effect by gender (girls compared to boys) and by socioeconomic position (SEP) (low, middle, high). Heterogeneity in effectiveness was explored utilizing pre-planned subgroup analyses and a series of meta-regressions. Results: A two-staged literature search process identified 14,479 publications, with 25 unique interventions included. Relevant data was obtained from 17 trials that were included in the final analyses. The main effect meta-analysis revealed a non-existent, non-significant effect (SMD:0.02, 95%CI:-0.07–0.11) (n=17). There was no evidence of differential effects by gender, with similarly trivial and non-significant effects in both boys (SMD:0.05, 95%CI:-0.09 –sh;0.19) and girls (SMD:0.07, 95%CI:-0.07–sh;0.21) (n=17). Analogously, there was a trivial and non-significant effect in all three SEP groups: low (SMD: -0.01, 95%CI:-0.12-0.11), middle (SMD: -0.06, 95%CI:-0.17–sh;0.05) and high (SMD: -0.01, 95%CI -0.13-0.11) (n=15). Meta-regressions of differential effects by gender and SEP were not significant, as were all meta-regression and subgroup analyses performed to explore heterogeneity in effectiveness. Conclusion: This meta-analysis indicates that school-based physical activity interventions are not effective in increasing MVPA when measured with accelerometer across the full day. Additionally, no evidence of differential effects by gender or SEP is revealed. These results suggest that active components of interventions are not reaching children as intended. Further process evaluations may shed light on why this is. Critical reflection on the accumulated evidence is needed to understand why current efforts are not effective before continuing to develop and evaluate new interventions.

P2.04: SIG Theories of motivation (Grand Foyer)

P2.04.01 - SHORT-LISTED FOR THE BEST POSTER PRESENTATION AWARD BY A STUDENT
PRELIMINARY VALIDATION OF GOAL CONTENT FOR WEIGHT MAINTENANCE SCALE
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SIG: Theories of motivation

Objective: Research has shown that weight loss is difficult to maintain over time. It is, therefore, crucial to understand which factors are key to support long-term behaviour change. Self-Determination Theory (Deci & Ryan, 2000) propose that goal content's quality is a significant predictor of behaviour maintenance (e.g. physical activity). There are scales to measure goal content and reasons for exercise (Goal Content for Exercise Questionnaire) but none assesses goal content for Weight Maintenance. The aim of this study was to conduct a preliminary validation of a Goal Content for Weight Maintenance Scale (GCWMS). Methods: The GCWMS was administered to a Portuguese speaking sample of 253 weight loss
maintainers (5% of weight loss in the last 12 months; 53% were males; mean age = 39.8; SD=9), as part of a large multicentre trial targeting weight loss maintenance through digital technologies - the NoHoW project (H2020 funded trial). The items in GCWMS were derived from two well-validated scales of goal content and motives for exercise (GCEQ and EMI-2, respectively) scale, and were developed by a panel of specialists in psychology and psychometrics, obesity and behaviour change. The scale comprises 16 items that assess the reasons why people want to maintain their weight loss in four key goal areas: Physical Fitness and Health, Appearance-Focused/Image, Social Recognition, Challenge/Achievement.

Factorial validity of the GCWMS was assessed by means of Confirmatory Factor Analysis, which assesses data fit to the hypothesized theoretical model, and internal consistency was assessed by means of Cronbach's alphas. Results: The scale adjustment showed reasonable fit: X² (98) = 433.55, p<.001; Root Mean Square Error of Approximation (RMSEA; <.10) = .12; Comparative Fit Index (CFI; .90) = .85; Goodness of Fit Index (GFI; .90) = .83; Good internal consistency reliability was achieved for all subscales (all > .76). Conclusions: This preliminary version of GCWMS presents acceptable and promising validity to assess goals for weight loss maintenance. Next steps are to: (i) run further factorial validity analysis with the full sample of NoHoW trial; and (2) conduct a cross-cultural validation of the scale in other countries (e.g. the United Kingdom and Denmark, partners in NoHoW).

P2.04.02
PRELIMINARY VALIDATION OF PORTUGUESE VERSION OF REGULATIONS FOR EATING BEHAVIOUR SCALE
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SIG: Theories of motivation

Objective: Examining eating behaviours is crucial to understand weight management Dysfunctional self-regulatory processes may explain difficulties in controlling food intake (e.g., amount and/or the quality of food consumed). Self-Determination Theory (Deci and Ryan, 1985), has been used to explain different eating behaviour self-regulatory styles. In those studies, a questionnaire was developed to discriminate more internalized/autonomous from more externalized/controlled forms of motivation for eating behaviours. One of the limitations of this scale and many other psychological questionnaires is its length, in particular in the context of digital intervention, developing short versions is warranted. This study aimed to develop and conduct a preliminary psychometric validation of a version of Regulation for Eating Behaviour Scale (REBS) in the Portuguese language. Methods: The short-REBS was derived from the original 24-item scale. Decisions were based on psychometric data of the original study to arrive at current 18-item scale with 6 motivational factors. Participants were 253 weight loss maintainers (5% weight loss in the last 12 months; 53% were male; mean age=39.7; SD=9) as part of a large multicentre trial targeting weight loss maintenance through digital technologies - the NoHoW project (H2020 funded trial). Factorial validity was undertaken by means of Confirmatory Factor Analysis, which assesses data fit to the hypothesized theoretical model, and internal consistency was evaluated by Cronbach's alphas. Results: Adjustment to SDT motivational regulations rational was tested with reasonable fit: X² (120) = 350.25, p<.001; Root Mean Square Error of Approximation (RMSEA; <.10) = .087; Comparative Fit Index (CFI; .90) = .89; Goodness of Fit Index (GFI; .90) = .86. Good internal consistency reliability was achieved for all subscales (Cronbach’s Alphas > .75) except for Introjected Regulation (aha; = .69) which suggests the need for deeper item analyses. Conclusions: The shortened portuguese version of REBS is a very useful tool to incorporate in digital behaviour change interventions, and presents satisfactory psychometric properties. Next steps are to: (i) run further factorial validity analysis with the full sample of NoHoW trial; (2) conduct a cross-cultural validation of the scale in other countries (e.g. the United Kingdom and Denmark, partners in NoHoW).

P2.04.03
ASSOCIATION BETWEEN ACTIVITY AND PHYSICAL ACTIVITY MOTIVATION IN SHORT-TERM WEIGHT LOSS
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TV and girls. For every explored domain, only a minority of boys disapproved the PN whereas girls only for more than 1 hour a day AB 33% vs. PN 90%). There was difference in approval of the PN between boys day: Actual Behaviour (AB) 53% vs. Perceived peer Norm (PN) 83%; Computer

the level of sedentary behaviours o
[Computer

for one week (Steps, PA, Sedentary Time). Two categorizations were used: a) Five groups of steps (Tudor-Locke’s criteria) and b) Four groups of Activity/Sitting Time, with IPAQ Activity Level (active vs insufficiently active or sedentary - Sed) and tertiles of Sitting Time (Sedentary - more than 480 min/day, vs Non-Sedentary - less than 360 min/day): a)Sed/Sed (i.e., Sedentary in the Activity Level and in Sitting Time); b)Sed/NonSed; c)Act/Act and d)Act/NonSed. ANCOVAs, controlling for gender, were used to run the comparisons (post-hoc and effect sizes - ES). Results: The Sedentary and Low Active participants were more amotivated and had less AM than the Active and Very Active participants (p's<.001, small to medium ES). No differences were found in introjected motivation; the Low Active participants had more external motivation than the Very Active participants (p=.047). Sed/Sed and Sed/NonSed participants had more amotivation and external motivation than the Act/Sed and Act/NonSed participants (p's<.001, small to medium ES). Higher AM was associated with these latter groups (p's<.001, small to medium ES). Act/Sed participants had higher scores on introjected motivation than the Sed/Sed and Sed/NonSed participants (p=.001, small ES). Discussion: Higher activity seems associated with better quality of motivation. Notwithstanding, the Act/Sed higher introjected scores suggests a compensation/guilt process that should be further explored in short-term weight loss as it may undermine the maintenance of the PA behavior associated with the prevention of weight regain.

P2.04.04
SO WE SIT ALL DAY. AND WHAT?
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SIG: Theories of motivation

Purpose: The current evidence affirms the consideration of social norms and social support in the development of interventions to address diet, physical activity and sedentary behaviour among adolescents. We were interested whether descriptive and/or injunctive norm misperceptions of sedentary behaviour among Czech adolescents exist. Methods: Data for this article was drawn from baseline measurement of 'Social Norms Intervention for Active Adolescents (SONIAA)' project. The project is designed as a randomized controlled crossover experiment. Data were collected in October and November 2017 using a web-based questionnaire. Sample consisted from 1586 pupils (age 11-15; 48% girls). Using a modified version of YAP(Youth Activity Profile), the respondents were surveyed about their out of school sedentary behaviours. They were asked about their own behaviours and in addition about the descriptive norms and injunctive norms for different domains of sedentary behaviour (TV-time, Computer-time, Video Game-time and Phone/text time). Results/findings: We found that adolescents overestimate the level of sedentary behaviours of their peers in every explored domain (TV-time more than 1 hour a day: Actual Behaviour (AB) 53% vs. Perceived peer Norm (PN) 83%; Computer-time more than 1 hour a day AB 41% vs. PN 81%; Video Game-time more than 1 hour a day AB 42% vs. PN 84%; Phone/text time more than 1 hour a day AB 33% vs. PN 90%). There was difference in approval of the PN between boys and girls. For every explored domain, only a minority of boys disapproved the PN whereas girls only for TV-time (Disapproval of PN in: TV-time 30% boys vs. 42% girls; Computer-time 38% boys vs. 55% girls; Video Game-time 41% boys vs. 52% girls; Phone/text time 38% boys vs. 60% girls). Conclusions: Most of
adolescents perceive the level of sedentary behaviours among their peers as higher than actually are. In addition, most of them do not feel uncomfortable with the perceived norms, especially boys. This should be taken into account when promoting active lifestyle in adolescent population. Our findings could also be used as the basis for a social norms campaign that aims to correct the misperceptions, by focusing on the positive behaviour of the majority, instead of the negative behaviour of the minority.

P2.04.05
ACTIVE WEIGHT MAINTAINERS: SUCCESSFUL DIETERS OR THOSE TRYING TO PREVENT WEIGHT GAIN?
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SIG: Theories of motivation

Purpose: Weight loss and weight loss maintenance have gained a lot of attention during the last decade due to the increasing obesity epidemic, active weight management as a preventive approach to avoid developing overweight and obesity has gained less attention. The objective is to study what are the weight-related goals and how common active weight management is among individuals regardless of their weight status and whether the weight history has an impact on weight-related goals. Method: In on-line survey (N=1047) respondents’ current weight-related goals (do not pay attention to my weight, actively try to maintain my weight, try to lose some weight and try to gain weight) we asked. They reported their current weight, maximum weight ever, height, and current subjective weight. In addition, restraint eating and emotional eating items from the short version of Three-factor eating Questionnaire Karlson et al. 2000) was filled out. Results: Approximately one third reported not to pay attention to their weight (31.5%), one third tried to lose weight (32.7%) and one third to actively maintain their weight (35.7%); 20 respondents trying to gain weight were omitted from the analyses. The BMIs and subjective weight perception of active maintainers was similar to those who paid no attention to weight (BMI 24.6 vs 25.2). The reported highest ever BMI, however, was higher among active weight maintainers than among those who did not pay attention to their weight. Both weight losers and weight maintainers had higher restrain scores than the no attention to weight group, but only weight losing group had higher emotional eating scores. When looking at the weight history of weight maintainers, 30.1 have always been normal weight, whereas 40.3% have a history of weight loss. Conclusion: A considerable number of normal weight people are successful weight maintainers who restrain their eating, but are in many other ways similar to those who are not paying attention to their weight. Active weight maintainers have a mixed weight history and the third that has never been overweight may be an interesting group to shed light on effective prevention of weight gain.

P2.04.06
EXPLORING MOTIVATION TO COOK IN AUSTRALIAN YOUNG ADULTS USING QUALITATIVE RESEARCH
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SIG: Theories of motivation

Purpose: Young adults are high consumers of convenience and ready-made foods which tend to be low in nutrients and energy-dense. Commercially prepared meals have been associated with poorer diet quality and young adults often lacking cooking skills are an at-risk group. The aim of this study was to develop instructional short cooking videos to build competency and explore young adults' perceptions of the videos. Motivators and barriers to cooking were also identified. Methods: A range of recipe types including breakfast, main meals and snacks were designed for the videos. All recipes had to be inexpensive and provide a source of protein without excess saturated fat, sugar and energy. Young adults aged 18-25 years were recruited for focus groups to gather feedback on the suitability of the content, as well as to understand the barriers and enablers to behaviours involving food preparation. Verbatim transcripts were analysed using NVivo to identify the major themes. Results: Thirty-four participants (nine males) attended four focus groups. Thematic analyses were grouped as 'exploring cooking skills', 'recipes' and 'videos'. The motivators to cooking at home were reported as cost (n=11); health reasons (n=9); easy recipes (n=5);
quick recipes (n=3) and hunger alone (n=3). The majority of participants did not perceive nutrition knowledge to be a problem (n=23). The main barrier reported by participants was lack of time. In examining the cooking videos, the content was acceptable as an educational tool for a social media intervention. The majority found it as a motivator to prepare foods at home (n= 25). The use of herbs, tofu and sardines were disputed as most young adults considered these foods to be inappropriate for their cooking due to reasons such as food avoidance, personal preference or cost. Conclusion: Our qualitative findings provide novel insights into the complex perceptions of young adults towards cooking. Overall, the cooking videos were accepted by participants and will be used to improve diet quality in an intervention.

P2.04.07
RELATIONSHIPS AMONG COLLEGE STUDENTS’ SEDENTARY BEHAVIOR, SLEEP QUALITY, BODY MASS INDEX AND DIET

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SIG: Theories of motivation

Purpose: Sedentary behavior (SB), diet, sleep efficiency (SE), and body mass index (BMI) are crucial determinants of individual's health. The purpose of this study was to determine the relationships among objectively-measured SB, SE, BMI, and diet in Chinese college students. Methods: A total of 220 college students (115 females, X’ age = 20.29 ±smn; 2.37) were recruited from a South Central Chinese university. Participants’ SB (% time spent in SB daily) and SE (the number of minutes in bed/number of minutes of sleep periods) were measured via a wrist-worn ActiGraph GT9X Link accelerometer for one week. Diet was assessed by a validated 15-item survey (Treatment Self-Regulation Questionnaire-Diet) and expressed as one’s perceived healthy eating behavior, while BMI was assessed by scales and computed as mass (kg)/height2 (m). Results: Descriptive statistics indicated that participants' average time spent in SB was 77.53% (SD = ±smn; 10.03), SE was 84.12% (SD = ±smn; 4.79), BMI was 20.67 (SD = ±smn; 3.12), and diet was 3.82 (SD = ±smn; 0.89), respectively. Correlation analyses revealed that no significant relationships between dietary assessment and other factors, but significant relationships were observed among SE, BMI, and SB (all p < 0.01). Specifically, SE was inversely associated with BMI (p < 0.01, r = -0.19) and SB (p < 0.01, r = -0.16), respectively. Although linear regression analyses suggested the overall models were statistically significant when age and gender were controlled, BMI [F (3, 215) = 4.71, p < 0.05, ?;2 = 0.06] and SB [F (3, 215) = 5.72, p < 0.05, ?;2 = 0.08] did not appear to be an ideal predictor of SE. Conclusion: Although no significant relationships were observed between perceived healthy eating behavior and other factors in Chinese college students, accelerometry-determined SE was found to be negatively associated with BMI and SB, suggesting high levels of BMI and SB can lead to poor sleep quality. As increased BMI and SB are linked to adverse health outcomes, more population-based prevention strategies seek to lower BMI and reduce SB (e.g., nutrition education and physical activity promotion) are needed in this population.

P2.04.08
WEIGHT PERCEPTION, INSTEAD OF ACTUAL WEIGHT, AFFECT WEIGHT CONTROL PRACTICES AMONG ADOLESCENTS: FINDINGS FROM A CROSS-SECTIONAL STUDY IN BEIJING, CHINA

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SIG: Theories of motivation

Background Theoretical models of health behavior change emphasize the need to perceive oneself at risk as a prerequisite to behavior change. It may be prudent to help adolescents recognize they are at risk of overweight and obesity in order to address the rising obesity epidemic in China. The purpose of this study is to understand the perceptions of weight of both adolescents' and their parents, and association with weight management practices. Method 539 students in grade 7 from two middle schools in Beijing, were
invited into the study. Students' actual weight status were defined by BMI, according to Chinese standards. Students' actual weight status, self- and parental weight perception both been divided into three groups: underweight, normal and overweight. Results 435 students (55.4% male) aged 11-15 with data both for themselves and their parents were used for data analysis. 27.1% students were overweight, 9.0% were underweight. More boys had 'abnormal' BMI than girls (47.1% vs. 22.6%, p<0.001): "underweight" (10.8% vs. 6.7%), "overweight" (36.2% vs. 13.9%). 12.9% "underweight" and 29.1% "normal" students reported themselves to be overestimate, while 10.8% "normal" and 3.4% "overweight" students reported themselves to be underweight. Girls had worse consistency between actual weight status and weight perception than boys (65.6% vs. 77.8%, p<0.001), and more likely to overestimate their weight than boys (27.7% vs. 13.4%, p<0.001). 51.4% "underweight" and 9.6% "normal" students' parents overestimate, 12.8% "overweight" students' parents underestimate their children's weight. Girls' parents more likely to overestimate (9.4% vs. 2.7%, p<0.001), boys' parents more likely to underestimate their children's weight (15.3% vs. 7.1%, p<0.001). 76.8% "overweight" students want to lose or control their weight, among them 69.5% students want to try both exercise and dieting. 7.2% "normal" students in weight gain, 33.2% "overweight" students keep their weight status, 5.3% "underweight" and 25.3% "normal" students in weight loss. Discussion Both overweight and underweight concerns were common among students, while a higher body weight was favored by normal-weight boys and their parents, and a lower body weight was favored by normal-weight girls and their parents. Distorted weight perceptions in adolescents, as well as parents, are problems that need appropriate intervention.

P2.04.09
MOTIVATION AND BEHAVIORS OF PORTUGUESE RECREATIONAL RUNNERS: THE KEEP ON RUNNING STUDY.
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SIG: Theories of motivation

Objective: The aim of this study was to estimate the prevalence of recreational running and describe the associated motivational and behavioral characteristics of a representative sample of Portuguese adults.

Methods: A nationally representative sample of Portuguese adults (n=1084; 50% women), aged between 18 to 65 years, was selected through a probabilistic random sample of telephone numbers. The sample was stratified by gender and age. Besides demographic information, weekly physical activity habits and running behavior was assessed. Recreational runners (n=115) were further assessed for running motivation, vitality, flow, barriers for running and self-regulation strategies. Short versions of previously validated scales representing the different constructs were adapted. Results: The prevalence of recreational running (defined has running at least two days and 60 minutes per week) was 10.6% (18-40y: 13.6%; 41-65y: 7.7%, p<.05; Men: 14.6%; Women: 6.6%, p<.05). On average, participants ran an average of 3h, in 3.4 days, covered 20 km per week (Men: 21.3km; Women: 16.4km, p<0.05). Fifty-seven percent of the participants interrupted their regular running in the past 12 months (averaging 2 months), and the most prevalent barrier was lack of time (43%). They reported preference for running alone (73%), in the street (53%), use wearables for time monitoring (44%) and music (45%). Among recreational runners, the motives for running with highest scores were General Health Orientation (p<.001), followed by Self-esteem, and Life Meaning (p's <.001). Life meaning and General Health Orientation subscales were positively correlated with Vitality (r (112) =0.221, p<.05 and 0.255, p<.01) and with Flow (r (111) =0.251, p<.01 and 0.371, p<.001). Additionally, positive correlations were observed between the autonomous subscales of the BREQ (identified, integrated and intrinsic), vitality (r (111) =0.331 - 0.515, p<.001) and flow (r (111) =0.314 - 0.437, p<.001). Conclusions: Autonomous motivation, Life Meaning and General Health Orientation motives were associated with measures of experience quality, such as vitality and flow. These results with recreational runners, confirm previous studies on physical activity motivation, and encourage longer prospective studies to clarify how controlled and autonomous motivations for physical activity develop and whether they respond to interventions designed to increase physical activity maintenance.

P2.04.10
ELEMENTARY PHYSICAL EDUCATION STUDENTS' MOTIVATIONAL CLIMATE PERCEPTIONS
PREDICT GOAL ORIENTATIONS AND PE SATISFACTION

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SIG: Theories of motivation

Purpose: Over the past decade, researchers have utilized the Caring Framework with Achievement Motivation Theory (AMT) to more fully understand individuals' psychosocial climate perceptions. Research has consistently supported the caring climate is positively correlated with task-involving and negatively correlated with ego-involving climate perceptions. Furthermore, perceptions of a caring climate have been associated with positive outcomes (e.g., empathy, prosocial behaviors, and enjoyment) in a variety of physical activity contexts. AMT grounded PE climate interventions have supported that motivational climates promote participants' matching goal orientation (i.e., definition of success). Recently, 11-13 year-old male athletes' task goal orientation was positively and significantly predicted by their perception of the caring climate, not the task-involving climate. This study continues this line of research by assessing the relationship between 5th and 6th grade students' perceptions of the caring, task-, and ego-involving climates with their satisfaction, task and ego goal orientations in PE. Methods: Elementary students in a US Midwest school district completed a survey in the middle of the Fall semester with the following measures adapted for the PE context: Perceived Motivational Climate in Exercise Questionnaire (task- and ego-involving climates), Caring Climate Scale, Task and Ego Orientation in Sport Questionnaire (task and ego), and Physical Activity Satisfaction Scale. The relationships between the climates, goal orientations, and PE satisfaction were tested with a four-group (123 5th grade males, 104 5th grade females, 110 6th grade males, and 90 6th grade females) path analysis in Mplus8. Results: The most parsimonious of the two hypothesized models was found to nonsignificantly differ in model fit (Chi-square(41)=45.82, p=.28) compared to the fully specified path model. The pruned model supported that task-involving and caring climates significantly, and positively predicted PE satisfaction; the goal orientations were only significantly predicted by the matching AMT climate. The relationships of this model were not significantly moderated by students' grade or gender. Conclusions: This research is the first to examine the relationship between PE students' perceptions of the caring climate, goal orientations, and satisfaction in PE. The orthogonality of the task and ego goal orientations also support 5th and 6th grade students can differentiate ability and effort.

P2.04.11
MISPERCEPTIONS OF DESCRIPTIVE AND INJUNCTIVE NORMS REGARDING ACTIVE COMMUTING TO SCHOOL AMONG CZECH ADOLESCENTS

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SIG: Theories of motivation

Objective: Physical activity (PA) is an important factor affecting human health. Active commuting (AC) to school can help increase the total daily step count and, thus, help meet health recommendations for PA. To promote AC and make this mode of transport more widespread, it is essential to identify the factors influencing the choice of transport form. We investigated whether misperceptions of descriptive (how many peers are involved in a given behaviour) and/or injunctive (what is opinion on a given behaviour) norms regarding AC to school exist among Czech adolescents. Methods: Data was collected in Autumn 2017 as a baseline measurement of the 'Social Norms Intervention for Active Adolescents (SONIAA) project using a web-based questionnaire (1586 students; age 11–sh;15; 48% girls). Respondents were asked how often they actively commuted to school in the last week and also about the descriptive norms and injunctive norms about AC to school. Results: According to our findings, majority of Czech adolescents (64% of boys; 72% of girls) actively commute to school almost every day. Nevertheless, 61% of boys and 51% of girls think that majority of their peers do not commute actively to school daily. In addition, majority of Czech adolescents (62% of boys and 68% of girls) think that the perceived norm of not commuting to school daily is OK or rather OK. Conclusions: Although majority of Czech adolescents actively commute to school daily, most of the adolescents do not perceive AC as a norm. In addition, most of them do not feel uncomfortable with the perceived norms, especially girls. These findings raise questions about the cause
of this condition. Can it be due to media informing constantly about the insufficient level of physical activity in general? Do adolescents find it 'cool' to be brought to school by car? Do cars in front of school attract adolescents' attention rather than their classmates walking to school? Our findings will be used as the basis for a social norms campaign that aims to correct these misperceptions by focusing on the positive behaviour of the majority, instead of the negative behaviour of the minority.

P2.04.12

#GETFIT: EXAMINING THE ROLES OF ONLINE HEALTH INFORMATION BEHAVIORS AND EHEALTH LITERACY ON FILIPINOS’ DIETARY AND EXERCISE BEHAVIORS
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SIG: Theories of motivation

Objective: In current society, there has been a shift in the healthcare landscape as digital revolution propels the use of Internet-based technologies for health communication. In the Philippines, Internet use for health has recently become more prevalent with the salience of online content related to well-balanced diet and physical exercise. While previous studies have mainly investigated the combined influence of traditional, mediated, and online information sources on health, this study exclusively focused on web-based sources to provide an overall look at the extent of influence of online sources. Specifically, it examined the influence of online health information behaviors (active and passive OHIBs) and eHealth literacy on one's performance of dietary and exercise behaviors. Methods: Utilizing an expanded model of the Theory of Planned Behavior, a panel survey was conducted among Filipino young adults aged 18-29 years old. The sample (N=352) was drawn from a university population in the Philippines. Path analysis was used to examine the direct and indirect effects between variables. Results: While passive OHIB occurred more frequently than active OHIB, only active OHIB significantly predicted intention for both health behaviors. Attitudes, subjective norms, and perceived behavioral control mediated the effects of active OHIB on intention. eHealth literacy also influenced one's intention to physically exercise, but only when mediated by subjective norms. Consistent with TPB's main assertion, intention led to action for both health behaviors. Conclusions: Findings suggest that online media use corresponds to health behavior only to the extent that there is a deliberate search for health information. The mediation effects of subjective norms also reflect how health-related online contents influence perceptions of normative behaviors, which consequently lead to the performance of exercise behavior. The findings also present a gap in knowledge and behavior as eHealth literacy did not completely translate to health behaviors, despite the relatively high eHealth literacy scores of the study participants. Overall, the study's extension of the TPB model increased the variance explained for healthy eating from 18% to 24%, and physical exercising from 29% to 39%. This provides empirical evidence that supports the pathway of relationship among online information, psychosocial predictors, and behaviors.

P2.04.13

A QUALITATIVE INVESTIGATION OF THE PERCEIVED INFLUENCE OF ADOLESCENTS’ MOTIVATION ON RELATIONSHIPS BETWEEN DOMAIN-SPECIFIC PHYSICAL ACTIVITY AND POSITIVE AND NEGATIVE AFFECT.
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SIG: Theories of motivation

Objective: The relationship between physical activity and mental wellbeing varies across different life domains, with leisure-time activity appearing most optimal. However, no study has examined factors that explain why leisure-time physical activity is more optimal than other domains. Also, no study has determined how to improve the mental health benefits of physical activity within less optimal domains. Self-determination theory suggests that compared to activity undertaken for controlled reasons, autonomously motivated activities lead to better psychological wellbeing. We aimed to examine motivation as a potential underlying factor in adolescent perceived relationships between domain-specific physical activity and
Methods: We conducted computer-assisted-self-interviews with 144 adolescents (M age = 14.42 years) about physical activity experiences in which they perceived led to positive and negative affect. The questions were guided by realism, which explains that investigating an experience (physical activity) and the context (motivation and life domain), enhances understanding of the outcomes (positive and negative affect). We asked participants when the activities occurred, their reason for participation, and with whom they participated. Participants responded to questions about physical activity in general, as well as in regard to specific domains (leisure-time, active travel, and physical education). We conducted thematic analysis on all data, and performed several frequency counts and descriptive statistics to supplement the emerging themes. Results: Adolescents perceived leisure-time physical activity led to positive affect, because it was fun, increased self-esteem, and provided a sense of belonging. However, active travel was associated with positive affect among those who participated for enjoyment or health benefits (autonomous motivation), far more than those who participated because it was their only means of transportation (controlled motivation). Similarly, those who believed physical education was fun, and experienced a sense of belonging, were more likely to report it led to positive affect, compared to those who participated in physical education because they were forced. Conclusions: Compared to other life domains, more adolescents associate leisure-time physical activity with positive affect. However, promoting more autonomous motivation may enhance the mental health benefits of physical activity conducted in other domains, such as active travel and physical education.

P2.04.14
A COMPARATIVE SCOPING REVIEW OF MOTIVATIONAL INTERVIEWING (MI) SETTINGS FOR PHYSICAL ACTIVITY (PA) COUNSELLING
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SIG: Theories of motivation

Purpose: Motivational Interviewing (MI) is a partnership-based counselling style that enables clients to explore their own motivations for behaviour change (Miller & Rollnick, 2013). Despite increasing use of MI in physical activity (PA) promotion interventions (O'Halloran et al., 2014), it is unclear in which settings (face-to-face versus web-based) MI-based interventions are most effective. The purpose of this comparative scoping study was to review the effectiveness of MI-based interventions for promoting PA in these two settings. Methods: A comparative scoping literature review was conducted in November 2016 and updated in March 2018 to identify primary studies, systematic reviews, and meta-analyses that describe MI-based interventions in either clinical settings or web-based platforms. Searches were conducted using PubMed, MEDLINE, and PsychINFO databases. Articles that a) described MI-based interventions that included either a clinical setting or a web-based platform, b) primarily focused on PA, c) targeted adults, and d) were written in English were included for further review. The initial search yielded 1393 articles, with twelve studies retained after a full-text review. Information on study design, MI session duration, and MI training was also collected. Results: In clinical settings, studies (e.g. Hardcastle et al., 2013; Bóveda-Fontán et al., 2015) have demonstrated that MI can be used to effectively increase PA when compared to usual care control groups, while meta-analyses showed that MI-based interventions have a small positive effect on PA levels (e.g. O'Halloran et al., 2014). Effectiveness increased with more MI sessions in a dose-response relationship although MI training varied considerably across studies. Web-based MI interventions have yielded mixed results in promoting PA, as Karnes and colleagues (2015) demonstrated increases in objective PA measures whereas Friederichs and colleagues (2015) found that PA levels did not significantly increase in comparison to theory-based PA interventions. All web-based interventions used four sessions where participants controlled session length and had planned, pre-determined feedback rather than interactions with trained counsellors. Conclusions: Web-based MI interventions hold both advantages (e.g. less likely to have MI-inconsistent responses) and disadvantages (e.g. more difficult to form a client-counsellor relationship) when compared to MI-based interventions that take place in clinical settings in supporting PA promotion.

P2.05: SIG Implementation and Scalability (Grand Foyer)
P2.05.01
THE LONG-TERM EFFECT OF COMPLEX WORKPLACE DIETARY INTERVENTIONS ON EMPLOYEES' DIETARY INTAKES AND HEALTH STATUS: THE FOOD CHOICE AT WORK TRIAL

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SIG: Implementation and Scalability

Objective In a previous study, (the Food Choice at Work cluster controlled trial) we described the positive effectiveness of a 9-month complex workplace dietary intervention that combined nutrition education and environmental dietary modification. The purpose of this particular study is to measure, in the same workplace settings, the long-term effect of the interventions and to assess whether the positive effects on employees' dietary intakes and weight loss observed at 9 months follow-up were sustained following removal of the intervention. Methods: In the Food Choice at Work trial, four large purposively selected manufacturing workplaces in Ireland were allocated to one of the following groups: control, nutrition education alone, environmental dietary modification alone and nutrition education and environmental dietary modification combined. Nutrition education included group presentations individual consultations and detailed nutrition information. Environmental dietary modification included menu modification, fruit price discounts, strategic positioning of healthier alternatives and portion size control. The interventions were implemented for a period of 9-months in each workplace. Data on dietary intakes and health status were obtained at baseline, 7-9 months follow up and again at 20-23 months follow-up. A total of 850 employees were recruited across the four workplaces. Follow-up data at 20-23 months were obtained for 317 employees (37% of 850 recruited) aged 18-64 years. A repeated measures mixed model will be conducted to measure changes across the four groups at each time point. Results: The primary outcome will be changes in employees' dietary intakes of salt and BMI at 20-23 months follow-up. Secondary outcomes will include changes in employees' dietary intakes of total fat, saturated fat, total sugars and fibre, midway waist circumference and resting blood pressure at 20-23 months follow-up. Conclusions: The results of this study will determine the long-term effectiveness of complex workplace dietary interventions that are focused on nutrition education and environmental dietary modification. Specifically, the results will demonstrate whether the significant positive results in terms of dietary intakes and weight loss that were observed after 9 months are sustained when employees are no longer exposed to the intervention in their workplace.

P2.05.02
USING SMARTPHONE APPLICATIONS TO SUPPORT HEALTHIER FOOD CHOICES FOR EMPLOYEES: PROTOCOL FOR THE DEVELOPMENT OF THE 'FOOD CHOICE AT WORK' SMARTPHONE APPLICATION

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SIG: Implementation and Scalability

Objective: Digital interventions such as smartphone applications have been identified as potentially powerful public health tools. However, a growing body of evidence suggests that smartphone interventions have been ineffective at sustaining healthy behaviour change with regards to food choices. This is owing to an overemphasis on behaviour outcomes rather than a focus on incorporating validated behaviour change strategies during intervention development. Previous interventions have also been single-dimensional, relying solely on information provision and have failed to consider the important role of social and environmental factors in food choice behaviour. The evidence also suggests that the nutrition content of the interventions has been of poor quality and without a scientific evidence-base. Furthermore, poor user engagement has limited the full public health potential of smartphone interventions as user perspectives have not been incorporated during intervention development. Further testing of smartphone interventions in robust research studies is needed to determine their effectiveness in altering the habitual elements of food choice behaviour. The purpose of this study is to develop, implement and assess the effectiveness of a multidimensional, scientifically based smartphone intervention in terms of supporting employees to make healthier food choices in their workplace. Methods: Effectiveness of the smartphone intervention will be assessed in a multinational software company (Dublin, Ireland) for a 3-month
timeframe (1 month baseline and 2 months intervention). An iterative developmental process involving direct engagement from employees and experts in nutrition, IT and software will be adhered to. All employees (n=1,300) will be invited to download the intervention to their smartphones and to attend nutrition and health check clinics with qualified nutritionists who will take objective health status measurements (BMI and blood pressure). Changes in food choice behaviour and user engagement will be measured using web analytics and surveys. Results: The primary outcome will be changes in employees' intakes of fat, saturated fat, sugar and salt and secondary outcomes will include user engagement with the smartphone intervention. Conclusions: The results of this study will determine the effectiveness and user engagement and utilisation of a theory based, multidimensional smartphone intervention to support healthier food choices for employees in their workplace.

P2.05.03
STUDENT SATISFACTION AND ENGAGEMENT WITH A TEACHER-LED SCHOOL-BASED PHYSICAL ACTIVITY INTERVENTION: PROCESS EVALUATION OF RESISTANCE TRAINING FOR TEENS
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SIG: Implementation and Scalability

Purpose: Young people have identified a desire to try a variety of non-traditional 'lifelong' physical activities, such as resistance training (RT), and schools are well-positioned to introduce adolescents to RT. The purpose of this study was to evaluate process data collected as part of the Resistance Training for Teens school-based physical activity intervention. Methods: Trained teachers delivered the multi-component intervention, which included: (i) an interactive student seminar (1 x 30 mins); (ii) a structured physical activity program (10 x ~90 mins, focusing on RT); (iii) lunchtime fitness sessions (5 x 20 mins); and, (iv) a web-based smartphone application (app). The intervention was delivered to students in Grade 9 (N=254; 14-15 years) from eight secondary schools over 10 weeks. A detailed process evaluation was conducted, which included: i) student satisfaction; ii) attendance; and iii) objectively assessed app usage.

Results: Students attended 82±smn;18% of structured physical activity sessions. Almost 70% of students utilized the smartphone app at some point during the intervention period. However, engagement with the specific app functions was low, ranging from 4% for the 'My Technique' function (assessment of exercise technique) to 34% for the 'My Motivation' function (tailored motivational messaging). Overall (1=poor to 5=excellent), students were satisfied with the Resistance Training for Teens program (3.8±smn;0.9). Students (1=strongly disagree to 5=strongly agree) agreed that their teachers were knowledgeable about health and fitness (4.2±smn;0.8), and enjoyed the physical activity sessions during class time (3.9±smn;0.9). However, students were less satisfied with the lunch-time physical activity sessions (3.0±smn;1.1). Conclusion: Overall, Resistance Training for Teens was well received by students.

However, some aspects of the program were not as favourable as others. This study may serve as a guide for the design of future interventions within schools, and provides useful insights into student preferences and engagement with intervention components.

P2.05.04
A REALIST EVALUATION OF GET SET TO GO: LEARNING FOR SUCCESSFUL ENGAGEMENT TO A MULTI-SITE, COMMUNITY BASED, PEER-LED PHYSICAL ACTIVITY INTERVENTION FOR MENTAL HEALTH SERVICE USERS
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Objective: Limited research has explored the complex relationship between physical activity (PA) and mental health (MH) in community based interventions. Get Set to Go (GStG), a 3 year PA programme delivered by Mind, a UK based national MH charity, used group based, peer-led PA taster sessions in mainstream sport facilities across eight local Mind MH services in four priority regions in England. A variety of sporting and physical activity taster sessions were delivered in blocks of 12 weeks over a two year period. We aimed to evaluate this peer-led, group based community PA programme for adults with mental illness and answer the question, how might we best deliver interventions to exploit the association between physical activity and MH.

Method: A Realist evaluation approach seeks to understand, what works for whom, in what contexts, and how, in complex social phenomena. Using a Realist evaluation approach and a context-mechanism-outcome configuration, our evaluation methods included nine focus groups with peer volunteers (4: n=28), Sport-Coordinators (1: n=8), and participants (4: n=35) across the four priority regions. Data was analysed first by sample group via an iterative process using an inductive thematic approach. Data across sample groups was then compared to develop meaningful themes.

Results: Analysis highlighted context specific areas for feasible and successful methods of engaging adults with mental illness to support behaviour change; the lived experience of MH problems for creating a supportive socio-contextual environment within group sessions; personalised text messages for participants to facilitate feelings of value and care; a support structure for the role of peer volunteer; clear line of communication to create stability for participants and peer volunteers; positive relationships with sports facilities and staff to reduce perceived stigma of poor MH. Conclusion: Group based, peer-led community programmes can successfully engage those with mental health problems by facilitating a supportive socio-contextual environment encompassing the lived experience of MH problems. PA has the potential to improve MH in people with mental illness within this setting. However, a positive change is not a given and can only be realised via conducive change mechanisms.

THE EFFECT OF STRENGTHENING PHYSICAL EDUCATION ON ACADEMIC ACHIEVEMENTS OF HIGH SCHOOL STUDENTS: EVIDENCE FROM SHANGHAI

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Purpose: Quality physical education (PE) is the cornerstone of school-based physical activity (PA) promotion programmes. We tested the efficacy of a strengthening physical education reform intervention program in Shanghai, designed to improve the interest and participation of school-based physical education by adding specialized sports learning and practicing in physical education curriculum, on academic outcomes. Methods: A quasi-experimental design takes advantage of the intervention program generating sharp across grade-cohort differences in physical education curriculum of high school students. The major change of PE curriculum is switching from the traditional short duration (40 mins) general fitness training curriculum to long duration (90 mins) specialized sports curriculum. The intervention lasts for three semesters. However, starting from the third semester, due to the extreme pressure caused by Chinese college entrance examination, one of the PE lessons was changed to activity session, which caused the total length of PE lessons of post intervention even short than prior intervention group. A total of 460 high students (236 prior the intervention and 224 post the intervention) were collected in grade 10 and being followed by two and three semesters. The academic outcome was assessed by district-standardized test scores. Difference-in-difference approach was employed. A full set of confounders including students individual, family characteristics as well as teacher quality variables were controlled.

Results: After adjusting all confounders, after two semesters, the standardized Chinese scores and English scores for post intervention group was increased by 0.61[95% CI: 0.44, 0.78, p<0.001] and 0.28[95% CI: 0.09, 0.47, p=0.01]. However, the standardized math scores for post intervention group was...
not significantly changed by two semesters. After three semesters, standardized Chinese scores for post intervention group was increased by 0.27 [95% CI: 0.06, 0.48, p=0.01]. Math scores and English scores was decreased by and 0.18 [95% CI: -0.36, -0.01, p=0.04] and 0.23 [95% CI: -0.38, -0.09, p=0.00] separately. Conclusions: Finding from real world evidence suggests an overall improvement of physical education reform intervention program on academic outcomes, especially in reading and literacy. However, the effect of the strengthened PE lessons might be endangered by undemanding implementation.

P2.05.06
THE CARRY-OVER EFFECT OF A COMPLEX WORKPLACE DIETARY INTERVENTION THAT COMBINES EDUCATION AND ENVIRONMENTAL DIETARY MODIFICATION ON EMPLOYEES’ OFF-DUTY DIETARY INTAKES.
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SIG: Implementation and Scalability

Objective: In a previous study (the Food Choice at Work cluster controlled trial), we have described the effectiveness of a complex dietary intervention that combined nutrition education and system-level environmental dietary modification on employees' dietary intakes in the workplace setting. The purpose of this particular study was to measure, in the same workplace settings, the carry-over effect of the combined dietary intervention through to employees' dietary intakes outside of the workplace setting. Methods: A pre-post study of data on employees' on duty (during working hours) dietary intakes and off-duty (outside of working hours) dietary intakes was conducted. Data was obtained from a complex workplace dietary intervention trial, the Food Choice at Work Study and included 7-9 months follow-up. Participants included 400 randomly selected employees (18-64 years) from a multinational manufacturing workplace based in Cork, Ireland where the combined dietary intervention was implemented. Dietary data was obtained through on-duty and off-duty 24-hour dietary recalls. Differences in mean dietary intakes were measured and linear regression analyses adjusted for socio-demographic characteristics. Results: Follow-up data at 7-9 months were obtained for a total of 272 employees (68% response rate). There were significant positive changes in on-duty dietary intakes of total fat (-14.2 g/day, p = 0.000), saturated fat (-7 g/day, p = 0.000), salt (-1.4 g/day, p = 0.000) and total sugars (-11.1 g/day, p = 0.004) between baseline and 7-9 months follow-up. Smaller but significant positive changes were observed in off-duty dietary intakes of total fat (-10 g/day, p = 0.001), saturated fat (-4.2 g/day, p = 0.001), salt (0.7 g/day, p = 0.043) and total sugar (-8.1 g/day, p = 0.020). Conclusions: The positive effect of complex workplace dietary interventions on employees' dietary intakes can extend beyond the work environment into employees' and their families' home lives if the intervention combines both nutrition education and system level environmental dietary modification.

P2.05.07
EFFICACY OF “IN FAVOR OF MY SELF” - GENDER, AGES AND SETTING ISSUES
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SIG: Implementation and Scalability

Purpose: To evaluate the impact of In Favor of myself when delivered in school-based vs. after school setting, to compare mixed-gender groups with girls-only groups and to evaluate its impact on different ages. Methods: Five clustered clinical trials were assessed the impact of In Favor of My Self on about 1000 adolescents aged 10-15.5 years was evaluated. Results All subgroups of the study reported on very high satisfaction from the program. In respect to setting, at program conclusion and follow-up, the impact of In Favor of Myself was higher among participants in the after-school programs compared to school-based programs. In respect to gender, at program conclusion and follow-up, only media literacy was improved in both mixed and girls-only groups compared to the control group. Body esteem, drive for thinness and satisfaction rates were significantly superior in the mixed gender groups compared to the girls-only groups. The idea of age-continuity of prevention program has been mentioned by others but to the best of our knowledge we are the first to develop and assess age-modifications of the same program.
Preadolescents (mean age of 10 yrs.) from both genders in the intervention group demonstrated statistically significant improvement in self-care (sleeping and healthy eating habits) as well as in knowledge about advertising strategies at follow-up. Self-esteem was statistically improved only among intervention groups' boys. Among 15-16 years old adolescents, a statistically significant increase was observed in the intervention group for self-resilience compared to control group (p<.05). Other statistically significant improvement only in the intervention group were seen for self-esteem, perceived ideal figure (p<.05) and the feeling towards the body (p<.001). The importance of age-related prevention program and their content will be emphasized in this presentation. Conclusions: The current study provides preliminary evidence for the superiority of mixed gender setting as well as after school setting to deliver prevention program to middle age adolescents. Age-related prevention program with spiral delivery is a promise for the field of prevention.

P2.05.08
APPLYING A SYSTEMATIC AND THEORETICAL APPROACH TO SCALING UP AN EFFICACIOUS SCHOOL-BASED PHYSICAL ACTIVITY INTERVENTION FOR ADOLESCENTS: ‘PHYSICAL ACTIVITY FOR EVERYONE’
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SIG: Implementation and Scalability

Purpose: This paper reports the process undertaken to scale-up Physical Activity for Everyone (PA4E1), an efficacious physical activity (PA) intervention conducted in Australian secondary schools. The PA4E1 efficacy trial involved the use of six implementation support strategies to facilitate the uptake of seven PA practices in schools. Methods: The PA4E1 intervention was scaled for delivery in 76 secondary schools (38 intervention: 38 control), utilising implementation and scale-up process models. A four-stage iterative process was undertaken, involving co-production with researchers and end-users, including principals, teachers, and students. Stage 1: Data were collected on the PA4E1 efficacy trial’s barriers and enablers via; i) focus groups with teachers and students from schools involved in the PA4E1 efficacy trial, ii) key informant interviews with school executive, including principals and faculty leaders, focusing on experience and perceived barriers to scale-up and iii) a literature review to identify additional barriers and enablers. Stage 2: The Theoretical Domains Framework was used to develop seven implementation strategies to address the barriers identified in Stage 1 and select suitable behaviour change techniques. Stage 3: Consultation with researchers and key stakeholders was undertaken to prioritise feasible, acceptable and contextually relevant implementation strategies, and suitable modes of delivery to support the scale-up of PA4E1. Stage 4: An expert advisory group reviewed the proposed implementation trial, including both the PA practices and implementation support strategies. Additionally, this group initiated the design of a suitable evaluation framework for the PA4E1 implementation trial. Results: The PA4E1 intervention was refined using the four-stage iterative process. The resulting implementation trial retains focus on the seven PA practices with some modifications to enhance scalability. More substantial revisions were made to the implementation support strategies, including the addition of an internal ‘School Champion’ - an existing staff member funded to facilitate the PA4E1 intervention within their schools. Additionally, to automate the delivery of implementation support strategies, an online portal (website) was established. An appropriate evaluation framework was also developed. Conclusions: The four-stage iterative process guided the development of an intervention suitable for delivery at scale. This process may be useful in planning the scale-up of other efficacious interventions.

P2.05.09
IMPILO NEZENKOLO: ADAPTATION OF FOOTBALL FANS IN TRAINING / EUROFIT HEALTHY LIFESTYLE PROGRAMMES TO LOW-INCOME FAITH-BASED SETTINGS IN URBAN AND RURAL SOUTH AFRICA
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OBJECTIVE: Evidence and experience from Football Fans in Training and EuroFIT demonstrates that in high-income countries (HICs), culturally-appealing settings (e.g. professional football stadia) can attract and engage participants in lifestyle change. Driven by high levels of overweight/obesity, low levels of physical activity and high levels of church attendance in South Africa, we investigated whether a weight management and healthy living programme could be adapted for delivery through churches. Our specific objectives were to determine: i) adaptations necessary to existing programmes; ii) acceptability to the target group; and iii) feasibility of delivery. METHODS: Four churches were recruited to participate in the study (2 rural, 2 urban). Between 2 and 15 church members participated in 3 workshops in two settings to contribute to the adaption of programme materials and activities. Some workshop participants were trained to facilitate the 12-week programme delivery in their church. Deliveries were observed to evaluate the implementation, and post-programme interviews and focus groups were conducted to capture facilitators' and members' perceptions of the programme in their church. RESULTS: Numerous adaptations were required to make the materials contextually relevant, and language played a role in making these changes. The adapted programme materials and activities proved acceptable to the target group. Despite the enthusiasm of the programme facilitators, implementation proved not to be feasible in one of the urban churches, due to difficulties with scheduling weekly sessions. Programme implementation in the other 3 churches was challenging, and differed widely. Success of implementation was influenced by the role played by members of the research team, personalities and motivation of the programme facilitators, the extent of church leaders' engagement, and typical practices and values in each church. Despite the challenges, programme leaders and members were positive about the programme and its impact on church members. Some facilitators have indicated a willingness to continue implementing a shortened version of the programme in their church. CONCLUSIONS: Although the programme was considered acceptable in the churches where it was delivered, there were numerous contextual challenges that make the implementation of such programmes in LMICs different and more challenging than in HICs.
were not sure (Cohen's d = .20 - .27). The number of activities (both already tried and planned) positively correlated with the level of activeness. Specifically, lightly active people reported having tried 12.7 activities and planned to try 35.5 compared with 26.8 and 53.1 activities, respectively, for very active people. Conclusion: The ParticipACTION 150 Play List was a unique opportunity to expose Canadians to various physical activities. However, individuals who were most active and/or valued PA appeared to benefit most from this national year-long program. It remains a challenge to engage the less active in such programs.

P2.05.11
CAPACITY BUILDING WORKSHOPS FOR LAY HEALTH PROMOTERS TO IMPLEMENT THE LARGE SCALE COMMUNITY-BASED FITTER FAMILY PROJECT IN HONG KONG
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SIG: Implementation and Scalability

Purpose: Under FAMILY: A Jockey Club Initiative for a Harmonious Society, we trained lay volunteers to be health promoters and role models to help social service workers in delivering the large community-based "Fitter Family Project" (FFP) to enhance physical activity, well-being and neighbourhood cohesion in a relatively deprived district in Hong Kong. We examined the feasibility and acceptability of our train-the-ambassador workshops (TTAs) and the effects on the health promoters (trainees), and the FFP participants. Methods: Zero-time Exercise (ZTE) includes simple movements and stretching while sitting, standing or walking. We designed the four–sh;session (8 hours) TTAs using ZTE as a foot-in-the-door approach to increase physical activity, reduce sedentary behaviour, and build capacity for community programme implementation. After training, trainees helped the implementation and acted as role models for the community participants. Repeated measures analysis of variance and Friedman test were used to compare the parametric and non-parametric data, respectively. Qualitative data were analysed using thematic content analysis. Results: Twenty-eight trainees participated in the TTT workshops with enthusiasm. At 3-month follow up, trainees reported improvements in knowledge and attitude towards engaging in ZTE regularly, increased ZTE and moderate physical activity, and reduced sitting time, with small to medium effect size (Cohen's d: 0.42 - 0.61). Objectively measured grip strength and balance improved (Cohen's d: 0.58 - 0.61) and perceived health and happiness scores increased (Cohen's d: 0.56), with medium effect size. Trainees helped the implementation of community programme for 953 participants from 672 families. The community participants reported increased ZTE, and improved fitness performance, neighbourhood cohesion and family well-being, with small to medium effect size at 3-month follow-up. All the improvements above were statistically significant. Eleven trainees attended the 1-year focus group interview, and the qualitative feedbacks supported the 3-month quantitative findings. Conclusions: This brief and innovative TTT has shown the feasibility and satisfactory outcomes of using ZTE and role modelling approach for training lay health promoters to reduce their sedentary behaviour, enhance physical activity and fitness, and improve well-being. They also contributed to the successful implementation of the community programme which benefited many participants. This could be a new model for capacity building for large scale community-based projects.

P2.05.12
A RANDOMIZED CONTROLLED TRIAL OF THE EFFECTIVENESS OF ZERO-TIME EXERCISE INTERVENTION FOR THE PROBATIONERS IN HONG KONG: JOCKEY CLUB FAMILY PROJECT
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SIG: Implementation and Scalability

Purpose: Probationers have poorer physical and psychosocial health, and often experience higher levels of family conflict and lower quality of family relationship. "Zero-time Exercise(ZTE) is simple movements and stretching while sitting, standing, walking, watching TV or commuting which requires zero time, zero money and zero equipment(3 Zeros) and can be done by anybody, anytime and anywhere(3As). Under
FAMILY: A Jockey Club Initiative for a Harmonious Society, this 3-arm randomized controlled trial examined the effectiveness of using ZTEx and family holistic health approach to enhance probationers' ZTEx, physical activity, physical and psychosocial health, family communication(performing ZTEx with family and praising family members) and family well-being(functioning, health, happiness and harmony).

Methods: Probationers under the care of Hong Kong Social Welfare Department were randomized into a brief intervention group (Group A), a combined intervention group (brief intervention plus a group session) (Group B) or a care-as-usual group (Group C, control). Self-administered questionnaires and fitness assessment were used at baseline, 1-month and 3-month follow-up. Focus group interviews were conducted. We analysed by intention-to-treat (missing data replaced by baseline values) with adjustment for age, gender and baseline values of outcome variables. Results/findings: 318 participants (51% male) were randomised to Group A (n=108), Group B (n=105) or Group C (n=105). Both Group A and B showed significantly greater increase in family communication and functioning with small to medium effect size, compared with Group C (Cohen's d=0.30-0.76). In addition, Group A showed significantly greater increase in family happiness and health scores and marginally significantly greater increase in subjective happiness and family harmony scores than Group C, with small effect size (Cohen's d=0.25-0.31). Group B showed significantly greater increase in moderate and vigorous physical activity and marginally significantly greater improvement in perceived physical health and physical fitness performance than Group C, with small to medium effect size (Cohen's d=0.25-0.61). Qualitative feedbacks supported the quantitative findings.

Conclusions: Our findings have shown preliminary evidence that ZTEx with family holistic health approach was an effective intervention to enhance ZTEx and physical activity, promote family communication and improve family well-being. The ZTEx intervention with family holistic health approach should be further developed and tested, and could be a new intervention model in probation and other services.

P2.05.13
A CANADIAN PERSPECTIVE ON THE ESSENTIAL CONDITIONS FOR THE SUCCESSFUL IMPLEMENTATION OF COMPREHENSIVE SCHOOL HEALTH

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SIG: Implementation and Scalability

Purpose: Recent research conducted with schools actively implementing Comprehensive School Health (CSH) in the province of Alberta, Canada identified seven essential conditions necessary for the successful implementation of CSH. While the essential conditions are evidence-based and have been used to inform practice, there is a need to ‘test’ the conditions to determine their utility in other contexts. The primary purpose of this research was to confirm whether the essential conditions for the implementation of CSH hold true in other contexts across Canada. The secondary purpose was to determine if an evaluative tool is needed to assess the implementation of the essential conditions. Method: Qualitative description methodology (Sandelowski, 2000) was used. Data were collected through individual semi-structured interviews (n = 36) and small focus groups (n = 4) with 45 participants across Canada involved in implementing CSH. Participants were school health champions (administrators and teachers), public health workers, program/organization directors, and individuals at the government level with experience in education and health promotion. Interviews were audio recorded and transcribed verbatim, and analyzed through a deductive thematic analysis approach. Results: There was positive support for the essential conditions for implementation of CSH and results indicated that the seven essential conditions are relevant in all provinces, territories, and contexts across Canada. Findings revealed the necessity for a new essential condition that reflected support and leadership from the school district and/or provincial/territorial level. Modifications to the description of each of the essential conditions were also suggested to enhance the clarity of the definition of the conditions. Results also indicated that an evaluative tool that was concise, meaningful, and provided immediate feedback would be useful to evaluate and improve successful implementation of the essential conditions. Conclusions: This research contributes to the evidence-base of CSH implementation by providing school communities across Canada with a set of refined and understandable essential conditions that support successful implementation. Further, the development of an evaluation tool will support school health champions, researchers, and policymakers in the optimization and implementation of CSH, ultimately supporting healthier school communities across the country.
P2.05.14
PROTOCOL FOR A GENDER-SENSITISED WEIGHT LOSS AND HEALTHY LIVING PROGRAMME FOR OVERWEIGHT AND OBESE MEN DELIVERED IN AUSTRALIAN FOOTBALL LEAGUE SETTINGS (AUSSIE-FIT): A FEASIBILITY AND PILOT RANDOMISED CONTROLLED TRIAL.


SIG: Implementation and Scalability

Objective: The innovative Aussie-FIT intervention is designed to challenge rising levels of overweight/obesity among Australian men, by capitalising on the appeal of Australian Football League (AFL) as a context to promote positive changes in physical activity (PA) and healthy eating behaviours. We will present the protocol and progress to date of the development, pilot testing and evaluation of the feasibility of a weight loss intervention designed for overweight and obese middle-aged men in Australia, delivered in AFL settings. Methods: 120 overweight/obese male fans will complete baseline measures (May 2018) of physical and psychological health, and objectively measured of PA, weight, waist circumference, and blood pressure, prior to randomisation into the intervention or waitlist comparison group. The intervention group will receive 12 weekly 90-minute workshops incorporating practical PA sessions and nutrition education, and which will apply behaviour change techniques (BCTs) and principles of effective motivation. Four community coaches will be trained to deliver Aussie-FIT at two AFL clubs in Western Australia. Measurements will be repeated at 3 and 6 months post intervention. Results: Outcomes will include programme uptake, attendance, changes in body weight, PA, diet, physical and psychological health to inform power calculations for a future definitive trial. Fidelity of programme delivery, acceptability, and satisfaction with the programme will also be evaluated. We will examine trial feasibility including recruitment rate, study protocol, assessment methods/procedures, and potential to gather cost effectiveness data. A multi-component dissemination strategy among the health promotion communities and general public will include targeted translation and stakeholder engagement events to establish strategies for sustainability and policy change, and social and print media campaigns. Conclusions: The Aussie-FIT pilot will provide data needed to scale up the intervention for a nationwide RCT. Additional components of the programme (e.g., motivational emphasis in coach training, application of BCTs specific to weight maintenance) build on existing interventions delivered to sports fans in the UK, continental Europe, Canada and New Zealand. Results from the definitive RCT will have potential to inform development of Aussie-FIT programmes customised for a range of professional sports (e.g., cricket, rugby) and segments of sport fans (e.g., females, children, families).

P2.05.15
INTERNET-BASED PROFESSIONAL LEARNING TO HELP TEACHERS SUPPORT ACTIVITY IN YOUTH (iPLAY): ADOPTION AND IMPLEMENTATION OF A PRIMARY SCHOOL PHYSICAL ACTIVITY PROGRAM

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SIG: Implementation and Scalability

Purpose: iPLAY is a whole-of-school, blended learning intervention for primary school teachers designed to promote physical activity and fundamental movement skills in children (ACTRN1261600731493). iPLAY will be delivered in up to 180 schools between 2016-2021. Here we examine the extent to which classroom teachers in the first cohort of schools have adopted and implemented the intervention. Methods: Most iPLAY content is based on the efficacious Supporting Children's Outcomes using Rewards, Exercise and Skills (SCORES) intervention. We modified the intervention components for online delivery in order to increase program flexibility and maximize scalability. After an initial face-to-face workshop, classroom
teachers are asked to complete 8 online modules (30 mins each) and implement strategies relating to 3 components: (1) quality physical education and school sport, (2) classroom energisers (i.e., physical activity breaks during academic lessons), and (3) physically active homework. At the start of each of the 8 modules, teachers report their recent implementation of these 3 components. Results: 73 teachers from 8 schools in the initial cohort began iPLAY training by attending the face-to-face workshop or completing an online version of the workshop. 57 teachers completed all 8 online modules (78% completion rate). Grade 5 and 6 teachers’ completion rates (64%) were lower than Kindergarten-Grade 4 teachers (81%). During the intervention period, the majority of teachers (78%) reported delivering at least 120 minutes of physical education and school sport lessons per week, with 58% reporting at least 150 minutes/week. This latter standard (150 mins/week) meets government policy requirements for physical activity delivery in primary schools. 95% of teachers reported implementing at least one classroom energiser per day and 79% assigned physically active homework at least once per week. Conclusions: Preliminary adoption and implementation rates in the iPLAY intervention are encouraging. A whole-of-school physical activity promotion program can be feasibly delivered using a blended format that combines face-to-face and online learning for teachers.

P2.05.16
SCALING UP APPETITE TO PLAY: EVALUATING AN INTERVENTION TO ENHANCE PA AND HE PROVISION BY EARLY YEARS PROVIDERS.
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SIG: Implementation and Scalability

Purpose: Appetite to Play (ATP), an intervention to enhance the physical activity (PA) and healthy eating (HE) policies, environments and practices in early years settings, is being scaled up in British Columbia. Reach, efficacy and implementation of the scale-up at 6 months was explored. Methods: Surveys, interviews, and web analytics measured the: reach of training, resources and partnership activities; impact of training on knowledge, confidence and intention to change; and facilitators and barriers to scale up and implementation for stakeholders, delivery agents, and early years providers (EYP). Descriptive analysis detailed reach and use. Wilcoxon Signed Rank Tests assessed efficacy and thematic analysis highlighted implementation issues for EYPs and delivery agents. Results: As of February 2018, ATP has trained 61 delivery agents and booked 120 workshops, of which 53 have been completed reaching 700 EYPs across the province. Over 1,000 visitors/month visited the ATP website and spent > 5 minutes/visit. 44% are return visits (7 minutes per/visit). Pre and post-workshop surveys (n=363 EYPs; 96% female; 38.6 years old, SD = 11.7) showed knowledge and confidence increased significantly after training (p<.001). EYPs were determined (91%) and motivated to promote PA (90%); and intended to limit sedentary behaviours (85%). EYPs were determined (88%) and motivated to promote HE (89%). For EYPs: time, weather, children with special needs, lack of parent and staff support, and lack of knowledge and skill were barriers to promoting PA and HE. While personal values, supportive environments, enthusiasm from kids, staff and parents, staff with specialized training, task simplicity, and reinforcement from licensing officers were facilitators. Barriers to workshop delivery included: complexity of the evaluation, time between delivery agent training and workshop delivery, managing the participants, questions outside of the scope of training and handling less-receptive participants. Facilitators included: enthusiastic participants, their training, the workshop materials, the ATP website, and positive reception to the content. Summary: A combination of in-person training and online resources expanded reach and training enhanced knowledge, confidence and intentions among EYPs. Real-time process evaluation is allowing for course-correction during scale-up. Next steps include longer term follow-up and assessment of impact on policies, environments and practices.

P2.05.17
WHO IS WANTING THEIR WORK TEAMS TO SIT LESS? CHARACTERISTICS OF EARLY ADOPTERS OF THE BEUPSTANDINGTM CHAMPION TOOLKIT.
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SIG: Implementation and Scalability

Objective: The BeUpstandingTM Champion Toolkit (www.beupstanding.com.au) was developed in response to strong demand from industry for resources to be able to tackle the emergent issue of too much sitting in the workplace. This free, online toolkit uses a "train-the-champion" approach and step-by-step guide (with associated multi-media resources) to support workplace champions to deliver the BeUpstanding intervention within their own work team. This world-first toolkit went live across Australia in a soft launch (with minimal promotion) in September 2017. Here we report on the participation and characteristics of the early adopters of the toolkit. Methods: Data on participation and characteristics were collected via the web-interface from workplace champions (self-completion surveys) and workplace staff (online surveys distributed by the workplace champions). Descriptive statistics are presented. Results: As of February 27th, 2018, BeUpstanding has attracted 80 workplace champions, representing organisations with ≈19,000 staff, located in diverse industries across several key (non-exclusive) sectors: blue-collar (n=12), call centre (n=9), regional (n=14), and small business (n=13) from across Australia. Common reasons for signing up to the toolkit include raising awareness in their team about the benefits of sitting less and wanting to create a healthy culture in their workplace. The champions surveyed so far (n=65) range from 21 to 65 years of age and are mostly: women (68%); work in an Occupational Health and Safety role (63%); have Workplace Health and Safety training (60%); and, are either a general employee (47%) or middle management (42%). Workplace audits (n=29) indicate 22% of participating workplaces are 'high stress' environments, only 31% have a written activity policy, 21% formally support activity based working, and 10% provide height-adjustable workstations to all staff. Staff surveys (n=223) indicate, on average, staff sit/stand/move for 73%/16%/11% of the time at work but desire a more balanced profile of 31%/32%/27%. Conclusions: Despite the minimal promotion of the toolkit, there has been good participation from multiple sectors and industries and from across Australia. The learnings gained from this phase, including user experience, will inform the national launch and associated evaluation of the BeUpstanding Champion Toolkit in late 2018.

P2.06: Adults and Older Adults (Grand Foyer)

P2.06.01 EFFECTS OF REDUCING SITTING TIME ON CARDIO-METABOLIC RISK BIOMARKERS IN ADULTS – A META-ANALYSIS OF INTERVENTION STUDIES

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: High levels of sedentary behaviour are associated with cardio-metabolic risk. While targeted interventions can effectively reduce sitting time, many of these studies have been underpowered to assess impacts of these reductions on health-related biological attributes. A systematic review and meta-analysis was conducted to assess effects on cardio-metabolic risk biomarkers of interventions to reduce sitting time. Methods: A systematic database search identified relevant peer-reviewed studies detailing sedentary behaviour interventions (= 1 week) in adults that reported on at least one cardio-metabolic biomarker outcome (body mass; BMI; waist circumference; glucose; insulin; HbA1c; triglycerides; total, HDL and LDL cholesterol; systolic and diastolic blood pressure) and included a control group. Interventions that targeted changes other than sedentary behaviour and physical activity (e.g., diet modification or medication use) were excluded. Meta-analyses using fixed-effects models, or random-effects models (DerSimonian-Laird) for heterogeneous outcomes, were used to summarise the pooled intervention effects on each outcome, relative to control conditions. Results: Sixteen studies (n=1872 participants) were included in the review. Outcomes most frequently reported were body mass (12 studies), triglycerides (11), HDL-cholesterol (10), and glucose (9). The duration of interventions ranged from 4 weeks to 12 months; the majority were in the workplace setting. The meta-analyses revealed significant (p<0.05), beneficial, pooled intervention effects for body mass: -0.67kg (95% CI: -1.30 to -0.05), BMI: -0.34 kg/m2 (95% CI: -0.60 to -0.08), waist circumference: -0.55cm (95% CI: -0.97 to -0.13) and insulin: -4.42 pmol/L (95% CI: -6.56 to -2.28). Effects
for the other outcomes were mostly in the beneficial direction but were small and not statistically significant. Conclusions: Interventions targeting reductions in sedentary behaviour can lead to statistically significant, but modest, improvements in insulin levels, and some markers of adiposity. The short timeframes and healthy populations targeted in these studies may underestimate potential health benefits. The evidence base needs studies with longer intervention durations and a focus on more diverse populations — especially those with chronic diseases, whose biomarkers have more scope to improve. The relative benefits of different replacement activities for sedentary behaviour remain to be elucidated.

P2.06.02 - SHORT-LISTED FOR THE BEST POSTER PRESENTATION AWARD BY AN EARLY CAREER RESEARCHER
ESTIMATING PORTION SIZES FROM FOOD IMAGES: ACCURACY OF ESTIMATION BY MALAYSIAN NUTRITION PROFESSIONALS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Validity of image-assisted and image-based dietary assessment methods relies on the accuracy of portion size estimation based on food images. This study aims to determine the accuracy of estimating portion sizes from digital food images among nutrition professionals in Malaysia. A total of 38 participants (16 dietitians, 8 nutritionists, and 14 nutrition researchers) aged between 24 to 36 years took part in this study. Methods: Each participant was randomly given two food images labelled as Image PL (lunch meal served on a plate) and Image BW (lunch meal in a bowl) via LimeSurvey, an online survey tool. Participants estimated quantity of the presented foods to the closest gram. Accuracy of portion size estimation was determined by calculating mean percentage error of estimated and weighed portion sizes. All 38 participants completed portion size estimation for Image PL while 31 participants completed for Image BW. Results / Findings: Only eight (21%) and nine (29%) subjects accurately estimated portion sizes within ±10% mean errors for Image PL and Image BW, respectively. Rice (mean error 3.5%) and sliced fruits (mean error 2.6%) were accurately estimated within 10% error based on Image PL. For both images, chicken/fish and beverages were significantly overestimated, while vegetables were underestimated compared to weighed standards. Overall, mean error was 15.8 ±16.9% for any food type. There was overestimation in portion size of high-energy foods and underestimation of low-energy foods. Mean error of portion size estimation was higher for foods served on a plate than for those served in a bowl. Conclusion: Only a low proportion of nutritional professional provided acceptable estimation of portion sizes based on food images. Training should be provided to nutrition professionals to enhance their skills in interpreting digital food images for assessing diets.

P2.06.03 - SHORT-LISTED FOR THE BEST POSTER PRESENTATION AWARD BY AN EARLY CAREER RESEARCHER
A STRUCTURED HEALTH INTERVENTION FOR TRUCKERS (THE SHIFT STUDY): STUDY PROTOCOL FOR A CLUSTER RANDOMISED CONTROLLED TRIAL
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SIG: No, this does not fit in any of the above mentioned special interest groups

Introduction: Heavy goods vehicle (HGV) drivers are exposed to a constellation of risk factors associated with their work routine, which puts drivers at risk of ill-health. As a result, HGV drivers exhibit higher rates of cardiometabolic disorders and higher than nationally representative rates of obesity compared to the general population, along with a reduced life expectancy compared to other occupational groups. Limited opportunities to engage in a healthy lifestyle are available within their working environment, yet health promotion programmes are scarce within this occupational group. The SHIFT programme is a multicomponent, theory-driven intervention targeting HGV drivers' physical activity (PA), sedentary behaviour and diet. Methods/analyses: A powered sample of 336 HGV drivers will be recruited from our
P2.06.04
EFFECTS OF ANTRODIA CINNAMOMEA ON ENDOTHELIAL INJURY AND ITS RELATED GENE EXPRESSION IN RATS WITH HYPERLIPIDEMIA
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Atherosclerosis (AS) is a chronic inflammatory process that could cause mononuclear cell infiltrates and lipid accumulation in blood vessel, and monocyte adhesion to vessel endothelial cells (VEC) is an important initial event of VEC injury which can lead to AS. Drug intervention is currently recognized as an effective method to treat AS. Previous studies demonstrated the anti-inflammatory, anti-tumor, anti-oxidation effect of antrodia cinnamomea. However, whether antrodia cinnamomea could effectively improve endothelial injury in rats with hyperlipidemia is unknown. To test the role of VEC injury related genes in AS treated with antrodia cinnamomea, we established an VEC injured animal model by feeding Sprague–sh;Dawley rats with high-fat diet, then observed the effects of antrodia cinnamomea on serum lipid, anti-oxidation indexes, and VEC injury related genes in aorta of the VEC injured rats. Methods: Fifty rats with similar weight [(220±smn;20 g)] were randomly divided into five groups, namely the normal control group (NG), the model group (MG), the antrodia cinnamomea groups of low, middle and high dose (AC-LG,AC-MG,AC-HG). The rats were fed with high-fat diets to establish the model of hyperlipidemia. After administration for 10 weeks, rats in each group were tested with the following indexes: serum lipid, SOD, MDA and ox-LDL, the mRNA and protein expression of LOX-1, P38MAPK and NF-κB and aorta were taken for morphological examination. Results: In the model group, the contents of TC, TG and LDL-C were significant increased (P<0.01), the contents of HDL-C was significant decreased (P<0.01). Compared with the model group, both the AC-M group and the AC-H group showed significant decreases in TC, TG and LDL-C (P<0.05 or P<0.01), the level of HDL-C were increased but no significant differences (P>0.05); SOD activity in the were markedly increased (P<0.05 or P<0.01), MDA and ox-LDL activity were dramatically decreased (P<0.05 or P<0.01). The mRNA and protein expression of LOX-1, P38MAPK, NF-κB were obviously decreased (P<0.05 or P<0.01). Conclusions: Antrodia cinnamomea can prevent endothelial injury by inhibiting the expression of LOX-1, P38MAPK, NF-κB in aorta tissue, improving the endothelial injury and protecting the cells from oxidative damage.

P2.06.05
A SYSTEMATIC REVIEW OF THE ASSOCIATION BETWEEN PERCEIVED OVERWEIGHT AND WEIGHT LOSS ATTEMPTS, STRATEGIES, BEHAVIOURS, AND OUTCOMES
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Purpose: Identifying as being ‘overweight’ is widely assumed to be necessary for successful weight management. This assumption informs public health approaches that involve monitoring and notifying individuals of their weight status, but is backed by limited evidence. The aim of the present research was to systematically review evidence for the association between self-perceived overweight and weight-related behaviours and outcomes including: (a) weight loss attempts, (b) healthy and unhealthy weight-loss strategies, (c) healthy eating habits and physical activity, (d) disordered eating, and (e) weight change. Methods: Searches targeting evidence published over the past 25 years identified 10,422 unique records which were screened to yield 78 studies eligible for inclusion. Evidence from eligible studies was evaluated using a methodological quality checklist and synthesised both overall and within participant subgroups split by gender, age group, and objective weight status. Results: Results indicated strong evidence that perceived overweight was consistently associated with a higher likelihood of attempting to lose weight. Perceived overweight was not reliably associated with physical activity or healthy eating habits, but was associated with reduced physical activity in some participant groups (e.g., male adolescents). There was strong evidence that perceived overweight was associated with an increased likelihood of disordered eating, and moderate to strong evidence that perceived overweight prospectively predicts increased weight gain. Conclusions: The findings of the present review suggest that while individuals who perceive their weight status as overweight are more likely to attempt weight loss, they are no more likely to engage in healthy weight-related behaviours. Further, perceiving oneself as overweight, as opposed to failing to perceive oneself as overweight is associated with disordered eating, and predicts increased weight gain over time. These findings cast doubt over the notion that being aware of one's overweight status is beneficial to weight management.

P2.06.06
THE EFFECT OF NUTRITION AND HEALTH CLAIMS ON CONSUMER PERCEPTIONS OF FOOD AND CONSUMPTION BEHAVIOUR
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Purpose: Previous studies have demonstrated that Nutrition and Health Claims (NHC) can affect consumer perceptions of food and drink products as well as their consumption behaviour. However, there is little understanding of the causes and mechanisms underlying these effects. This study aimed to explore the influencing factors and reasons as to how claims may impact perceptions and consumption. Methods: Ten focus groups were conducted across the island of Ireland with a total of 78 participants. A semi-structured topic guide was created to examine consumers' thoughts on food packaging, nutrition claims, and health claims, focussing on perceptions (tastiness, healthiness, and satiety) and consumer behaviour in relation to different types of NHC. Participants were also asked about their familiarity with and knowledge of NHC. Showcards and products containing NHC were used to prompt discussion. Audio from the focus groups was transcribed and NVivo was used for thematic analysis. Results: Six themes were identified; Knowledge of NHC, believability of NHC, factors influencing purchase, target markets for NHC, characteristics/perceptions of products with NHC, and consumption of products with NHC. Participants had superficial knowledge of NHC and the believability of claims was dependent on product type and brand. There were conflicting opinions as to whether claims encouraged purchases or did not influence purchasing behaviour. NHC were identified as useful for certain stereotyped groups of individuals such as older people, parents, and those with specific health issues and not for the average consumer. Overall, participants perceived that products with claims were healthier than those without claims and there was acknowledgement that NHC do affect food consumption, although not always in the expected direction. Conclusions: Overall, consumers had limited knowledge of NHC. The effects of NHC on consumption were related to consumers' perceptions in terms of taste and healthiness but not satiety as suggested by previous research. Future research should test the links between food perceptions and consumption behaviour in relation to NHC. This material is based upon work supported by safefood, under grant no. 09/2015.
THE EFFECTS OF NUTRITION AND HEALTH CLAIMS ON CONSUMER PERCEPTIONS AND PORTION SIZE SELECTION: A REPRESENTATIVE CROSS-SECTIONAL STUDY

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Purpose: While Nutrition and Health Claims (NHC) have been designed as aids for consumers to make healthier food choices, they have also been found to increase consumption. However, the evidence of overconsumption of NHC products has typically emerged from experiments with small unrepresentative samples, limiting the validity and generalisability of findings. To address these limitations, the current study used a representative sample to investigate the effects of NHC on consumer perceptions and portion size selection.

Methods: A representative island of Ireland sample of 1,039 adults completed a cross-sectional survey. Photographs of four food packages (cereal, soup, lasagne, yoghurt) each randomised to carry a different NHC ("low fat", "lowers cholesterol", "fuller for longer", as well as no claim), were rated by respondents in terms of expected tastiness, fillingness, and perceived healthiness. Respondents also selected a portion size that they would eat for each food product. Appetite, sociodemographic, health, and psychological factors were also measured. ANOVAs and hierarchical multiple regressions were used to examine the effects of claims and other factors on perceptions and portion size selection.

Results: The presence of the "lowers cholesterol" claim on food products decreased fillingness ratings. After controlling for appetite, 3%-12% of the variance in perceptions of the different foods was explained by sociodemographic, health, psychological, and claim type variables, with claims explaining 1%-2%. These variables together also explained 19%-27% of variance in portion size selection, with claims having little effect. Those who believed the claims in the study had significantly higher tastiness, healthiness, and fillingness ratings and also chose significantly larger portion sizes than those who did not believe.

Conclusions: The current study was the first to examine the impact of NHC on consumer perceptions and portion size selection using a survey with a representative sample. NHC impacted upon consumer perceptions of food but had limited impact on portion size selection over and above sociodemographic, health, and psychological variables. Believability was associated with larger portion sizes and greater positive perceptions. Those who believe claims should be made aware how NHC may influence consumption. This material is based upon work supported by safefood, under grant no. 09/2015.

CORRELATES OF PHYSICAL ACTIVITY IN PEOPLE WITH MENTAL RETARDATION: A LITERATURE REVIEW

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Objective: Evidence has shown that mentally retarded (MR) people has a lower level of physical activity (PA) than their normal peers. But the correlates of PA in MR people are relatively less reported. The aim of this review is to summarize existing findings on the correlates of PA in MR people, and to provide references for PA promotion in MR people in the future.

Methods: Literature search was conducted in two electronic databases (PubMed and CNKI) using key words "intellectual disabilities", "mentally retarded", "physical activity", "correlates", and "influence factor" in December 2017. To be included in the review, articles should fulfill the following criteria: (1) participants are MR people, and (2) studies investigated the correlates of PA in the MR population. Conference abstracts and articles written in languages other than Chinese or English were excluded. Results: The initial search identified 71 articles. Nine articles were included in the review after screening for eligibility. Among which, eight studies are quantitative research. Correlates of PA in MR people are classified based on the social-ecological theory. Personal correlates include body mass index, movement disorder, anticipated benefits of PA, knowledge of health movement, motor skills, self-efficacy, self-motivation, and preference for sedentary behavior. Social correlates include over protection by caregivers and parents’ encouragement. In addition, environmental factors such as
Sports resources and relevant policies are also correlates of PA in MR people. Moreover, the high cost of PA participation is another influencing factor of PA in the MR population. Conclusions: The correlates of PA in MR people are multifaceted. Interventions for promoting PA in MR people should target the personal, social, and environmental factors. Qualitative studies are warranted in the future to provide more in-depth understanding of correlates of PA in MR people.

**P2.06.09**

**CHANGES IN HEALTHY AND UNHEALTHY EATING PATTERNS FROM AN INTERVENTION TO PROMOTE LIFESTYLE CHANGES AMONG MEXICAN AMERICANS**

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**SIG:** No, this does not fit in any of the above mentioned special interest groups

**Objective:** Examine the efficacy of a community health worker (CHW) delivered intervention with motivational interviewing strategies to promote change in eating patterns among low-income Mexican American adults. We hypothesized that adults randomized to the intervention group would report less unhealthy and more healthy eating patterns compared to the control group. Methods: Tu Salud ¡Si Cuenta! (Your Health Matters!) at Home was designed to reach Mexican American adults, 18-75 years, through six monthly CHW home visits, which included lifestyle change education, motivation and support. Participants were randomly selected from an ongoing cohort study and randomized into intervention or control group. Controls were potentially exposed to a community-wide physical activity and healthy diet campaign. Data were collected at baseline, 6 and 12 month follow-ups. Healthy and Unhealthy eating indices (HEI, UNHEI) measured intake frequency of common foods during the previous day. Mixed effects Poisson models were used to account for family level clustering and repeated measures correlation. An interaction between study group and follow-up visit was included to assess study group effects change over time. All models were adjusted for demographic and social variables. Results: There were 250 participants randomized to the control and intervention group, respectively, and 198 intervention participants completed at least 3 CHW visits. The estimated mean HEI and UNHEI did not differ between the study groups at baseline or follow-ups. The estimated mean UNHEI declined significantly for the intervention completer group from baseline to 6 month (p<0.0009) and 12 month (p<0.0001) and for the control group between baseline and 12 months (p<0.0001). Conclusions: The CHW home visit intervention provided individualized learning and counseling sessions for the intervention group in addition to both study groups having exposure to a community-wide campaign designed to promote healthy lifestyle changes. The change seen in unhealthy eating for control group could be associated with the positive impact of the community-wide campaign. Additionally, benefit may be found from the home visits, which guided discussions about food choice. It appears that reducing unhealthy eating behaviors may be an initial step when changing nutritional patterns, as we found no differences in healthy eating patterns.

**P2.06.10**

**ARE AESTHETIC FACTORS AND PHYSICAL FITNESS ASSOCIATED WITH EXERCISE ATTENDANCE AND EXERCISE DROP-OUT? A LONGITUDINAL PROSPECTIVE COHORT STUDY.**

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**Objective:** The scientific evidence of those individuals that choose to exercise at a fitness club is scant. There is a need for longitudinal documentation of motivational reasons, as well as insight about which factors are most influential across time. The aims of the present study were: 1) to identify motivational reasons for fitness club membership and exercise, and 2) investigate if aesthetic factors and physical fitness are associated with attendance, exercise drop-out and membership drop-out at three and 12 months of fitness club membership. Methods: In total, 125 new fitness club members were recruited. Eligible criteria were <4 weeks of fitness club membership, untrained (exercising <60 min once a week at moderate or vigorous intensity), =18 years, and not pregnant. At onset of exercise, and after three and 12 months of fitness club membership, the participants answered an electronic questionnaire and performed
measurements of body composition, maximal oxygen uptake (VO2max) and 1 repetition maximum (1RM) (bench press and leg press). Based on self-reported attendance at three months, the participants were divided into three groups: regular attendance (=2 exercise sessions per week), low attendance (<2 exercise sessions per week) and exercise drop-out (no exercise sessions the last 4 weeks). A linear random effects regression model was conducted to investigate if aesthetic factors (weight loss and body composition) and physical fitness (VO2max and muscle strength) were associated with attendance and exercise drop-out at two time-points (three and 12 months). Results: Primary motivational factors for new fitness club membership were increase in physical fitness (92.8%), have a healthy body (66.4%) and bodily well-being (64.8%). VO2max was the only factor showing an interaction with attendance. At three months, regular attendees had significantly higher VO2max than exercise drop-out (6.54 ml·min⁻¹·kg⁻¹, p=0.003). At 12 months, a difference in VO2max of 5.32 ml·min⁻¹·kg⁻¹ (p=0.054) was found between regular attendees and exercise drop-out, as well as between regular and low attendance (6.17 ml·min⁻¹·kg⁻¹, p=0.042). Conclusions: Increased physical fitness was the primary motivational reason for joining the new fitness club. VO2max was the only factor associated with exercise attendance after three and 12 months of fitness club membership.

P2.06.11
PHYSICAL ACTIVITY OF SPECIAL OLYMPICS ADULT ATHLETES FROM 2015 WORLD GAMES
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Adults who have intellectual disabilities are at particular risk for insufficient physical activity, obesity, and health problems. Special Olympics provides opportunities for those with intellectual disability to obtain the benefits of physical activity and sport in a supportive environment. Although competitive games represent one aspect of involvement in Special Olympics, it is unknown to what extent organized participant training contributes to physical activity and health. Methods: We obtained data on international participants (n =550 men, 279 women) attending the 2015 Special Olympics World Games in Los Angeles. Participants were evaluated by a medical team before competition, and self-reported (along with a caretaker) on various health behaviors. Among several "disciplines," height, weight, and blood pressure were assessed, and data were recorded regarding age, sex, moderate and vigorous physical activity, flexibility and strength exercises, and the proportion of athletes' typical weekly physical activity performed within Special Olympics training and competition. Descriptive statistics included means and standard deviations. Differences between participants who reported that a majority (most or all) versus minority (none or some) of weekly physical activity took place within Special Olympics were determined using ANOVA. Results: Participants ranged in age from 18 to 69y (mean=25.1±smn;8.1y). Body mass index (BMI) ranged from 10.8 to 63.7kg/m² (mean=24.8±smn;5.4kg/m²). Systolic blood pressure (SBP) ranged from 69 to 171mmHg (mean=118.7±smn;13.4mmHg) while diastolic ranged from 35 to 111mmHg (mean=70.3±smn;10.2mmHg). When comparing those who reported a majority versus minority of their physical activity took place within Special Olympics, significant differences were observed for SBP (mean=118.0±smn;66mmHg vs. 119.9±smn;0.66mmHg, p=0.045); BMI (mean=24.4±smn;0.24kg/m² vs. 25.3±smn;0.30kg/m², p=0.019); total physical activity (mean=4.0±smn;0.11days vs 3.4±smn;0.12days p<0.001); and moderate physical activity (mean=4.0±smn;0.11days vs 3.4±smn;0.12days, p<0.001). Differences persisted (except for SBP, p=0.079) after statistical adjustment for age and sex. Conclusions: Participants in the 2015 Special Olympics World Games showed heterogeneity in physical activity and health profiles. Those who reported higher proportions of physical activity within the Special Olympics context were more physically active, had lower systolic blood pressure, and lower BMI. Greater opportunities to participate in Special Olympics may potentially improve the physical activity and health profiles of adults with intellectual disability.

P2.06.12
FRIENDS FOSTER PHYSICAL ACTIVITY: EXAMINING A SOCIAL COGNITIVE THEORY MODEL IN MAINLAND CHINESE UNIVERSITY STUDENTS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Background: Regular physical activity offers important mental and physical health benefits, and Chinese students may not be sufficiently active to achieve these benefits. Social cognitive theory (SCT) can be used to understand correlates of physical activity. In Western samples, self-efficacy has shown direct and indirect relationships to physical activity through other SCT variables such as self-regulation, and barriers/facilitators. Social support for physical activity is typically indirectly related to physical activity through self-regulation and self-efficacy. These relationships may differ in a Chinese context. Purpose: This research aimed to test the direct and indirect relationships between SCT variables and vigorous and moderate intensity physical activity for mainland Chinese university students. Method: Chinese university undergraduate students (N = 317; 54.8% female; Mean age 20.16 ± smn; 1.57 years) completed an online survey package measuring physical activity (IPAQ), self-efficacy (MSES), friend support for exercise, intention to be physically active, perceptions of access to places to be physically active, and self-construal. A dependent t-test was used to examine differences on endorsement of an independent or interdependent self-construal within the sample. Structural equation modelling was used to test theorized relationships between SCT variables and vigorous and moderate intensity physical activity. An alternative model was tested in which social support was directly related to vigorous intensity physical activity. Results: The students rated themselves higher on interdependent self-construal compared to independent self-construal (p < .05). The alternative model was retained as it was supported statistically and theoretically. Social support was directly positively related to vigorous physical activity and self-efficacy (ßa; = .28). Self-efficacy was positively related to intention (ßa; = .74) and access perceptions (ßa; = .56). No relationships were found for moderate intensity physical activity. Conclusions: Social support may be a more important facilitator of physical activity for interdependent Chinese students compared to those in independent Western cultures. Moderate physical activity may be built into Chinese student's daily lives, and not require the psychological resources described in SCT to complete (e.g., self-efficacy, social support, intention). Health promoters should use social support to encourage vigorous physical activity in Chinese university students.

P2.06.13
EFFECTS OF ENDURANCE EXERCISE ON INSULIN RESISTANCE AND CAVEOLIN-3 IN HIGH-FAT DIET-FED RATS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: A disturbance of glucose homeostasis may lead to diseases such as type 2 diabetes (T2DM). The development of T2DM is preceded by insulin resistance (IR), which is mainly occurred in skeletal muscles. Caveolin-3 (Cav-3) is a muscle-specific subtype of caveolin, a scaffolding protein membranes. A recent study showed that Cav-3 null mice displayed IR, characterized by decreased glucose uptake in skeletal muscles and impaired glucose tolerance test performance, suggesting that Cav-3 plays an important role in insulin signaling in muscle. Exercise is currently recognized as an effective strategy to prevent IR, however, the mechanism of exercise on Cav-3 and insulin signal transduction remains to be identified. Here, we investigated whether 8-week swimming exercise could up-regulate the expression of Cav-3, then enhance the insulin signaling in skeletal muscles in IR rats. Methods: Sprague–sh;Dawley rats were randomly divided into three groups: control group with standard diet (group CON), IR model group with high-fat diet (group HFD), and exercise group with high-fat diet (group ex-HFD). The IR model was established by 8-weeks' high-fat diet, and swimming exercise was performed. The model were evaluated by using the euglycemic clamp technique, homeostasis model assessment for IR (HOMA-IR) and insulin sensitivity index (ISI). Moreover, eNOS, GLUT4, mRNA expression of Cav-3, protein expression of Cav-3, and Akt were detected by RT-PCR and WB. Results: After feeding with high-fat diet for 8 weeks, compared to CON group, both the glucose infusion rate (GIR) and ISI levels were significantly decreased (p<0.01), whereas the HOMA-IR levels were significantly increased (p<0.01) in the HFD group, suggesting that the IR rat model was successful established. Compared with CON group, the GIR and ISI levels were obviously increased (p<0.01), while the HOMA-IR levels were significantly decreased (p<0.01) in ex-HFD group. Furthermore, in ex-HFD group, the activity of eNOS and the contents of GLUT4 were both markedly up-regulated (p<0.01), Cav-3 gene and protein expression significantly increased (p<0.01), and the 8-
week exercise increased protein expression of pAkt ser473 and Akt (p<0.01). Conclusion: Exercise may increase the expression of Cav-3 and improve the IR through up-regulating the sensitivity of IR signaling pathway.

P2.06.14
“NO LONGER ALONE ON MY JOURNEY:” EXPERIENCES, BARRIERS AND BENEFITS OF A PHYSICAL ACTIVITY PROGRAM FOR INDIVIDUALS WITH SERIOUS MENTAL ILLNESS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: In Canada, mental illness carries a high yearly economic burden and is associated with poorer quality of life and life satisfaction. Physical activity (PA) may be one way to improve the health and well-being of individuals with serious mental illness (SMI). However, the factors that affect the quality of the PA experience and adherence to PA programs among individuals with SMI are not well understood. To address this gap, the purpose of this study was to explore experiences and logistics of delivering a 6-week PA program for individuals from a local community mental health organization with SMI.

Methods: Individual interviews were conducted with individuals with SMI (N=4; 2 female), a trainer, and a key organizational stakeholder to better understand individuals' experiences following a 6-week tailored PA program. Based on a social constructivism approach, interviews were audio-recorded and transcribed verbatim. Observational data was collected throughout the program by the researcher in the form of field notes. Guided by Braun and Clarke's (2006) methodology, an inductive thematic analysis was completed.

Results: Triangulation of interview and field note data revealed several prominent themes. Individuals with SMI primarily reported experiences that were coded into five themes: motivational factors (e.g. health, age, aesthetics), transference of health behaviours (i.e. PA leading to positive changes in diet, decreases in substance use), mood (i.e. acutely following PA and consistent improvements over program), confidence and competence (e.g. desires for leadership roles in starting PA programs in their community homes) and self-esteem. Stigma reduction (i.e. increased sense of normalcy) and PA program feasibility (e.g. location, tailored, trainer education, recruitment challenges) were themes common in all individual, trainer, and stakeholder interviews. Conclusions: Individuals with SMI view PA as important and reported various positive changes after completing the 6-week PA program. Participants, organizational stakeholder and trainer viewed the program as feasible. Factors identified that facilitate the feasibility and effectiveness may be used to inform the development of future PA programs for individuals with SMI in community-based settings.

P2.06.15
RUNNING ON A HIGH: PARKRUN AND PERSONAL WELL-BEING
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Background: Previous research on mass-participation physical activity (PA) and health has focused mainly on the physical health benefits of single-location or infrequent events. We examined overall and domain specific subjective well-being adult "parkrun" participants in Australia, a weekly community-based, timed, 5km running event. Parkrun is unique among mass participation PA events being simultaneously frequent, cost-free, with no minimum skill level. Originating in the UK, it attracts experienced and inexperienced runners alike spread across 16 countries in almost 1300 locations and is run almost entirely through volunteers. Australia has 260 parkruns and over 370,000 registrants. Methods: Data were a national online survey of 865 adult Australian parkrunners. First, scores on nine individual personal well-being measures and the global Personal Well-being Index (PWI) were compared to national, normative data. Second, regression models with the parkrun sample tested associations between both the global PWI and the single item Satisfaction with life as a whole and the perceived benefits of parkrun in terms of (1) mental health and (2) connection to community. Results: Of 100 scores, 28% of means for parkrunners fell
outside the population normative ranges overall and those for age and gender subgroups. Satisfaction with health was higher for male parkrunners, parkrunners aged over 45 and for parkrunners overall; only parkrunners aged 18-24 fell below their population age group norm. Higher scores on the global PWI were associated with higher perceived benefit of parkrun for connecting with the community for men (B=3.60 (95%CI:0.81-6.40)) and with mental health benefit for women (B=3.76 (95%CI:1.04-6.48)). For women Satisfaction with life as a whole was positively associated with perceived mental health benefits of parkrun (B=3.99 (95%CI:0.60-7.38), but not perceived community connection, and neither measure for men.

Conclusions: Australian parkrunners mostly reflect the general population on personal well-being, except report superior satisfaction with their physical health. Women's personal well-being may benefit from parkrun through improved mental health and men's from the community connectedness it provides. Among athletes, parkrun may facilitate positive expression of identity and continuation of healthy habits; for non-athletes parkrun represents non-demanding, health enhancing activity and social interaction.

P2.06.16
ENERGY EXPENDITURE OF SPORADIC SLOW WALKING LASTING LESS THAN 60-SEC AS INTERRUPTION TO PROLONGED SITTING
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SIG: No, this does not fit in any of the above mentioned special interest groups

[Objectives] The metabolic associated with the walking is mainly estimated based on the results of the laboratory test where the cardiovascular responses to the prolonged walking. However, in regard to the free-living condition, the bout length is apparently shorter that the length obtaining steady state of the cardiovascular. The purpose of the present investigation was to examine the energy cost of the sporadic walking lasting less than 60-sec. [Methods] The subjects of the present investigation were young 15 men and 9 females aged from 21 +/-1 years old. The experiment was consisted by the 1-min of the walking and the 10-min of the resting period followed by the 5-min of recovery period. The subjects walked 1-min at the speed of 70 m/min under 3 conditions, 1st; 4 bouts of the 15-sec walking, 2nd; 2 bouts of the 30-sec walking, and 3rd; one continuous walking for 60-sec. The 10-min of resting period was equality sandwiched depend on the walking bout length. Additionally, the subjects walked at the self-selected three speeds for 10 minutes continuously, respectively. During the experiment, the energy expenditure was continuously measured by the gas analyzer (METAMAX 3B, Cortex Medical, Leipzig). [Results] The net energy cost, averaged over the 16-min of the experimental period including recovery period, significantly differ across the walking condition, and the 4 bouts of the 15-sec walking expended greater calories compared the 2 longer bout duration (p<0.05). After adjusted by the walking distance, the energy cost of the sporadic walking was significantly differ compared with that obtained by the continuous 10-min of the walking period (p<0.05). [Conclusions] The energy cost of the short sporadic walking assuming the actual habitual physical activity may not be explained by the walking speed and distance. Not only total daily distance but also the evaluation of the bout length and the changes in walking speed (acceleration) would improve the accuracy for estimating energy expenditure during the free-living condition.

P2.06.17
ASSOCIATIONS OF OLDER ADULTS’ PERSONAL ATTRIBUTES AND PERCEPTIONS OF THE NEIGHBORHOOD ENVIRONMENT WITH WALKING FOR RECREATION AND TRANSPORTATION
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: This study examined the cross-sectional associations of personal and perceived neighborhood environment attributes with walking for recreation and transportation among older Taiwanese adults. Methods: A telephone-based cross-sectional survey of older Taiwanese adults was conducted in November 2016. Data related to personal factors, perceived environmental factors, and time spent in transportation-related and recreational walking (part of the long version and the Environmental Module of
the International Physical Activity Questionnaire) were obtained from 1,032 older adults. The data were analyzed by performing adjusted binary logistic regression. Results: After adjusting for potential confounders, two commonly perceived environmental factors, the presence of sidewalks (PS) and the presence of a destination (PD) were positively associated with 150 minutes of walking for recreation (PS: odds ratio [OR] = 1.50; 95% confidence interval [CI]: 1.15-1.96; PD: OR = 1.56; 95%CI: 1.17-2.07) and transportation (PS: OR = 1.93; 95%CI: 1.37-2.39; PD: OR = 2.39; 95%CI: 1.60-3.58). Different personal and perceived environmental factors were also associated with walking for recreation and transportation, respectively. Conclusions: These findings suggest that policy makers and physical activity intervention designers should develop both common and individual environmental strategies in order to improve and increase awareness of the neighborhood environment to promote recreational and transportation walking behaviors among older adults.

P2.06.18
THE EFFECT OF HIGH INTENSITY INTERVAL TRAINING OR RESISTANCE TRAINING, BOTH WITH LOW-CARBOHYDRATE HIGH-FAT NUTRITION ON FITNESS AND FAT LOSS IN LOW-ACTIVE OVERWEIGHT ADULTS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: We sought to compare the effects of time equated and similar effort high intensity interval training (HIIT) versus resistance training (RT), both combined with a 'low-carbohydrate, high-fat' (LCHF) approach to nutrition, in overweight low-active adults. Methods: 37 participants (16 male, 21 female; 48±smn;7 years; BMI 30±smn;5) were randomised to 12 weeks of either HIIT or RT, both performing 10 sets of 1 minute 'work' interspersed with 1 minute passive recovery. HIIT utilised stationary cycling and/or a treadmill, with a target heart rate of 90% of age-predicted maximum. RT was 10 sets of 15 repetitions at ≈70% one repetition maximum in a variety of multi-joint exercises. Target rate of perceived exertion for both groups was 16-18 on a 6-20 scale. All sessions were fully supervised, and conducted thrice weekly. Both groups were provided with resources and guidance on adopting LCHF (daily =100g carbohydrate, ≈1.5 g/kg protein, fat not limited). Assessments pre- and post-intervention included body mass, VO2 peak, and DXA-derived lean body mass, fat mass, and visceral fat. Within group change was evaluated using paired t-test or Wilcoxon signed rank test, with effect size (ES) using Hedge's g. Between group differences were evaluated using a combination of linear and generalised linear models, controlling for baseline measures (p=0.05). Results: Results are for completers only (HIIT N=17, RT N=13; withdrawals were unrelated to intervention). VO2 peak improved significantly in both groups (ES 0.57 p<0.001, and ES 0.53, p=0.001 for HIIT and RT respectively). Body mass significantly decreased for both HIIT (ES -0.35, p<0.001) and RT (ES-0.19, p=0.001). Fat mass significantly decreased for both HIIT (ES-0.54, p<0.001) and RT (ES -0.36, p=0.004). Visceral fat significantly decreased for both HIIT (ES-0.54, p<0.001) and RT (ES -0.33, p<0.001). Lean body mass significantly decreased for HIIT (ES -0.07, p=0.005, and did not change for RT (ES 0.00, p=0.853). There were no significant between group differences in these measures. Conclusions: Irrespective of specific exercise modality, consistent, effortful exercise combined with LCHF is an effective approach for fat reduction and aerobic fitness, but HIIT resulted in some loss of lean body mass whereas RT did not.

P2.06.19
MEN IN SINGAPORE: DIFFERENCES IN BODY DISSATISFACTION AND ATTITUDES TOWARDS DISORDERED EATING IN THE THREE MAIN ETHNICITIES
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Singapore is a multi-cultural society mainly composed of Chinese, Malay and Indian ethnicities.
Men from different races differ in body shape and this may lead to conform to an ideal shape via excessive exercise and/or disordered eating. The aim of the current study was to investigate if ethnicity is related to disordered eating behaviour and body dissatisfaction in adult males in Singapore. Methods: Men were randomly approached at universities, food courts and religious temples aiming for similar numbers of Chinese, Malay and Indian ethnicities. Participants filled in a paper questionnaire consisting of demographic and anthropometric data and the Eating Attitudes Test (EAT-26). Participants also answered about own ideal weight, perceived and ideal muscularity body shapes and if on a diet for weight loss/gain. This sample was composed of 279 adult men (mean age=29.4 years, SD=11.6) and divided as 84 Chinese, 87 Malays and 108 Indians. Data were statistically analysed using SPSS at the significance level of 0.05. Kruskal Wallis with Bonferroni post-hoc test assessed ethnicity differences regarding age, body mass index (BMI), discrepancies between perceived and ideal weight and shape, EAT-26 and subscales' scores. Chi-square test was performed between ethnicity and if on a diet for weight loss/gain. Results: Chinese participants had the lowest BMI (p<0.05) however, there was no significant difference between Malays and Indians. Independent of ethnicity, 68% of men desired to be more muscular (p<0.05). Nonetheless, in contrast with Chinese, Malays were the least satisfied with weight whilst Indians with shape (p<0.05). About 73% of participants were not on a diet and 86% scored below 20 (clinical cut-off score) on the EAT-26. There were no ethnic significant differences in EAT-26 and subscales' scores except for Dieting. Chinese scored lowest in the Dieting subscale in contrast with Malays and Indians (p<0.05). Yet, Malays and Indians did not significantly differ between their Dieting scores. Conclusion: This multi-ethnic non-clinical sample was at a low-risk of developing eating disorders. However, Malays and Indians scored higher than Chinese on the Dieting EAT-26 subscale. Possibly, this was because Malays and Indians were of a bigger built and less satisfied with weight and/or muscular appearance.

P2.06.20
DESCRIPTIVE EPIDEMIOLOGY OF ACCELEROMETRY-BASED ACTIVITIES IN A MULTI-ETHNIC URBAN ASIAN POPULATION

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Despite the increasing use of accelerometers to improve the accuracy of physical activity (PA) and sedentary behaviour (SB) measures, one major issue in this field is choosing the appropriate cut-offs to define activity-intensities. Also, accelerometer-assessed data are limited among nationally representative Asian populations. We aimed to report accelerometer-assessed time spent in activities by finer intensity categories, and aggregated (broader) intensity categories. Methods: Baseline data of adults (Chinese, Indian and Malay ethnicity aged =18 years) who participated in a nationwide prospective cohort study in Singapore were used. Participants wore the ActiGraph accelerometers on the waist for 7 days. Valid wear-time was defined as =4 days, =10 h/day. Time spent in counts per minute (cpm) was grouped into six finer intensity categories (<200, 200-499, 500-1499, 1500-2499, 2500-3999 and =4000) and further aggregated into three broader intensity categories (<200, 200-2500, =2500). Since the intervals were of different range of values, data were normalized to 100-units cpm (when reporting data across finer categories). Absolute mean difference (AMD) between genders was calculated (reference category: females), expressed in min/day. Results: 746 participants (mean age=47.8 years; 58.0% females; 66.0% Chinese) provided valid accelerometry-data, with a mean wear-time of 7.0 days and 911.8 min/day. All participants time spent in activities within cpm of <200, 200-499, 500-1499, 1500-2499, 2500-3999 and =4000 was 261.4,34.2, 17.2, 6.8, 2.9 and 0.3 min/day. Females spent more time on lower-intensity activities within 500-1499 (AMD=-2.7, p<0.001) and 1500-2499 cpm (AMD=-0.3, p=0.03) than males, while males spent more time in the highest-intensity categories of 2500-3999 (AMD=0.5, p<0.001) and =4000 cpm (AMD=0.2, p<0.001). No gender differences were observed in 200-499 cpm (AMD=-0.3, p=0.71). Across the broader intensity groups, males engaged greater time in SB (=200 cpm) (AMD=18.4, p=0.06),
and MVPA (=2500 cpm) than females (AMD=14.8 min/day, p<0.001), while females engaged more time in light-intensity PA (200-2499 cpm) (AMD=-30.8, p<0.001). Comparison by ethnic groups did not demonstrate differences in intensity categories. Conclusions: Males spent more time in the higher-intensity categories than females. A detailed descriptive analysis of activity patterns across the full intensity spectrum may help further understanding the use of appropriate cut-offs for adults to achieve PA recommendation.

P2.06.21
EXPLORING PERCEPTIONS OF THE PROPOSED SUGAR-SWEETENED BEVERAGE TAX AMONG HEALTH PROFESSION EDUCATORS AT A SOUTH AFRICAN UNIVERSITY
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective In South Africa, plans to introduce a levy on sugar-sweetened beverages (SSB) were announced in February 2017. The aim of this study was to determine the perceptions of this proposed levy and the behavioural characteristics of health professional educators at a South African university. Methods A web-based cross-sectional, exploratory study of 31 health educators (mean age: 44.8 ±smn; 12.9 years and 71% were female) was conducted at the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg. Perceptions of the proposed 20% sugar levy were assessed using an adapted self-administered questionnaire. The SSB consumption and physical activity profiles of those for and against this levy were determined using descriptive statistics. Results The majority of the sample is in support of the proposed sugar levy (77.4%), while 80% of those against it believed they would buy cheaper alternatives to save money. Forty-seven percent of those who perceived that a tax on SSBs would help with addressing obesity felt it should be executed in conjunction with similar policies and education. No differences were observed for physical activity measures, however those who believed that a lower SSB tax would be more acceptable had significantly higher consumption of low fat milk (16.3 (0; 40.8) vs 0 (0; 6.5) kcal/day, respectively; p<0.05) and energy drinks (4.97 (1; 25) vs 0 (0; 8) kcal/day, respectively; p<0.05) than those would did not. Conclusions The health profession educators in this study appear to be in support of the proposed tax on SSBs in South Africa. Further investigations are necessary to determine whether the wider South African public are also in favour of the levy.

P2.06.22
INCIDENCE AND CHARACTERISTICS OF PHYSICAL ACTIVITY-RELATED INJURIES AMONG UNIVERSITY STUDENTS IN SHANTOU, CHINA
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: University students might be relatively physically active and more vulnerable to experience physical activity-related injury (PARI) underlying the current global campaign to promote physical activity (PA). However, researches about PARI epidemic was little known among the general population though it has been firmly established for collegiate athletes. This study, a part of a multi-centered mixed study on PARI supported by the Natural Science Foundation of China (Grant No. 31640038), aimed to describe the incidence and characteristics of PARI among university students in Shantou. Methods: This is a cross-sectional study conducted in two universities, where 434 students graded 1-3 were invited to complete the questionnaires during April and May via the face-to-face and one-on-one investigation in the spot after their completion of the baseline survey in March and April, 2017. Individual weekly exposure to PA was estimated from the baseline and following questionnaires. PARI experience in the past 12 months was recorded if it met at least one of the judgment criteria. The exposure setting, injury mechanism, injury location, injury type, and injury severity were evaluated for the overall sample and by sex. Pearson chi-
square test and two-tailed t-test were used to test the between-group differences. Results: During the past 12 months, a total of 317 injuries were reported by 182 participants, with an overall PARI incidence rate of 41.9% (49.6% in males vs. 39.3% in females). Football had the highest injury rate for all injuries (70.6%), followed by basketball (64.9%). Most injuries involved the lower extremities, were newly occurring injuries, and occurred in extramural PA and non-contact situations, with sprain and strain being the primarily injury types. Nearly 49% of all injuries did not required medical treatment though more than half of all injuries resulted in a period of inactivity or class absenteeism of 2 days or above. Significantly differences could be seen between males and females in injury circumstance, injury mechanism, and treatment of the injuries. Conclusions: Conditioning and practical injury-prevention programs may be needed to underpin the injury mechanism to address the high rate of PARI and maximize the benefits of PA among general university students.

P2.06.23
ASSOCIATED FACTORS OF PHYSICAL ACTIVITY-RELATED INJURIES AMONG UNIVERSITY STUDENTS IN SHANTOU, CHINA
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: The increase of physical activity-related injury (PARI) could be expected under the contemporary global campaign to promote physical activity (PA) to public for health. In China, university students might be more physically active as their release from heavy academic burdens and pressure for college admission. Compared with children and adolescents, however, evidence in PARI occurrences and its associated factors among university students is scarce. This study, supported by the National Natural Science Foundation of China (Grant No. 31640038), was designed to explore the incidence and associated factors of PARI among university students in Shantou. Methods: This is a cross-sectional study conducted in two universities, where 434 students graded 1-3 were invited to complete the questionnaires during April and May via the face-to-face and one-on-one investigation in the spot after their completion of the baseline survey in March and April, 2017. Information of socio-demographics, habitual level of PA (including various kinds of sports and leisure-time activities), individual safety awareness, and PARI experiences in the past 12 months. The adolescent risk-taking questionnaire (ARQ) was also distributed to this population, which was comprised of thrill-seeking, rebellious, reckless and antisocial risks. The least absolute shrinkage and selection operator (Lasso) and multiple logistic regression were performed to identify risk factors of PARI. Results: A total of 317 injuries were reported by 182 participants, resulting in an overall PARI incidence rate of 41.9% in the past 12 months. Around one tenths of the injured (9.7%) experienced PARI at least three episodes. Incidence of PARI was significantly associated with gender, club membership, level of participation in vigorous-intensity PA (VPA), protective equipment, and antisocial risks. Male, high level of VPA, and antisocial risks were identified as the important risk factors of injury events in the Lasso logistic regression model, and the results were proven to be robust. Conclusions: This analysis above reinforces the importance of implementing injury-intervention programs to address the high rate of PARI among university students. Safety issues as part of a comprehensive response to injury control should also be emphasized and disseminated to the public along with the recommendations on PA.

P2.06.24
PREFERENCE TRIAL FOR THE SUPPORTED PREPARATION FOR AN ACTIVE CHARITY EVENT: FEASIBILITY AND PRELIMINARY EFFECTS ON PHYSICAL ACTIVITY BEHAVIOUR AND PSYCHOLOGICAL OUTCOMES.
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SIG: No, this does not fit in any of the above mentioned special interest groups
Objective: Active charity events have been identified as having untapped potential for public health by encouraging physical activity (PA) through charitable and social motives. However there is limited research on how to convert event participation into sustained PA behaviour. This preference trial examined the feasibility of providing a 7-week supportive group training programme, and changes in PA behaviour and psychological outcomes three months post-event. Methods: Adult women (n=27) taking part in a Cancer Research UK women-only Race for Life 5km event, and currently unable to run 5km, were recruited. Participants were offered supported group training, independent training, or random allocation (no preference), in preparation for the event. Feasibility was assessed by acceptability ratings, retention and adherence rates. Self-report measures included PA, self-efficacy, and social physique anxiety. Objective measures were accelerometry, height, weight, body composition and blood pressure. All assessments were taken pre-training (baseline), post-event, and after a 3-month follow up. Results: All participants had a preference for either group (n=15) or independent (n=12) training. The main reason for preferring group training was low motivation (100%), and for independent training was schedule flexibility (100%) particularly around work (50%) or family commitments (33%). The proportion of overweight/obese participants was higher among those choosing group support (53.3%) than independent training (41.7%). Seven participants dropped out prior to training (group = 4) or early in the programme (group = 2; independent = 1). Of those retained, mean adherence to training sessions was 58.1% (group) and 53.3% (independent). Post event, there was a decrease in social physique anxiety (95% CI = -7.63, -1.12; d =.61) and an increase in self-efficacy (95% CI = 0.45, 2.02; d =.97) for group training. Three months later, the increase in self-efficacy from baseline remained for the group training arm (95% CI = 0.33, 1.89; d =.94). No clear differences were evident for any objective measures between groups or over time. Conclusions: Supported group training for Race for Life may particularly appeal to overweight participants, and lead to sustained increases in self-efficacy levels. However, increases in PA behaviour were not observed after the event with either supported or independent training.

P2.06.25
UNHEALTHY BEHAVIOR AND POOR SLEEP PROFILES: A CROSS-SECTIONAL STUDY AMONG MIDDLE-AGED FINNISH PUBLIC SECTOR EMPLOYEES
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Person-oriented approach has been rarely used to examine the clustering of unhealthy behaviors and poor sleep. We aimed to model the underlying subgroups of unhealthy behaviors and poor sleep among middle-aged female and male employees using latent class analysis. Methods: The study is part of an ongoing Helsinki Health Study. Baseline survey (n=8960, response rate 67%, 80% women) was conducted among 40-60-year-old employees of the City of Helsinki in 2000-2002. Unhealthy behaviors included physical inactivity, smoking, high alcohol consumption and low consumption of fruits and vegetables. Poor sleep was defined as frequent (>14 nights/month) insomnia symptoms. Latent class analysis was used to search for different underlying profiles in women and men. Three class model for women and men were chosen according to fit criteria (AIC, BIC). Results: The most common profile of women (37%) is characterized by a slightly higher probability for poor diet, poor sleep and, especially, low physical activity. The second (35%) is characterized by a low probability for all unhealthy behaviors and poor sleep, whereas, the third (28%) by higher probability for poor sleep and all unhealthy behaviors, especially, smoking. Men had somewhat different profiles than women. The most common profile of men (44%) is characterized by a slightly higher probability for poor diet, low physical activity and poor sleep. The second (29%) is characterized by a slightly higher probability for poor diet, smoking and drinking, whereas, the third (27%) by a higher probability for poor sleep and all unhealthy behaviors, especially, poor diet, smoking and low physical activity. Conclusions: Using a person-oriented approach revealed somewhat different underlying profiles of unhealthy behaviors and poor sleep between women and men. Further analyses are needed to examine determinants and health outcomes in relation to these profiles. Policy makers, occupational healthcare and health promotion programs can use this information for better focusing their actions.
P2.06.26
PREGNANT WOMEN’S WEIGHING ATTITUDES AND BEHAVIOUR
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Promoting healthy gestational weight gain (GWG) is important for preventing obstetric and perinatal morbidity, along with obesity in both mother and child. GWG guidelines have become a key component of antenatal clinical guidelines. Research concerning pregnant women’s weighing practice and views on being weighed is limited. This study aimed to explore pregnant women’s self-weighing practices and views on health professional (HP) weighing. Methods: Using a cross sectional design, 1046 consecutively enrolled women received a mailed questionnaire after their first antenatal visit to a public maternity hospital in Melbourne, Australia. Frequency of self-weighing, agreement on a five-point Likert scale that “I’m embarrassed when a doctor or midwife weighs me” and socio-demographic variables were assessed. Logistic regression was used to investigate the associations of demographic and weight variables for self-weighing and HP weighing discomfort. Results/findings: Participants (n=368; 35% response) averaged 32.5 years, 20 weeks gestation and 35% speaking a LOTE. Thirty-six percent had a pre-pregnancy BMI (ppBMI) in the overweight/obese categories with 59% in the healthy range. 40% of women self-weighed monthly, 16% fortnightly, 26% weekly or more frequently and 18% never. Women with a tertiary education were nearly three times more likely to self-weigh (OR 2.8;95%CI 1.26-6.31) than those without. 63% of women “disagreed” or “strongly disagreed” that they were embarrassed by HP weighing while 20% neither "agreed nor disagreed" and 17% "agreed or strongly agreed". Women with overweight and obese ppBMIs were more than three (OR 3.49;95%CI 1.66-7.36) and thirteen times (OR 13.74;95%CI 6.41-29.44) more likely to agree to embarrassment than those with a healthy weight.

Conclusions: The majority of pregnant women reported self-weighing at least once per month with tertiary educated women three times more likely to self-weigh. Women who were overweight or obese prior to pregnancy were significantly more likely to report discomfiture with HP weighing. This research signals the need for promotion of self-weighing particularly amongst those with less than tertiary education and need for strategies to reduce embarrassment with HP weighing.

P2.06.27
IMPACT ON HEALTH-RELATED PHYSICAL FITNESS OF MALE UNDERGRADUATES FROM HEALTH RECREATIONAL GYMNASTICS COURSE
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: The purpose of this study is to test whether health recreational gymnastics courses contribute to the improvement of the health-related fitness of male university students by the experiment. Method: In the study, 68 male university students of Shanghai Normal University were divided into two groups: the control group (n=33) participated in traditional gymnastics classes, the experimental group (n=35) was engaged in moderate- or vigorous-intensity of health recreational gymnastics classes. Both of the groups had classes for 90 minutes once a week, which lasted 8 weeks. The heart rates of all the students were monitored throughout gymnastics classes, the indicators of health-related physical fitness were tested before and after the experiment. Result: The results showed that the average heart rate was higher in the experimental group than that in the control group (P <0.05), and all the indicators of health-related physical fitness in the experimental group were higher than that in the control group (P <0.05), however, ONLY three indicators of health-related physical fitness in the control group increased significantly (P <0.05). The experimental group had two indicators superior to the control group (P <0.05). Conclusion: The results demonstrated that both health recreational gymnastics exercises and traditional gymnastics exercises can improve the physical health of university students, but the former had better effect than the latter.
ASSOCIATIONS BETWEEN SELF-REPORTED PHYSICAL ACTIVITY AND PRODUCTIVITY AMONG SIX SOUTHEAST KANSAS WORKSITES
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Objective This study sought to examine the relationship between self-reported all-day physical activity and workplace productivity among six southeast Kansas worksites. Methods The International Physical Activity Questionnaire – Short Form (IPAQ-SF) and Health and Work Questionnaire (HWQ) were administered online to employees at six worksites in one southeast Kansas county from August 2017 through November 2017. Each worksite identified a point of contact to administer the survey link to employees. Self-reported minutes of physical activity for the last seven days were assessed. MET-minutes were computed by self-reported vigorous, moderate, and walking minutes and categorized into three levels: inactive, minimally active, or highly active. Workplace productivity was assessed through the use of an overall HWQ score, using a 10 point response scale. The HWQ score is based on 24 items in six subscales: concentration, productivity, impatience, supervisor relations, non-work satisfaction, and work satisfaction. Results A total of 556 of 1228 employees completed the surveys, a 45% response rate. Based on MET-minute calculations, employees were most likely to report being highly active (38%) or minimally active (37%). As physical activity increases, the overall HWQ score increases (p=0.016). Employees who were highly active (95% confidence interval [CI], 0.055-0.729) and those who were minimally active (95% CI, 0.003-0.679) had higher HWQ scores than inactive employees. Conclusions Among these six Kansas employers, self-reported physical activity was positively associated with self-reported workplace productivity.

SELF-REPORTED PHYSICAL ACTIVITY AND SEDENTARY BEHAVIORS OF KANSAS EMPLOYEES BY INDUSTRY
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Objective This study sought to identify employer industry groups whose employees report the most and least physical activity and sedentary behaviors while at work. Methods Each worksite identified a point of contact to administer the survey link to employees. The assessment was administered online to a convenience sample of 45 worksites across Kansas from November 2015 to November 2017. Two items assessed perceived physical activity levels while at work (engaging in physical activity that raises heart rate; engaging in physical activity for at least 10 minutes at a time). Perceived work time spent sedentary or physically inactive and employees’ level of agreement with needing more opportunities to be physically active at work were also assessed. Responses were categorized by industry using the 2017 North American Industry Classification System (NAICS) sector codes. Results 3,370 of 5,418 employees completed the surveys, for a 62% response rate. Five industry groups (construction, finance and insurance, educational service, health care and social assistance, and public administration) made up 92% of the total responses. Employees in public administration (53%) and health care and social services (47%) were most likely to report ‘regularly’ or ‘constantly’ engaging in physical activity that raises heart rate while at work. Employees in construction (57%) and health care and social services (39%) were most likely to report ‘regularly’ or ‘constantly’ engaging physical activity for at least 10 minutes at a time while at work. Employees in finance and insurance (64%) and public administration (43%) were most likely to report sedentary behaviors during work ‘all day’ or ‘nearly all day.’ Employees in finance and insurance (71%) and educational service (62%) were most likely to report that they ‘agree’ or ‘strongly agree’ they need more support at the worksite to be physically active. Conclusions Among these Kansas employees, those working in construction and health care/social services were more likely to report being physically active at work compared to other industry groups. Those in finance and insurance were more likely to report
sedentary and physical inactivity at work compared to other industry groups. Those in public administration reported both physical activity and sedentary behavior at work.

P2.06.30
PHYSICAL ACTIVITY AND RISK OF CARDIOVASCULAR DISEASE, CANCER AND ALL-CAUSE MORTALITY: A SYSTEMATIC REVIEW
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Regular physical activity (PA) improves overall health, and has the capacity to reduce risk of chronic disease and death. However, better understanding of the relationship between multiple lifestyle behaviours, including PA, and disease outcomes is pertinent for prioritising public health messages. We conducted a systematic review to examine how PA and additional lifestyle behaviours impact cardiovascular disease, cancer and all-cause mortality. Methods: Ovid MEDLINE (n=12,633) and EMBASE (n=8,834) from 1 January 2010 to 22 November 2017 were searched to identify studies examining the relationship between PA and at least one additional lifestyle factor (smoking, alcohol, diet, or sedentary behaviour) and cardiovascular disease, cancer and all-cause mortality. This resulted in 22,875 titles, and the abstracts and full-text articles of potentially relevant papers were screened for eligibility. Data were extracted from 85 eligible papers, of which 21 studies were included. Quality assessment was completed using a modified Newcastle-Ottawa Scale (NOS). Results/findings: Across the 21 eligible studies, there were between 974 and 476,396 participants aged between 20 and 84 years. There was strong evidence that increasing PA levels, and improving levels of lifestyle behaviours led to reduced risk of cardiovascular disease and all-cause mortality. Engaging in more healthy behaviours compared to fewer, gave greater protection against most cancers. Previous high quality research examining these relationships has been limited, and across studies, PA reporting tends to be heterogenous. Additionally, most studies did not consider epidemiological challenges that may bias findings, such as residual confounding, reverse causality by pre-existing disease, and measurement error from self-report data. Conclusions: Engaging in healthier lifestyle behaviours was associated with lower risks of cardiovascular disease and death from all-causes. These findings support current global public health recommendations to continue to improve lifestyle behaviours, and limit poor health behaviour decisions to promote longevity and better health outcomes.

P2.06.32
ASSOCIATIONS BETWEEN CONSUMPTION OF NOT HOME PREPARED MEALS AND TYPES OF PHYSICAL ACTIVITY AND SEDENTARY BEHAVIORS WITH OVERWEIGHT AND OBESITY AMONG ADULTS IN NHANES 2013-2014
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Consumption of away from home meals has been linked to increased body weight. Also physical and sedentary activities are risk factors for overweight, obesity and related chronic diseases. Additionally, engaging in sedentary activities is associated with obesity independent of PA; however, little is known about the link between levels of leisure and work related physical activity and types of sedentary activities and overweight or obesity among a large sample of adults. Methods: Cross-sectional data from the National Health and Nutrition Examination Survey (NHANES) 2013-2014 were used to examine associations between overweight or obesity and away from home meals, types of PA (vigorous/moderate recreational and transportation) and sedentary (TV or video watching, computer or video game use) among adults. A total of 4,129 adults (age: 20-64 years, mean: 42.3 years; male: 49%; white: 63%) were included. Logistic regression was used to examine association between independent variables and prevalence of overweight (yes/no) or obesity (yes/no). All models were adjusted for age, gender, race,
education level, marital status, and birth place; analyses were weighted to account for the complex survey design (including oversampling), survey non-response, and post-stratification. Results/Findings: Obesity was higher among females (42%) than males (35%); 38% of whites, 50% of African Americans, and 43% of Hispanics were obese. About 28% engaged in =150 minutes of moderate and 18% in =75 minutes of vigorous PA per week. Engaging in =75 min/week of vigorous and =150 min/week of moderate recreational PA was associated with 52% (p<.0001) and 25% (p<.0001) lower obesity risk, respectively. Walking or biking for transportation of =150 min/week was associated with decreased risk of overweight by 40% (p=0.0007) and obesity by 36% (p=0.033). TV watching of =2 hours/day was linked to increased risk of overweight by 61% (p=0.0003) and obesity by 85% (p=0.0008). Having one additional not home prepared meal a week increased the obesity risk by 28% (p=0.015). Conclusions: Our findings support the benefits of engaging in the recommended levels of moderate or vigorous PA and of limiting TV watching to reduce risk of overweight/obesity. Health messages should continue to support these behavior changes.

P2.06.33
UNDERSTANDING MULTIPLE HEALTH BEHAVIOUR CHANGE: SPILLOVER EFFECTS OF A PHYSICAL ACTIVITY INTERVENTION ON ALCOHOL CONSUMPTION
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: While cross-sectional research indicates physical inactivity (PA) and alcohol consumption tend to co-occur, there are limited longitudinal data on how interventions targeting one behaviour affect other behaviours. For example, as per the compensatory effects hypothesis, is alcohol used as a 'reward' or 'damage control' for increased PA? Or, as suggested by the transfer hypothesis, is increasing PA associated with improved health behaviour (ie. reduced alcohol consumption)? The current investigation examined the potential spill-over effect of increasing PA on alcohol consumption, within the context of a PA intervention. Methods: Between 2011-14 insufficiently active adults (n=203; mean age=57 years; 70% female) were recruited from primary care in NSW, Australia and enrolled in a pragmatic randomized controlled PA trial. Participants completed baseline and 3 month assessments that included measures of PA (step-counts) and alcohol consumption. We hypothesised that successfully increasing PA may lead to reduced alcohol consumption (to reduce calories or increase health benefits) or to increased alcohol consumption (as a 'reward' for being more active). Logistic regression was used to assess the impact of change in PA (increased by 1000 steps/day or did not) on alcohol consumption at 3 months. Results: Becoming more physically active did not result in reduced alcohol consumption (OR=0.56; 95% CI: 0.23, 1.37; p=0.2), nor increased alcohol consumption (OR=0.37; 95% CI: 0.13, 1.05; p=0.06). Overall, compared with those who did not increase their step count, there was a trend towards participants with increased step count being less likely to decrease their alcohol consumption (OR=0.40; 95% CI: 0.15, 1.03, p=0.06) and significantly less likely to increase their alcohol consumption (OR=0.27; 95% CI: 0.09, 0.82, p=0.02). Results from multiple imputed data were broadly consistent with complete case analyses. Conclusion: Contrary to our hypotheses, participants who increased their PA during the intervention were more likely to maintain their existing level of alcohol consumption rather than increase or decrease it. Thus, neither the compensatory effects nor the transfer hypothesis were supported. This suggests that alcohol may not be viewed as a reward in the same way that food is. Participants may not recognise reduced alcohol consumption as a healthy behaviour.

P2.06.34
NUTRITIONAL POTENTIAL OF DATE PALM FRUIT (PHOENIX DACTYLIFERA) AND ITS POSSIBLE USE AS SWEETENER
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SIG: No, this does not fit in any of the above mentioned special interest groups

This study was carried out to determine the Proximate, Minerals, Anti nutrient composition and Functional properties, and to evaluate the sensory properties of the pap Sweetened with the formulated date flour.
The result of proximate composition were as follows: moisture (5.12g), fat (14.48g), ash (7.09g), crude protein (20.87g), crude fiber (2.30g), total carbohydrate (50.04g). The mineral value were: calcium (51mg), magnesium (40mg), potassium (126mg), zinc (2.42mg), cooper (0.25mg), iron (1.39mg), manganese (2.00mg) and sodium (70.95mg). The result of ant nutrient composition were as follows: tannin (2.10mg), saponion (47.00mg), phytate (40.00mg) and oxalate (5.00mg). The results of the functional properties were: water absorption capacity (67.33), oil absorption capacity (79.33), Bulk density (10.0) and gelatinization (770c). The result obtained from the sensory evaluation showed that the taste and flavor of the pap sweetened with the formulated date flour was equally acceptable as that of granulated sugar. There were no significant differences in colour and mouth feel of the two samples but the texture and appearance of pap sweetened with sugar was slightly preferred to that of date flour. The granulated sugar was slightly more acceptable than date flour as a sweetener. Date palm fruit contain an appreciable amount of nutrient such as minerals and fibre if improved upon in terms of texture and appearance can help in controlling the blood sugar level when consumed as sugar substitute.

P2.06.35
HOW DID COMPLETERS OF LIFESTYLE MODIFICATION PROGRAM PERCEIVE THEIR ADHERENCE BEFORE AND AFTER PROGRAM? FINDINGS FROM A QUALITATIVE STUDY.
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Existing evidence on adherence to lifestyle modification program focused mainly on attrition and attendance, neglecting the behavioural aspects of adherence. The aim of this study is to explore and compare the perception of dietary adherence, physical activity (PA) adherence, attendance and self-monitoring among good and poor adherers of a community-based lifestyle modification program in Hong Kong

Methods: Using a combination of convenience and stratified purposive sampling, twenty-six completers of LMP@CNSCUHK, a lifestyle modification program developed by the Center for Nutritional Studies of the Chinese University of Hong Kong, were recruited for in-depth semi-structured interviews about their perception of adherence between April and August 2016. Interviews were audio-taped and transcribed verbatim in Cantonese. The transcripts were analyzed to identify emergent themes.

Findings: Consistency in perception of dietary and PA adherence differ among good and poor adherers. Good adherers consistently perceived their dietary and PA adherence high during weight loss phase. Overestimation of adherence was reported in some poor diet adherers that they perceived their dietary adherence high in early weight loss phase. There was a decreasing trend of dietary adherence in most participants, mostly occurred upon completion of program. However, fluctuations in dietary adherence were only reported in good diet adherers. On the other hand, both good and poor adherers shared similar perception towards long-term behavioural changes, self-monitoring and attendance. Most participants reported long-term changes in healthier eating behaviour after LMP@CNSCUHK. For diet self-monitoring and diet consultation attendance, most participants perceived they were facilitators of dietary adherence, through self-checking against diet plans and the pressure to follow diet plan before meeting their dietitians/nutritionists. Conclusions: Fluctuations in dietary adherence might be a sign of giving up of lifestyle changes among good diet adherers. Overestimation of dietary adherence level might contribute to the poor adherence among poor diet adherers. LMP@CNSCUHK appeared to have long-term effect on dietary changes in both good and poor adherers. The findings of this study suggested dietary and PA adherence were better indicators of behavioural change. Self-monitoring and attendance were facilitators of dietary and PA adherence.

P2.06.36
RELATIONSHIP BETWEEN DAILY INTAKE OF DIETARY FIBER AND EATING BEHAVIOR IN OBESE AND NORMAL-WEIGHT JAPANESE ADULTS: A CROSS-SECTIONAL STUDY
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Purpose Disruption of eating behavior increases the risk of obesity and associated disorders. Short-chain fatty acids produced by the microbial fermentation of dietary fiber (DF) in the gut can contribute in regulating appetite and eating behavior. A daily intake of DF might prevent an impairment of eating behavior. There are few studies that have elucidated whether a high intake of DF is associated with regulation of eating behavior in Japanese individuals. Thus, we examined the relationship between daily intake of DF and eating behavior in obese and normal-weight Japanese subjects. Methods The subjects of this study were 547 Japanese adults (396 female and 151 male; aged 22-82 years) who participated in the Nutrition and Exercise Intervention Study (NEXIS). They were classified as obese and normal-weight according to BMI (obese = 25.0 kg/m2). Eating behavior was assessed using the 21-item Three-Factor Eating Questionnaire (TFEQ-R21), where a low total score on the 21 items means a good eating behavior. TFEQ-R21 measures three domains of eating behavior: cognitive restraint, uncontrolled eating, and emotional eating. Dietary intake was estimated using a brief-type self-administered diet history questionnaire. The subjects were divided into three quantiles according to daily DF intake. An analysis of covariance with DF intake and BMI as factors, with age and gender included as covariates, was conducted to assess the main and interaction effects on the score of TFEQ-R21. Results/findings Mean DF intake and TFEQ-R21 total score for all subjects were 7.7 ±smn; 2.3 g/1000 kcal/day and 42 ±smn; 8, respectively. The total score on TFEQ-R21 significantly decreased in accordance with the increase in DF intake in normal-weight subjects (P = 0.018) but not in obese subjects, which resulted in a significant interaction effect on the total score of TFEQ-R21 (P = 0.037). A significant interaction effect on the score of emotional eating was found (P = 0.032). In the high DF intake group, obese subjects showed a significantly higher score on emotional eating compared to normal-weight subjects (P = 0.013). Conclusions These results suggest that the relationship between daily intake of DF and eating behavior was different between obese and normal-weight Japanese adults.

P2.06.37 SECULAR TREND OF METABOLIC INDICES AND RISK FACTORS OF FATTY LIVER FOR CHINESE IT WORKERS

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Objective: To examine the secular trend of metabolic indices in continuous five years, and the cross-sectional and longitudinal effects of metabolic risk factors on fatty liver among Chinese IT workers.

Methods: A group of 823 young IT workers from an urban area of China who had physical examination in the same institution for continuous 5 years (2011-2015) were recruited. The repeated measurements of physical examination data (e.g. anthropometric indices, blood pressure, biochemical bioassays, and B-ultrasonography tests etc.) were included in the analysis. Secular trend of metabolic indices were summarized and illustrated for whole sample and subgroup analysis by age and gender. Panel data analyses using logistic regression models were performed to identify the effects metabolic risk factors on fatty liver. Results: For these young IT workers, the metabolic conditions became worsen and the prevalence of fatty liver increased dramatically over five years, and the prevalence of fatty liver in this study sample was significant higher than general population in the same area. According to panel data analysis, body mass index (OR=2.84, p<0.01), systolic blood pressure (OR=1.06, p<0.01), diastolic blood pressure (OR=1.05, p<0.01), fasting blood-glucose (OR=1.79, p=0.002), triglyceride (OR=1.74, p<0.01), and low density lipoprotein (OR=1.45, p=0.018) were positively associated with the odds of having fatty liver, whereas the high density lipoprotein was negatively associated with the odds of having fatty liver (OR=0.23, p<0.01), and the effects within the individual for five years explained more variance of fatty liver than those within the population (all rho>0.5). Conclusions: Chinese IT workers were suffering poor health conditions, and the conditions kept deteriorating over a short term. The deteriorating metabolic risks increased the risk of fatty liver in this population. Appropriate health promotion efforts should be placed on this population, such as improving life styles, monitoring metabolic risks, and improving working...
conditions.

P2.06.38
ASSOCIATIONS BETWEEN SITTING TIME AND MUSCULOSKELETAL PAIN IN DIFFERENT BODY REGIONS AMONG WORKERS ACCORDING TO BLUE AND WHITE COLLARS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objectives: To investigate the association between sitting time (daily total, and occupational and leisure-time periods) and musculoskeletal pain in different body regions among workers by blue-collar and white. Methods: The sample comprised 205 workers. Musculoskeletal pain and related symptoms was assessed with the Nordic Questionnaire of Osteoarticular Symptoms, and the sitting time was assessed with IPAQ – sh; Short Version. The association of sitting time and musculoskeletal pain and related symptoms was analyzed with logistic regression, adjusted for BMI, age, gender and Moderate to Vigorous Physical activity. Results: The white collars participants had lower level of moderate to vigorous Physical Activity than Blue collars. The participants were more likely to have less musculoskeletal pain and related symptoms in the ankles/feets with higher sitting time (odds ratio [OR] = 0.995, p = .032). Conclusion: Sitting time is negatively associated with musculoskeletal pain in the ankles/feets intensity only among white collars workers. Future studies using a prospective design with objective measures of sitting time are recommended. Our results emphasize the need of worksite interventions to prevent musculoskeletal pain and related symptoms.

P2.06.39
THE INFLUENCE OF IMPENDING HEALTHY BEHAVIOUR ON EATING BEHAVIOUR
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective Well-intended healthy behaviour (i.e. eating a healthy meal, exercise,) is regularly scheduled into an individual's day. Uniquely, the anticipation of engaging in healthy behaviour potentially leads to two contrasting outcomes by i) priming future healthy behaviour or ii) by licensing indulgence, yet their determinants remain unclear. For the present research, we studied these phenomena by examining the influence of impending healthy behaviour on snack intake. We hypothesized that the increased salience of "health" from the expectation of consuming healthy food without implying a resultant negative energy balance will activate healthy eating behaviour (decreased snack intake). Conversely, we predicted that expectations about the opportunity to expend energy via exercise will result in compensatory behaviour (increased snack intake). Lastly, considering restrained-eaters maintain active yet competing goals for both healthy eating and indulgence, we predicted dietary restraint will play a moderating role in our outcomes. Methods We conducted three separate studies and examined snacking behaviour in response to the expectation of consuming a healthy (HM) vs. conventional version of a meal (CM) (Study 1), consuming a healthy version of a meal (HM) vs. low-calories meal (LC) vs. control (CON) (Study 2) and performing exercise (EX) vs. not (NEX) (Study 3). Results/Findings In support of our hypotheses - In Study 1, participants consumed less snacks in HM compared to CM (p=0.050) (p=0.014, controlling for BMI). In Study 2, less snacks were consumed in HM compared with CON (p=0.003) and no difference between LC vs. CON (p=0.850). In Study 1 & 2, dietary restraint was positively associated with eating behaviour (accounting for BMI), but only in the HM conditions (p=0.0370). In Study 3, participants consumed more snacks in EX compared with NEX (p=0.050, controlling for dietary restraint). Conclusion Taken together, our findings suggest that i) reminders of healthy behaviours, without implying of negative energy balance, may be a viable approach to promote healthy eating, especially among restrained-eaters and ii) restrained-eaters, when faced with situations that may significantly impact subsequent energy balance (i.e. exercise), are at risk of adopting compensatory eating behaviour. These findings have important implications for the promotion of healthy eating.
STUDY ON ENERGY EXPENDITURE AND DIETARY NUTRITION INTAKE OF SYNCHRONIZED SWIMMERS IN THE GRADUALLY WEIGHT REDUCTION PERIOD

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: To reduce the weight of synchronized swimmers to monitor the daily energy consumption and intake and dietary intervention, in an attempt to realize at the end of the phase control weight, make the athlete's weight to fulfill the requirements of the coach, while keeping the water body weight and lean body mass, and the ability to stay in motion. Methods: The research object is 12 female Synchronized Swimmers in Shanghai. Dietary adjustment before nutrition intervention. To determine the daily energy consumption of athletes during the dietary intervention period, and to control the daily energy intake according to the daily energy consumption, aim to achieve the target weight after the end of the eight-week gradually weight reduction period. Results: (1) Body composition test shows that after the dietary intervention, athletes' weight decreased 2.50±smn;0.42kg(P<0.05), and percentage of body fat decreased 5.49±smn;1.74(P<0.05), and muscle weight in bodies maintained. (2) Monitoring of energy expenditure/intake shows the athlete's daily energy consumption was 2589±smn;254.31 kcal that after the dietary intervention, the athlete's daily energy consumption was 1985.63±smn;432.56 kcal, athletes' nutrition intakes decreased significantly, and a negative balance between intake and consume was built in their bodies. (3) Dietary investigation shows that after the dietary intervention, athletes had better daily dietary structures, and their intake of carbohydrates increased 21.56±smn;10.21% significantly, while the intake of fats decreased 9.24±smn;4.56% significantly. Athletic ability test shows that, their athletic abilities was remained, or even increased for aerobic capacity. Conclusions: (1) It is effective to use the method of dietary intervention in this study to guide athletes to understand foods with high energy, and to help them control their diets and nutrition intakes, resulting in a negative balance of energy in their bodies. (2) It is effective to use the method of dietary intervention in this study to maintain athletes' body moisture and lean body mass, and to significantly reduce their percentage of body fat resulting in loss of weight. (3) It is feasible to use the method of dietary intervention in this study to optimize athletes' nutrition structure, meanwhile to maintain their athletic abilities and muscle strength, as well as their sleep qualities.

Jun 06, 10:50 - 11:50 Grand Foyer – Poster Presentations

P3.01: SIG Early Care and Education (Grand Foyer)

P3.01.01
ASSESSMENT OF PHYSICAL ACTIVITY AND OVERWEIGHT AMONG SENIOR HIGH SCHOOL CHILDREN IN THE ACCRA METROPOLIS

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SIG: Early care and education

Abstract Physical activity is fundamental to energy balance and weight control. Globally, about 23 per cent of adults and 81 per cent of school-going adolescents are not active enough (WHO2010). According to WHO fact three, physical activity is any bodily movement produced by the skeletal muscles that uses energy and it includes sports, exercise and other activities such as playing, walking, household chores, gardening, and dancing. Adolescent overweight is increasing worldwide. Adolescents who are overweight are more prone to be obese. Unhealthy lifestyles, including physical inactivity and unhealthy diets, reinforcing the occurrences of overweight, obesity and a number of chronic diseases. According to the Ghana National Health Policy (2007), non-communicable diseases are increasing in Ghana. Physical inactivity and overweight are among factors responsible for the increase. However little evidence of information on physical activity and overweight among the youth is available in Ghana. OBJECTIVE This
study aims at estimating overweight and the level of physical activity among the youth in the Accra Metropolis. METHOD: A cross sectional study, conducted in the Accra Metropolis, among selected Students age 15 to 19 years. Respondent were selected using a two stage cluster sampling method. Structured questionnaire and anthropometric measurement were employed to gather information for the study. Student were considered as overweight when their BMI = 25kg/m²2; and obese with BMI = 30kg/m²2. RESULTS: Out of 444 students, 11.7% were overweight. Overweight prevalence was higher among female students 15.6% than male student (4.5%). The study also found that the risk of overweight was lower (6%), among students who engaged in high physical activity compared with low active students, (20.3%). There was independent association between physical activity (p-value 0.01), sex (p-value 0.001) and age (p-value 0.01) and overweight. The study recommends further studies into adolescent overweight and creation of enabling environment for participation in physical activity among the youth in Ghana

P3.01.02
A KNOWLEDGE, ATTITUDES AND PRACTICES (KAP) SURVEY OF FEEDING YOUNG CHILDREN AGED 6–24 MONTHS AMONGST LOCAL MOTHERS IN SINGAPORE
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SIG: Early care and education

Background: Child feeding practices can influence a child's eating behaviour, shape their dietary habits and influence their health in adulthood. We conducted a knowledge, attitudes and practices (KAP) survey among mothers in multi-ethnic Singapore to inform interventions promoting optimal child feeding practices. Methods: Mothers of children aged 6 to 24 months were recruited (n=164) via convenience sampling. Survey design was based on questionnaires in the literature and reviewed by experienced practitioners. Knowledge on weaning foods and techniques, confidence and attitudes about feeding, and reported practices of managing food refusal and meal environment, together with demographic characteristics were evaluated. Results: From n=139 completed questionnaires, mean age of the children was 13.5 ±smn: 5.6 months, of which 70% were first-born, 51% females. Ethnic distribution was 69 % Chinese, 20 % Malay, 7% Indian and 4% others. For 30% of the children, mothers were the main caregivers for most days of the week, while the remaining was cared by grandparents and nannies. Mothers displayed good knowledge in child feeding [median score = 8 out of 10 (IQR 6 –sh; 9)]. While 44.6% felt that it was important for their child to finish all the food on his plate, in practice, 65% would 'often' or 'sometimes' insist that food should be eaten when their child refuses a food and 77.5% of mothers would 'hardly ever' or 'sometimes' accept that their child may not be hungry and take the food away. Various instrumental and emotional feeding methods were reported such as 'often' or 'sometimes' using food (86 %) or non-food (54%) to encourage eating or when child is upset (56.8%). While 64% of mothers disagreed to the use of media tools and toys during mealtimes, 54% actually followed so in practice. These inappropriate feeding practices were evident regardless of socio-economic status and level of maternal education. Conclusion: Majority of local mothers are not recognising and trusting in child cues, which may diminish a child's innate ability to self-regulate food. While mothers have appropriate knowledge and attitudes, there appears to be a mismatch with actual practices, suggesting a need for more skills-based support in child feeding practices.

P3.01.03
EFFECTIVENESS OF A FREE-PLAY SCHEDULING INTERVENTION TO INCREASE PHYSICAL ACTIVITY AT CHILDCARE: A RANDOMISED CONTROLLED TRIAL
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SIG: Early care and education

Objective: To examine the effects of childcare services allowing children unrestricted access to outdoor areas across the day for free-play (when a structured activity was not taking place) on child moderate-to-
vigorous physical activity while in care. Methods: An exploratory parallel-arm randomised controlled trial was conducted in six centre-based childcare services in the Hunter region of New South Wales, Australia. Intervention services provided children unrestricted access outdoors for active free-play at any time when there were no structured programs occurring. Services randomised to the control group continued with their usual scheduled periods of outdoor play. The primary outcome, children's moderate-to-vigorous physical activity while in care per day, was measured over five days via accelerometer at baseline and at three months post baseline. Secondary outcomes included percentage of time spent in moderate-to-vigorous physical activity while in care per day, and total physical activity while in care per day. Results: There were no significant differences between groups in minutes of moderate-to-vigorous physical activity in-care (mean difference: 4.85; 95% CI: -3.96, 13.66; p=0.28) or total physical activity in-care (mean difference in counts per minute: 23.18; 95% CI -4.26, 50.61; p=0.10). There was a non-significant 1.52 percentage increase (95% CI -0.50, 3.53; p=0.14,) in the proportion of wear time in care spent in moderate-to-vigorous physical activity for children attending intervention relative to control services at follow-up. Conclusions: The findings of this study suggest that changing childcare operational procedures and scheduling to allow unrestricted access of children to outdoor areas to engage in free-play may achieve modest improvements in child physical activity. Further research assessing the impact of such a strategy as part of a larger randomised trial is warranted to verify this hypothesis.

P3.01.04
EARLY CHILDHOOD MONTESSORI AS OBESITY INTERVENTION IN DIVERSE COMMUNITY SCHOOLS: EXPLORATORY ANALYSIS.
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SIG: Early care and education

Purpose: There are no studies on the impact of Montessori early childhood education on child weight status. This analysis is preliminary analysis of change in weight status of children who attend culturally-centered Montessori early childhood education programs. Methods: Five Minnesota Montessori early education programs participated in a longitudinal program evaluation aimed at increasing the achievement and health opportunities for low-income, culturally diverse populations. The program, Serving the Whole Child (SWC) activities did not focus on childhood obesity directly. Child height and weight were measured by trained staff. Length of time attending Montessori, race/ethnicity and qualifying for free-or-reduced price lunch (FRL) was provided by the programs. Descriptive statistics and regression models assessing length of time in Montessori on change in weight category (healthy, overweight/obese) and body mass index z-score (bmiz) were calculated using Stata and controlled for clustering by site, sex, FRL and race/ethnicity. Results: To date, four schools have contributed data to the analysis on 174 children. However, only three schools and 123 children had at least two data points. Baseline average age=4.3, 44% male, 63% qualify for FRL, 30% White; 19% African American; 18% American Indian; 7% Asian; 25% Hispanic/Latino and 20.3% were overweight or obese, mean bmiz=0.48 (SD=0.81). At follow-up, 18.7% of children were overweight or obese. T-test of bmiz-score was not significant (t=0.47, p=0.64). Chi-square analysis indicated significant difference from baseline to follow-up in BMI category, follow-up category and FRL, and differences in overweight/obesity by school. Adjusted linear regression of change in weight category or bmiz-score was not statistically significant. Conclusions: Preliminary data analysis suggests that participating in Montessori early education program may be an effective obesity intervention for low-income, cultural communities. Limitations include, small sample size, missing data and limited follow-up time for all children.

P3.01.05
PRECONCEPTION DIET INFLUENCES HEALTH IN THE NEXT GENERATION: A WINDOW OF OPPORTUNITY FOR HEALTH PROMOTION?
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SIG: Early care and education
Purpose: Non-communicable diseases account for more than 75% of deaths and disease burden in Europe, with poor diet as one of the leading causes. It is known that nutrition in the first 1000 days of life plays a vital role in the etiology of these preventable disorders. Emerging evidence also shows that the nutritional status of parents at conception, and even before, influences the lifelong physical and mental health of their future children. However, to our knowledge, there is no evidence from longitudinal population-based studies regarding the relationship between parental diet in preconception years and the health of the next generation. The general aim of this study is to examine if preconception diet of adolescent women predicts their pregnancy health outcomes and child neonatal outcomes. Methods: Demographic and dietary data of the Young-Health Study in Nord-Trøndelag (HUNT) will be merged with pregnancy and child neonatal data from the Medical Birth Registry of Norway (MBRN) to answer this research question. HUNT is Norway’s largest collection of population health data. Data for the research question comes from the Young-HUNT Study which is the adolescent part of HUNT, including participants aged 13-19 years. Data collection took place at three time points between 1995-2008. Diet was assessed with a valid and reliable food frequency questionnaire. The Medical Birth Registry (MBR) is a national health registry containing information about all pregnancy and birth outcomes in Norway from 1967 onwards. All maternity units in Norway must notify births to the MBR. The notification form includes the personal identity number of the child and their parents, making it possible to merge birth data with data from other studies. Results: Preliminary descriptive analyses (n=4542 mother-first born dyads) showed significant associations between unhealthy snack and soft drink intake and child neonatal outcomes, i.e. higher intakes had detrimental effects. More extensive results of this study will be presented at the conference. Conclusions: If this study can prove this relationship, it could be the start of a significant focus shift in current health promotion practice towards adolescence and pre-pregnancy to influence both the health of this generation and the next one.

P3.01.07
TIME-USE PATTERNS OF SCHOOL-GOING ADOLESCENTS WITH RESPECT TO TIME SPENT IN TELEVISION WATCHING AND ENGAGED IN PHYSICAL ACTIVITY IN HARARE, ZIMBABWE.
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SIG: Early care and education

Introduction: Time budgets provide key and sound opportunities for developmental support and greatly contribute to understanding of the gaps in achievement gaps and several adjustments amongst the youth populace. Adolescents are on record for poor constructive use of time, reduced health and unproductive lifestyles. However, there is no information on time use patterns of school going adolescents in Zimbabwe. Study Objective: To determine the time-use patterns of school-going adolescents with respect to time spent in television watching and engaged in physical activity. Methods: A descriptive cross-sectional study design was used. 90 school-going adolescents aged between 14 to 17 years were randomly recruited from three high schools in Harare North District, of Harare Zimbabwe. An adapted Occupational Questionnaire was used to gather data on demographic details and time use on a typical week day and weekend day. Analysis of results was done using Microsoft excel and SPSS version 22. Results: There were more male participants (N=52, 57.8%) compared to the female participants 38(42.7%). The mean age of the participants was 15.9 years (SD=0.9 years). The mean time spent screen was found to be 1.6(S.D 1.3) hours during a week day, with the number increasing to 3.7(S.D 1.9) hours during weekends. The mean time spent on activities involving physical activity was found to be 1.4(S.D 0.8) hours during a weekday and increased to 2.5 (S.D 1.2) during a weekend day. Conclusion: Generally, the adolescent spent slightly more time on screen related activities as compared to activities involving physical activity. There is need for more research in this populace on the impact of their time-use to health and productivity.

P3.01.08
PHYSICAL ACTIVITY AND EARLY CHILDHOOD DEVELOPMENT AMONG TODDLERS AGED 1 TO 3 YEARS
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Purpose: The early years are considered a critical stage in a child's life, whereby developmental milestones attained at certain ages set the stage for later childhood development. Physical activity provides not only physiological benefits, but also plays an important role in all domains of early childhood developmental milestones. Previous studies have explored these relationships; however, not many have explored it in young children, and even fewer have measured physical activity objectively. Therefore, this study aims to explore the relationship between physical activity and early developmental milestones among Malaysian toddlers. Methods: This cross-sectional study involved 38 healthy and able-bodied children aged 1 to 3 years old who completed all the protocol. Physical activity was measured using Actigraph GT3X+. Developmental milestones (communication, gross motor, fine motor, problem solving and personal social skills) were measured using the Ages and Stages Questionnaire (ASQ-3).

Results/Findings: Results from this study indicate that young children spend most of their time in sedentary activities (489.2±smn:63.2 minutes/day, 75% wear time) and least time in moderate-to-vigorous physical activity (MVPA, 63.8±smn;21.9 minutes/day, 9.8% wear time). Children's total physical activity time was on average higher on weekend days (171.6±smn;49.4 minutes) compared to weekdays (154.5±smn;43.2 minutes, p=0.026). Boys (71.8±smn;23.2 minutes) were more active than girls (57.4±smn;18.8 minutes, p=0.04) based on MVPA time. Almost all (97.4%) of the children achieved Malaysian 2010 recommended physical activity guideline of 90 minutes of daily physical activity, but only 32% achieved a more recent guideline from the international community of 180 minutes of total physical activity daily. Total physical activity was positively correlated with communication skills (r=0.322, p=0.048) and fine motor skills (r=0.330, p=0.043). Conclusions: The association of physical activity participation with developmental milestones among Malaysian toddlers shows the importance of physical activity participation in this age group. Further studies in this area are needed to better understand the relationship between physical activity and childhood development among young children.

P3.01.09 TOOL DEVELOPMENT: INCREASING PRESCHOOLERS' ABILITY TO DELAY GRATIFICATION

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SIG: Early care and education

Purpose: Most entertainment games designed for children build on the addictive quality of immediate gratification, and thus gaming can lead to increased impatience and impulsivity (compromised self-regulation) in children. Compromised self-regulation, including the ability to delay gratification, in childhood has been linked to unhealthy lifestyles and obesity later in life. Moreover, impulsivity and problems in self-regulation are more common among children from low socioeconomic backgrounds. Since the majority of the Finnish 4–sh;6-year-olds attend preschool, the preschool is an ideal setting for promoting delayed gratification. The aim of this project is to develop a new tool for preschools to improve children's ability to delay gratification and to promote positive mealtime environment in preschools, which will increase vegetable consumption. Methods: The tool development takes place in 2018. The two specific learning goals for the tool are: 1) to learn how to delay gratification and 2) to learn how to speak positively about food (enhancing positive mealtime environment). Two preschools serve as pilot preschools. To figure out how, when and where the children and early educators are able to use the tool, lunch time observations in the two preschools are conducted. Additionally, focus group interviews with early educators are carried out in order to recognize relevant themes to be included in the tool. A multiprofessional team will create the concept design, whereas educational game developers will be in charge of the development of the tool. Playability, usability and feasibility of the tool will be tested. Results: We will develop a prototype of a tool aiming at improving children's ability to delay gratification and promoting positive mealtime environment in preschools. A document describing the tool development process will also be delivered. Conclusions: Based on the evaluation, the tool will be further developed and possibly digitalized. Additional funding would also enable the evaluation of the tool's effects on children's behavior. If successful, the tool will improve the children's ability to delay gratification and enhance positive mealtime environment in the
preschools. In the long run, children’s vegetable acceptance and consumption could also be influenced.

P3.01.10
PERCEPTIONS OF ADOLESCENTS IN PREVOCATIONAL EDUCATION ON WHAT INFLUENCES PHYSICAL ACTIVITY AND DIETARY BEHAVIORS: A PHOTOVOICE STUDY

SIG: Early care and education

objective: To gain insight into the perceptions of adolescents in prevocational education about what influences their choices for physical activity (PA) and dietary behaviors. Methods: Photovoice methodology guided instructions for students to take photos of aspects that help or hinder choosing healthy or unhealthy PA and dietary behavior. Photos were reviewed and 7 focusgroups (divided over four schools) were conducted. Data were analyzed by open coding method. Results: A total of 184 photos were taken by 43 students (mean age 14). Themes around motivation, opportunities and capabilities emerged as components that influenced dietary and PA behavior, which also influenced each other. Motivation was influenced by beliefs about consequences of a certain behavior, such as short-term rewards, how a behavior influenced performance in class, influenced health or whether it relieved stress. Within the theme of opportunities, a difference was made between social and physical environment. In the social environment, several parental practices became apparent such as modelling, encouragement and rules. Peers also played an important role, mainly by setting social norms. Friends in particular provided social support and made behavior fun, which enhanced motivation. Some students also mentioned relatedness to a sports-trainer as a motivator for exercising. In the physical environment, students mainly talked about availability and accessibility to food and exercise options in the home environment as well as the school environment. Within the theme of capabilities, students commented on knowledge and goal-setting. Gaining skills was often mentioned as a goal for engaging in exercise. Improving and achieving this goal also became a motivator. Conclusions: This photovoice study reveals that opportunities for health promotion especially lie in the social and physical environment of school and home. While adolescents indicate that they start to make more choices independently in the school environment, they also indicate that their parents and the home environment are still important. Therefore, collaboration between school and home is necessary for effective school health-promotion. By actively involving adolescents how the environment is shaped, they can create an environment that enhances motivation and capabilities and takes advantage of opportunities.

P3.01.11
COMPARING PHYSICAL ACTIVITY PRACTICES BETWEEN LICENSED FAMILY AND GROUP CHILD CARE CENTRES FOR CHILDREN 3-5 YEARS OLD IN BRITISH COLUMBIA
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SIG: Early care and education

Purpose: Physical activity (PA) is critical to early child development and child care is a key setting for PA promotion. We examined a range of daily PA practices and supportive PA environments between two licensed child care settings for children 3-5 years old: family child care (FCC) and group child care (GCC). Methods: Managers of GCC centres (n=581) and FCC (n=357) providers completed surveys assessing their practices in fundamental movement skills (FMS), active play, outdoor play, screen time, sedentary behavior, free play, PA modelling (daily vs. less than daily), and availability of indoor and outdoor space for group activities including running (yes vs. no). Comparison of the two settings were analyzed using Chi-Square tests. Results: Positive PA practices were occurring daily in about half of both settings. The most prevalent practices were providing FMS daily for GCC (77%) and spending 120 minutes in active play for FCC (82%). The least prevalent daily practice for both settings was spending 30 minutes or less on screen
time (GCC=47%, FCC=54%). Both settings typically had enough space for large group running games outdoors (GCC=93%; FCC=88%) but not indoors (GCC=29% and FCC=23%). Daily practices of spending: 120 minutes on active play, less than 30 minutes on screen time, and 60 minutes outdoors were significantly (p<.05) more likely in FCC centres (OR 2.23; 95% CI 1.58 - 3.15; OR 1.35; 95% CI 1.02 - 1.80; and OR 1.99; 95% CI 1.4 - 2.9 respectively). However, taking part in daily FMS, breaking up prolonged sitting daily, and having enough outdoor space for group running games was more likely for GCC centres (OR 1.40 95% CI 1.01 - 1.92; OR 1.86; 95% CI 1.36-2.5; and OR 1.74; 95% CI 1.07 - 2.83 respectively). Indoor space and PA modelling practices did not vary between settings. Conclusions: The occurrence of daily positive PA practices and supportive PA environments varied between FCC and GCC centres. Interventions to support PA in child care should be tailored to different child care settings and the facilitators of PA faced in each setting should be explored.

P3.01.12
INCONSISTENT GESTATIONAL WEIGHT GAIN DIALOGUE BETWEEN PATIENTS AND PRENATAL HEALTHCARE PROVIDERS: A NARRATIVE REVIEW

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SIG: Early care and education

Background: Gaining too much or too little gestational weight can have adverse maternal and infant health outcomes. Healthcare providers (HCPs) have the potential to provide reliable and valuable sources of evidenced-based information when counseling pregnant women about managing their weight. What is needed is a better understanding of what guidance and information is being exchanged within patient and HCP dialogues. Objective: This narrative review aims to summarize the literature surrounding gestational weight gain (GWG) discussions during the prenatal period between patients and their HCPs. Exploring patient and HCP perspectives may help to clarify perceived barriers and attitudes related to GWG communication and its impact on prenatal education information delivered. Methods: A comprehensive literature search was performed to identify studies published in English, from inception to November 15, 2017. The search was conducted in 3 databases: Ovid Medline, CINAHL, and Embase. Key search terms included combinations and iterations of "pregnancy", "weight gain", "counselling", and "health professional." Results: Of the 724 articles yielded from the search strategy, 54 full-text articles were retrieved after eligibility screening. Of the 54 studies, 34 were quantitative, and 20 were of qualitative study design. Quantitative studies focused on frequency and accuracy of GWG recommendations, while qualitative studies reported content themes within patient and HCP prenatal discussions, and advice given if GWG counselling was provided. Frequency and content related to GWG discussions varied drastically, and was often low in frequency and inaccurate. A discrepancy between patient and provider perspectives of GWG counselling was also revealed in the collected literature. Moreover, the few studies that used objective measurements (n=3) showed a lack of weight documentation throughout the prenatal period. Conclusions: This review is the first to our knowledge to summarize the literature surrounding GWG dialogue between patients and HCPs. Although the sheer volume of literature on prenatal weight counselling practices has increased over time, the evidence remains variable and inconclusive. Future research should focus on using objective measurements to examine underlying factors related to GWG counselling and on developing knowledge translation strategies to facilitate effective GWG dialogue between patients and HCPs.

P3.01.13
TECHNO-SWIM: INTEGRATING TABLETS AS A TOOL IN SCHOOL SWIMMING

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SIG: Early care and education
Objective

This study is part of the research project Learning to Swim - aiming to improve school swimming by integrating evidence-informed methods. The purpose of the study is to explore a particular swimming approach, Techno-swim, which integrates smart devices as a learning tool, in order to improve the quality and student motivation in school swimming. Methods Data were collected at three primary schools using a combination of qualitative methods. In total 12 lessons were observed using field observations, four semi structured teacher interviews and four group interviews with 16 students from grade 4 to 5 were conducted. The interviews underwent thematic analysis. Results The observations showed that smart devices, in the form of tablets, offer several possibilities in relation to school swimming. Tablets were used to initiate versatile water games and activities, to develop water competencies and to visualize the students body movements in water, in order optimize swimming skills. Teachers interviewed pointed out that they acted more as advisors than actual teachers. The students very much took the lead and worked rather autonomously with learning activities. The younger the students were, the more counselling and teacher support was deemed necessary. Teachers also point out, that because many of the students were super users of smart devices, the barriers for initiating swimming lessons with use of tablets were minor. The group interviews with students established that the use of tablets is motivating, provides variation and more concentration in swimming lessons. The students highlighted the immediate possibility to see, explore and improve their own swimming skills in peer-to-peer sessions as a positive feature of Techno-swim. Conclusion Techno-swim enhances motivation and commitment of students and promotes digital literacy. Peer-to-peer learning is a powerful component of the Techno-Swim approach. Tablets makes it possible to practise interdisciplinary teaching e.g. a combination of PE, math or arts.

P3.01.14

“WE'RE TRYING TO NOURISH THE BODY AS WELL AS OUR MINDS AND RELATIONSHIPS”: EARLY CARE AND EDUCATION PROVIDERS’ PERSPECTIVES ON MEALTIMES

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SIG: Early care and education

Objective Mealtimes in early care and education (ECE) facilities can be an important setting for promoting healthy eating. This qualitative study explored how ECE providers approach mealtimes with preschool-aged children. Methods Fifty in-depth interviews were conducted with ECE providers from Head Start centers (n=10), center- (n=10) and home-based (n=10) facilities that were funded by the Child and Adult Care Food Program (CACFP) and center- (n=10) and home-based (n=10) facilities that were not funded by CACFP. Analyses took a modified grounded theory approach that moved through three stages of coding: open, axial and selective. Two coders open coded all interviews and resolved any discrepancies. During axial and selective coding, the two coders moved between inductive and deductive processes by using the open codes to develop themes and then returning to the data to refine those themes. Findings The ECE providers in this sample described mealtimes as serving multiple functions. At a basic level, mealtimes were seen as an opportunity to provide nourishment. ECE providers strived to ensure that meals were healthy and filling and expressed a concern that children would not eat enough. Most providers were not concerned that children would eat too much or in the absence of hunger. Providers also reported using mealtimes to teach about healthy eating through role modeling and repeated exposure to a variety of healthy foods. The ECE providers in this sample promoted social and emotional development by encouraging conversation between children, teaching table manners and turn taking, and fostering a sense of community during meals. Finally, some providers felt that the meals in their care facility had to compensate for mealtimes at home which were thought to lack healthy foods and opportunities for social interaction. Conclusions The findings suggest that ECE providers view mealtimes as an important setting for teaching about healthy eating and promoting social and emotional development and therefore might be receptive to professional development around best practices. Future work should explore the implications of providers’ focus on ensuring that children eat enough and the view that providers have to compensate for what they felt were inadequate mealt ime experiences at home.

P3.01.15

MOVING WELL-BEING WELL: EVIDENCE AND BACKGROUND TO THE DEVELOPMENT OF THE MWBw PHYSICAL LITERACY INTERVENTION FOR CHILDREN
Longitudinal studies have shown that physical activity (PA) levels gradually decreased during childhood (Niven et al, 2009; Inchley et al, 2008). Additionally, recent research suggests that Irish adolescents are not displaying the attributes of physical literacy that would see them engage in physical activities for life (Belton et al, 2014). Ergo, the purpose of the current study was to assess the current level of physical literacy in Irish primary school children (5-13 years) and implement an intervention before the decline. Cross-sectional data on Whiteheadian (2010) physical literacy constructs, physical activity (PA) levels (using self and proxy reports, and accelerometers), anthropometric characteristics, perception of body figure, well-being, and fundamental movement skill (FMS) proficiency of 2098 children (53% male, 9.17 ±smn; 2.04 years) were collected. Findings indicate that the majority of children (77.5%) did not achieve the FMS proficiency expected for their age. Children scoring above average on self-efficacy and intrinsic motivation scales scored significantly higher (p < 0.01) on the gross motor quotient (GMQ; Ulrich, 2000) than those who fell below the population average. Regardless of their GMQ, children had a poor knowledge and understanding of why it is important to value and take responsibility for engagement in physical activities, with 54.8% not knowing the minimum recommended MVPA guidelines. Based on these findings, it seems important to diverge with the objectives of previous studies. The development of the Moving Well-Being Well intervention will not predominantly target levels of PA as a primary outcome but will focus on affecting the constructs of physical literacy. Empirical research is one method of gaining a greater understanding of the concept of physical literacy, examining it will help identify how the concept can be operationalised. Thus, the research team wanted an empirically supported intervention, yet to maintain the holistic assumptions of physical literacy. With this in mind, the intervention will look to build opportunities that help children to develop positive exercise self-efficacy and motivation; ensure PE class follows a self-determination theory framework; target both low locomotor and object control FMS levels; and finally educate on the health benefits of PA.
game-based nutrition education. The results may also be useful to guide and shape the focus of other nutrition education activities in high schools.

P3.02: SIG Children and Families (Grand Foyer)

P3.02.01

FAMILY'S SOCIOECONOMIC BACKGROUND IS NOT ASSOCIATED WITH PARENT-CHILD DIETARY RESEMBLANCE

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SIG: Children and families

Purpose: Previous studies examining parent-child dietary resemblance have gained mixed results, and some studies have suggested the resemblance may vary according to background factors, such as socioeconomic status of the family. However, these factors have not been systematically studied. We used a novel way to measure parent-child dietary resemblance on a whole-diet level. Furthermore, we sought to establish whether socioeconomic status of the family was associated with dietary resemblance. Methods: As part of the DAGIS study, which investigated health behaviors and associated factors among Finnish preschoolers cross-sectionally, one parent filled in a food frequency questionnaire (FFQ) assessing the child's food consumption outside preschool hours. Both parents or legal guardians, should the child have two, were also instructed to fill in a similar FFQ regarding their own food consumption. In addition, one of the parents reported both parents' educational level and the family's income. To obtain a continuous measure of dietary resemblance, Spearman correlations between parent-child pairs over the whole diet were computed by ranking the consumption frequencies separately within the parent's and the child's FFQ and then comparing these rankings to each other. The resemblance measures were used as dependent variables in linear mixed models. Results: Altogether 665 father-child and 798 mother-child resemblance measures were obtained. In this sample, mother-child resemblance was stronger (on average 0.57) than father-child resemblance (0.50, p for difference <0.0001). However, the difference between father-child and mother-child resemblances was explained by the parent providing food consumption data on behalf of the child. Father's educational level was not associated with father-child resemblance. Similarly, mother-child resemblance was not explained by mother's educational level. Relative income of the family was not associated with father-child or mother-child resemblance. Conclusions: The diet of the child seems to resemble more the diet of the parent responsible for the reporting of food consumption. This possible reporter-bias should be taken into account in future studies. Regarding socioeconomic background, families seem to share a somewhat similar diet. This knowledge could be used for example in dietary interventions targeting families from different socioeconomic backgrounds.

P3.02.02

CLASSIFICATION ACCURACY OF A WEARABLE ACTIVITY TRACKER FOR ASSESSING SEDENTARY BEHAVIOR AND PHYSICAL ACTIVITY IN 3 – 5 YEAR-OLD CHILDREN

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SIG: Children and families

Background: Wearable activity trackers such as Fitbit devices have been increasingly used in epidemiological and biomedical research to objectively measure sedentary behavior (SB) and physical activity (PA) in children and youth; however, no evidence is available about the accuracy of the Fitbit activity tracker for quantifying the amount of time spent in SB and PA in young children. This study examined the validity of the Fitbit activity tracker for quantifying varying intensities of SB and PA in 3 –sh; 5 year-old children under simulated free-living conditions. Methods: Twenty-eight healthy preschool-aged children (Girls: 46%, Age: 4.5 ±smn; 1.0 yrs) were fitted with the Fitbit Flex activity tracker (FF) on their
non-dominant wrist and directly observed while performing a set of various unstructured and structured free-living activities at varying intensity levels ranging from sedentary to vigorous intensity. Activity counts from the FF were summarized in terms of minute-by-minute basis and temporally matched with criterion data from direct observation. The classification accuracy of the FF for measuring SB, light PA (LPA), moderate-to-vigorous PA (MVPA), and total PA (TPA) was examined calculating Pearson correlation coefficients (r), mean absolute percent error (MAPE), Cohen’s kappa (k), sensitivity (Se), specificity (Sp), and area under the receiver operating curve (ROC-AUC). Results: Between the FF and direct observation, Correlations were high and MAPEs were low for SB (r = 0.81, MAPE = 13%) and TPA (r = 0.81, MAPE = 11%), but lower and high for LPA (r = 0.21, MAPE = 92%) and MVPA (r = 0.62, MAPE = 32%). The classification accuracy of the FF (ROC-AUC) was 0.92, 0.63, 0.77, and 0.92 for SB, LPA, MVPA, and TPA, respectively. Similarly, values of kappa, Se, Sp, and percentage of correct classification were consistently high for SB and TPA, but low for LPA and MVPA. Conclusions: The FF demonstrated excellent classification accuracy for assessing SB and TPA, but lower accuracy for classifying LPA and MVPA. Our findings suggest that the FF should be considered as a valid instrument for assessing time spent sedentary and overall physical activity in preschool-aged children.

P3.02.03
PHYSICAL ACTIVITY, DIET AND OTHER BEHAVIOURAL INTERVENTIONS FOR IMPROVING COGNITION AND SCHOOL ACHIEVEMENT IN CHILDREN AND ADOLESCENTS WITH OBESITY OR OVERWEIGHT
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SIG: Children and families

Objective: To assess whether healthy weight interventions improve school achievement, cognitive function and/or future success in children and adolescents with obesity or overweight, compared with standard care, waiting-list control, no treatment, or an attention placebo control group. Methods: In February 2017, we searched CENTRAL, MEDLINE and 15 other databases, searched two trials registries, reference lists, and handsearched one journal from inception. We included randomised and quasi-randomised controlled trials of behavioural interventions for weight management in children and adolescents with obesity or overweight. Four review authors independently selected studies for inclusion. Two review authors extracted data, assessed quality and risks of bias, and evaluated the quality of the evidence using the GRADE approach. We used data analysis procedures expected by the Cochrane Collaboration. Results: We included 18 studies of which eight studies were physical activity-only interventions, seven studies combined physical activity programmes with healthy lifestyle education, and three studies delivered dietary interventions. The number of studies included for each outcome was low, with up to only three studies per outcome. The quality of evidence ranged from high to very low and 17 studies had a high risk of bias for at least one item. Compared to standard practice, analyses of physical activity-only interventions suggested high-quality evidence for improved mean cognitive executive function scores (MD 5.00, 95%CI 0.68-9.32). There was a moderate difference in the average achievement across subjects taught at school favouring interventions targeting the improvement of the school food environment compared to standard practice in adolescents with obesity (SMD 0.46, 95%CI 0.25-0.66), but not with overweight. There was no evidence of a beneficial effect of physical activity-only and physical activity interventions combined with healthy lifestyle education on average achievement across subjects taught at school, mathematics achievement, reading achievement or inhibition control. Conclusions: School and community-based physical activity interventions can benefit executive functions of children with obesity or overweight specifically. Similarly, school-based dietary interventions may benefit general school achievement in children with obesity. Future obesity treatment and prevention studies in clinical, school and community settings should consider assessing academic and cognitive as well as physical outcomes.
P3.02.04
WE12BFIT! IMPROVING PHYSICAL FITNESS AND LIFESTYLE PHYSICAL ACTIVITY IN 7-12 YEAR OLD CHILDREN WITH DEVELOPMENTAL COORDINATION DISORDER- PRELIMINARY RESULTS
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SIG: Children and families

Purpose: Children with developmental coordination disorder (DCD) have compromised PF and form a risk group for developing cardiovascular disease. To date there are no suitable interventions for this target group. Therefore we developed We12BFit!, a family focused intervention to increase physical fitness (PF), motivation for physical activity (PA) and, indirectly, improve lifestyle PA in 7-12 year old children with DCD.
In this study we aim to describe the preliminary effectiveness of We12BFit!. Methods: The intervention was evaluated in 19 children aged 7-12 with DCD, recruited from rehabilitation centers and schools for special education. During the intervention the participants engaged in a group training (2*60min/week, 10 weeks). Exercises focused on improving cardiorespiratory fitness, muscle strength and anaerobic power. Six weeks in to the training, a family-focused lifestyle PA intervention was added, which ended 12 weeks after the last training session. Motivation for PA was targeted through application of behavior change strategies corresponding to the stages of the transtheoretical model of change. Effectiveness was assessed in week 0, 10 and 22, using the 20 meter Shuttle Run Test, Muscle Power Sprint Test and Hand Held Dynamometry. Training intensity was monitored with heart rate monitors, if necessary the intensity was adjusted. The lifestyle intervention was evaluated using interviews with participants and coaches. A thematic content analysis was performed on the data. Results: Preliminary analysis revealed significant improvements in cardiorespiratory fitness from T0 to T1. Positive trends were found for mean power, elbow flexion, knee flexion, however significance of the effects was not retained after Bonferroni correction. Handgrip strength, elbow and leg extension did not improve significantly. From T1 to T2 there were no significant differences in PF. During the interviews parents indicated that they were able to meet the goals they set (e.g. finding a suitable sport, increasing active transportation). In addition, they stressed that the training intervention was of particular value in increasing their child's self-esteem, perseverance and participation in PA. Conclusion: We12BFit! has the potential of improving PF and participation in activities in children with DCD and shows how training and behavioral intervention may be combined successfully.

P3.02.05
TRENDS IN PREFERENCES OF INDIVIDUAL TYPES OF PHYSICAL ACTIVITIES IN CONTEXT OF PHYSICAL ACTIVITY
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Regular and adequate physical activity (PA) of youth and children depends on successful creation of friendly environment with respect to preferred PA. Diagnostics of PA preferences is irreplaceable part of PA monitoring. Continuously changing area of preferences can better explain longitudinal monitoring of PA preferences in different settings. The aim of the study was (a) to analyze the status and trends in physical activities with specific respect to individual physical activities of youth in different educational and sports settings in context with PA, (b) to explore associations between increasing preferences of track and fields / running activities and meeting of PA recommendations. Methods: The research was conducted in the period of 2007 to 2017. The overall research sample consisted of 16116 participants in the age of 14 to 26 years. Sport preferences survey was employed to explore preferences of individual PA and IPAQ-long questionnaire was used to determine weekly PA. Results/findings: The biggest longtime stability in Czech and polish boys, as well as Czech girls, reports swimming and cycling,
while in Polish girls swimming and skating. The biggest increase of preferences is reported in track and fields/running activities, especially in Czech girls and boys. Both girls and boys, preferring track and fields/running meet PA recommendations significantly more than those who do not prefer these activities.

Conclusions: The knowledge of trends in preferred types of PA has predictive importance for promotion of physically active healthy lifestyle of youth as well as for creation of optimal conditions for implementation of popular types of PA. The other benefits of the insight to the area of trends of preferred types of PA are significant for school educational policy and is of significant economic importance.

P3.02.06
HAVE YOUTHS BECOME LESS PHYSICALLY ACTIVE? 17 YEARS’ TEMPORAL-TRENDS OF Pedometer-Determined Physical Activity Among Swedish 2nd, 5th and 8th Graders
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: To explore 17 years’ temporal-trends of daily pedometer-determined physical activity among Swedish 2nd, 5th and 8th graders. Methods: Daily pedometer-determined physical activity (mean steps/day) was measured using the same protocol and identical procedures and instruments (sealed Yamax SW-200) in 2000 and 2017 respectively. During the first data-collection period in 2000, daily pedometer-determined physical activity was measured during four consecutive school-days among 332 pupils in 2nd, 5th and 8th grade (aged 8, 11, and 14 respectively) (n=153 girls) in six schools (middle-class communities) in Southeast Sweden. In 2017, daily pedometer-determined physical activity was measured during four consecutive school-days among 561 (n=290 girls) pupils in 2nd, 5th and 8th graders enrolled from matched classes at the same six schools. Results: Daily pedometer-determined physical activity was stable among girls (from 13129 steps/day in 2000 to 13565 steps/day in 2017, p>0.05) and increased among boys (from 15907 steps/day in 2000 to 17062 steps/day in 2017, p=0.037) in 2nd grade. In contrast, daily pedometer-determined physical activity decreased among both 5th (girls: from 13613 steps/day in 2000 to 12627 steps/day in 2017, p=0.007; and boys: from 17382 steps/day in 2000 to 15396 steps/day in 2017, p=0.008) and 8th graders (girls: from 12748 steps/day in 2000 to 9733 steps/day in 2017, p<0.001; and boys: from 15353 steps/day in 2000 to 10718 steps/day in 2017, p<0.001).

Conclusions: Seventeen years’ temporal-trends of daily pedometer-determined physical activity differed across grades. Whereas being stable and increasing among girls and boys in 2nd grade respectively, daily pedometer-determined physical activity decreased with 7-11 percent among 5th graders, and 24-30 percent among 8th graders between 2000 and 2017.

P3.02.07
Effects of a Two-Year Empowerment-Based School Intervention on Sedentary Time and Physical Activity Among Adolescents in a Swedish Multicultural Area Characterized by Low Socioeconomic Status
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: The first purpose was to investigate whether participation in a two-year empowerment-based school intervention had any effect on accelerometer-measured sedentary time and moderate-to-vigorous physical activity (MVPA). The second purpose was to investigate two-year changes in any of these variables among adolescents in a Swedish multicultural area characterized by low socioeconomic status. Methods: This study used a prospective design with three measurement points during two-year follow-up, involving an empowerment-based school intervention. Totally 114 adolescents in 7th grade (aged 13 at baseline) were recruited from three municipal schools (one intervention school and two control schools) in a multicultural area characterized by low socioeconomic status. During the two years, the intervention was continuously developed and implemented through cooperation and shared decision making between the
researchers and the participants. Data for accelerometer-measured (ActiGraph, GT3X+) sedentary time and MVPA were collected in 2014 (baseline), 2015 (midpoint), and 2016 (endpoint) respectively. The number of participants providing valid accelerometer-data across the three measurement points were as follows: baseline: n=100 (n=54 intervention group); midpoint: n=71 (n=53 intervention group); and endpoint: n=83 (n=54 intervention group). Data were analyzed with latent growth curve analyses (LGC) and performed using the Bayesian estimator in Mplus 8.0. An intercept and a slope for sedentary time and MVPA between baseline and endpoint was specified in the LGC. Average accelerometer wear-time and intervention condition (i.e., intervention or control group) were included as predictors for both the intercept and the slope. Results: There was no effect of the intervention condition on the slope for sedentary time and MVPA. Sedentary time increased with 17.5 min per day and year, equivalent to 35 min per day more of sedentary time during two-year follow-up. MVPA decreased with approximately 6.6 min per day and year, equal to approximately 13 min per day less of MVPA during two-year follow-up. Conclusions: No intervention effect was observed for neither sedentary time nor MVPA. The adolescents' sedentary time increased annually with 3% whereas MVPA decreased with 10% per year.

P3.02.08
FUNDAMENTAL MOVEMENT SKILLS, PHYSICAL ACTIVITY, PERCEIVED COMPETENCE AND QUALITY OF LIFE IN CHILDREN WITH BRONCHIECTASIS
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SIG: Children and families

Bronchiectasis is a major cause of respiratory morbidity in children and youth. FMS are known to be positive associated with physical activity and health benefits. Currently there are no data on the fundamental movement skills (FMS) of this patient group. Purpose: In children with bronchiectasis, to 1) assess FMS proficiency; and 2) examine associations between FMS proficiency, habitual physical activity (HPA), perceived competence (PC) and health-related Quality of Life (QoL). Methods: Forty-six Children with bronchiectasis aged 4 to 14 y (mean age 7.5 ±smn: SD 2.6 y) recruited from the Respiratory Department (Lady Cilento Children's Hospital, Brisbane) were tested during a stable phase of their illness. The Test of Gross Motor Development -2 (TGMD-2) was used to assess FMS; HPA was measured over 7 days using the ActiGraph GT3X+ accelerometer; PC was evaluated by the athletic competence subscale from Harter's Self-Perception Profile; and QoL assessed with the PedsQL. Standard scores for object control and locomotor, gross motor quotient (GMQ) and mastery status were described by medians, interquartile ranges (IQR) and frequencies. FMS values were compared to published norms. One-way ANCOVAs, with gender and/or accelerometer wear time as covariates, were utilised to assess differences in HPA, PC and QoL between children achieving and not achieving age equivalency for FMS performance. Results: The mean percentile for locomotor or object control skills were on 25% and 21%, respectively. Few children achieved mastery targets run (n=2, 4.3%), gallop (n=1, 2.2%), hop (0%), leap (n=2, 4.3%), striking a ball (n=4, 8.7%), overarm throwing (n=2, 4.3%) and underarm rolling (n=4, 8.7%). The GMQ indicated that FMS were below average (median 82.0, IQR= 55-109). Only 21.7% achieved their age equivalency for locomotor or object control skills. Children with bronchiectasis who achieved their FMS age equivalency exhibited significantly higher PC and HR-QoL scores than those with delays in FMS proficiency. HPA was higher in children meeting their age equivalency; however, did not reach statistical significant. Conclusions: Programs improving FMS might be beneficial for this patient group. Further it could be useful for clinicians to assess FMS on a regular base to monitor children's physical function development.

P3.02.09
HIGH-INTENSITY-INTERVAL-TRAINING MAKES A HIT ON STUDENT LEARNING, FITNESS AND HEALTH IN PRIMARY AND SECONDARY SCHOOLS STUDENTS IN SINGAPORE
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SIG: No, this does not fit in any of the above mentioned special interest groups
The purpose of the research is to examine the acute and chronic effects of 18 sessions of high intensity interval training (HIIT) on student learning, fitness and health. This is an on-going study. HIIT for the intervention group takes the form of thrice a week 3x20s maximal running sprints, interspersed with an active recovery interval of 60s. The research employs a counterbalanced crossover design, over a period of two 10-week blocks that is interspersed with a 1-month school break (washout period). With institutional ethics approval for the study, participants are aged 9-10 yrs (primary school pupils), and 14-15 yrs (secondary school students). Participants are randomized to the HIIT Intervention Group and the Control Wait-list Group. Acute measurements of alertness (Epworth Sleepiness Scale), mood (Short Mood and Feelings Questionnaire) and verbal memory recall (Rey Verbal Auditory Learning Test), are administered 15 minutes for the HIIT intervention group and to the Control Wait-list group after the thrice weekly session. Subject-specific tests for mathematics, language, science are administered to both groups in a similar manner. Habitual physical activity, (5-day pedometer-assessed); height-weight and waist circumference; quality of life (PEDsQL) and a timed 50m sprint-run, are conducted for all participants in a pre-to-post research study in Weeks 1-2 and 9-10. Data will analyzed statistically in a pre-to-post manner, as will differences between key variables between the HIIT Intervention and Control wait-list group. The group order will be reversed following a wash-out period of 1-month and the study is repeated using a cross-over design i.e. the Wait-list Group becomes the HIIT Intervention Group and vice versa. The test measurements are repeated as in the previous 10-week cycle. Results are instructive in that HIIT may not only serve as a time-saving means of breaking up sedentary time in school, improve the conditions for learning, fitness and health.

P3.02.10
PREVALENCE OF MEETING THE CANADIAN 24-HOUR MOVEMENT GUIDELINES FOR CHILDREN AND YOUTH AMONG SOUTH KOREAN ADOLESCENTS
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SIG: Children and families

Purpose: The purpose of this study was to describe physical activity, sleep duration, and screen time among South Korean adolescents (12-17 years), and, to examine the proportion of adolescents meeting the Canadian 24-Hour Movement Guidelines for Children and Youth. Methods: The 2017 Korea Youth Risk Behavior Web-Based Survey was used for analysis. Moderate to vigorous intensity physical activity (MVPA), vigorous physical activity (VPA), muscle and bone strengthening activities (MSA), sleep duration and recreational screen time were assessed. Descriptive analyses for continuous variables and frequency analyses for categorical variables were performed. Results / findings: In total, data for 48,535 adolescents (M age = 14.8 years; 50.4 % female) were included in the analyses. The proportions of adolescents who engaged in MVPA 7 days per week, VPA and MSA at least 3 days per week were 6.0%, 38.5%, and 22.7%, respectively. Sleep duration during weekend days (8.8 ±smn; 3.1 hour/day) was longer than weekdays (6.4 ±smn; 1.4 hour/day). Similarly, recreational screen time during weekend days (269.4 ±smn; 200.9 min/day) was longer than weekdays (148.7 ±smn; 124.8 min/day). The proportions of adolescents meeting the guidelines for physical activity, sleep duration, and recreational screen time were 6.0%, 15.1%, and 36.6%, respectively. The proportion of adolescents meeting the overall guidelines was only 0.5%, and about half of participants (51.0%) did not meet any of the guidelines. Conclusions: Few South Korean adolescents met the overall 24-hour movement guidelines. Given the low compliance to these guidelines, identifying correlates of meeting them among Korean adolescents is of importance.

P3.02.11
OBJECTIVELY MEASURED SEDENTARY BEHAVIOUR AND PHYSICAL ACTIVITY IN CHILDREN WITH CHRONIC KIDNEY DISEASE.
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SIG: Children and families
Objective: To objectively measure sedentary behaviour and physical activity in children and adolescents with chronic kidney disease. Methods: Participants are being recruited at the Renal Clinic at the Royal Hospital for Children in Glasgow, UK (study is ongoing). Participants are eligible to participate if they are diagnosed with chronic kidney disease. Cross-sectional PA and SB data will be collected using an ActiGraph GT3X and accelerometer epochs were classified as SB, light physical activity and moderate-to-vigorous physical activity when recorded counts were <25, 25-573 and =574 counts/15s. Outcomes will be time average time spent in sedentary, light and moderate-to-vigorous physical activity per day. In addition, number of bouts of sedentary behaviour lasting 10-19.99, 20-29.99 and >30 minutes will be calculated. Descriptive data will be provided. Results: Results are preliminary. On average participants wore the accelerometer for 13.9 hours/day and spent 9.81 hours/day (SD±smn;2.0 hr/day) sedentary, 3 hours/day (±smn;1.2 hour/day) in light physical activity and 0.8 hours/day (±smn;0.7 hour/day) in moderate-to-vigorous physical activity. On average participants engaged in 14.6 (±smn;4.8), 4.7 (±smn;2.7) and 1.9 (±smn;0.8) bouts of 10-19.99, 20-29.99 and >30 minutes, respectively. Discussion and Conclusions: The preliminary results of this study showed very low levels of physical activity and very high levels of sedentary behaviour in children with chronic kidney disease. This study is one of the first to objectively measure physical activity and sedentary behaviour in children with CKD. If final results confirm the preliminary results interventions focussing on increasing physical activity in children with chronic kidney disease are needed.

P3.02.12
A TYPOLOGY OF CLASSROOM MOVEMENT INTEGRATION INTERVENTIONS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Movement integration (MI) involves infusing physical activity into normal classroom time. In the context of comprehensive school physical activity programming, MI is an evidence-based and widely recommended strategy to help children accumulate the nationally recommended 60 minutes of physical activity each day. A wide range of MI interventions have succeeded in increasing children's participation in physical activity. However, no previous research has attempted to unpack the various MI intervention approaches, which would help in identifying distinct types of MI interventions, determining which types are used more and less frequently, and considering which types may lead to the most sustainable implementation outcomes. Therefore, this study aimed to systematically review, qualitatively analyze, and develop a typology of all MI interventions conducted in K-12 school settings in order to develop a typology of MI interventions. Methods: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed to identify published MI interventions. A literature search yielded 6046 unique records. Irrelevant records were removed first by title, then by abstract, and finally by full texts of articles, resulting in 77 studies being retained for analysis. Intervention details from these studies were extracted, organized into categories, and thematically analyzed to identify common and distinct characteristics of the interventions. Previous research on MI was used as a conceptual framework during the analysis. Findings: Four types of MI interventions were identified and labeled as Physical Environment (interventions that focused on manipulating the physical environment of the classroom), Teacher-Driven (interventions characterized by high teacher autonomy in the design/implementation of physical activity opportunities), Researcher-Driven (interventions in which the researchers controlled the design/implementation of physical activity opportunities), and Teacher-Researcher Collaboration (interventions in which teachers and researchers collaborated to design/implement physical activity opportunities). Within each type, interventions incorporated teacher trainings, the provision of equipment/materials, or a combination of both trainings and equipment/materials. Each type was further refined by whether the intervention focused on using movement breaks, active lessons, or a combination of both breaks and lessons. Conclusions: Nearly half of the interventions were researcher-driven, which may undermine the sustainability of MI as a routine practice by teachers in schools.

P3.02.13
PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR ACROSS THREE TIME-POINTS AND
ASSOCIATIONS WITH SOCIAL SKILLS IN EARLY CHILDHOOD

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SIG: Children and families

Objectives: The objectives of this study were to 1) examine the longitudinal associations of physical activity and sedentary behaviour with social skills, and 2) examine how physical activity and sedentary behaviour track over three time-points in a sample of toddlers from Edmonton, Canada. Methods: Participants were from the Parents' Role in Establishing healthy Physical activity and Sedentary behavior habits (PREPS) project. A total of 254 toddlers participated at baseline in 2014/15 (1.6±smn;0.2 years) and a sub-sample participated at 1-year (n=81; 2.65±smn;0.3 years) and 2-year (n=76; 3.7±smn;0.4 years) follow-ups. Sedentary time (=25 counts/15sec), light-intensity physical activity (LPA; 26-419 counts/15sec), and moderate- to vigorous-intensity physical activity (MVPA; ≥420/15sec) were objectively measured with wGT3X-BT ActiGraph accelerometers, and standardized for wear time. Parents reported their children's screen time and demographic characteristics using the PREPS questionnaire. Parents also reported on children's social skills using the Adaptive Social Behavior Inventory (ASBI) at 1-year and 2-year follow-ups. Three social skills subscales were created, including comply (e.g., cooperates; 10 items), express (e.g., joins play; 13 items), and disrupt (e.g., teases; 7 items). Generalized estimating equations (GEE) that adjusted for child age, child sex, and parental education were conducted to address objective one. Tracking coefficients (low: ßa;1<0.30; moderate: ßa;1=0.30-0.60; moderate-high: ßa;1=0.60 to 0.90; high: ßa;1>0.9) were used conducting GEE to address objective two. Results: Sedentary time was positively associated with disrupt scores (ßa;1=0.16; 95%CI: 0.05, 0.28) and LPA was positively associated with express scores (ßa;1<0.15; 95%CI: 0.01, 0.28). Additionally, screen time was negatively associated with comply (ßa;1<0.06; 95%CI: -0.08, -0.03) and express (ßa;1<0.06, 95%CI: -0.10, -0.01) scores and positively associated with disrupt scores (ßa;1=0.04; 95%CI: 0.01, 0.06). Screen time tracked at moderate-high levels (ßa;1=0.68; p<0.01) and sedentary time (ßa;1=0.44; p<0.01), LPA (ßa;1=0.34; p<0.01), and MVPA (ßa;1=0.51; p<0.01) tracked at moderate levels over the three time-points. Conclusions: LPA may be beneficial, whereas sedentary time and screen time may be detrimental for social skills in early childhood. Furthermore, all behaviours tracked at moderate to moderate-high levels from toddler to preschool ages. Therefore, promoting healthy physical activity and sedentary behaviour patterns as early as toddlerhood appears important.

P3.02.14

PREVALENCE AND RISK FACTORS OF GROSS MOTOR DELAY IN PRE-SCHOOLERS

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SIG: Children and families

Objective: Gross motor skills are important for children's health and development. Delays in these skills are a concern for healthy developmental trajectories and therefore early identification of delay is important. This study aimed to screen for gross motor delay in children from low-income communities and to investigate potential risk factors associated with gross motor delay. Methods: This cross-sectional study involved 34 childcare services from low-income and remote communities in Australia. Preschool-aged children were screened on gross motor delay using the Ages and Stages Questionnaire (ASQ)–sh:3rd edition. Potential risk factors were collected through parent questionnaires and included: sex, age, birth weight, prematurity status, weight status, childcare service, postcode, parent's education, parent's marital status, parent's employment and family income. Results: In total, 702 pre-schoolers (Mage = 54.0±smn;8.8 months, 51.9% boys) were included in the study. Results showed 6.9% of the children were delayed in gross motor skills and 8.5% were at risk of delay. Logistic regression showed being a boy (OR 1.55, 95% CI 1.07–sh;2.24), from an Aboriginal background (OR 1.90, 95% CI 1.21–sh;3.09), underweight (OR 2.22, 95% CI 1.13–sh;4.36), having a low family income (OR 0.31, 95% CI 0.13–sh;0.77) and parent not being employed (OR 1.92, 95% CI 1.00–sh;3.68) were factors associated with the likelihood of children being
delayed or at risk of gross motor delay. Conclusions: This study was unique in reporting prevalence and risk factors associated with gross motor delay in socially disadvantaged, low-income and remote communities. Results show especially boys, Aboriginal children and underweight children, have a higher risk of gross motor delay and can guide policy on where to invest in early screening and potential interventions. We recommend implementing early screening programs for gross motor delay in socially disadvantaged and low-income communities. Communities with a high proportion of Aboriginal families could benefit greatly from early screening as this is a developmental outcome that Australia is committed to in closing the gap between indigenous and non-indigenous children.

P3.02.15
PHYSICAL ACTIVITY IN NEPAL: A REVIEW
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SIG: Children and families

Objectives: Prevalence of non-communicable diseases is increasing in Nepal which can be attributed to changing lifestyles, food habits, ageing and unplanned urbanization. Behavioral risk factors like physical inactivity and sedentary behaviors are higher in urban and semi-urban population including the younger age groups. Till date, there is no any consolidated evidence on the number and type of studies and their focus on different aspects of physical activity among Nepalese population. This review will synthesize the existing literature and identify the research gaps in physical activity in Nepal. Methods: A systematic literature search of different databases was carried out in order to identify potential published papers. Combination of subject headings and keywords related to Nepal and physical activity were used to search for papers published or in press till January 2018. Manual searching involved checking the reference list and citations of these papers. In addition, physical activity experts of Nepal were consulted to explore grey literature. Age group or study design did not limit the search. Results: Altogether 854 records were identified through database searching: Medline (545), EMBASE (170), PsycINFO (101) and CENTRAL (38), and additional 3 records through manual searching, of which 57 were duplicate records. After removing 745 irrelevant articles during the title/abstract screening stage, full text was retrieved for 55 articles. These articles were assessed for eligibility against the inclusion/exclusion criteria. Finally, 38 articles were included for data extraction. Conclusions: This review will consolidate the physical activity related research in Nepal and highlight research gaps and priorities. It is expected that the findings will be useful for researchers to plan future research in this area. Additionally, the findings might also guide the planning of health promotion interventions in the Nepalese context.

P3.02.16
EMOTIONAL EATING, HEALTH BEHAVIOURS, AND OBESITY IN CHILDREN: A 12-COUNTRY STUDY
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SIG: Children and families

Objective: Eating in response to negative emotions (emotional eating) may predispose an individual to obesity. Health behaviours (i.e., dietary patterns, physical activity, sleep, and TV viewing) in children are also potentially important contributors to obesity. Our aim was to analyze the independent associations between emotional eating, health behaviours, and body mass index (BMI) in a multinational sample of children. Methods: The present cross-sectional sample included 5426 (54% girls) 9–sh;11-year-old
children from 12 countries and 5 continents. Emotional eating was measured with a self-administered questionnaire and confirmatory factor analysis was used to derive factor scores. Diet was measured with a 23-item food frequency questionnaire, and principal components analysis was used to identify dietary patterns. Daily moderate to vigorous physical activity (MVPA) and nocturnal sleep duration were measured by a waist-worn accelerometer, and television viewing with a questionnaire. BMI was calculated using measured weight and height. Multilevel (site, schools nested within sites) linear regression models were used to study the associations of emotional eating with health behaviours and BMI z-score. The models were adjusted for age, gender, household income, health behaviours, and BMI z-score. Results: Emotional eating was positively and consistently (across all 12 study sites) associated with an unhealthy diet pattern ($\beta_a=0.29$, SE=0.02, $p<0.0001$ for the pooled sample). Positive associations between emotional eating and MVPA and TV viewing were observed in the pooled sample ($\beta_a=2.01$, SE=0.51, $p<0.0001$ and $\beta_a=0.07$, SE=0.03, $p=0.01$, respectively), yet these patterns were not consistent across all sites. There were no significant associations between emotional eating and healthy diet pattern, nocturnal sleep duration, or BMI z-score in adjusted models. Conclusions: In this large international sample, emotional eating was positively associated with an unhealthy diet pattern and the association was consistent across countries. This finding suggests that this association is not restricted to the Western countries and their cultural and food environments. Because dietary patterns are quite stable throughout the life-course, it would be useful to pay attention to children's emotional eating in order to prevent undesirable eating behaviour and subsequent obesity.

P3.02.17
A SYSTEMATIC-REVIEW OF EATING HABITS AND PHYSICAL ACTIVITY IN MALAYSIAN ADOLESCENTS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: The increased prevalence of unhealthy eating habits, sedentary lifestyle and obesity among Malaysian adolescents has become a public health problem. The purpose of this systematic review was to summarise the evidence from lifestyle observational and intervention studies among Malaysian adolescents and understand the determinants of diet and physical activity and their associations with cardiometabolic risk factors. Methods: We systematically searched for observational and intervention studies published in Medline via PubMed, Science Direct, Cochrane and Web of Science, up to August 2017. Two reviewers independently screened the results against inclusion and exclusion criteria, which were journal articles of observational or intervention studies examining correlates of diet/physical activity (PA) behaviours or associations of diet and PA with cardiovascular risk factors in general (not clinical) populations of Malaysian adolescents aged 13-18 years. Data were extracted by one reviewer and independently double-checked by a second reviewer. Studies included were rated for quality based on the modified Ottawa-Newcastle scale and the Cochrane Risk of Bias tool. Results: From 2,410 retrieved references, 36 full-texts were screened as potentially relevant. We included 25 (22 cross-sectional, one cohort, and two intervention) studies that met the inclusion criteria and had data extracted and analysed. All studies except one were rated poor quality. Sample sizes ranged between 86 to 40,011 adolescents. Gender and ethnicity were the most commonly studied correlates of diet and physical activity; males tended to have a lower diet quality, higher energy and saturated fat intake in comparison to females. In addition, Malay adolescents had a poorer diet quality compared to other ethnicities. The majority of adolescents had unhealthy dietary patterns such as skipping meals. Males were more physically active in comparison to female adolescents. Compared to Malays, Chinese spent less time to participate in physical activity. Conclusions: This review highlights a lack of longitudinal observational research and trials to support a causal role of specific factors in improving diet and PA behaviour or cardiometabolic health. However, we have summarised the best available evidence for policymakers and public health practitioners to develop interventions for improving diet, physical activity and health of Malaysian adolescents.
P3.02.18
CORRELATIONS BETWEEN SOCIODEMOGRAPHIC FACTORS, WORK-RELATED FACTORS, AND PRESCHOOL PersonNEL'S READINESS TO IMPLEMENT A PRESCHOOL-BASED HEALTH PROMOTION INTERVENTION FOR CHILDREN
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Personnel's readiness to implement a setting-based intervention may have an influence on how successfully the intervention is implemented. Readiness refers to one's mindset to either support for or resistance to the change effort. The purpose of this study is to examine whether preschool personnel's readiness to implement a preschool-based health promotion intervention for preschool children is correlated with the following factors: age, level of education, communication and teamwork quality in the preschool, and personnel's perceptions of possibilities to influence children's energy balance-related behaviors (EBRBs) at preschool. Methods: The Increased Health and Wellbeing in Preschools intervention study (the DAGIS study) conducted pre-intervention surveys in autumn 2017 among preschool personnel in southern Finland. The results are based on answers from 68 members of personnel, of which 53% were preschool teachers with higher level of education. In order to assess the level of readiness, a sum variable was formed, consisting of 11 items assessing motivation, interest and commitment to intervention, among others. A sum variable about personnel's perceptions of possibilities to influence children's EBRBs consisted of items assessing possibilities to influence children's food consumption, physical activity and use of electronic devices in preschool. The associations between the level of readiness and age, communication and teamwork quality, and personnel's perceptions of possibilities to influence children's EBRBs in preschool were examined by Spearman correlation coefficient. Association between readiness and level of education was examined using Mann-Whitney's U-test. Results: Higher level of readiness correlated with the personnel's perceptions of better possibilities to influence children's EBRBs in preschool (r= .40, p= .001). It also correlated significantly with higher perception of flexible teamwork (r= .26, p= .03) and sufficient communication in work organization (r= .28, p= .02). Age or level of education were not associated with readiness to implement intervention. Conclusions: These results show that personnel's perceptions of better possibilities to influence children's EBRBs in preschool, sufficient communication and flexible teamwork in preschool may enhance readiness to implement a health promotion intervention. These factors should be taken into consideration and be supported when implementing preschool-based intervention.

P3.02.19
EFFECT OF REGULAR FOOTBALL TRAINING ON CHILDREN PHYSICAL FITNESS AND SELF-CONCEPT: A PRELIMINARY ANALYSIS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose The aim is to examine effect of regular football training on body composition, aerobic capacity, and self-concept in school children. Methods A 12-weeks parallel-group randomized trial of control/intervention was conducted among school children in Qatar. Data was collected from 3 different schools and 139 children were included (53% intervention; 47% control). Inclusion criteria consisted of healthy boys (10-14 years) with parents' consent. Children with chronic medical conditions, deformity or injuries were excluded. Anthropometric measurements, body composition, and aerobic capacity assessment via YoYo intermittent recovery test (level 1) were obtained before and after football training. Drop-out rate during 2nd assessment was 10%. Validated Physical Self-Description Questionnaire (PSDQ) was used to assess the effect of regular football training on self-concept. Results/findings Average weight of control group was 47.7±smn;15.1 kg compared to 43.8±smn;14.4 kg for intervention group. Body Mass
Index (BMI) was found higher in control group (22.3±smn;5.9 kg/m²) than children in the intervention group (20.9±smn;5.3 kg/m²). Similarly, waist circumference was 74.0±smn;17.4 cm while intervention group was (69.0±smn;14.7 cm). Triceps and subscapular skinfold thickness was respectively 16.6±smn;8.1 mm and 14.3±smn;9.7 mm in the control group, while 14.5±smn;7.3 mm and 11.9±smn;8.1 mm in intervention group. When comparing the running distance completed by children during test, it was found that aerobic capacity has slightly increased after football training in intervention group. However, this difference was not found significant. An inverse correlation was confirmed between aerobic capacity and body composition which was found significant when applying the Pearson Correlation Coefficient analysis. As weight, BMI, waist circumference, triceps skinfold, and subscapular skinfold increase, the aerobic capacity of children decreases. Collected data from PSDQ were not enough to complete the proposed sample size. Therefore, the data collected was inadequate for statistical analysis. Conclusions Although the difference between groups was not found significant; still, the effect of football on fitness and self-concept cannot be excluded. The obtained results could not be generalized and the sample size did not show significant effect of football on healthy boys; therefore, a larger sample needs to be considered in the future in order to strengthen the positive effect of football training.

P3.02.20
SCHOOL LUNCHES ARE LESS EXPENSIVE THAN HOME-PACKED LUNCHES: A COMPARATIVE COST STUDY THAT INCLUDES TIME
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SIG: Children and families

Purpose: To explore the cost, including time, of National School Lunch Program (NSLP) versus home-packed lunches to provide additional insight into decision-making toward meals at school. Only considering the direct cost of school and home-packed lunches and ignoring time can give very misleading results in terms of which is most cost effective. No studies have been published to examine the cost of home-packed lunches compared to school lunches, including preparation time, which is often considered a barrier to home food preparation. The goal of this study was to compare and contrast the direct cost, time cost, and full cost (i.e. direct + time cost) of NSLP and home-packed lunches. Methods: Data from pre-kindergarten and kindergarten lunches from three schools in southwest Virginia were used for this study. Each lunch item was priced and assigned a direct cost based on the lunches' contents. Time assessments were conducted to determine the amount of time to prepare each lunch, with a monetary value for time computed based on average salary of the respective county. A non-parametric Kruskal Wallis test was used to compare the direct cost, time cost, and full cost of the meals. Medians were computed based on outlier data. Results: The lowest median direct cost was found for homemade packed lunches ($1.55), followed by homemade school lunches ($2.11), then convenience packed lunches ($2.12), and then NSLP lunches ($2.15). When incorporating preparation time, the NSLP lunch cost the least ($2.15), followed by convenience packed lunches ($2.56), then homemade packed lunches ($2.92), and then homemade school lunches ($11.32). Seventy-six percent (n=414) of home-packed lunches contained sugar-sweetened beverages (SSBs) and/or desserts, accounting for almost one-quarter (21.8%) of the cost of all home-packed lunches. Conclusion: When time is computed as part of the total cost of NSLP and home-packed lunches, the NSLP is the least expensive option. In conjunction with the nutritional benefits of the NSLP, this time-cost data may help shift purchasing and consumption patterns among parents of school-age children who choose packed lunches for perceived economic savings or could help eliminate SSBs and/or desserts from packed lunches for cost and nutritional savings.

P3.02.21
COMPARING CHILDREN’S SUPERVISED AND UNSUPERVISED OUTDOOR ACTIVITIES: A MIXED METHODS INVESTIGATION
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SIG: Children and families
Purpose: Encouraging outdoor time has been recently emphasized as a public health strategy to increase children's physical activity; yet there is a lack of in-depth description of the activities children engage in while outdoors outside of school hours. Furthermore, we lack understanding of what children do when they are supervised or unsupervised while outdoors. This study aimed to describe children's outdoor activities, and compare their outdoor activity profiles by adult supervision using mixed methods approach. Methods: Participants consisted of 93 children aged 10-13 years from three different neighbourhoods in Metro Vancouver, Canada. Child participants completed a daily log for 7 consecutive days wherein they recorded the times (excluding school hours) they were outdoors, the activities they participated in, and whether or not they were with an adult. Qualitative content analysis was used to categorize the activity description. Two independent investigators coded the activities and then resolved discrepancies. ANCOVA was conducted to compare outdoor activities with and without supervision, and adjusted for child's gender, age, highest parental education and neighbourhood. Results: A total of 1763 outdoor activities were reported and coded. Mean outdoor time was 106 (SD=47) min/day per participant, over half of which was with adult supervision (57%, 60 min/day). Play accounted for the greatest proportion of outdoor time (43%, 46 min/day), followed by active transportation (21%, 22 min/day) and sports participation (17%, 18 min/day). After controlling for covariates, there was no significant difference in the amount of time (min/day) children spend outdoor on supervised or unsupervised play; but less active transportation and more sports participation were observed while supervised. Interestingly, all three supervised outdoor activities and unsupervised sports participation did not differ by any demographic characteristics. However, unsupervised outdoor play decreased from 44 min/day at age 10 to 17 min/day at age 13, while unsupervised active transportation increased from 9 min/day at age 10 to 32 min/day at age 13. Conclusions: Over half of children's outdoor time was supervised and almost half was spent on play. Age difference should be considered when designing interventions to bring back unsupervised outdoor play and active transportation for children of different age groups.

P3.02.22
VIGOROUS PHYSICAL ACTIVITY MEDIATES THE EFFECT OF A SCHOOL-BASED PHYSICAL ACTIVITY INTERVENTION

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SIG: Children and families

Objectives: The Supporting Children's Outcomes using Rewards, Exercise, and Skills (SCORES) intervention has previously been shown to significantly improve children's cardiorespiratory fitness. The aim of this study was to investigate whether moderate physical activity, vigorous physical activity, or both mediated the effects of the SCORES intervention on cardiorespiratory fitness. Methods: SCORES was a 12-month multicomponent program, delivered in 4 primary schools in NSW, Australia, with 4 additional schools acting as controls. Cardiorespiratory fitness and physical activity were the primary outcomes, measured using a 20m shuttle-run and 7-day accelerometry, respectively. Measures were taken at baseline and 12months. Regression analysis (n=93) was used to investigate the hypothesis that vigorous physical activity mediates the effect of the SCORES intervention on cardiorespiratory fitness among children. Results: SCORES was a significant predictor of vigorous physical activity (b = 5.192, SE = 1.621, p < .05) and vigorous physical activity was a significant predictor of cardiorespiratory fitness (b = .304, SE = .143, p < .05). These results support the meditational hypothesis. The SCORES intervention remained a significant predictor of cardiorespiratory fitness after controlling for vigorous physical activity (b = 5.203, SE = 2.285, p < .05), consistent with a partial mediation effect. Approximately 23% of the variance in cardiorespiratory fitness was accounted for by the predictors (R² = .233). The indirect effect was tested using a bootstrap estimation approach with 5000 samples. These results indicated the indirect coefficient was significant (b = 1.578, SE = .93, 95% CI = .033, 3.638). MPA did not mediate the effects of the SCORES intervention on cardiorespiratory fitness among children. Conclusion: Vigorous physical activity, but not moderate physical activity, mediated the SCORES effects on cardiorespiratory fitness in children. Our finding suggests that interventions may be best served by targeting vigorous physical activity.
P3.02.23
EXPLORING MALE STUDENTS’ MOTIVATION TOWARDS PHYSICAL EDUCATION IN HONG KONG SECONDARY SCHOOLS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Grounded in self-determination theory, this was a cross-sectional study aimed at exploring male students’ motivation in physical education (PE) lessons in Hong Kong secondary schools. Specifically, we examined the associations between three types of motivation representing different levels of relative autonomy: autonomous motivation, controlled motivation and amotivation. The purpose of this study was to identify whether existing motivational differences among three grade levels, which will assist PE teachers to design multidimensional curriculums based on the gender and grade discrepancy. Methods: 148 secondary male students (Grade 7 to Grade 9, mean age=15.42 years, SD=1.11 years) participated in this study. Participants self-reported their engagement motivation in PE using the Perceived Locus of Causality Questionnaire. Using one-way ANOVAs, we explored whether students from different grade levels differed in the three forms of motivation respectively. Results: There is no significant discrepancy in autonomous motivation between male students in three grades. However, controlled motivation and amotivation demonstrated significant difference in three grades separately. Specifically, (1) Controlled motivation: F(2,147)=3.181, p< .05, in this section, Grade 8 was lower than Grade 9 as well as Grade 7. (3) Amotivation: F (2,147)=4.698, p< .05, Grade 9 was higher than Grade 7 and Grade 8. Conclusions & Recommendations: Findings indicated that boys in Grade 8 reported the lowest controlled motivation levels and amotivation levels. Grade 9 male students, however, showed highest amotivation. Based on the above-mentioned consequence, grade difference on PE participation may be related to learning environment, teaching style, peer relationship and ego sport performance, however, is much more complex. Consequently, the following focus groups interview will be conducted in the further research for locating in-depth reasons. Moreover, this research will strengthen the call for teachers to develop diverse instructional methods and targeted curriculum design for reversing the Grade 9 male students’ amotivation and fostering autonomous motivation in PE class.

P3.02.24
A NOVEL METHOD FOR MEASURING PARENTS’ AND CHILDREN'S “CO-PHYSICAL ACTIVITY BEHAVIOR” TIME – A PROOF OF CONCEPT STUDY
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SIG: Children and families

Background: Regular physical activity (PA) is vital to children's health. Unfortunately, few Hong Kong children meet World Health Organization's PA guidelines (i.e., 60 minutes of moderate-to-vigorous physical activity per day). Parental engagement such as role modeling and support have been identified as contributors to children's participation in PA. Researchers frequently measure parents' and children's PA volume and intensity with the use of accelerometers. In addition to volume and intensity, being able to measure the amount of time parents and children undertake PA together may add to our understanding of parental impacts on children's PA. Despite this interest, limited research has used the Bluetooth proximity function for the measurement of distance between two individuals (i.e. parent and child). Purpose: To preliminary investigate whether the Actigraph wGT3X-BT proximity detection function can serve as a proxy measure for the amount of time parents and children undertake PA together (“co-PA behavior”). Methods: A semi-controlled study design was performed to simulate a parent-child outdoor activity scenario. Two subjects each wore two wGT3x-BTs and performed a range of sedentary, light, moderate and vigorous physical activities at increasing distances within line-of-site. Bluetooth Received Signal Strength Indication (RSSI) values were evaluated. Differences in signal strength at different distances were compared. Results: RSSI values detected at 10 meters or below exhibited close to -90dB RSSI. A significant relationship between distance (2 vs 4 vs 6 vs 8 vs 10 meters) and missing RSSI values was found (?2(6) = 84.281, p < .000): amount of missing data increased as distance increased. One-way ANOVA revealed that RSSI values recorded at 2 meters differed significantly from all other distances (F(6,77) = 11.219, p =
no significant differences in RSSI values were found between other distances. Conclusions: The wGT3X-BT proximity detection function was able to detect the presence of two individuals within 10 meters line-of-site. It may serve as a proxy measure for the amount of "co-PA behavior" time. Future studies are needed to explore validity and reliability issues.

P3.02.25
PLAY AS A CONTEXT FOR MOTOR DEVELOPMENT IN PRESCHOOL CHILDREN: A COMPOSITIONAL ANALYSIS
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SIG: Children and families

Purpose Play is suggested as an important context for physical development in preschoolers. However, empirical studies examining associations between fundamental movement skills (FMS) and play behaviors are lacking. This study aimed to examine associations between play behaviors during recess and FMS in typically developing preschool children. Method One hundred and thirty-three children (55% male; age mean 4.7±0.5yrs) from twelve preschools completed assessments of six locomotor and six object-control skills, which were video recorded for later analysis (Champs Motor Skill Protocol). A modified version of the System for Observing Children's Activity and Relationships during Play (SOCARP) was used to record preschool children's play behaviors (including activity level, activity type, group size and social interaction). A compositional data analysis was undertaken to examine associations between these play behaviours and FMS. Results For activity level, total skills score was negatively associated with very active only (ß = -1.3080, p=0.0249). For activity type, total skills score was positively associated with time spent in play without equipment (ß = 1.1772, p=0.0021), but negatively associated with locomotion activities (ß = -1.1527, p=0.0202). No associations were found between total skills score and group size or social interaction. Conclusions The findings suggest that play behaviors during recess may not be associated with FMS development. Preschool children may need more structured play or a richer playground environment to foster the development of FMS (including a wider variety of fixed and mobile play equipment). However, future studies should consider more detailed systematic observation tools to assess play behaviors and observe children for a longer duration.

P3.02.26
SOCIOECONOMIC DIFFERENCES IN PARENTS' REPORTED BARRIERS IN FRUIT AND VEGETABLE USE AMONG FINNISH PRESCHOOL CHILDREN
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SIG: Children and families

Objective In Finland preschoolers do not consume the recommended five portions (approximately 250 g) of fruit and vegetables (FV) per day. The purpose of this study was to examine parents' reported barriers to increase child's FV consumption and assess educational level differences in these barriers. We also examined which of the barriers were associated with child's FV consumption. Methods The pre-intervention phase of the DAGIS (Increased Health and Wellbeing in Preschools) study was conducted in autumn 2017. Altogether 801 3 to 6-year-old preschoolers (46% of those invited) in southern Finland participated in the study. Data on FV consumption was available for 595 (74%) children and perceived barriers to increase FV use for 694 (87%) children. Parents reported whether or not they perceived the following factors as barriers to increase child's FVs consumption: 1) lack of skills and means, 2) difficulty of providing FVs, 3) high cost, 4) lack of support from other parent, 5) low availability at home, 6) child's resistance and 7) parents themselves not liking FVs. Respondents were divided into three groups (low, medium, high) based on their education. Pearson's Chi-Square and Mann-Whitney U-tests were used for statistical analysis. Results All barriers, except the high cost of fruits or vegetables, were associated with
lower FVs consumption. The most frequently reported barrier to increase child's vegetable consumption was child's resistance (44%). The high cost of fruits (21%) and child's resistance (21%) were the two most often reported barriers to increase child's fruit consumption. There were socioeconomic differences in perceiving following factors as barriers: high cost of vegetables (low 34%, medium 17%, high 19%, p=0.001), child's resistance to vegetables (low 41%, medium 54%, high 43%, p=0.012), high cost of fruits (low 30%, medium 20%, high 13%, p=0.001) and child's resistance to fruits (low 16%, medium 30%, high 19%, p=0.001). Conclusions These results show that child's resistance is a significant barrier for increasing FV consumption regardless of parental educational level. Future interventions promoting FV consumption among preschoolers should acknowledge educational level differences in the perceived barriers.

P3.02.27
THE ASSOCIATION BETWEEN STRESS AND PHYSICAL ACTIVITY AMONG MALAYSIAN ADOLESCENTS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Inadequate physical activity and growing obesity levels among Malaysian adolescents are becoming a public health issue. Their lifestyle normally been altered with their daily routine to the schools and preparing themselves for academic achievement and potentially some sports performance. This study aims to investigate the level of stress experienced by Malaysian adolescents and its association with their body weight and physical activity. Methods: A cross sectional study was conducted among 427 multi-ethnic 17 years old Malaysian adolescents from both urban and rural areas. The stress level was assessed subjectively by using a validated Cohen Perceived Stress Scale (CPSS) questionnaire and objectively by using the saliva cortisol level of a subsample of 261 participants. Height and weight were measured using calibrated instruments. Self-reported physical activity levels were assessed using the validated Physical Activity Questionnaire for Older Children (PAQ-C). Pearson's correlation analysis were applied to collected data. Results: About 23.7 % of the adolescents in this study was overweight/obese. The mean CPSS Score was 18.6 (95% CI: 18.2, 19.0) reflecting moderate stress level while the mean saliva cortisol was 2.84 nmol/L (95% CI: 2.37, 3.32). Physical activity score differ significantly between genders (p<0.01) but not between the school location or the ethnic groups. There was a significant but weak negative correlation between physical activity score and CPSS score (p<0.01); significantly stronger among the male \((r=-0.23)\), the urban \((r=-0.17)\) and the normal weight \((r=-0.19)\) adolescents. There was no significant correlation between the physical activity score and the saliva cortisol level. Conclusions: Physical activity may play a role in minimising stress in the schoolchildren who will anticipate in examination. Being physically active is good; and should be encouraged and promoted even during the preparation of major school examinations.

P3.02.28
PREDICTORS OF MODERATE TO VIGOROUS PHYSICAL ACTIVITY AMONG CHINESE ADOLESCENT GIRLS DURING WEEKDAYS AND WEEKENDS: A SOCIAL ECOLOGICAL PERSPECTIVE
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SIG: Children and families

Key words: Moderate to vigorous physical activity, MVPA, predictor, adolescent girls, social ecological model, weekdays, weekends, Hong Kong Purpose: Adolescent girls face a high risk of being physically inactive, however, few studies have employed social ecological model (SEM) to comprehensively investigate predictors of MVPA among adolescent girls in a Chinese community. Due that the pattern and
settings of adolescent girls engaging in PA during weekdays and weekends are completely different, this study aimed to investigate predictors of MVPA among Chinese adolescent girls in Hong Kong during weekdays and weekends from a SEM perspective, respectively. Methods: A cross-sectional design was used. There are five hundred and four girls (Mage = 13.49±smn; 1.11) were recruited from four secondary schools in Hong Kong. Girls’ MVPA during weekdays and weekends were measured by accelerometers. Participants’ individual (age, body mass index, household income, self-efficacy, enjoyment for PA), social environment (peer support, parents support, physical education teacher support, and the attitude of peer, parents and physical education teachers for PA), physical environmental (perceived availability of PA equipment) factors were self-reported using questionnaire. Hierarchical regression was employed to analyze the data. Results: Adolescent girls engaged in MVPA during weekdays and weekends about 31.59 (SD=13.14) and 27.30 (SD=21.97) minutes per day, respectively. Among the investigated factors, only age (βa; =-0.21, p<.0) and peer’s attitude toward participant’s PA (βa; =.22, p<.05) were found to be significant predictors of MVPA during weekdays. The model accounted for 10.2% variance to adolescent girls’ MVPA during weekdays. No significant predictor was found for girls’ MVPA during weekends. Conclusions: Peer’s attitude toward participants’ PA should be considered in the intervention programs for promoting adolescent girls’ MVPA during weekends in Hong Kong. The predictors of Hong Kong adolescent girls’ MVPA during weekends require further investigation.

P3.02.29
EXAMINING THE GROSS MOTOR SKILL PROFICIENCY OF CHILDREN BORN PRETERM AT AGE 4-6 YEARS
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SIG: Children and families

Purpose Children born preterm (<37 weeks) have been shown to exhibit poor gross motor skills. However, examining movement skill proficiency of children born preterm is largely limited to those born early preterm (<32 weeks) with less research on the performance of children born preterm at later gestational ages (>32 weeks). This investigation examined the gross motor proficiency of 4-6 year old children born preterm. Methods Written informed consent was received for ten children (n = 6 f, n = 4 m) born preterm (ranging from 26.6 weeks to 35.1 weeks, mean gestational age = 31.4 ±smn; 3.0 wk), with no known neurological or physical impairments between the ages of 4 and 6 y (mean age = 5.3 ±smn; 0.7 y). The children were assessed for gross motor skill proficiency (locomotor and object control) using the Test of Gross Motor Development-2 (TGMD-2), as well as on balance (single-leg balance test), grip strength, and standing long jump distance. Results Participants were found to have a mean TGMD-2 gross motor quotient of 79.9 ±smn; 7.8, the equivalent of the 8th percentile. Mean single-leg balance was found to be 7.1 ±smn; 5.5 sec, and participants were found to have a mean grip strength of 9.3 ±smn; 1.9 kg, as well as a mean standing long jump distance of 82.8 ±smn; 10.3 cm. Gestational age and gross motor quotient were not found to be statistically significant (r = 0.192, n = 10, n.s.). Gross motor quotient was found to have a significant positive correlation with single-leg balance (r = 0.663, n = 10, p < 0.05). Conclusions Low mastery of gross motor skills was demonstrated on the TGMD-2. Although children born early preterm have been shown to demonstrate poor gross motor competence, this investigation indicates that children born preterm at later gestational ages also exhibit poor proficiency in gross motor tasks. Given the importance of gross motor skill mastery in early childhood, it would be of interest for follow-up, prevention, identification, and intervention strategies to target balance proficiency and to include all children born preterm, regardless of gestational age.

P3.02.30
ASSOCIATIONS OF DIETARY PATTERNS WITH BMI AND SUBCUTANEOUS FAT IN FIVE-YEAR-OLD ASIAN CHILDREN: THE GROWING UP IN SINGAPORE TOWARDS HEALTHY OUTCOMES (GUSTO) STUDY
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LONGITUDINAL RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND COGNITIVE PERFORMANCE AMONG CHILDREN IN SHANGHAI CHINA

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SIG: Children and families

Objective: To evaluate the prospective associations between objectively measured physical activity and cognitive performance among children in Shanghai. Methods: A total of 306 participants (176 boys, 130 girls, M=4.5yr, SD=0.47) from 8 Kindergartens were enrolled in this study. 127 participants (79 boys, 48 girls, M=7.7yr, SD=0.44) were followed between Oct, 2013 to Jun, 2017. Physical activity was both objectively measured by accelerometer ActiGraphGT3X+ for 7 consecutive days at baseline and at follow-up. Cognitive performance, including verbal intelligence quotient (VIQ), performance intelligence quotient (PIQ), and full intelligence quotient (FIQ), were assessed using Simplified Chinese version of Wechsler Young Children Scale of Intelligence (C-WYCSI) and Wechsler Intelligence Scale for Children (C-WISC) at baseline and at follow-up respectively. All physical fitness measurements were conducted in preschool settings by trained research assistants according to the National Physical Fitness Standard (the Preschool Children Version). Mother’s education, family structure, household income were reported by parent or
teacher, cardiorespiratory fitness was measured using multistage 20m shuttle run test. Children were classified as Active-Active, Inactive-Active, Active-Inactive, Inactive-Inactive according to the PA recommendation guidelines. Linear regression models were used to explore the longitudinal associations between physical activity and cognitive performance at 8 years old after adjusting for compounding factors.

**Results:** Overall, MVPA levels decreased from 5 to 8 years (preschool to elementary school) both workday and weekend regardless of gender (all p<.01). Children accumulated an average of 40.3 minutes of MVPA per day at follow-up, boys engaged in more MVPA than girls (43.79 min/day vs. 34.88 min/day, p<.01). After adjusting for age, gender, mother's education, family structure, household income, baseline BMI, baseline FIQ, laps in 20m-srt, maintaining an active MVPA level (active-active) and improved MVPA level (inactive-active) was associated with higher FIQ (p<.05), VIQ (p<.05) at follow-up as compared to those classified inactive-inactive. Further, girls' FIQ were also positively associated with improved MVPA level (p<.05).

**Conclusions:** MVPA levels decreased rapidly from 5 to 8 years (preschool to elementary school) both workday and weekend. Trajectories of objectively measured physical activity are associated with children's cognitive performance during this period. Children who are persistently active or improved MVPA level tend to show higher cognitive performance, especially in girls. Keywords: physical activity, cognitive performance, children, longitudinal study

P3.02.32
**A SQUARE WORLD: EXPLORING THE USE OF AUTOMATED WEARABLE CAMERAS TO CAPTURE SCREEN USE IN ADOLESCENTS**

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**SIG:** Children and families

Objective Tablets, computers and mobile phones are an important aspect of modern living, however there is concern that excess recreational use of these devices increases sedentary activity and adversely affects sleep. The aim of this research was to pilot the use of automated wearable cameras to investigate their potential to measure evening screen use in adolescents. Methods A convenience sample of adolescents (13-17 years, n=15) wore an automated camera on a lanyard around their neck for three evenings from 5pm to bedtime. The camera (Brinno TLC120) captured an image every 15 seconds. Actual bedtime was determined by actigraphy (Actigraph wGTX-BT) as an indicator of camera wear time compliance. Screen images were coded for the type of device, activity (e.g. watching, texting), and context (multitasking, screen as a background activity and area). Results In total, 42,312 images were captured for 40 evenings. Two participants completed only two nights of recording and one participant failed to turn the camera on. Average wear time per evening was 4h 24min (SD 1h 36min) with a mean screen time of 1h 54min (SD 56min). Compliance to wearing the camera declined over the three evenings (day1: 77%; day 2: 68%, day 3: 52%). One quarter of screen images showed adolescents using two devices simultaneously, mostly phones with watching TV/laptops. Few images were dark or blurry (median <1%) but the camera field of view frequently captured ceilings if the participant was lying or slouching (median 7%). The percent of images with screens ranged from 25% to 79% (median 52%) in individual participants. The most common screens captured were phones (25%), TV (25%) and laptops (17%). For one third of screen images the type of activity was uncodable and most of these were for phones (89%). Conclusions In this group of adolescents, more than half of evening time was spent using or watching screens. The automated cameras performed well in low light and have the potential to measure multi-tasking and intermittent screen use not easily captured in self-report. Some limitations in respect to measuring types of activities and wear time compliance were evident in this pilot trial.

P3.02.33
**A DESCRIPTIVE STUDY OF MOVEMENT BEHAVIOURS AND PARENT-CHILD PROXIMITY IN EARLY YEARS CHILDREN**

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**SIG:** Children and families
Objective: The objective of this study was to describe early years children's (18-60 months) movement behaviours and concurrent parent-child proximity. Methods: Nineteen parents (34.04±smn;4.15 years) and children (38.37±smn;13.07 months) wore ActiGraph wGT3X-BT accelerometers for seven days. Parental accelerometers continuously emitted Bluetooth signals, while children's accelerometers recorded one signal/minute. Accelerometer data was downloaded in 15-seconds epochs for parents and children. Sleep was classified via logsheets, while stationary time [ST] (Child: =25, Parent: <25 counts/15sec), light-intensity physical activity [LPA] (Child: 26-419, Parent: 25-504 counts/15sec), and moderate- to vigorous-intensity physical activity [MVPA] (Child: =420, Parent: =505 counts/15sec) were classified by accelerometer data. Children's movement behaviours were grouped by detection of Bluetooth signals (i.e., no proximity [NP] or proximity). When proximity was detected children's movement behaviours were further grouped by parent-child co-activity [Co] or parent close but mismatching behaviours [Close]). All data analysis was completed in R (version 3.4.0). Results: Of the 6.32±smn;1.11 average valid days and 21.31±smn;1.42 average hours/day of wear time for parent-child dyads, 46.04% was NP, 33.74% was Close, and 20.43% was Co. Children had 9.36±smn;2.00 hours of sleep (57.31% NP-Sleep, 34.52% Co-Sleep, and 8.17% Close-Sleep), 6.41±smn;1.34 hours of ST (43.32% NP-ST, 36.67% Co-ST, and 20.01% Close-ST), 4.25±smn;0.68 hours of LPA (35.19% NP-LPA, 31.49% Co-LPA, and 33.32% Close-LPA), and 1.29±smn;0.45 hours of MVPA (36.22% NP-MVPA, 2.74% Co-MVPA, and 61.04% Close-MVPA). For Close-ST, 90.33% of the time parents were engaged in LPA, likewise for Close-LPA 93.60% of the time parents were engaged in ST. For Close-MVPA, parents were engaged in LPA and ST 52.35% and 47.13% of the time, respectively. Conclusions: Parent-child dyads spent just over half of valid wear time together according to Bluetooth signals; however, ~60% of sleep was NP-sleep. Of the time spent together almost double the amount of time in ST was spent in Co-participation compared to Close-ST. The opposite was observed for MVPA, with the majority of time spent in Close-MVPA versus Co-MVPA. For LPA, there was an even split between Close-LPA and Co-LPA. Future research will build on this pilot study by increasing the sample size to examine the associations between parent-child proximity and movement behaviours.

P3.02.34
MEETING 24-HOUR MOVEMENT GUIDELINES FOR THE EARLY YEARS AND INDIVIDUAL, PARENTAL, AND ENVIRONMENTAL CHARACTERISTICS AMONG EARLY YEARS CHILDREN IN CANADA AND SOUTH KOREA: CROSS-CULTURAL COMPARISONS
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SIG: Children and families

Purpose: To compare 1) proportions of children meeting 24-Hour Movement Guidelines for the Early Years (0-4 years), and 2) individual, parental, and environmental characteristics pertaining to physical activity (PA) and screen time (ST) between samples of children from Edmonton, Canada and Seoul, Korea. Methods: Participants included 174 children aged 1-4 years (Canada N=84, M age=2.79±smn;0.5 yr old; Korea N=88, M age=3.41±smn;1.1 yr old) from the Parents' Role in Establishing healthy Physical activity and Sedentary behavior habits (PREPS) project. Children's PA, ST, sleep (SLP), activity temperament, PA- or ST-specific parental cognitions and behaviors, and the home and neighborhood environments were measured via parental-report using the English or Korean version of the PREPS questionnaire. Meeting the specific (PA, ST, SLP, PA+ST, PA+SLP, ST+SLP, PA+ST+SLP) and general (none, one, two, three) combinations of the 24-hour movement guidelines was calculated. Two-tailed Independent samples t-tests, Chi-square tests, and linear and logistic regression analyses were performed. Age and main type of childcare were controlled when comparing children's characteristics. Results: Differences between Canadian and Korean samples in meeting the guidelines were observed for the PA recommendation (26.2 vs. 9.1%; p=.019), SLP recommendation (46.4 vs. 38.6%; p=.007), and PA+SLP recommendations (14.3 vs. 3.4%; p=.027). Canadian children, compared to Korean children, spent more time in PA (134.10 vs. 90.42 min/d; p=.007), ST (150.99 vs. 100.86 min/d; p=.033), and SLP (12.04 vs. 10.74 hr/d; p<.001). Interestingly, Canadian children spent more time in non-organized PA (128.06 vs. 67.69 min/d; p<.001) while Korean children spent more time in organized PA (22.73 vs. 6.02 min/d; p=.001). Canadian parents, compared to Korean parents, showed higher ST (149.08 vs. 113.26 min/d; p=.018), lower limit on their child's ST (p=.015), higher ST-related negative outcome expectations (p<.001), and higher support for PA (p=.002). In addition, Canadian children, compared to Koreans, had more electronic devices in bedroom.
(6.0 vs. 5.6; p=.030) and at home (9.3 vs. 7.8; p=.004). Canadian parents, compared to Koreans, also reported higher scores in the suitability of playgrounds (p<.001) and neighborhood safety (p<.001). Conclusions: Country-specific strategies can be developed to establish healthy movement behavior patterns among children in the early years.

P3.02.35
EYE-HAND COORDINATION AND HABITUAL PHYSICAL ACTIVITY IN CHILDREN WITH CEREBRAL PALSY AND TYPICAL DEVELOPMENT
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Eye-hand coordination (EHC) is a key component of motor skill affecting the successful performance in sports and daily activities. Few studies have examined the association between EHC and habitual physical activity (PA) in children with cerebral palsy (CP). The purpose of the study was to: 1) investigate the performance of EHC in children with CP in comparison with peers of TD (TD); 2) examine the relationship between EHC and habitual PA. Methods: Twenty-nine children with CP (18 boys, 4-11 years old) and 29 children with TD matched by gender and age were recruited. Participants finished a computer-based aiming task where eye movements and hand movements were tracked. Habitual PA level was assessed by the Actigraph accelerometers and participants were divided into physically active or sedentary groups based on the median score of activity counts. ANCOVA, with GROUP (CP vs. TD) and PA (active vs. sedentary) as between-participant factor, was used to investigate the effect of GROUP and PA on various eye parameters and hand kinematics related to EHC. Results: A significant main effect of GROUP on overall eye parameters and hand kinematics was found (p < 0.05). Children with CP executed aiming movements with more corrective saccades (p < 0.05) and more temporal and spatial variability at hand kinematics (p < 0.05) compared to children with TD. A significant main effect of PA was also found (p < 0.01), with physically active children performing with higher hand peak velocity (p < 0.01) and less temporal variability (p < 0.05) at hand kinematics. There were significant GROUP by PA interaction effects, in which sedentary children with CP experienced more temporal and spatial variability (p < 0.05) at hand kinematics than active children with CP. Meanwhile sedentary children with TD showed similar eye parameters and hand kinematics as active children with TD. Conclusions: EHC is less efficient in children with CP compared to children with TD. More active children are likely to have better performance of EHC, and this relationship tends to be more pronounced in children with CP.

P3.02.36
ASSOCIATIONS BETWEEN SLEEP, PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR AMONG ADOLESCENTS IN HONG KONG
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SIG: No, this does not fit in any of the above mentioned special interest groups

Physical activity (PA) and sedentary behavior (SB) are associated with both sleep quality and quantity, but very few study used objectively-measured PA, SB and sleep quantity among adolescents. Objectives: This study aimed to: (1) assess the sleep quality and objectively-measured quantity and (2) determine the associations of PA and SB with sleep quality and quantity, among Chinese adolescents. Methods: 1,039 adolescents from 18 schools wore the waterproof activPALTM for 24-h over 7 consecutive days to assess sleep quantity, PA and SB. Sleep quality was measured by the Pittsburgh Sleep Quality Assessment (PSQI). Linear mixed models (LMMs) were conducted to assess the associations of moderate-to-vigorous intensity PA (MVPA) and SB with sleep quality and quantity, while adjusted for age, gender, body mass index, and school clustering effect. Results: The analytic sample consisted of 656 adolescents (14.6 ±smn; 1.6 years, 48% of girls) who provided the activPALTM data for at least 4 days and completed the PSQI questionnaire. Forty percent of adolescents reported poor sleep quality (PSQI score > 5), girls had worse sleep quality than boys (5.5 ±smn; 4.2 vs 4.8 ±smn; 3.8, p=0.030). 39.2% of the sample met the sleep
guidelines (9–sh;11 hours/night for 5–sh;13 years or 8–sh;10 hours/night for 14–sh;17 years), with a mean quantity of 8.0 ±smn; 0.9 hours/night. On average, they spent 39.5 ±smn; 15.6 minutes/day and 10.9 ±smn; 1.3 hours/day in MVPA and SB, respectively. The score of PSQI was negatively associated with SB for girls (b = -1.26; 95% confidence interval [CI]: -2.45 to -0.08) but not for boys. There was a negative association between sleep quantity and SB for both boys and girls (b = -0.30; 95% CI: -0.42 to -0.18). MVPA was related to neither sleep quality nor sleep quantity. Conclusions: A part of Hong Kong adolescents experienced poor sleep quality and insufficient sleep quantity. Time spent on SB during waking hours had a positive relationship with the sleep quality of girls. Future sleep studies could focus on the influence of SB, and more attention should be paid to improve sleep quality of Hong Kong adolescents, particular in girls.

P3.02.37
CHANGES IN DIET OVER THE TRANSITION OUT OF SECONDARY SCHOOL: DOES POST-SCHOOL SITUATION MATTER?
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SIG: Children and families

Purpose The transition out of secondary school is a time of significant change, including situational changes such as taking on further study, moving out of home and/or entering the workforce. However, apart from the transition to college in the US, little research has examined how diet changes over this time. This study examined changes in diet over the transition out of secondary school and whether these changes were moderated by situational changes. Methods Secondary school students recruited in Year 11 via schools and social media completed three surveys (online or via telephone) one year apart (T1-T3, n=852, 74% female). Participants reported fruit and vegetable intake (serves/day), consumption of five discretionary foods (frequency/week), sugar-sweetened beverages (<1 vs =1 cup/week), fast food (<="span">)

P3.02.38
EQUITY PATTERNING OF VIGOROUS PHYSICAL ACTIVITY AMONGST CHILDREN: A CROSS-SECTIONAL ANALYSIS OF THE UK MILLENNIUM COHORT STUDY
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SIG: Children and families

Objective To assess if the proportion of vigorous physical activity (VPA) accumulated within daily moderate-vigorous physical activity (MVPA) differs between children from varying equity subgroups including by gender, ethnic group, religion, socioeconomic status (maternal education, annual household income) and place of residence. Methods Accelerometer-assessed physical activity data from the fourth follow up of the Millennium Cohort Study, a longitudinal study of children born in the UK between 2000-2002, was utilized. 12 872 children (age 7) were mailed a pre-programmed Actigraph accelerometer and instructed to wear it on their waist for all waking hours across a seven day period. Accelerometers were programmed to use a 15s sampling epoch. Participants with a registered time of = 10 h on at least = 3 days (including one weekend day) were included in analyses with counts separated into sedentary (<100 counts per min (cpm)), moderate (2240-3840 cpm) and vigorous (>3841 cpm) physical activity. Multivariable linear regression models accounting for survey design were fitted to analyse differences in average daily minutes of VPA achieved across subgroups, adjusting for MPA and mean accelerometer wear time. Day level data was used to further analyse differences by weekday and weekend. Results Following data processing 5098 children were included in the analyses. The proportion of daily minutes of activity achieved through vigorous intensity activities was significantly higher for children from advantaged socioeconomic backgrounds (Highest versus lowest level of maternal education: B-coef: 2.908, p-value: 0.003) and neighbourhoods (Per increase in multiple deprivation decile: B-coef: 0.124, p-value: 0.002)
alongside for girls compared to boys (B-coef: 1.489, p-value: 0.000). Additionally, children from certain minority ethnicities (Bangladeshi and Pakistani) and religions (Muslim) accumulated less of their MVPA from vigorous activities than their counterparts. Conclusions Given the stronger correlation between VPA and body weight and other health benefits in comparison to MPA, these results may have important implications for understanding the growing inequalities in childhood obesity found across equity subgroups of children. These findings demonstrate that the common aggregate measured of MVPA utilized across physical activity research and within global activity recommendations masks important equity differences in the patterning of behaviour.

P3.02.39
SKILLS TRANSFER FROM TWO INDEPENDENT CYCLING INTERVENTIONS ON LEARNING TO CYCLE INDEPENDENTLY
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Cycling a bike is considered a complex skill as it requires complicated skills like lower limb strength and coordination that must be learnt through practice to allow for appropriate spatio-temporal responses. Learning to cycle independently often occurs through practice on precursors such as balance bikes (BB) and bikes with stabilisers (BS), with the view that skills learned are transferable between bikes. Industry has evolved around this view; however, there is no empirical evidence to support this statement. This study investigates if a five week cycling intervention leads to improvements in ability to cycle independently and if there is a difference in rate of learning between the BB and BS. Methods: Three groups (BB, BS, Control) of 35 children (3.7 years±smn;0.7) were assessed over a five week intervention on ability to cycle independently (ACI). BB and BS partook in two cycling sessions a week for five weeks. ACI was measured once a week over the five weeks (pre, week2, mid, week4, post) for BB; BS and pre and post for Control. The participants were categorised as able to cycle independently if they could cycle without assistance for more than three revolutions of the pedals. Results: A repeated measures ANOVA and Bonferroni post-hoc were run to assess differences in ability to cycle across the three groups from pre to post. There was a significant interaction effect (p<.001) between groups with post-hoc analysis indicating a significant difference between BB and Control (p<.001) and BS and Control (p=.002). No significant differences were found between BB and BS. T-tests were run to measure differences between the BB and BS groups at each of the 5 time points. There was only a significant difference at post-intervention (p=.039) with BB having a higher percentage of participants cycling independently than BS (75vs50%). Discussion: The following study indicates that a five week cycling intervention on either BB or BS enhances ACI with a faster rate of learning using BB. This result indicates firstly that BB and BS act as tools toward cycling independently. Future research can try identifying the exact nature and role of the transferable skills between bikes.

P3.02.40
THE IMPACT OF A PARENT-FOCUSED PILOT INTERVENTION TARGETING CHILDHOOD OVERWEIGHT AND OBESITY ON PARENTS’ PERCEPTIONS OF FAMILY COHESION, COMMUNICATION, AND SATISFACTION
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SIG: Children and families

Purpose: Poor family functioning including lack of family cohesion and communication are associated with an increased risk of paediatric overweight and obesity (Halliday et al., 2014). The purpose of this study was to evaluate the impact of a group-based, parent-focused pilot intervention targeting childhood overweight and obesity (i.e., "C.H.A.M.P. Families") on parent-reported family cohesion, communication, and satisfaction. Methods: C.H.A.M.P. Families was a 13-week pilot intervention (8 group-based educational sessions) offered to parents of children with overweight and obesity (n = 9 parents) from
September-December, 2017. Family cohesion, communication, and satisfaction were measured via the FACES IV Package, a valid and reliable tool consisting of six Family Cohesion scales (n = 42 items), one Family Communication scale (n = 10 items), and one Family Satisfaction scale (n = 10 items; Olson, 2011). The instrument was administered to parents at baseline, mid-intervention (week 6), and post-intervention (week 13). Two focus groups were held with parents (n = 6 per group) on the last day of the program, in which family cohesion, communication, and satisfaction were discussed. Qualitative data were analyzed individually for each participant, with trustworthiness established through inter-subject replication. Qualitative data were analyzed using the steps of thematic analysis described by Braun and Clarke (2006). Results/Findings: Analysis of the quantitative data demonstrated that although the outcomes were not universally positive, increases in parent-reported family cohesion (n = 6), communication (n = 7), and satisfaction (n = 8) were noted. Qualitative analyses revealed that overall, parents perceived that family cohesion and communication improved as a result of the intervention; they also reported common communication- and parenting-related challenges associated with their roles as the primary agents of change in their families. Conclusion: Improving family functioning has important implications for child and family health; this study sheds light on family cohesion, communication, and satisfaction within the context of an innovative parent-focused childhood overweight/obesity intervention. Preliminary knowledge gained will be used to inform the development of future family-based paediatric overweight and obesity interventions.

P3.02.41
LIFESTYLE FACTORS ASSOCIATED WITH MEETING PHYSICAL ACTIVITY GUIDELINES AMONG PARENTAL PARTICIPANTS OF THE MIND, EXERCISE, NUTRITION, DO IT PROGRAM
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SIG: Children and families

Objective: To identify lifestyle factors associated with meeting recommended physical activity guidelines before and after completion of a diet and exercise program. Methods: The Mind, Exercise, Nutrition, Do it (MEND) program focuses on reducing childhood obesity outside of the school setting by incorporation family support. The program was implemented in a Mexican American community along the Texas-Mexico border. Children and parents participated in physical activity and nutrition educational sessions twice a week for 10 weeks. Data were collected at pre and post-assessments. Parent physical activity was measured using the International Physical Activity Questionnaire. Meeting physical activity guidelines was defined as METs=600. Logistic regression was used to assess factors associated with meeting guidelines at pre and post-assessments. Multinomial logistic regression analysis assessed factors associated with change in meeting guidelines. Participants were categorized into three groups based on meeting guidelines: consistent activity, consistent inactivity or declined activity, and improved activity. Results: At the pre-assessment (N=1037) and post-assessment (N=604), 62.8% and 82.1% reported meeting recommendations, respectively. Of those with data at both assessments (N=465), 27.1% improved activity and 55.7% were consistently active. At the pre-assessment, single parents (adjusted odds ratio [AOR]: 0.57, p=0.015) and older parents (aged 42-71; AOR: 0.45, p=0.002) were associated with not meeting recommendations. At the post-assessment, obesity (AOR: 5.7, p=0.003), living below the poverty level (AOR: 0.33, p=0.046) and age 32-36 years (AOR: 0.29, p=0.029) were associated with meeting recommendations. In multinomial logistic regression analysis, compared to consistent activity, single parents (AOR: 3.6, p=0.003) and older parents (AOR: 3.8, p=0.002) were more likely to show improved activity. Additionally, single parents, living below the poverty level, obesity, and middle age were all associated with declined activity or consistent inactivity. Conclusions: This analysis of the MEND program data identified different demographic and lifestyle factors associated with meeting physical activity recommendations. Family dynamics, such as single parents and older parents, were associated with not meeting recommendations at the pre-assessment but were associated with improving physical activity over the intervention period. These parents may have different motivations and barriers than non-single and younger and middle aged parents with regard to changing physical activity.
P3.02.42
CLUSTERING OF HEALTH-RELATED LIFESTYLE BEHAVIORS AND ASSOCIATIONS WITH SOCIAL ECONOMIC STATUS IN TODDLERS (1-3 YEARS)
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SIG: Children and families

Objective: Health-related lifestyle behaviors are often correlated to each other, or ‘cluster’. This study examined whether health-related lifestyles behaviors already cluster in children as young as 14 months and whether these clusters persist to 36 months, and how does these health-related lifestyle clusters associated with family social-economic status (SES). Methods: This study used repeated-measurement data from the ‘BeeBOFT’ study. Parents completed questionnaires on child's health-related lifestyle behaviors (e.g. the consumption of sweet beverages, unhealthy snacks, water, fruits and vegetables, TV viewing, physical activity and play outside) and at child age of 14 months (n=753) and 36 (n=687) months respectively. Family SES was indicated by parental educational level. We applied exploratory factor analysis to identify clusters of health-related lifestyle behaviors, and linear regression analyses to assess their associations with SES indicators at child age of 14 and 36 months respectively. Results: At child age of 14 months, three clusters of lifestyle behaviors emerged: the ‘healthy diet’ cluster, featured by higher consumption of water, fruits and vegetables; the ‘unhealthy diet and TV’ cluster, featured by higher consumption of sweet beverages and unhealthy snacks and longer duration of TV viewing; and the ‘physical activity’ cluster, featured by longer duration of playing outside and being physically active. The same clusters emerged at 36 months, with stronger correlations between the behaviors within each of the clusters. The cluster scores of the children at 14 months were highly correlated to their corresponding cluster scores at 36 months (r=0.55, 0.54, and 0.31 for the 3 clusters respectively). At each age, both low maternal and paternal educational level were associated with higher scores on the ‘unhealthy diet and TV’ cluster, and low paternal educational level was associated with higher scores on the ‘physical activity’ cluster. No significant association was found between indicators SES and the ‘healthy food’ cluster. Conclusions: Clusters of health-related lifestyle behaviors have already emerged in 14-months old children, and these clusters consolidated at 36 months. The cluster of unhealthy lifestyles are related to low parental educational level.

P3.02.43
EFFECTIVENESS OF A COMPREHENSIVE SCHOOL-BASED INTERVENTION: THE PHYSICAL EDUCATION PHYSICAL LITERACY (PEPL) APPROACH
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SIG: Children and families

Purpose: There is concerning evidence of the ineffectiveness of current Australian public primary school physical education (PE). A specialist PE teacher, if appointed, can only teach each class once per week, and classroom teachers frequently feel unable to contribute. In collaboration with the state educational authorities, we tested the effectiveness of a sustainable and economically realistic approach to improve PE and enhance the development of physical literacy during primary school. Methods: We appointed a physical education physical literacy (PEPL) coach to work in 7 schools (the Intervention group, N students=135); major roles being the professional development of the classroom teachers and to facilitate links with community sport. Six schools (the Control group, N=156) continued their usual practice. Pre-and post-intervention measures assessed PE lesson content (SOFIT), physical activity (accelerometers), object control (Test of Gross Motor Development-2), physical fitness (20m-multistage run), and enjoyment of physical activity (S-PACES questionnaire). Interviews were also conducted with students, teachers, and principals, and a day-to-day diary was kept by the PEPL coach. Multiple linear mixed modelling was used to examine intervention effects. Results: Post intervention, PE lessons conducted by the intervention group classroom teachers were 55% longer, with 4 times the pre-intervention time spent on skill development
and 2.4 times more moderate and vigorous physical activity (MVPA). The coach's diary showed daily teacher and student interaction and introduction to community sport coaching schemes. There was an intervention effect on object control ($\beta_a=1.62; SE=0.61; p=0.008$), and indications of increased school-day MVPA ($\beta_a=4.50; SE=2.39; p=0.06$). No group differences in enjoyment of physical activity or fitness emerged. Qualitative assessments in the intervention group suggested improved teacher appreciation of PE and motivation to engage students in physical activity. All principals reported their keenness to continue with the approach, with some funding its continuation post-trial. Conclusion: The PEPL approach was effective in increasing the quality and delivery of primary school PE lessons and was well-accepted into the curriculum by teachers and principals. Designed in collaboration with state educational authorities, and consistent with government educational objectives, the next steps include learning from the current trial to improve the approach prior to administration on a larger scale.

P3.03: SIG Policies and environments (Grand Foyer)

P3.03.01
UNDERSTANDING THE INTENTIONAL INCLUSION OF HEALTH AND WELL-BEING STRATEGIES IN MULTIFAMILY REAL ESTATE DEVELOPMENT DECISION-MAKING
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SIG: Policies and environments

Objective The multifamily real estate development sector's response to rapid urbanization serves as a prime opportunity to improve community health through the intentional inclusion of built environment and other health and well-being strategies throughout the decision-making process. This ongoing, early-phased project explores 1) how and why multifamily developers consider and include community health strategies and health-related amenities in new projects, and 2) barriers and facilitators of including health in real estate decision-making. Methods Using a multiple case study approach with two southeastern private multifamily developers who have demonstrated interest and engagement in establishing healthy communities, our team used in-depth interviews for data gathering. In addition to interviews, data triangulation will occur through website content analysis to understand marketing approaches and pro forma reviews to understand financial considerations. Transcribed interviews underwent independent open coding for theme generation and conceptualization of health strategies in QSR NVivo 10.0. Thematic and interpretative validity occurred through team discussions and member checks with development partners respectively. Website and pro forma content analysis are forthcoming. Results The topic of health and wellbeing is nuanced and not concrete within the multifamily real estate discipline. Details of how specific amenities fit within the various project scales (unit interior, property envelop, community-wide) remain less understood. Themes revealed that the inclusion of health and wellbeing considerations serve as a positive market differentiator (example themes = branding, innovation, risk, lifestyle, and value). Common health amenities included access to open space, bicycle shares, greenways, and walkability. Examples of challenge-related themes included: quantifying financial value, reliance on soft metrics (i.e., gut checks), and the lack of standardized health metrics. Barrier and facilitator exploration revealed the importance of creating partnerships with community stakeholders, entitlement incentives, and the identification of a health champion within the development team. Conclusions The two southeastern multifamily developers have tapped into underexplored mechanisms to provide environments that encourage physical activity and other healthy behaviors. Knowledge gained from these preliminary interviews will help create developer-specific guidelines to intentionally include health strategies and to maximize value propositions from a multidisciplinary perspective.

P3.03.02
THE SAFETY OF THE NEIGHBORHOOD ENVIRONMENT AND PHYSICAL ACTIVITY IN CZECH AND POLISH ADOLESCENTS
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Purpose: The aim of this study was to assess the associations between adolescents' walking activities and various levels of perceived safety of the built environment in differing socio-demographic backgrounds of Poland and the Czech Republic. Furthermore, we aimed to determine major moderators affecting the walking habits of adolescents in areas with different levels of walkability. Innovation in this research is use of online tool to collect the data. Methods: The surveys were conducted during the 2008/9 and 2013/14 school years in 24 secondary schools in Poland and 35 secondary schools in the Czech Republic, with sample of 849 boys and 1152 girls. All the participants completed the International Physical Activity Questionnaire—Long Form and the Neighborhood Environment Walkability Scale—Abbreviated in the internet-based research platform. Selected students also took part in weekly monitoring of physical activity using pedometers. Results: Boys and girls who perceived their neighborhood environment as the safest met the recommendations for leisure-time walking activities, for at least 60 minutes per day on at least five days per week, at significantly higher rates than those who lacked these perceptions of safety. In particular, girls who perceived a safe neighborhood environment were significantly more active concerning leisure-time walking transportation than other girls. The aggregate results from objective monitoring of weekly physical activity correspond with results obtained through subjective assessment of physical activity. Adolescents from the safest environment achieved 11,024 steps/day on average, while those from the least safe environment achieved only 9686 steps/day. Conclusions: A safe neighborhood environment is a significant predictor of walking activities among adolescent girls. An increase in environmental safety can support the adoption of the habit of active transport and better use of leisure time for physical activity. The work was supported by the Czech Science Foundation under grant "Multifactorial research of built environment, active lifestyle and physical fitness of Czech youth" (No. GA 14-26896S).

P3.03.03
INTRODUCTION OF PUBLIC PLAYGROUNDS IN DEPRIVED NEIGHBOURHOODS: A CAUSAL IMPACT ON OUTDOOR PLAY AND SEDENTARY BEHAVIOR IN SCHOOL-AGE CHILDREN? EVIDENCE FROM THE GENERATION R STUDY

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Purpose: Childhood inactivity is a major public health concern. A supportive neighborhood is considered to be important to get children more physically active, but whether reducing the distance to playground leads to more activity is less clear. We used the introduction of new public playgrounds in Rotterdam (the Netherlands) to study the causal impact of changes in access to public playgrounds to changes in outdoor play and sedentary behavior, and to evaluate if these effects were similar between population subgroups.

Methods: We included 2666 Dutch children from the Generation R Study who participated at two subsequent measurement rounds when the children were, on average, 6.0 and 9.7 years old. Individual-level fixed effects models were used to link GIS-determined changes in distances from home to the nearest public playground to parent self-reported outdoor play and sedentary behavior. The model was adjusted for the time-varying factors, net household income and season of data collection. Results: The children were exposed to 34 different public playgrounds within 800 meter of their home, of which 9 were built during follow-up. The average distance to the nearest public playground decreased from 1628 meters to 1139 meters. Using buffers around children's home to allocate exposure status did not give clear evidence that a shorter distance to public playgrounds affects children's outdoor play behavior. However, for each 100 meter that children were living closer to a public playground, outdoor play increased with 14 min/week (95% CI: 1-26 min/week). When excluding children that moved during follow-up (n=325; 12%), the association became stronger and increased to 18 min/week (95% CI: 3-34 min/week). No changes were seen for sedentary behavior. The impact was largest for children with a non-Western background, lower parental education level and lower net household income. Conclusions: The introduction of public playgrounds is an effective approach to increase children's outdoor play, especially for children from families with lower socioeconomic position.
S1: Policies and environments

Purpose: In 2015, the Partnership for a Healthier America (PHA) launched a branded integrated marketing communications campaign called FNV (Fruits & Veggies) in Fresno, California and Hampton Roads, Virginia to increase fruit and vegetable sales and consumption among millennial moms (21-34 years) and teens (15-20 years). Pro bono celebrity endorsement was part of the FNV marketing strategy. This study examined the FNV celebrities’ demographic profile (i.e., race, ethnicity, sex and age); food category and brand endorsements; and company or organization partnerships. Methods: FNV Campaign celebrity names were obtained from the FNV website and entered into an Excel database associated with food and beverage group, brand or product endorsements in the United States (U.S.) (1990-2017). A Python-based scripting engine and data visualization tools were used to analyze and display endorsement relationships of each FNV celebrity. We created two interactive dendrograms to illustrate FNV celebrity endorsement relationships among products, brands and companies. We created scatterplots to show each celebrity’s food and beverage category or product endorsements and the compliance with the U.S. Department of Agriculture (USDA) Smart Snacks in School standards that aligned with the Dietary Guidelines for Americans (DGA). Results: Unique celebrities (n=548) were associated with 738 endorsements representing 124 brands across 10 food and beverage categories. FNV celebrities (n=83) represented 15% of the database, of which two thirds were male (67%; n=56), and primarily white (46%; n=38) or African American (42%; n=35). FNV celebrities were involved with 122 endorsements representing 28 brands across 10 categories. A quarter (32%; n=9) of brands promoted fruits and vegetables; water, low- or no-calorie beverages and fluid milk. Three quarters (76%; n=63) of celebrities endorsed only FNV; the remaining endorsed one to seven brands other than FNV. 20% (n=17) celebrities were associated with 86% (n=24) brands that include one or more high-fat, -sugar and -sodium products that did not comply with the USDA guidelines. Conclusions: Future research should evaluate whether targeted populations recognize and are influenced by the FNV celebrities to buy and consume more fruits and vegetables; and how target populations view multiple celebrity endorsements for healthy versus unhealthy nutrient-profile food and beverage products.

S2: Policies and environments

Purpose: Food, beverage and restaurant companies use celebrity endorsement to promote food and beverage products high in fat, sodium and sugar associated with obesity and diet-related non-communicable diseases. Research suggests that celebrity credibility (i.e., trust, expertise and attractiveness) may influence consumers’ brand awareness and purchasing behaviors. This study used Q methodology to explore the views of millennials about celebrity trustworthiness related to branded food and beverage product endorsements in the United States (U.S.). Methods: A purposive sample of millennials (n = 40; ages 23 to 36 years) were recruited in Blacksburg, Virginia in March to May 2017. Participants sorted 48 images of entertainment, sports and political celebrities associated with unique food and beverage product and brand endorsements in a normal distribution (+4 most trusted to -4 most distrusted). Participants completed a post Q study 9-item questionnaire to interpret their views about celebrity trustworthiness, credibility and fit with branded product endorsements, and whether these factors influenced their purchase and consumption decisions. PQMethod 2.35 statistical software program used factor analysis to identify distinct viewpoints based on intra-individual differences for how participants sorted the celebrity images. NVivo 11.0 software was used to analyze the emergent themes from the questionnaires. Results: Three factors emerged that explained 40% of the variance. Each factor
emphasized unique viewpoints on celebrity trustworthiness and food and beverage product endorsements. Factor 1 represented healthy lifestyle champions (n=15) who trusted celebrities associated with healthy nutrient-profile products. Factor 2 represented gender-oriented supporters (n=12) who trusted female entertainment, sports and political celebrities perceived as successful positive role models. Factor 3 represented racial and ethnic devotees (n=8) who trusted African-American celebrities who reflected participants' own identities and personal interests. Analysis of questionnaires was used to triangulate the results, which suggested that celebrity trust was lower with simultaneous endorsements of food and beverage products with both healthy and unhealthy nutrient profiles. Conclusions: Understanding millennials' distinct viewpoints may guide U.S. government and industry initiatives to use celebrity endorsement to promote brands associated with food and beverage products that align with healthy dietary guidelines, encourage healthy lifestyle behaviors, and promote healthy food environments.

P3.03.06 CHILD TRANSPORT PRACTICES AND PHYSICAL ACTIVITY IN ACTIVE COMMUTING TO SCHOOL WITH OBJECTIVE MEASUREMENT OF SHANGHAI, CHINA
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SIG: Policies and environments

Purpose: To ascertain the transport practices and assess the association between personal characteristics, family, build environment, travel mode, measured month and physical activity. Methods: Cross-sectional surveys with 271 preschool students' (aged 3-5) family were enrolled from 3 private and 4 public kindergartens of Shanghai. Times of two physical activity outcome variables were derived: 1) Moderate-vigorous physical activity (MRPA) . 2) Transportation physical activity (TRPA) was considered during the journey to and from school (6 to 9 Am and 3:30 to 4:30 Pm weekdays). Results/findings: MVPA recorded during 7-9 am is 8.22 units higher (p=0.005), 3-4:30 pm is 1.72 units higher (p=0.025) and whole school week journeys is 3.52 units higher (p=0.002) of active traveler than passive traveler. Public houses compared to those other residential types were less active overall (b=-4.05 minutes, 95% CI: -6.86 to -1.25). Measured in July-Sep month were less active overall than measured in other months (b=-4.87 minutes, 95% CI: -7.87 to -1.87). Walkers are more active than those passive travel modes (b=3.896 minutes, 95% CI: 1.67 to 6.13). Conclusions: Active mode will has higher TRPA while not lead to higher MVPA for aged 5-6 years preschool children in China. This does not justify the adverse publicity given to the school run nor the government's perception of the school run's impact. There may be other benefits from walking children to their neighborhood school, but physical activity does not appear to be one of them.

P3.03.07 IMPACT OF REDUCING PORTION SIZES IN WORKSITE CAFETERIAS: A STEPPED WEDGE RANDOMISED CONTROLLED PILOT TRIAL
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SIG: Policies and environments

Purpose. Reducing the portion sizes of foods available in restaurants and cafeterias is one promising approach to reducing energy intake, but there is little evidence of its impact from randomised studies in field settings. This study aims to i. examine the feasibility and acceptability, and ii. estimate the impact on energy consumption, of reducing portion sizes in worksite cafeterias. Methods. Nine worksites in England were recruited to reduce the portion sizes of foods available in their cafeterias from targeted food categories (main meals, sides, desserts, cakes) by at least 10%. In a stepped wedge randomised controlled pilot trial (Trial Registration: ISRCTN52923504), each site was randomised to a date of implementation, staggered fortnightly and following a baseline period of four weeks. Impact on energy purchased was analysed using generalised linear mixed modelling. We also assessed feasibility, acceptability, and fidelity of intervention implementation. Results/findings. Data from six of the nine
randomised sites that completed participation were analysed; three sites were excluded for not providing sufficient data and/or not implementing the intervention. The extent to which the intervention was implemented varied by site, with between 6-49% of products altered within targeted categories. Feedback following the intervention suggested it was broadly acceptable to customers and staff. For the primary outcome of daily energy (kcal) purchased from intervention categories, there was no statistically significant change across all sites: mean -10.1% (95% CI: -18.7, -0.6; p=0.079). All six sites individually showed reductions in energy purchased, ranging from -15.6 to -0.3%, none of which were statistically significant. Sites that reduced portions for the highest proportion of products showed the greatest reductions in energy purchased. Conclusions. The results of this pilot trial suggest that, when implemented, reducing portion sizes could be effective in reducing energy purchased and consumed, and merits investigation in a larger trial. However, not all sites completed participation in the trial, and implementation varied by site, with the intervention typically being applied sub-optimally across a limited range of products. Future studies will need to examine how to address barriers that prevent optimal implementation of reduced portion sizes.

P3.03.08
DANCING IN THE CHURCH? EXPLORING THE PROVISION OF HOLISTIC MOVEMENT PRACTICES IN A LARGE AUSTRALIAN CITY
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SIG: Policies and environments
Objective: Holistic movement practices (HMPs) are physical practices embedded in philosophies aimed at enhancing holistic well-being, thereby offering potential for improving mental and physical, and possibly spiritual, health. While some HMPs, like yoga and Pilates, have become more mainstream in western countries, we have limited knowledge about the provision of other HMPs. The purpose of this study was to explore the provision of HMPs in Melbourne, Australia. Methods: Data were collected in 2016-17 via internet searches. We recorded information about various provision features, including event type and venue type. Due to volume of events, details about yoga and Pilates were only collected for the inner city. Details about other HMPs were collected for the whole of metropolitan Melbourne. Results: In inner Melbourne, 1020 events were found for yoga and Pilates. Across metropolitan Melbourne, 541 events were found, offered by 20 different HMPs. The 20 HMPs included 11 dance/movement-based practices, four mind-body fitness-based practices, three somatics-focused practices, and two practices based on Traditional Chinese Medicine principles. Among the 20 HMPs, offerings varied from 2 to 236 events. Event types included weekly classes (78.1%), monthly/twice-monthly classes (3.2%), workshops (3.9%), short courses (4.5%) and one-off classes (5.0%). Seven HMPs did not offer weekly classes. A large range of venue types was used. Most common were Neighbourhood Houses (16.6%), Church Halls (14.9%), Community Halls (9.1%), Yoga Studios (6.2%), and Martial Arts Schools (5.9%). For yoga and Pilates in the inner city, the most commonly used venues were Fitness/Health Centres (24.5%), Yoga Studios (19.7%), Musculoskeletal Health Clinics (19.4%), Pilates Studios (18.1%), and Body-Mind Fitness Studios (15.6%). Conclusions: A metropolitan city can house a substantial number of different HMPs, although practices vary widely in the number of events on offer. Yoga and Pilates appeared to have a stronger association with more commercial and health/fitness orientated venues, while other HMPs tended to be associated more with general community leisure provision and with religion. This may be a reflection of a more grass-roots level of operation of smaller HMPs, yet also suggests a broader range of physical activity opportunities beyond health/fitness settings, potentially attracting different population subgroups.

P3.03.09
SEDENTARY BEHAVIOR ASSOCIATED WITH GENDER-RELATED OBESITY RISK AMONG EMPLOYED ADULTS—A POPULATION-BASED NATIONAL STUDY
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Introduction
The office-based job tends to have higher proportions of sedentary behavior. High duration of sedentary behavior in a human lead to increase obesity risk. The association between sedentary behavior and obesity according to the type of job were remain unclear. The aim of this study is to explore the association between sedentary behavior and obesity risk, not only among those subjects with the office-based job but also other jobs. Methods A secondary analysis from the 2013 Indonesia Basic Health Research showed that representative adults were selected using the probability proportional to size technique. 319,443 employed adults were selected. They were measured body mass index and were interviewed to evaluate sedentary behavior using validated questionnaire with physical activity card. Results Pearson Chi-Square analysis was showed that among women, sedentary behavior significantly associated with the presence of obesity among farmer (p< 0.0001) and private employee (p=00144). But, in men, sedentary behavior significantly correlated with obesity among laborer (p=0.0321). Furthermore, among entrepreneur, sedentary behavior and obesity were related to both men and women (p < 0.0001). But, presumably, the presence of obesity was higher not only because of sedentary behavior in life but also other factors such as dietary factors or metabolic status. Conclusion This study showed that obesity risk was appearing not only among office-based job but also other job types. Promotion of physical activity at worksites and reduces prolonged sitting are important among all workers.

P3.03.10
MEMBER STATES’ CAPACITY TO RESTRICT THE MARKETING OF UNHEALTHY FOOD AND BEVERAGE PRODUCTS TO CHILDREN AND ADOLESCENTS TO REDUCE GLOBAL OBESITY AND NON-COMMUNICABLE DISEASE RATES BY 2025
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Objective: Member States will report their county progress at the 73rd United Nations General Assembly meeting in September 2018 to implement the World Health Organization (WHO) Action Plan to halt obesity and reduce non-communicable diseases by 2025. This study analyzed Member States’ capacity to implement the World Health Assembly Resolution WHA63.14 that they endorsed in 2010 to restrict the power and exposure of the marketing of food and non-alcoholic beverage products high in fat, sugars and sodium (HFSS) to children and adolescents. Methods: A SWOT (strengths, weaknesses, opportunities, threats) analysis was conducted to identify and analyze relevant evidence about internal factors (i.e., strengths and weaknesses) and external factors (i.e., opportunities and challenges) that may influence Member States’ capacity to restrict unhealthy food and beverage marketing to children and adolescents. The WHO policy framework was used to organize the SWOT analysis findings based on a scoping review of relevant documents (January 2010 to January 2018). The scope review was guided and used a PICO strategy to define the approach and identify documents addressing unhealthy food and beverage marketing. We reviewed five electronic databases and relevant gray literature between January 2010 and January 2018. A thematic analysis with an open coding and iterative process to examine the themes were used. Results: The scoping review identified 48 evidence documents and results were organized under the WHO framework with three themes and nine sub-themes: (1)policy development (prioritize this issue on political agenda, use principles that support public health over commercial interests, and ensure comprehensive mandatory recommendations); (2)policy implementation (apply strong tools, use best practices, and lead governance and stakeholder engagement); and (3)policy monitoring and evaluation (empower regulatory institutions, require transparency, and ensure accountability for actors and institutions). Conclusion: A SWOT analysis is often used by the business sector for strategic planning but can also be useful to identify strategies and actions to promote healthy populations. Four concrete actions were recommended for Member States. These results may inform the United Nations General Assembly meeting in September 2018 about the WHO’s Action Plan to halt obesity and reduce non-communicable diseases by 2025 that align with WHA63.14.

P3.03.11
DEVELOPMENT OF A RESPONSIBLE FOOD AND BEVERAGE MARKETING INDEX FOR NATIONAL GOVERNMENTS TO IMPLEMENT AND EVALUATE POLICIES TO RESTRICT THE MARKETING OF
SIG: Policies and environments

Objective: National governments need a simple index to assess the current policy landscape to fulfill international commitments to restrict the marketing of unhealthy food and beverage products to help reduce children’s future obesity risk. An interdisciplinary research team collaborated to use data visualization tools to map policy trends in countries to develop a prototype for a responsible food and beverage marketing index (RIMI).

Methods: We reviewed available evidence (June 2017-January 2018) for voluntary and mandatory policies related to food and beverage marketing to children in 13 countries from North, Central and South America. Evidence was compiled from gray literature sources and websites. We used a python-based scripting engine database to develop a scoring scheme based on evidence-based a priori definitions from a World Health Organization policy framework. Three index components focused on government policy characteristics; integrated marketing communications techniques; and media channels and platforms or settings. The transdisciplinary team participated on the consensus coding and formative evaluation processes. Proportions and chi-square analysis were conducted (p<0.005). We created interactive dendograms, scatterplots and choropleths to analyze and visually display results. Results: We identified 32 unique policies at local, state and federal levels across 13 selected countries in the region of the Americas. Half of the policies (54%) were issued between 2011-2018, one third (34%) between 2000-2010, and 11% between 1980-1990. Mostly, policies were mandatory (68%). Significant differences were found between policy characteristics in countries. Eight countries used the United Nations definition of a child (birth through age 18 years) to develop protective and mandatory policies, whereas voluntary government and industry policies did not adopt this age criterion. Brazil and Chile had the highest RIMI scores of 8.8/10 and 7.25/10, respectively. The most common policies addressed the use of licensed media characters (48%), product placement (36%) and premium offers (32%). The majority of the media channels and platforms or settings addressed by policies were broadcast (76%), digital and social media (68%) and schools (44%). Conclusions: The RIMI prototype was constructed by an interdisciplinary collaboration to visually map policies that can provide valuable metrics to enable national governments to benchmark and track progress toward the development, implementation, monitoring and evaluation of country progress to restrict unhealthy food and beverage marketing to children. Future testing is needed to determine the feasibility and adaptability of this index for other countries and regions.

P3.03.12
CHARACTERISTICS OF FOOD LABELLING USERS AMONG THE MEXICAN POPULATION
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SIG: Policies and environments

Purpose: Mexico is facing a national state of emergency due to the obesity and diabetes epidemic. Thus, strategies to help consumers achieve healthier diets represent a high priority in the public health agenda. Ultra-processed packaged foods are an important component of the diet. Recently the Guideline Daily Amount (GDA) front-of-package labeling system has been adopted as a tool to inform and orient consumers in the country. The aim of this study was to describe characteristics of the food labelling users among the Mexican population. Methods: This was a cross-sectional study that used the information from the Mexican National Health and Nutrition Survey 2016 (ENSANUT 2016). In total, 4,538 participants answered the questionnaire. Food labelling users were classified according to the question ‘Do you read the food labelling in packaged foods and beverages when you shop?’. Health characteristics were measured according to a standardized protocol. Descriptive statistics were calculated. Pearson ?;2 test was used to identify the relationship between the frequency of users vs non-users stratified by sex, age...
group, education level, marital status, occupation, and BMI. Results/findings: Overall, 38% of the study participants (n=1,718) were classified as food labelling users. The food labelling users were 68% females, 32% were between 30 to 39 years, 39% had a higher education level, 68% were married, and 39% had overweight (BMI >24.9kg/m²), compared to non-users. Significant differences (p<0.05) between users vs non-users were found for education level, marital status, and BMI. Conclusions: Our analysis show that a low percentage of the participants declare to be using the food labelling. However, understanding was not evaluated. Other Latin American countries have developed an easier to understand front-of-pack labeling system that are well recognized and widely used among the population. Our results suggest that a system such as the one currently used in Mexico is not becoming a tool to make healthier food choices, particularly among diverse vulnerable groups.

P3.03.13
PERCEIVED, BUT NOT OBJECTIVE, FRUIT AND VEGETABLE AVAILABILITY, QUALITY, AND VARIETY ARE ASSOCIATED WITH FRUIT CONSUMPTION, BUT NOT VEGETABLE CONSUMPTION AMONG RURAL RESIDENTS IN UPSTATE NEW YORK

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SIG: Policies and environments

Objective: Objective measures typically used in food environment assessments tend to miss food sources in rural settings. Because of this, we hypothesized that the perceived food environment may be more relevant in this setting. The present study aimed to examine the associations between perceived and objective measures of food environments and their associations with fruit and vegetable (FV) consumption among rural residents in upstate New York. Methods: 198 individuals (mean age 51.8; 81.8% female) living in 12 rural towns in upstate New York participated in this study. The Retail Food Availability & Marketing Survey (RFAMR) was used to audit all licensed retail food stores in participants' towns. Objective FV availability was characterized by the number of stores that carried FV per square mile of participants' town size. Summary scores based on in-store audits were used to characterize the objective FV quality and variety. Perceived availability, quality, and variety of FV were measured by participants' self-report of the Perceived Nutrition Environment Measures Survey (NEMS-P). To assess FV intake, participants completed the National Cancer Institute’s Fruit & Vegetable Intake Screener. Linear mixed models were used to examine: 1) the relationships between perceived and observed FV availability, quality, and variety, 2) whether perceived and objective food environments were associated with FV consumption. Models controlled for demographic characteristics and town location. Results: No associations were found between perceived and objective measures of FV, indicating poor agreement between these perceived and objective FV measures. Perceived, but not objective, FV availability, quality, and variety were associated with participants' daily fruit intake (all p < 0.05). Participants who perceived greater FV availability, quality, and variety in their communities had higher daily fruit intake than those who perceived the opposite. None of the food environment measures (perceived or objective) were associated with vegetable intake. Conclusions: Similar to previous studies, we found little correspondence between perceived and objective measures of food environments, which requires further examination; however, our data suggests that perceived food measures may be useful when examining rural populations' diets. Further work is needed to better characterize objective and perceived rural food environments.

P3.03.14
HEALTH BY STEALTH: PROMOTING PHYSICAL ACTIVITY THROUGH PUBLIC TRANSPORT USE

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SIG: Policies and environments
Purpose: Physical activity promotion messages often encourage public transport users to exit the bus a stop earlier or walk to a station/stop further away. However, the number of people who partake in this behaviour, and their characteristics, are unknown. This study examined public transport (bus) accessibility, choices to walk further than necessary to a bus stop, and walking behaviour. Methods: 1,091 adults 18+ years living in Tasmania, Australia, completed an online survey in March-April (autumn) 2017. Participants reported bus stop accessibility (mins/week), weekday bus use frequency (every/most weekdays, sometimes, rarely/never), frequency of getting off a stop earlier or walking further to catch a bus (always/mostly, sometimes, never), walking (minutes/week), general health (excellent, very good, good/fair/poor), gender and household composition. Chi-square and Kruskal-Wallis tests examined differences in walking by categorical and continuous variables, respectively. Results/findings: Many (62%) participants could walk to their nearest bus stop in =5 minutes, but only 20% used the bus every/most weekdays, and 21% used it sometimes. Among bus users, 14% always/mostly and 21% sometimes walked further than necessary to a bus stop. Men more commonly walked further to a bus stop than women (19% vs 12%, p=0.127), as did participants from lone-person households (21%) compared with couples with (13%) or without (11%) children (p=0.370). Those with excellent self-rated health more commonly always/mostly walked further to a bus stop than necessary (18%) than those with very good (15%) or good/fair/poor (11.5%) self-rated health (p=0.777). Median walking time was significantly higher (p=0.001) amongst those who always/mostly walked further to a bus stop (210 minutes/week) than those who sometimes (167.5 minutes/week) or never (150 minutes/week) did. Conclusions: A small percentage of this population who use public transport do take the opportunity to incorporate more physical activity by exiting the bus a stop earlier or walking further than necessary to catch the bus. This is the first study to provide valuable information about the characteristics of those who do, and identified that these people accumulate more weekly walking time. Further research to understand the influences on choices to incorporate activity situated around public transport use is warranted.

P3.03.15
IMPACT OF TAX AND SUBSIDY FRAMED MESSAGES ON HIGH AND LOWER SUGAR BEVERAGES SOLD IN VENDING MACHINES: A RANDOMIZED CROSSOVER TRIAL

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SIG: Policies and environments

PURPOSE The effect of modest sugar sweetened beverages (SSB) taxation or healthier beverages subsidies on SSB purchase decisions has been small. Framing and nudging of such fiscal incentives has been suggested to be important in influencing purchase decisions. We aimed to examine the effect of framing a modest price difference between high-sugar and lower sugar beverages as tax or subsidy, and nudging using messages placed on vending machines on high-sugar beverage purchases. METHODS We conducted a randomized crossover trial using 21 beverage vending machines located at a Singapore university to display the 'Tax message', 'Subsidy message' or 'No message (Control)'. The former two messages suggest 'a tax for high sugar beverages' or 'a subsidy for lower sugar beverages' respectively. Beverage prices were fixed at baseline: lower sugar options were priced SGD$0.10 lower than the corresponding high-sugar options. The machines were randomized into 6 sequences of intervention. Each message intervention period was 3 weeks. The effect of messages were assessed by comparing average weekly units of beverages sold between interventions via a mixed effects model. RESULTS The average weekly units of high-sugar beverages and lower sugar beverages sold per vending machine were 115 and 98 respectively in the Control condition. There were no significant differences in lower sugar and higher-sugar beverages sold between Control and different message conditions. The average weekly units of high-sugar beverages sold was on average 2 units lower (95% CI -8 to 5, p = 0.61) for Tax message condition and identical (95% CI -10 to 10, p = 0.96) for Subsidy message condition as compared with
Control condition. The average weekly units of lower sugar beverages sold was on average 4 units higher for Tax message condition (95% CI -4 to 12, p = 0.32) and 7 units higher for Subsidy message condition (95% CI -4 to 18, p = 0.18) as compared with Control condition. CONCLUSIONS: The effect of using tax and subsidy messages to nudge and highlight modest price differences did not substantially affect high-sugar beverage sales. Messages targeted at high-risk individuals might be more effective in reducing high-sugar beverages consumption.

P3.03.16
CONSUMER BEHAVIOUR AND PERCEPTION RELATED TO LOW ALCOHOL WINE – DO PEOPLE OVERCOMPENSATE?
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SIG: Policies and environments

Objective: Moderate wine consumption might be cardio protective. However increased alcohol consumption is also associated with an increased risk for various types of cancer including breast and liver cancer. Low alcohol products such as 'light beer' become increasingly popular. However, high quality light wines are a new innovation and to date it is unclear how consumers perceive this type of wine and how a low alcohol label influences taste perceptions and consumer behaviour. This study aimed to investigate how people evaluate 'low alcohol' wine (Sauvignon Blanc) and if the label influences consumption and taste ratings. Methods: Eighty-nine participants (39 male, mean age = 41, SD=15) were invited to a wine tasting and were randomised into one of three conditions: They either tasted a 'new white wine' (12.5% alcohol), a 'new low alcohol white wine' (8.0%) or they also tasted the low alcohol wine, but they were not aware that the wine was reduced in alcohol (low alcohol, blinded). Results: Mean comparisons show that participants in all groups liked the wine (mean ratings >5.6/7) and did not consume more wine, if it was labelled as being 'low alcohol' (F(2,88)= .43, p>0.05). The mean consumed amount across all groups did not differ (161 ml, SD=70.1) and hence people who tasted low alcohol wine consumed 36% less alcohol. However, participants were willing to pay more for the normal wine compared to the low alcohol wines, (F(2,95)=4.01, p<0.05). Conclusions: Participants did not alter their drinking behaviour in response to low alcohol labelling and the low alcohol wine was perceived as very positive. There might be an emerging market potential for low alcohol wine, but consumers may not be willing to pay the same price as for standard wine.

P3.03.17
HIGH-CALORIE FOODS AND LACK OF DRINKING WATER IN PUBLIC PARKS OF MEXICO CITY
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SIG: Policies and environments

Introduction. Public parks in Mexico could provide opportunities to be physically active; but also could contribute to the energy intake due to the lack of drinking water and the availability of high-calorie foods. A positive relationship between availability of high-calorie foods, lack of drinking water and obesity has been observed in public spaces. The present study aims to characterize the drinking water sources and high-calorie foods availability in public spaces of Mexico City. Methods. Trained interviewers performed the evaluation of the inside and outside characteristics of parks in Mexico City. Parks were classified according to their dimension in: metropolitan (>10,000 m2), locals (3,000 a 10,000 m2), neighbors (400 a 3,000 m2), pockets (100 a 400 m2), remnants, roundabouts, gardens, squares, and malls. Data was collected using a questionnaire designed to capture the Mexican context. Water availability questions explored fountains availability, fountains quality, type of fountains, and other drinking water sources. High-calorie food questions included number of stands and type of products inside and outside the parks. Results. In total, 789 parks were evaluated. Of those, 21% were metropolitan, 26% locals, 28% neighbors,
4% pockets, 7% remnants, 1% roundabouts, 5% gardens, 8% squares, and 1% malls. Only 6% of parks had water fountains, and 54% of the fountains were located in metropolitan parks. The average number of fountains per metropolitan parks was 5. Most of them were hand-operated fountains with low quality. There were no other sources of water in parks. In total, 13% of parks have food stands inside and 26% outside. Most of them were located in metropolitan parks. The most prevalent food inside parks was industrialized candies, followed by fried chips. The corresponding for outside parks was taco restaurants followed by fried chips stand. Conclusion. Parks are the most popular places to perform physical activity; however, according to our results there is a lack of water sources available and most of the available inside and outside foods are high-calorie foods. Regulatory guidelines are needed for these public spaces; specifically, because lack of drinking water and high availability of high-calorie foods could contribute to the obesity prevalences.

P3.03.18
FOOD PRODUCTION RECORDS - WHAT STUDENTS ARE CHOOSING IN THE LUNCH LINE
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SIG: Policies and environments

Purpose: Children are consuming increased amounts of solid fats, added sugars, and lower amounts of fruits and vegetables than recommended. The National School Lunch Program (NSLP) has increased the nutrition standards of school meal offerings, however students can still choose from several options daily from each food category. This study examined the NSLP food production records and selection choices of elementary aged children in southwest Virginia, USA. Few studies have utilized school food production records as a source of data to determine food preferences. Methods: Existing food productions records were examined from six elementary schools in rural Virginia for five consecutive weeks and analyzed using descriptive statistics for food items produced and selected. Schools were categorized by free and reduced lunch eligibility. Categories of food included: dairy, fruit, entrée, and vegetable. Results: Of the 27 days of records examined, 35,484 portions of entrees, 31,465 vegetables, 28,678 fruits, and 33,840 dairy were served. The most frequently chosen menu items in each food category were flavored milk, canned pineapple, hamburgers, and French fries. Least frequently chosen menu items in each category included white milk, canned mixed fruits, tuna salad sandwich, and side salads. Starchy vegetables were often chosen over non-starchy options. Schools with higher free and reduced lunch eligibility served more entrees per student and less fruit varieties. Conclusions: Students chose foods that were higher in fat, sodium, and sugar. While better nutritional options are being offered through the NSLP, food preferences are still influencing student choices. Additional research is needed on changing the food preferences of children and encouraging fruit and vegetable selection.

P3.03.19
ASSOCIATION BETWEEN HEALTH-PROMOTING SCHOOL ENVIRONMENT AND CLUSTERING OF HEALTHY BEHAVIORS AMONG BRAZILIAN STUDENTS
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SIG: Policies and environments

Purpose: To investigate whether the existence of health resources implemented in the school environment is associated with clustering of physical activity (PA), sedentary behavior (SB) and diet among Brazilian ninth-grade students. Methods: Cross-sectional data from the Brazilian National School-Based Health Survey (PeNSE 2015). A total of 100,794 ninth-grade students (51.7% females; 14.3±1.1 years old) answered a validated questionnaire about daily hours in SB; weekly frequency in leisure PA; weekly frequency of consumption of a healthy diet (green salads or vegetables and fruits) and unhealthy diet (candies, soda, ultra-processed and fast foods). Schools' principals were asked whether their school a) were engaged with the National Health System; b) had their own school health council; c) had implemented the Brazilian School Health Program; d) had implemented the More Education Program. Two-step cluster analysis was conducted to identify health-related patterns. Multinomial logistic regression assessed association between school environment and behavioral clusters (cluster 3: reference category).
Results: Three reliable and meaningful clusters were identified: (1) Health promoting SB and diet (32.6%) with following profile: SB: 2.59(±smn;1.5) hours/day; PA: 0.68(±smn;0.92) days/week; Unhealthy diet: 1.68(±smn;0.97) days/week; Healthy diet: 2.68(±smn;1.97) days/week; (2) Health-promoting PA and diet (44.9%) with following features: SB: 3.85(±smn;2.05) hours/day; PA: 4.56(±smn;2.05) days/week; Unhealthy diet: 4.10(±smn;2.07) days/week; Healthy diet: 4.10(±smn;2.07) days/week; (3) Health-risk (22.6%) that presented: SB: 7.78(±smn;1.39) hours/day; PA:0.86(±smn;1.24) days/week; Unhealthy diet: 3.24(±smn;1.45) days/week; Healthy diet: 2.58(±smn;1.97) days/week. An increased odds ratio (OR) of being in Cluster (1) and Cluster (2), compared with cluster (3) was verified among those students from schools that had implemented the Brazilian Health School Program (OR:1.13; 95%CI: 1.05; 1.21 and OR: 1.41; 95%CI: 1.30; 1.53, respectively) and the Brazilian More Education Program (OR: 1.08; 95% CI:1.01; 1.16 and OR: 1.52; 95%CI: 1.39; 1.66). Schools engaged in the National Health System increased the probability of students being in Cluster (2) (OR 1.19; CI95%: 1.09; 1.29), compared with Cluster (3). No difference was observed regarding schools that had their own health council and the identified cluster. Conclusion: Schools with a health-promoting school environment were associated with healthier clustering patterns of PA, SB and diet among Brazilian students.

P3.03.20
NEIGHBOURHOOD ENVIRONMENT CORRELATES OF ADOLESCENTS’ ACTIVE TRANSPORTATION AND MODERATE- TO VIGOROUS-INTENSITY PHYSICAL ACTIVITY OUTSIDE OF SCHOOL: RESULTS FROM THE FLASHE STUDY.

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SIG: Policies and environments

Objective: Examine associations of neighbourhood environment correlates with adolescents’ active transportation and non-school moderate- to vigorous-intensity physical activity (MVPA). Methods: Participants were adolescents (aged 12-17 years) and their parents (n=1348 dyads) from the Family, Life, Activity, Sun, Health, and Eating (FLASHE) study. Parents and adolescents reported on several neighbourhood features (i.e., accessibility (6 items), perceived crime (2 items), social capital (3 items), and perceived traffic (1 item)) via questionnaire. Adolescents self-reported frequency of walking/cycling to school, walking/cycling from school, non-school weekly minutes of MVPA, and weekend minutes of MVPA. Multinomial regression models were used to examine the association between neighbourhood environment correlates and the odds of walking/cycling to and from school 1-3 days/week (some) and 4-5 days/week (most), compared to 0 days/week. Multiple linear regression models were used to examine the association between neighbourhood environment correlates and MVPA variables. All models adjusted for age, sex, ethnicity, and household income. Results: Higher perceptions of access to all neighbourhood environment features by parents and adolescents were significantly associated with higher odds of walking/cycling to and from school some and most days/week, compared to 0 days/week. Effect sizes ranged from weak to strong (OR=1.3,95%CI:1.1-1.3 to OR=3.2,95%CI:2.2-4.5). Findings for MVPA were less consistent and associations that were observed had small effect sizes (f 2<0.01). The environment features most consistently associated with the physical activity outcomes were access to stores/shops/markets nearby and access to more recreational features. Surprisingly, higher perceived crime by parents and adolescents was associated with higher odds of walking/cycling to and from school most days/week only, compared to 0 days/week, and effect sizes were moderate (OR=1.5,95%CI:1.1-2.1 to OR=1.8,95%CI:1.3-2.6). No associations with MVPA were observed. For social capital, associations were inconsistent for both active transportation and MVPA. Higher perceived traffic by students was only significantly associated with lower odds of walking/cycling from school most days/week, compared to 0 days/week (OR=0.6,95%CI:0.5-0.9). Conclusion: Neighbourhood environment correlates appeared to have a more consistent and stronger impact on active transportation compared to non-school MVPA. Incorporating features such as stores/shops/markets and more recreational facilities into neighbourhoods may increase both active transportation and non-school MVPA.

P3.03.21
RELATIONSHIPS BETWEEN NINE DIMENSIONS OF WELLNESS, NUTRITIONAL WELLNESS, AND DIET QUALITY IN EMERGING ADULTS

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P3.03.22
HEALTHY VENDING CONTRACTS: DO LOCALIZED POLICY APPROACHES IMPROVE THE NUTRITION ENVIRONMENT IN PUBLICLY FUNDED RECREATION FACILITIES?

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55% vs 84%, p<.0001), higher SS (BEV: 24% vs 14%, p=.003; SNACK: 35% vs 12%, p<.0001) and higher SM Products (BEV: 21% vs 13%, p=.03; SNACK: 10% vs 3%, p<.0001). Facilities with consistently healthy contracts or that changed to healthier contract specifications over the study had significantly better DNS and SM profiles for both BEV and SNACK (p<.01) and better SS for SNACK only (p<.021). Conclusions: Contracts mattered. Facilities with healthy vending contracts had significantly healthier food and beverage vending profiles than those without. Facilities that implemented healthy vending contracts at any time period improved their vending significantly over time compared to those with no contract or no health stipulations. Contracts with health stipulations were rare and the prevalence of less healthy food products remained high, highlighting the importance of intervention.

P3.03.23
UNDERSTANDING THE LIVED EXPERIENCE OF ADOLESCENT GIRLS’ USE OF PARKS TO INCREASE PHYSICAL ACTIVITY IN URBAN ENVIRONMENTS: A MIXED-METHOD INQUIRY
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SIG: Policies and environments

Only 21.6% of United children and adolescents meet national recommendations to obtain>60-minutes of moderate-to-vigorous PA on >5 days/week. Increasing park-based PA is a promising strategy to increase PA, as parks are often no-to-low cost and provide an open and natural environment for youth to thrive physically. Yet, differential PA levels in parks have been observed among adolescent boys and girls. Relative to boys, girls are less active; and less likely to report using parks (55% vs. 72%) and park spaces (e.g., courts and fields; 57% vs. 82%). Research focused on adolescent girls and park use primarily explores factors associated with PA and PA facilities (e.g., schools, parks, gyms, abandoned plots, etc.). Objective: Mixed-methods were used to explore determinants of park-use and park-based PA among adolescent girls in the urban community of East Palo Alto, California (EPA). Methods: Participants were recruited from after-school programs and parks. A study questionnaire with demographic, behavioral, and park-use variables was administered. The Physical Activity Resource Assessment (PARA) instrument was used to assess EPA parks (N=4). Qualitative in-depth interviews were conducted to identify emergent themes and factors influencing park-use and park-based PA. A content analysis was conducted to assess qualitative data; and descriptive statics were conducted for quantitative data. Results: Of the 18 Latino, African-American, and Asian participants aged 11 to 18 years recruited, none met national PA recommendations. PARA data indicated varying types/numbers of amenities and incivilities at each park (N=4), and no designated staff at any park. Tracks, bike paths, and courts were often missing from parks. Overall, participants lacked interest in visiting EPA parks. Emergent themes of factors that would positively improve girls' park-use included: the presence of friends/family, supportive activity partners (e.g., coach), scheduled events, updated equipment, household proximity, signage, and improved safety measures. Middle schoolers wanted swings, slides, and climbing equipment; whereas high schoolers wanted sport/fitness facilities. Conclusions: Valuable insights into determinants of adolescent girls' park-use were obtained. Findings have implications for improving the design of public parks and recreational amenities, and programs to increase park-use among the sample.

P3.03.24
BRIDGING THE GAP BETWEEN RESEARCH AND THE SCHOOL ENVIRONMENT: USE OF THE SCHOOL PHYSICAL ACTIVITY AND NUTRITION ENVIRONMENT TOOL (SPAN-ET) IN A NEWLY CONSTRUCTED LOW-INCOME SCHOOL
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SIG: Policies and environments

Purpose: To assess priorities, school resources and readiness to change within the nutrition and physical activity environment in a newly constructed, low-income, urban, K-8 public school in the United States. Methods: The School Physical Activity and Nutrition Environment Tool (SPAN-ET) was used to measure
187 criteria in 27 areas of interest. The criteria measured included components of the physical activity and nutrition environment. The physical, situational and policy environment were assessed for both physical activity and nutrition. Data was collected independently by three auditors using face-to-face interviews, direct observations and content review of documents. Results: The school met 60 of the 106 total criteria in the physical activity environment and 37 of 81 total criteria in the nutrition environment. Identified priorities for the physical activity environment included improving signage that supports safe and active transport to and from school, and develop a system to provide and manage portable equipment during breaks and recess. Identified priorities for the nutrition environment included moving recess to before lunch, making information about nutritional content more accessible to students and parents, encouraging staff to model healthy food and beverage practices, involve students in taste tests of healthy foods and beverages intended for inclusion in school meals, providing 20 minutes of actual seat time for students lunch, and market healthy food and beverages with posters and strategic placement of healthy options. In both the physical activity and nutrition environment, recommendations included creating a wellness committee that includes a broad representation from stakeholders, and develop an official school wellness policy. Conclusion: SPAN-ET provided a strong framework in which to identify current resources, areas of need, and readiness to change. Formal needs assessments conducted using tools such as SPAN-ET ensure a variety of criteria across multiple physical activity and nutrition environments are measured. This helps provide support for appropriate stage-matched intervention strategies and track changes resulting from environmentally based treatments and programs.

**P3.04: SIG Socio-economic inequalities (Grand Foyer)**

P3.04.01

ASSOCIATION OF NEIGHBORHOOD PERCEPTION AND SEDENTARY TIME IN THE HEALTHY AGING IN NEIGHBORHOODS OF DIVERSITY ACROSS THE LIFESPAN (HANDLS) STUDY.

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SIG: Socio-economic inequalities

Objective: It is increasingly important to understand obesity-related health behaviors, including sedentary time (ST). Less is known about the role of perceived neighborhood environment as a determinant of ST. We examined the relationship between neighborhood environment perception and ST in an ageing, diverse population employing an objective ST measure, which is under-utilized in the literature. Methods: Within the multiracial, socioeconomically diverse Healthy Aging in Neighborhoods of Diversity across the Lifespan (HANDLS) cohort in Baltimore, MD, USA, we examined the association between self-reported neighborhood perception (Likert-scale survey) and accelerometer-measured ST (wrist-worn ActiGraph, n=760). Factor analysis identified key neighborhood characteristics to develop a neighborhood perception score (NPS). Higher NPS indicated less favorable neighborhood perception. ST (minutes) was evaluated for the waking day (5am-11pm) and within specific time periods: morning (5am-9am), work (9am-5pm), and evening (5pm-11pm). Linear regression evaluated the relationship between overall and factor-specific NPS and ST. Results: In HANDLS Wave 4 (mean age 56.6(9.1) years, 58.6% female, 61.1% Black), we identified five neighborhood perception factors: 1) concern about specific crimes 2) physical environment, 3) violent crime, 4) social environment and 5) violence beyond the neighborhood. Unexpectedly, those in NPS quintile 5 (worst neighborhood perception) were more likely to be younger, white, above the poverty level, and more highly educated (p values<0.001), but less likely to smoke (p=0.05) or engage in leisure time physical activity (p<0.001). Due to a significant NPS-sex interaction, all models were sex stratified. Among females, worsening overall neighborhood perception was associated with increasing ST in the evening (βa=0.23, SE=0.12; p=0.048), and perception of neighborhood social environment was associated with increasing ST throughout the day (βa=2.92, SE=1.51; p=0.05). Among males, concern about specific crimes (βa=0.98, SE=0.44; p=0.03) and worsening perception of violent crime beyond the neighborhood (βa=3.53, SE=1.37; p=0.01) were associated with increasing ST during morning hours. The NPS-ST relationship was not moderated by poverty level, education, or race. Conclusions: Poor perceived social cohesion, neighborhood environment, and perception of crime may contribute to unfavorable activity
patterns among adults, such as increased ST. Intervening at the neighborhood level may facilitate behavior change and reduce risk of adverse cardiometabolic outcomes.

P3.04.02
THE LIFESTYLE BEHAVIOURS OF YOUNG ADULTS WITH INTELLECTUAL DISABILITIES TRANSITIONING FROM SCHOOL TO ADULTHOOD: A FEASIBILITY STUDY.
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SIG: Socio-economic inequalities

Background/Objective: In the general population, the transition from adolescence to adulthood has been identified as a 'high-risk' period for weight gain. There has been no research examining health behaviours over this transition in adults with intellectual disabilities. Since adults with intellectual disabilities have higher rates of obesity and engage in more sedentary behaviour and less physical activity than the general population, there is a need to understand more about the lifestyle behaviours of this population over this high risk transition period. Methods: 31 adolescents with a mild-moderate level of intellectual disability agreed to participate in this study, which examined the feasibility of recruitment, participant retention and the measurement of relevant health behaviour outcomes. Anthropometric (weight, height, waist and hip circumference), objective physical activity measures (7-day accelerometer wear), dietary and self-determination measures, were collected over a 12-month transitional period. Baseline data was collected during the final year of school, with follow-up data collection at 6 and 12 months post leaving school. Data was collected at each time point to assess the feasibility of measuring diet patterns, food frequency, physical activity and BMI. Contextual qualitative information was also collected, but is reported elsewhere. Results: Retention in the study was higher than average for this population, with data collected from 65% of participants at month 6, and 61% at month 12. Weight, BMI and hip circumference increased, on average, from baseline to month 12 but was not significant. However, weight and BMI increased significantly on average from month 6 to month 12 (respectively p=0.044 and p=0.043). In addition, waist circumference increased significantly from baseline to month 12 (p=0.049), and also from month 6 to month 12 (p=0.03). Conclusion: Recruiting and retaining young adults with intellectual disabilities over 12 months to a lifestyle health behaviour study is feasible. While collecting data on Physical activity behaviours over this transition period was feasible, the reliability of the dietary measures is questionable. The data indicates that the transition from school to adulthood may be the start of a high-risk period for weight gain in this population, which continues into adulthood.

P3.04.03
AN EMPOWERMENT-BASED SCHOOL INTERVENTION IN A LOW SOCIOECONOMIC AND MULTICULTURAL AREA
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SIG: Socio-economic inequalities

Objective: Socioeconomic inequalities in youth health have increased during the last decade and to intervene in disadvantaged groups is of high priority. The aim of this paper is to describe and problematize the development and implementation of an empowerment-based school intervention to promote healthy food and physical activity habits. Methods: All 7th graders in one school (n=54 aged 12-13), situated in a Swedish multicultural area of low socioeconomic status, were recruited. The researchers developed four core intervention components to aid the empowerment-process (i.e., health coaching, health promotion sessions, website and Facebook group, and a reflexive cycle). Consequently, a two-year intervention was progressively developed and implemented through cooperation and shared decision making between the researchers and participants. Results: The intervention provided an opportunity to involve the participants in decision-making processes, and thereby enabling participation and empowerment. Throughout the intervention, the participants were provided with opportunities to prepare and cook healthy meals and try
on a broad range of physical activities, as well as opportunities to critically reflect upon, and appraise, health information and recommendations. The process of developing and implementing the intervention was, however, accompanied by several ethical dilemmas that needed careful consideration, such as the intervention's voluntariness. Our experiences suggest several aspects that were beneficial for a successful implementation of the intervention. Conclusions: For upcoming empowerment-based school interventions, our experiences suggest that it is beneficial to: (a) recruit participants from schools where the principal, teachers, and students are positive about the intervention at its outset; (b) implement interventions during school hours; (c) spend time in the school environment to build relationships and trust; (d) carefully consider how health coaching is implemented to best meet the needs of participants; and (e) focus on implementing practical activities instead of theoretical or sedentary ones.

P3.04.04
SOCIAL GRADIENTS AND PHYSICAL ACTIVITY TRENDS IN AN OBESOGENIC DIETARY PATTERN: CROSS-SECTIONAL ANALYSIS OF THE UK NATIONAL DIET AND NUTRITION SURVEY 2008-2014
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SIG: Socio-economic inequalities

Objective: An energy-dense, high-fat, low-fibre dietary pattern has been prospectively associated with the development of obesity in childhood but is population-specific, which limits translating the pattern into interventions. We explored the generalisability and correlates of this obesogenic dietary pattern in the UK National Diet and Nutrition Survey for the first time. Methods: Data came from participants (n=4636 children and n=4738 adults) with 4-day food diaries in NDNS 2008-2014. Reduced rank regression was applied to 51 food groups to explain variation in energy density, fibre and fat intake. Consistency of the pattern in population subgroups (according to sex, age, occupation and income) was compared with the whole sample pattern using coefficients of congruence. Pattern correlates (sociodemographic, survey year, physical activity and eating related behaviours), were explored using multiple linear regression. Results: Food group loadings were similar to the previously identified obesogenic dietary pattern and were generalisable across all sub-groups (coefficients of congruence: 0.93-0.99). An obesogenic diet was associated with eating takeaways, being omnivorous, a manual household occupation and lower income in both adults and children (p<0.0001). Dieting for weight loss, being older, more physically active and less sedentary was associated with a less obesogenic diet among adults (p<0.0001). Conclusions: Future experimental studies should investigate if this obesogenic pattern could be used to monitor the effectiveness of obesity prevention policies or develop personalised interventions.

P3.04.05
ASSOCIATION BETWEEN DIETARY COSTS AND DIETARY QUALITY IN DIFFERENT ETHNIC AND SOCIOECONOMIC GROUPS: THE HELIUS STUDY
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SIG: Socio-economic inequalities

Purpose: To investigate the association between dietary costs and dietary quality and to unravel interactions with ethnicity and socioeconomic position (SEP). Methods: We used data from participants of the multi-ethnic Healthy Life in an Urban Setting (HELIUS) study in the Netherlands who completed an ethnic-specific food frequency questionnaire (FFQ) (N=4750). Dietary quality was defined according to: adherence to the Dutch Healthy Diet index 15 (DHD15), accordance with the Dietary Approaches to Stop Hypertension (DASH)-diet and compliance to the Mediterranean Diet score (MDS). Ethnic origin was based on country of birth of the participant as well as that of his/her parents. Education level was used as indicator of SEP. Individual dietary costs (the monetary value attached to consumed diets in Euros) were
estimated by merging a food price variable with the FFQ nutrient composition database. We examined differences in dietary quality between ethnic groups and examined the interaction between ethnicity, SEP and dietary costs in relation to dietary quality in a General Linear Model with estimated marginal means, adjusted for key covariates. Results: Of the participations, 30% was of Dutch origin, 21% of South Asian Surinamese origin, 21% of African Surinamese origin, 15% of Moroccan origin and 13% of Turkish origin. One third of the sample completed lower secondary education at most. The average age was 46 years and 41% were men. Average daily costs spent on the diet were 5.31€. Individuals of Turkish origin had the highest DASH and DHD15-scores, while individuals of Dutch origin had the highest MDS score. Higher dietary costs were associated with higher DASH, DHD15 and MDS scores (e.g., individuals in the highest tertile of dietary costs had a 5.09 higher score on the DHD15 (95%CI=3.94; 6.24) than individuals in the lowest tertile of dietary costs). We found evidence for interaction between dietary costs, ethnicity and SEP suggesting that of those with low SEP and low dietary costs, individuals of Moroccan origin achieved the highest dietary quality. Conclusions: Across different ethnic and socioeconomic groups, a higher dietary quality was associated with higher dietary costs, but some groups seem to benefit more from higher dietary costs.

P3.04.06
PROMOTING PHYSICAL ACTIVITIES FOR ADULTS WITH INTELLECTUAL DISABILITIES: ANALYSIS OF GROUP HOMES SETTING IN HONG KONG
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SIG: Socio-economic inequalities

Purposes Studies frequently showed that adults with intellectual disabilities (ID) are at higher risks of health problems and aging (Haveman, Heller, Lee, 2010; Dixon-Ibarra, Lee & Dugala, 2013). Adults with ID who live in Group Homes are fully rely on the staff and caregivers to provide physical activities (PA) opportunities in their daily routines (Taliaferro &Hammond, 2016). The objectives of this study are to examine the barriers and facilitators perceived by the staff related to the implementation of PA in the Group Homes. Methods A qualitative approach of focus group interviews was employed in the study. Four Group Homes for adults with mild and moderate ID and located in different areas of Hong Kong participated in the study. Totally 19 staff (10 males, 9 females) were interviewed with one to twenty years of working experience for people with ID. Semi-structured interviews were conducted. Content analysis was used to interpret the transcribed data. The initial list of coding themes was based on the Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis. Results Results from the interviewees’ views on promoting PA for adults with ID were presented by organizational and individual levels. The perceived strengths of the organizations were: i) staff recognized the importance of promotion of PA to their service users, ii) medical professionals’ support in each Group Home, iii) have trialed to implement different PA activities. The organizational weaknesses were: i) voluntary participation, ii) limited space, iii) lack of manpower, and iv) lack of sustainable PA program. Weaknesses related to individual level were, i) low motivation in PA, ii) getting older, and iii) multimorbidity of health problems. Opportunities for the individual level included enjoyment in rhythmic PA and PA led by activity volunteers. Conclusion The identified themes in SWOT analysis can provide valuable information for Group Home administrators to develop PA policy and PA programs for their residents with ID.

P3.04.07
IMPROVING ACCESS TO FRESH PRODUCE AMONG FOOD PANTRY CLIENTS: A MIXED-METHODS PROGRAM EVALUATION TO UNDERSTAND FOOD ASSISTANCE NEEDS AND PREFERENCES
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SIG: Socio-economic inequalities

Objective. Increasing numbers of the population are relying on food assistance and more non-profits are stepping in to fulfill this need. This study evaluated the impact of a food pantry hub on meeting the dietary needs and preferences of pantry clients in west central Florida. By understanding perspectives of both
pantry leaders and clients, the aim was to identify potential solutions to build capacity of food assistance organizations to support health among food pantry clients. Methods. A 10-item questionnaire was implemented at five food pantries using a convenience sample of pantry clients from February to July 2017. Questionnaire items were analyzed in SPSS. In-depth interviews were conducted with food pantry leaders at the opening of the food pantry hub and six months later. Interviews were analyzed using thematic analysis to identify salient themes around the topic of food pantry and client needs and preferences. Themes and lessons learned were checked for validity with community members during and at the completion of the program. Results. Among the pantry clients who completed questionnaires (N=243), the majority indicated that their access to fresh produce was easy (70.37%), however, 27.6% indicated they did not always have fresh fruits or vegetables at meals. Of the top ten most commonly consumed fruit/vegetable by pantry client, five matched the most commonly distributed item list by the food pantry hub; meaning that among the most frequently distributed produce, only half the items met the preferences of their consumers. In-depth interviews were conducted in February (N=6) and six months later (N=9) with old and new pantry partners. All respondents agreed that the food pantry hub increased access to fresh fruits and vegetables for the community. Salient themes included ensuring consistency for food providers and clients, diversifying channel of food sources, expanding partnerships, and responding to the needs of food pantries. Conclusions. While pantries play a significant role in helping to reduce food insecurity, it is essential for these organizations to provide healthy foods to support the nutritional needs for human growth and development. Findings can inform pantry practices to better meet the preferences of clients to improve diet.

P3.04.08
PARENTAL PERCEPTION OF THE BUILT ENVIRONMENT AND CHILDREN'S ACTIVE TRAVEL TO SCHOOL BY DEPRIVATION LEVEL
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SIG: Socio-economic inequalities

Introduction: Active travel to school (ATS) has the potential to increase children's physical activity. The built environment (BE) can influence ATS. This study examined the association between parental perception of the BE and ATS and whether it is modified by deprivation. Methods: A cross-sectional study was conducted with 113 parents of children aged 9-11 attending school in different areas of deprivation across Coventry, UK. Parents provided demographic data and completed the 'Assessing Levels of Physical Activity and Fitness' (ALPHA) questionnaire to produce a score indicating perceptions of various BE themes. Deprivation was assessed by the English Index of Multiple Deprivation (IMD). Summary theme scores were associated with active travel using logistic regression stratified by deprivation. Results: Children of parents with positive perceptions of road safety were statistically significantly less likely to travel actively than those with negative perceptions (odds ratio (OR for every point increase in theme score)=0.77, 95% confidence interval (CI)=0.64-0.92). Parents from more affluent areas were more likely to perceive traffic safety, crime safety and neighbourhood environment positively, yet their children were less likely to walk or cycle. However, in more deprived areas there was no association between parental perceptions of any BE themes and ATS. Conclusion: In more affluent areas, parental perception of traffic and crime safety, and neighbourhood environment may be related to children's active travel to school. Children of parents living in more deprived areas were more likely to travel to school actively, but ATS was not associated with parental perception of built environment themes.

P3.05: Adults and Older Adults (Grand Foyer)

P3.05.01
COMPAARED WITH CONTINUOUS EXERCISES, HIGH-INTENSITY INTERMITTENT EXERCISES INDUCED MORE CARDIAC RISK BIOMARKER RELEASE
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Objective High-intensity intermittent exercise (HIIT) is recommended to the intervention of weight control, but the potential risk of HIIT requires further investigation. This study was to compare the cardiac risk biomarkers release after workload matched intermittent and continuous exercises. Methodology Twelve experienced marathon runners [sex, 11 males and 1 female; age, 23.5 ± 5.5 y; body mass, 63.3 ± 3.9 kg; height, 170.5 ± 5.5 cm; % body fat, 12.6 ± 3.9%; VO2max, 62.4 ± 5.4 ml·dot·kg·us·1·dot·min·us·1; velocity of VO2max (vVO2max), 17.1 ± 1.4 km·dot·h·us·1] completed intermittent (IE) and continuous (CE) exercise in random order. Each bout of IE included hard run at 90% vVO2max for 2 min followed by easy run at 50% vVO2max for 2 min, 23 bouts in 92 min totally. In CE trial, subjects continuously run in 70% vVO2max for 92 min. Heart rate (HR) and Rating of Perceived Exertion (RPE) were recorded during each exercise trial. Blood samples were drawn on the first visit before all exercises (pre 0) and then in IE and CE trials before exercise (pre1), immediately after (0 h), and 1, 4, 24 and 48 h after the completion of exercise. High-sensitivity cardiac troponin T (hs-cTnT), high-sensitivity cardiac troponin I (hs-cTnI), N-terminal pro brain natriuretic peptide (NT-pro-BNP), C-reactive protein (CRP), creatine kinase-MB (CK-MB) and creatine kinase (CK) was determined at all of these time points. Each analysis was performed with mixed model using the general linear mixed-model procedure (Proc Mixed) in the Statistical Analysis System (version 9.4, SAS Institute, Cary NC). Uncertainty in the differences was expressed as 90% confidence intervals and interpreted via the non-clinical magnitude-based approach. For clear effects the likelihood that the true effect was substantial was indicated with the following scale: possibly (25-75%), likely (75 to <95%), very likely (95-99%), and most likely (>99.5%).

Results & Discussion Compared with trial CE, percentage of HR reserve (% HRR) during IE was possibly lower (-22%, 90% confidence limits ± 37%). RPE during CE was very likely lower than that of IE (1.7, ± 1.0). Hs-cTnl was very likely higher (1.05, 90% confidence limits ± 0.66) in IE compared with CE. Conclusion IE could trigger more cardiac biomarkers release and induced more cardiac risk.

P3.05.02
DIETARY BELIEFS AND EATING PATTERNS IN TYPE 2 DIABETES: EVIDENCE FROM SOUTH INDIA
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Background: Almost 15% of India's urban adult populace now lives with type 2 diabetes. This study aimed to characterize the eating patterns, knowledge, beliefs, and determinants of food choice, and assess associations with the metabolic health among urban Asian Indians with type 2 diabetes. Materials and Methods: A cross-sectional study of 258 individuals (mean age 55.7 ± 10 years; body mass index 27.1 ± 4.8 kg/m²; diabetes duration 10.1 ± 6.5 years) attending two outpatient clinics in Calicut,Kerala, India. Food-related information was collected during a semi-structured interview. Clinical, anthropometric, and biochemical data were recorded. Results: Beliefs related to health and diabetes played a role determining food choice and dietary patterns; erroneous views were associated with the poor food choices and greater metabolic perturbations. Average consumption of fruits/vegetables was low. Intakes were positively associated with intentions to manage diabetes; inversely associated with the waist circumference and negatively correlated with one's degree of personal responsibility for food choice. Household saturated fat usage was common. High fat intakes were positively associated with the taste preference, ratings of perceived “health-value;” waist circumference, glycosylated haemoglobin percentage (HbA1c%) and lipids. Conclusions: Strategies to enhance diabetes control among Asian Indians are required and should encourage fruit/vegetable intake, personal accountability, and consider individual beliefs and preferences. Keywords: Asian Indian, behavior, belief, diabetes, food choice.

P3.05.03
MY PLANS, YOUR PLANS: INDIVIDUAL, COLLABORATIVE, AND DYADIC PLANS EXPLAIN PHYSICAL ACTIVITY IN ADULT DYADS
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Objective: Although the effects of individual planning on physical activity were thoroughly investigated, much less is known about the effects of dyadic planning (two dyadic partners plan together on one partner's behavior) or collaborative planning (two dyadic partners make plans on how to enact a behavior together). We investigated the predictive role of these three types of planning on moderate-to-vigorous physical activity (MVPA) in adult-adult dyads. Methods: Adult-adult dyads (N = 138; aged 20-86 years old) were enrolled and provided their data at the baseline (Time 1; T1) and at Time 2 (T2; 10-12 weeks later). One individual in each dyad was coded as a target person for dyadic planning in each dyad; the other person was coded as a dyadic partner. At T1, target persons did not meet recommended levels of MVPA and reported lower levels of MVPA than their partners. Three types of planning were reported at T1 by target persons and their dyadic partners. MVPA T1 and T2 levels were measured with IPAQ in both dyadic partners. Results: Path analysis showed that higher levels own dyadic planning (T1) and partner's collaborative planning (T1) predicted higher levels of T2 MVPA among target persons. Higher levels of own individual planning (T1) and own collaborative planning (T1) predicted higher MVPA levels among their partners (T2). Conclusions: Across types of planning, only forming collaborative plans by a dyadic partner predicted their own MVPA and a target person's MVPA at the follow-up.

P3.05.04
DEGREE OF INTER-RATER RELIABILITY FOR USER BEHAVIORAL ANALYSIS OF OUTDOOR FITNESS EQUIPMENT
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Objective: Although the effects of individual planning on physical activity were thoroughly investigated, much less is known about the effects of dyadic planning (two dyadic partners plan together on one partner's behavior) or collaborative planning (two dyadic partners make plans on how to enact a behavior together). We investigated the predictive role of these three types of planning on moderate-to-vigorous physical activity (MVPA) in adult-adult dyads. Methods: Adult-adult dyads (N = 138; aged 20-86 years old) were enrolled and provided their data at the baseline (Time 1; T1) and at Time 2 (T2; 10-12 weeks later). One individual in each dyad was coded as a target person for dyadic planning in each dyad; the other person was coded as a dyadic partner. At T1, target persons did not meet recommended levels of MVPA and reported lower levels of MVPA than their partners. Three types of planning were reported at T1 by target persons and their dyadic partners. MVPA T1 and T2 levels were measured with IPAQ in both dyadic partners. Results: Path analysis showed that higher levels own dyadic planning (T1) and partner's collaborative planning (T1) predicted higher levels of T2 MVPA among target persons. Higher levels of own individual planning (T1) and own collaborative planning (T1) predicted higher MVPA levels among their partners (T2). Conclusions: Across types of planning, only forming collaborative plans by a dyadic partner predicted their own MVPA and a target person's MVPA at the follow-up.

P3.05.05
TAKE A SEAT OR STAND UP? AN EXPLORATIVE STUDY OF IMPLICIT AND EXPLICIT PREDICTORS
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Purpose: The use of outdoor fitness equipment (OFE) continues to experience a growing worldwide popularity as a means of promoting active lifestyles. However, without professional instruction in the proper use of OFE, the level of successful use of such equipment is questionable at best and can, in worst case scenarios, actually cause physical harm to the user. In order to study the behavioral patterns of OFE users, it is essential to establish a reliable degree of consensus between two or more professional coders who have carried out independent analysis of the subject. Thus, the purpose of this study is to certify that a high degree of inter-rater reliability was achieved in each of a specified number of categories of behavioral patterns among the users of outdoor fitness equipment. Methods: Much of our assessment will rely on videotaped data which was shot during earlier studies carried out in 2012 and 2015 which record the use of OFE in parks in Tainan, Taiwan. The behavioral patterns of the users of the outdoor fitness equipment shown in the videos were categorized using the Mangold INTERACT Software. This study also used the same software to operate the "Cohen's kappa" to obtain inter-rater reliability rates between the various judges. Two different pieces of outdoor fitness equipment were analyzed in this study: the Leg Pliability Developer and the Waist Twister. Each piece of equipment was observed and recorded for a period of one hour. Results: The results of the study reveal that the Cohen's kappa of user behavior is 0.83 and 0.81 for the Leg Pliability Developer and Waist Twister, respectively. The Cohen's kappa values of both pieces of equipment represented that the standard of each category was established with a substantial degree of consistency and accuracy. Conclusion: The various types of user behavior for outdoor fitness equipment can be achieved with a high degree of inter-rater reliability between coders and is therefore useful for further behavioral analysis. Keywords: Outdoor fitness equipment, Inter-rater reliability, Behavioral analysis
Purpose: Sedentary time is a health risk factor distinct from physical inactivity. On average, people spend between six and eight hours per day in sedentary behaviors. It is not well understood why people spend more or less time sedentary. Recent theoretical approaches suggest that health behavior is regulated via two different pathways: controlled and automatic processes. It can be assumed that sedentary behaviors are regulated to a large extent automatically in daily life as these behaviors are often 'invisible', they are a subcomponent of actions such as working, talking, reading etc. The aim is to investigate the role of automatic processes in the regulation of sedentary behavior. Specifically, in this on-going study we develop an Implicit Association Test (IAT) measuring automatic evaluations of sitting vs. standing and explore implicit and explicit correlates of sitting vs. standing. Methods: The study consisted of two experimental sessions with a 7-day interval. During the first session participants are asked to fill out a questionnaire combined with a behavioral choice of sitting vs. standing (normal table vs. standing desk). Afterwards participants complete the IAT. The second session starts with the IAT followed by another questionnaire (e.g. habit) combined with the behavioral choice between sitting vs. standing. Between the measurements the participants wear a thigh-mounted accelerometer to assess everyday sedentary behaviors. Results: In a first wave 24 persons (18 female, age M = 29.7, SD = 13.37) took part. The distribution of the choice to sit or stand was the same at both measurements (sitting: n = 11/11, standing: N = 13/13). First explorative analyses revealed a moderate test-retest reliability (r = .64, ICC2,1 = .77). Furthermore, there was a moderate correlation between IAT(Mzp1) and habit strength (r = -.25, 95% KI -.63 / .29). Future analyses will focus on correlations between explicit (e.g. attitude, intention) and implicit (d-score IAT) measures and the relation to the choice to sit vs. stand. Discussion: Gaining further knowledge regarding automatic processes in the regulation of everyday sedentary behaviors and their interplay with controlled processes, is crucial to enhance understanding of these behaviors and to develop effective intervention programs.

P3.05.06

DOES DIET STRICTNESS LEVEL DURING WEEKENDS AND HOLIDAY PERIODS INFLUENCE LONG-TERM WEIGHT LOSS MAINTENANCE? EVIDENCE FROM THE PORTUGUESE WEIGHT CONTROL REGISTRY

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose Research about how diet strictness level during weekends and holidays influence long-term weight loss maintenance is currently unclear. Our aim was to examine how weight loss maintenance was influenced by dieting more or less strictly during weekends and holidays compared to the weekdays and non-holiday periods. Methods Portuguese Weight Control Registry (PWCR) participants (n = 108) indicated, in a 7-point scale, whether they had a more or less strict diet regimen during weekends compared to weekdays. A similar question about holiday and non-holiday period diet regimen was answered. In the laboratory, weight and height were measured at baseline and 1y follow-up, according to standard procedures. A 3% maximum weight variation was considered to define the participants as "non-regainers". Correlations, chi-square and odds ratio tests were performed. Results/findings PWCR participants were 61.1% women, aged 40.3 ±smn; 10.5 years, with a BMI of 26.4 ±smn; 4.1 kg/m2, who lost 17.9 ±smn; 10.6 kg, and maintained that weight loss for ~27 months. The mean weight difference between the 1y follow-up assessment and the baseline assessment was 0.5 ±smn; 4.0 kg. About 9.6% reported dieting more strictly during the weekend, 31.7% maintaining the same diet and 58.7% being less strict during the weekend. Similarly, 15.4% reported dieting more strictly during holidays, 25.0% maintaining the same diet and 59.6% being less strict during holidays. General scores on dieting strictness for weekends vs. weekdays (r = -0.28, p<0.01) and holidays vs. non-holidays (r = -0.33, p<0.001) predicted 1y weight change. Participants who reported being less strict during weekends (OR = 0.34, 95% CI: 0.15-0.81) were more likely to be non-regainers when compared with the ones who reported being more strict during weekends. Non-significant results were found for the holiday period (OR = 0.47, 95% CI:
P3.05.07
A SYSTEMATIC REVIEW AND META-ANALYSIS OF THE EFFECTS OF PHYSICAL ACTIVITY BREAKS DURING SITTING ON BLOOD, GLUCOSE, INSULIN, TRIACYLGLYCEROL (TAG)
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SIG: No, this does not fit in any of the above mentioned special interest groups

Introduction: The aim was to systematically review and meta-analyse trials breaking up prolonged sitting with bouts of PA throughout the day (INT) compared with sitting (SIT), on glucose, insulin and triacylglycerol (TAG). Another aim was comparing the effects of INT against continuous exercise (EX), on glucose, insulin and TAG. Methods: PRISMA recommendations were followed. Eligibility: control trials comparing INT vs SIT or INT vs one bout of EX before or after sitting, in participants aged 18 or above, metabolically healthy or impaired, but not with other major health conditions such as chronic obstructive pulmonary disease or peripheral arterial disease. Results: INT vs SIT: For glucose, SMD of -0.60 [-0.81, -0.39] in favour of INT. For insulin, SMD of -0.69 [-0.98, -0.41] in favour of INT. For TAG, SMD of -0.27 [-0.44, -0.09] in favour of INT. BMI associated with glucose responses (βa= -.064, 95% CI: -0.123, -0.005, p= .034), but not insulin (βa= -.066, -.152, 0.02, p=.122), nor TAG (βa= .010, -.048, .067, p= .722) INT vs EX. For glucose, SMD was -0.24 [-0.56, 0.08] (p=0.15) in favour of INT. For TAG, SMD of 0.21 [-0.16, 0.57] (p=0.27) in favour of EX vs INT. SMD for insulin was -0.08 [-0.31, 0.16] (p=0.53) in favour of INT. When energy expenditure matched, SMD of -0.36 [-0.65, -0.06] (p=0.02) in favour of INT on glucose, but not insulin, -0.16 [-0.40, 0.08] (p=0.20). Discussion There was possible publication bias for TAG. PA breaking sitting moderately attenuated post-prandial glucose, insulin, and TAG, with greater glycaemic attenuation in people with higher BMI, but differences compared to one continuous bout of exercise are small, for glucose when exercise protocols are energy matched, or non-existent for insulin and TAG. Other PROSPERO Registration: CRD42017080982

P3.05.08
PHYSICAL ACTIVITY COUNSELLING IN PRIMARY CARE: A QUALITATIVE STUDY IN A THAI CONTEXT
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Physical activity (PA) counselling in primary care is an intervention to promote PA among patients. Providing PA counselling in clinical practices is still limited. This study aims to explore PA counselling practices of Thai general practitioners (GPs). Methods: A qualitative phenomenological study was carried out between February 2017 and February 2018 in Nakhon Si Thammarat Province, Thailand. GPs, who worked at district hospitals, were invited to participate in this study. Physicians, who were certified specialists or during specialist training, were excluded. The semi-structured in-depth interviews were conducted to explore GPs' experiences and opinions. The audio-recorded files were transcribed verbatim and analysed by using a thematic approach. Results: Seventeen GPs (6 males and 11 females) from six hospitals participated in the study. The mean age was 29.8±smn;3.4 years (range 26-37). Clinical experience was 2-12 years (mean 4.7±smn;2.9). The GPs saw 30-80 patients/day (mean 56.2±smn;14.1) with 1-8 min/consultation (mean 3.8±smn;1.8). The GPs focused on patients with non-communicable diseases (NCDs), especially, poorly controlled diabetes, hypertension, and obesity. Thai translation of ‘exercise’ was used to communicate with patients rather than using the word ‘physical activity’. The GPs
Objectives: Many people with multiple sclerosis (PwMS) experience debilitating symptoms of fatigue, either persistently or sporadically, and over half describe it as their most severe symptom. As studies suggest that physical activity (PA) may be an effective strategy for controlling MS fatigue symptoms, this study investigated associations between fatigue and objective measures of PA, walking speed and endurance in PwMS.

Methods: PA data were collected from 120 people with mild-to-moderate MS (Expanded Disability Status Scale 1.0-6.5) over a period of 3.7 days using an Actigraph GT2M accelerometer. The Modified Fatigue Impact Scale (MFIS) was used to assess Physical, Cognitive, Psychosocial and Total Fatigue over the same 7-day time period and the timed 25-foot walk (25FW) and 6-minute walk test (6MWT) were used to assess walking speed and endurance, respectively. Bivariate associations were explored using Spearman's rho test and differences in PA and functional outcomes between participants experiencing high (MFIS³3.38) and lower levels of MS fatigue were compared using the Mann-Whitney U test.

Results: Participants were achieving a median (IQR) daily step count of 4572 (2749-6396), with 41% of the sample achieving 150 min.week⁻¹ of moderate-vigorous PA (MVPA) and high levels of sedentary time being apparent (9.5 [7.2-11.8] h.day⁻¹). Fatigue was inversely associated with weekly MVPA (rho=−0.33; P<0.001), daily step count (rho=−0.37; P<0.001) and 6MWT (rho=−0.42; P=0.001) and positively associated with 25FW (rho=0.43; P<0.001). Highly fatigued PwMS were achieving less weekly minutes of MVPA (90.0 [17-163] versus 218 [96-349]; P=0.014) and daily step counts (4018 [2514-5522] versus 5876 [4501-7251]; P=0.001) than PwMS experiencing lower levels of fatigue, respectively, whereas daily sedentary time was similarly high between the groups (P=0.41). Highly fatigued PwMS also had poorer walking speed (P<0.001) and endurance (P<0.001) than those experiencing lower levels of fatigue.

Conclusion: Higher levels of fatigue are associated with reductions in MVPA, walking speed and endurance but not higher levels of sedentary time in PwMS. Our results suggest that interventions for increasing the intensity of daily ambulatory activities and reducing sedentary time may be an effective strategy for increasing MVPA (and total PA), and improving fatigue management in PwMS.
Purpose: Prolonged sitting time is a risk factor for ill-health. Office-based employees—sh; who make up half of the UK workforce—sh; typically sit for around 10.5hrs per waking day. We have developed a theory- and evidence-based intervention designed to displace sitting with standing among desk-based office workers. The intervention comprises an awareness-raising monitoring and feedback task, provision of a sit-stand workstation, and a 'menu' of behaviour change techniques tailored to self-declared sitting-reduction barriers. This paper reports a qualitative analysis of office-based employees' responses to an early prototype of the intervention, as a means of identifying potential barriers to intervention engagement or adherence. Methods: A semi-structured longitudinal interview design was used. Twenty-nine office-based university employees were interviewed 1, 6, and 12-weeks post-intervention. Interviews focused on expectations and experiences of standing, workplace-specific constraints, and the usefulness of selected techniques. Thematic analysis identified common reflections. Findings: Three themes captured potential facilitators and barriers to translation of the intervention into behaviour change: practical and social challenges to adherence; reconciling sitting-reduction with mental representations of work; and self-regulatory challenges. While expectations of psychological discomfort from breaking the sitting norm were not borne out by participants' experiences, many encountered unanticipated practical barriers (e.g. insufficient space on the sit-stand workstation). Participants often attempted to stand only for periods of 'worthwhile' duration (e.g. 20 minutes). Some felt unable to stand for cognitively demanding tasks, though others felt better able to complete 'thought work' while standing. Discussion: Findings reveal contextual factors that potentially determine responses to sitting-reduction efforts in the workplace, and speak to the importance of acknowledging contexts in which workers may find standing less appropriate. We describe how these insights have informed refinement of the prototype, which is currently undergoing user-testing.

P3.05.11
HOW DO OFFICE WORKERS RESPOND TO MEDIA COVERAGE OF SEDENTARY BEHAVIOUR RESEARCH?
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Sitting time is associated with adverse physical and mental health, as well as premature mortality. Successful implementation of sitting reduction strategies may depend in part on public acceptability; unpopular interventions may not be politically or practically feasible. Acceptability depends on public awareness of the problem of sedentary behaviour. Scientific advances in the sedentary behaviour domain are predominantly communicated to the public via reports in the news media. Little is known about how people understand or respond to news stories about sedentary behaviour. This study sought to examine in-the-moment responses to news reports relating to sedentary behaviour among office workers, a highly sedentary sub-group of the UK population. Methods. A semi-structured interview design was used. Twenty-six UK-based office workers were asked to narrate their thoughts, using 'think aloud' methods, as they read through three researcher-selected real-world news articles. These related predominantly to: (a) the prevalence of workplace sedentary behaviour, (b) health risks associated with sedentary behaviour, or (c) behavioural recommendations for reducing sedentary behaviour in the workplace. Verbatim transcripts of audio recordings were analysed using Thematic Analysis. Findings: Three themes emerged: challenges to the personal relevance of the story; challenges to the trustworthiness of key messages; and challenges to implementation of sitting-reduction strategies. Participants typically sought to relate news stories to their personal situation, with some requesting further detail of the methods used in the evidence underlying the stories (e.g. sample characteristics) so as to gauge personal relevance. Some questioned the scientific rigour of the underlying evidence, or the motives of funders, suggesting a lack of trust in the scientific basis for the story. Several participants were uncertain about which behaviours were being recommended, or did not feel that recommended behaviours were feasible. Discussion: Findings reveal how the public consumes evidence around sedentary behaviour. Sedentary behaviour researchers should work closely with press offices to ensure that press releases incorporate key details that may influence perceptions of credibility, such as the representativeness of samples, and provenance of the research. Researchers might also work to engage the public in research, to increase the perceived trustworthiness of findings.
EXPLORING FOOD CRAVINGS IN SINGAPORE: THE IMPACT OF ETHNICITY CONSIDERING EMOTIONAL AND DIETARY RESTRAINT STATES

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Singapore is a multi-cultural society with appealing ethnic cuisines. However, one may struggle when choosing foods which may not be in agreement with one’s own ethnic identity. The purpose of this study was to explore the impact of ethnicity on food cravings, considering emotional and dietary restraint states in a non-clinical adult sample in Singapore. Methods: Adults were randomly approached at food courts and religious temples and completed the Emotional Eating Scale (EES), the Eating Attitudes Test (EAT-26) and the Food-Craving Inventory (White et al. 2002) with extra items relevant to Singapore (FCI-SG). This sample consisted of 582 adults (58% female) with similar numbers of Chinese, Malay and Indian ethnicities and age ranged 20 to 76 years. Kruskal-Wallis with Bonferroni post-hoc test assessed ethnicity differences regarding EES, EAT-26 and FCI-SG. Mann-Whitney U-Test evaluated differences between participants with EAT-26 clinical score (=20; n=70) and non-clinical score (n=512) regarding EES and FCI-SG. Results: Factor analysis revealed cravings gathering in three factors: sweets; starchy/fast-foods; pork and alcohol. Significantly, Spearman's correlations showed cravings for these three factors to be positively associated with Depression-EES, Anger-Frustration-EES, Anxiety-EES and Bulimia/Food-Preoccupation-EAT-26 subscales. However, these cravings were negatively correlated with the Dieting-EAT-26 subscale. Participants with a higher risk of developing eating disorders had a higher mean rank for Depression-EES in contrast with those with a non-clinical score (p<0.05). Unexpectedly, the mean rank for cravings for starchy/fast-foods was higher among individuals with a non-clinical score (p<0.05). No other differences were observed for remaining food cravings. Indian participants reported more cravings for starchy/fast-foods in contrast with Chinese. However, Chinese craved for pork and alcohol the most whilst Malays the least (all p values <0.05). There were no significant differences regarding cravings for sweets. Conclusion: This study suggests culture to be a stronger determinant for cravings rather than dietary restriction or emotions. Most Malays profess the Islamic religion which forbids pork and alcohol consumption. Therefore, Malay participants may have never consumed pork and alcohol. This supports the popular belief "you will not desire things until you have tried them", at least among this non-clinical sample of the multi-cultural population of Singapore.

DOES SELF-PERCEIVED ORAL HEALTH STATUS HAVE AN IMPACT ON NUTRIENT INTAKE AMONGST ADULTS AT A HIGH RISK OF CARDIOVASCULAR DISEASE IN NORTHERN IRELAND?

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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Data from the randomised controlled trial PREDIMED observed a significant reduction in the incidence of T2DM and CVD, the leading causes of death worldwide, in response to adoption of a Mediterranean style diet (MD). Oral health status has been shown to impact dietary choice and nutritional status; older adults who wear dentures or have fewer natural teeth present tend to consume poor quality diets which are low in fibre and protein, and high in complex carbohydrates and calories. Objective: The aim of this preliminary analysis is to analyse baseline data from a 12-month pilot cluster randomised study evaluating a peer support MD intervention in Northern Ireland (NI), to investigate whether self-perceived oral health status has an impact on nutrient intake. Methods: Dietary data from 4-day food diaries collected from participants in NI (n=31, mean age 59.5y) were entered into Nutritics and analysed using SPSS v22. Mean intake of energy and macro- and micronutrients (including fat, carbohydrates, protein, carotene, eicosapentaenoic acid, and monounsaturated fatty acids) were calculated and ANOVAs were conducted to investigate whether mean daily intake of the nutrients differed between individuals with different self-
perceived oral health status, assessed via questionnaire, at baseline. Results: Significant differences in mean intake of total fat (g/day), energy (kcal/day) and MUFA (g/day) were observed (p values from ANOVA 0.03, 0.03 and 0.03 respectively) between the three self-perceived oral health groups (excellent or very good n=12, good n=8, fair or poor n=11); with post-hoc analysis demonstrating that the intake of those with fair or poor oral health were significantly higher than those with good oral health. No significant differences were observed between those individuals with excellent or very good oral health and those with either good or fair or poor oral health. Conclusion: These results highlight differences in nutrient intake according to oral health status. The next stage of this research is to explore oral health status as a predictor of response to the MD intervention. This information can then be used to effectively develop and tailor future interventions to improve nutritional status, whilst taking account of oral health status, amongst this population group.

P3.05.15
BEING MORE CONFIDENT WITH FOOD AND COOKING SKILLS IS ASSOCIATED WITH HIGHER DIET QUALITY IN AUSTRALIAN MEN; A CROSS-SECTIONAL SURVEY

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Consuming a diet of poor nutritional quality increases the risk of chronic diseases including cardiovascular disease, type 2 diabetes, and some cancers. Women generally make healthier food choices and have better cooking skills than men. Thus, it is important to explore men's cooking and food skills in relation to diet quality. This study investigated how men with higher diet quality differed from men with lower diet quality in relation to demographics, cooking and food skills. Methods: An online cross-sectional national survey was conducted between Aug 2016-2017, with a 910 Australian residents, including 176 males participants completed the survey questions on cooking and food skills confidence and diet quality, measured using the validated Australian Recommended Food Score. Independent T-tests were conducted to assess differences between males with high and low diet quality index scores for sociodemographic characteristics and cooking and food skills. Results: Men with a higher diet quality were older, of lower SES than those with a lower diet quality, and identified themselves more as a 'cook'. Men with a higher diet quality had a greater confidence in 12 of 14 cooking skills, than those with a lower diet quality. For example, they were significantly more confident (P<0.05) in preparing and cooking raw fish; making sauces and gravy from scratch; using herbs and spices to flavour food; roasting food; baking cakes/bread/buns; steaming food; and stewing food. Additionally, men with a higher diet quality were more confident that men with a lower diet quality in all five food skill categories of Meal planning/preparation, Shopping, Budgeting, Resourcefulness, and Label Reading/Consumer Awareness. Conclusions: Men with higher diet quality reported greater cooking and food skills confidence. This survey identified that those with a higher diet quality were older, of lower SES and had a greater confidence in the majority of cooking and food skills. Further research is needed to assess whether improving men's confidence in key cooking and food skills can improve their diet quality and nutrition-related health and wellbeing.

P3.05.16
THE INFLUENCE OF INCREASED FRUIT AND VEGETABLE INTAKE ON BODY COMPOSITION OVER 10 WEEKS

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Inadequate fruit and vegetable intakes have been associated with obesity and adverse health outcomes. This weight loss intervention aimed to determine whether increasing fruit and vegetable intakes results in change in body weight and composition in overweight and obese participants who were maintaining physical activity levels (PAL). Methods: Sixteen adults completed a 10-week weight reduction
program, completing five face-to-face visits; two each at baseline and follow-up and one session two weeks into the study. All participants were aged between 18-45 years and had a BMI between 25-35 kg/m². Fruit and vegetable (F&V) intake was assessed using the Australian Eating Survey food frequency questionnaire and PAL determined using the International Physical Activity Questionnaire. Body composition was assessed by bioelectrical impedance analysis. Participants were encouraged to increase their F&V intakes to meet Australian Dietary Guideline (ADG) recommendations and received individual counselling from an Accredited Practising Dietitian to help them to lose weight and increase F&V intakes. Each participant received a week’s supply (49 serves) of F&V to demonstrate ADG daily intake targets. Descriptive statistics, correlations and regression analysis were performed. Results: Participants were primarily female (75%), mean age 33.6±smd;8.3yrs, BMI 28.8±smd;1.4kg/m² and %body fat 35.7±smd;7.7%. Mean baseline F&V intakes on average were 398.6±smd;217.6 grams/day and 223.1±smd;103.9 grams/day, respectively and PAL 1.2±smd;0.1. After 10-weeks, fruit intakes increased by 17.7±smd;231.2 grams/day and vegetable intakes by 105.1±smd;136.0 grams/day (respectively). Weight and %body fat decreased by -1.6±smd;2.2kg and -1.3±smd;1.7% (respectively), with PAL unchanged (0.1±smd;0.1). There was no significant relationship between change in total F&V intake and change in weight (r=0.4, p=0.1) and %body fat (r=0.3, p=0.2). A statistically significant positive association was found between change in vegetable intake and %body fat change (βa=0.01, p=0.04), but not change in fruit intake. Conclusion: Overall, preliminary results indicated that increased total F&V intakes were not associated with weight change over 10-weeks, although an increase in vegetable intake alone was associated with a change in %body fat. Due to the small sample size, further research is required to determine if there is a relationship between fruit and vegetable intake and change in body fat.

P3.05.17
FEAR OF FALLING MEDIATES BETWEEN FALLS SELF-EFFICACY AND QUALITY OF LIFE AMONG NEUROLOGICAL REHABILITATION PATIENTS

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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: The role of fear of falling (FOF) and low falls self-efficacy (FSE) on impaired health-related quality of life (HRQoL) has been mainly investigated in healthy older adults. However, the associations between FOF and FSE among older adults with neurological impairments is unknown. In particular in the context of HRQoL, one of the main outcomes of a successful rehabilitation process. This study examined the role of FOF as a potential mediator of the FSE and HRQoL relationship among patients in a process of neurorehabilitation. Methods: Data were provided by 82 rehabilitation in-patients aged 25-85 (M = 61.22, SD = 11.55) with neurological impairments (e.g. after stroke). Questionnaires were filled in at the baseline (T1) and at a 4-6-week follow-up (T2). Measures included assessment of FOF, FSE, and HRQoL. Mediation analyses were performed to test the hypotheses. All analyses were controlled for effects of age, gender, respective HRQoL index at T1 and the T1 mediator. Results: The analyses confirmed that FOF (T2) was a significant mediator between FSE (T1) and HRQoL (T2) for a total score of HRQoL and physical domain of HRQoL. The mediation role of FOF was not supported for social, environment and psychological domains of HRQoL. Conclusions: Results suggests that patients with higher FSE had lower levels of FOF and thus better physical functioning. Intervention designed for people with walking difficulties due to neurological impairments should enhance patients self-efficacy towards falling, as it lowers fear of falling levels and thus, fosters patients HRQoL in the rehabilitation process.

P3.05.18
CALCIUM CONSUMPTION AND LIPID PROFILES IN RESPONSE TO AN AEROBIC EXERCISE TRAINING INTERVENTION: THE HERITAGE STUDY

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Objective: In a previous study, daily calcium supplementation in low calcium consumers was shown to improve the response in lipemia in obese women submitted to dietary restriction (Major et al. 2006). Adverse responses in lipemia have been observed in men and women submitted to a standardized exercise training program (Bouchard et al. 2012). Therefore, the objective of the present study is to further investigate the response in lipemia to an aerobic exercise training intervention in individuals differing in their usual calcium intakes. Methods: A total of 314 adults (mean age: 35 ±13 years) from the Health, Risk Factors, Exercise Training and Genetics (HERITAGE) Family Study were classified into very low (<500 mg/day) and adequate (>1000 mg/day) consumers of calcium. Under and over-reporting of energy intakes was considered by calculating the resting metabolic rate using the Harris Benedict equation and multiplying by a physical activity factor of 1.3 to 2.0 to exclude extreme intakes. Plasma lipids including high-density lipoprotein cholesterol (HDL-c), low-density lipoprotein cholesterol (LDL-c) and total cholesterol were compared between groups before and after a 20-week aerobic exercise training program. A two-factor mixed ANOVA was conducted to assess the impact of calcium intake, time and their interaction on the outcome measures. All analyses were performed on data adjusted for age, sex, ethnicity and baseline body mass index. The data were also adjusted for multiple comparisons using the Benjamini Hochberg method. Thus, a P-value of = 0.03 was considered significant. Results: Post-intervention, a main effect of time was observed for total cholesterol (P=0.002) and LDL-c (P=0.03) after adjustment for studied covariates; however, there was no effect of calcium on any of the plasma lipid variables. Significant interactions were observed for total cholesterol (P=0.03) and LDL-c (P=0.02) with higher concentrations post-intervention in very low calcium consumers compared to those in the adequate calcium group. Conclusion: The benefits from an exercise training intervention appear to be less favorable in very low calcium consumers.

P3.05.19
ANXIETY AS A MODERATOR OF THE RELATIONSHIP BETWEEN PERCEIVED STRESS AND PHYSICAL ACTIVITY AMONG PATIENTS WITH CORONARY HEART DISEASE
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Objective: Although strong association between lower physical activity and higher psychological stress among patients with coronary heart disease (CHD) has been documented, the potential mechanisms to explain this relationship remain unclear. This study aims to investigate the effect of physical activity on perceived stress among CHD patients, and to examine whether anxiety moderates this potential effect. Methods: A total of 253 CHD participants (18.6% women, mean age=63.11, SD=8.67) were recruited from a community-based cardiac rehabilitation program. Perceived stress, intensity and amount of physical activity, and anxiety were evaluated by the Perceived Stress Scale (PSS), International Physical Activity Questionnaire (IPAQ), Hospital Anxiety and Depression Scale (HADS) Anxiety subscale, respectively. Hierarchical multiple regression analyses were conducted to test the effect of physical activity on perceived stress, and whether anxiety was a moderator between this association, while adjusting for age, gender, education, marital status, BMI, and months in rehabilitation. Results: The results demonstrated that, physical activity had a marginal significant effect (βa;=-.122, p=.070) on perceived stress after adjusting for the covariates. There was a significant moderation effect of anxiety (physical activity x anxiety interaction R2 change=0.032, F change (1,218)=10.292, p<.010). That is, among patients with higher anxiety, greater physical activity was associated with lower perceived stress (βa;=-.588, p<.001); in contrast, among less anxious patients, physical activity was not associated with perceived stress (βa;=.054, p=.709). Conclusions: Although physical activity did not have significantly direct effect on perceived stress, anxiety appeared to be a significant moderator of physical activity on stress. The findings suggest that it may be important to consider patients’ anxiety status when promoting physical activity as an intervention to relieve stress among CHD patients. Physical activity may be more effective in stress reduction, especially for highly anxious patients.
P3.05.20
DIETARY INTAKE AND CARDIOVASCULAR RISK FACTORS IN SPECIAL OLYMPICS ATHLETES FROM 2015 WORLD GAMES
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Adults with intellectual disabilities (ID) have a high risk for poor dietary intake, obesity, and associated maladies. Hypertension, in particular is an important obesity-related health outcome that is often undiagnosed in adults. Special Olympics provides a physical activity and social support environment that may be associated with a healthier diet, lower obesity prevalence, and reduced risk for hypertension in persons with ID.

Methods: We obtained data on international participants (n= 217, 37% female) attending the 2015 Special Olympics World Games in Los Angeles. Data collection for each participant took place as part of a "discipline" that included a specific health-related evaluation performed by a medical team at the World Games. In the Health Promotion and FUNfitness disciplines, dietary intake was recorded, along with demographic and anthropometric information including age, sex, height, weight, blood pressure (BP), and the proportion of athletes’ typical weekly physical activity performed within Special Olympics training and competition. Descriptive statistics included means and standard deviations. Correlates of elevated blood pressure were determined via stepwise logistic regression.

Results: Participants ranged in age from 18 to 61 y (mean=26.2±8.0 y). Body mass index (BMI) ranged from 17.1 to 42.0 kg/m² (mean=24.6±4.5 kg/m², 39.6% overweight/obese). Approximately 49% of participants consumed fewer than two servings of fruits and vegetables and 75% consumed fewer than two servings of calcium sources per day. Nearly half (48%) of participants reported consuming sugar-sweetened beverages daily. Systolic BP ranged from 80 to 158 mmHg (mean=118.5±13.4 mmHg) and diastolic BP ranged from 40 to 105 mmHg (mean=70.3±10.0 mmHg). Approximately 28% of participants had elevated BP. Significant predictors of elevated BP included BMI (OR=1.13, 95% CI=1.06–1.21) and the proportion of physical activity done within Special Olympics (OR=0.43, 95% CI=0.22–0.84).

Conclusions: Adults with ID participating in the 2015 Special Olympics World Games showed heterogeneity in dietary intake, BMI, and BP. Having a lower BMI and participating in most or all physical activity within the Special Olympics context were associated with reduced likelihood of elevated BP. Given the prevalence of sugar-sweetened beverage consumption, low fruit and vegetable intake, and low calcium intake, there may be opportunities within Special Olympics to make dietary improvements.

P3.05.21
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Previous research shows that screen time is positively related to depression symptoms; however, the mechanisms which drive this association are poorly understood. The aim of this study was to examine if association between screen time and depression symptoms was mediated by sleep quality.

Methods: We used cross-sectional data from 2005–2006 National Health and Nutrition Examination Survey. The sample included 1,436 adults (mean age: 39 years), of which 51.8% were women. Screen time and sleep quality were measured by questionnaire. We used linear regression analysis to investigate i) if screen time predicted depression (c path); ii) if screen time predicted sleep quality (a path); and iii) if sleep quality predicted depression (b path). We used the Lavaan R-Package to test for mediation, using structural equation models. Moderate-to-vigorous physical activity (measured using 7-day accelerometer), age, gender, and ethnicity were introduced in all models as confounders.

Results: In separate models, screen time was independently associated with depression symptoms (c path, B=0.38, p<0.001) and with sleep quality (a path, B=0.52, p<0.001). Sleep quality independently predicted depression (b path, B=0.28, p<0.001), providing justification for a mediation analysis. Sleep quality mediated 41% of the association...
between screen time and depression (ab=0.15, p<0.001). Conclusion: Poor sleep quality appears to underpin the potential negative impact of screen time on depression symptoms in adults.

P3.05.22
SHORT-TERM EFFECTS OF ACTIVITY COACH+, A PHYSICAL ACTIVITY INTERVENTION IN HARD-TO-REACH PHYSICALLY DISABLED PEOPLE: A FEASIBILITY STUDY.
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: People with physical disabilities or chronic diseases participate less in physical activity compared to healthy people. The majority of physically disabled people is not reached by existing physical activity stimulating interventions, since these reach their target population through rehabilitation centres, special education and primary health care. Systematic development applying Intervention Mapping resulted in the community-based intervention Activity Coach+, aiming to stimulate physical activity in hard-to-reach physically disabled people. Activity Coach+ stimulates organised physical activity (by providing information about possible activities), non-organised physical activity (by connecting buddies) and physical activity during activities of daily living (by monitoring daily physical activity). The purpose of this study was to test feasibility and short-term health effects of Activity Coach+. Methods: Activity Coach+ was implemented in community and evaluated using a prospective cohort study with measurements at baseline, two, four, six and twelve months after baseline. Measurements at baseline, and after two and four months were included for evaluation of short-term health effects (n=21). Physical activity behaviour was measured objectively using the Activ8 accelerometer, and subjectively using the adapted SQUASH questionnaire. Body mass index, waist circumference, systolic blood pressure, hand grip force, 10 meter walk test, 6 minute walk test and Berg Balance Scale were measured to assess health changes. Bio-psychosocial health was assessed using the Exercise Self-Efficacy Scale, Fatigue Severity Scale and IMPACT-S measuring social participation. Data was analysed using multilevel modelling. Results: Activity Coach+ included 29 hard-to-reach physically disabled people during the first four months after implementation, of whom two dropped out. Body Mass Index (p=.002), hand grip force (p=.001), dynamic balance (p=.001) and health change (RAND-36) (p=.007) increased over time after implementation of Activity Coach+. Relevant trends were found for the increase of intensity of active behaviour (p=.069) and 10 meter walking speed (p=.080), and for the decrease of systolic blood pressure (p=.063). Conclusions: The implementation of Activity Coach+ in a community setting was feasible. The current study provides first indications for the effectiveness of Activity Coach+ in hard-to-reach physically disabled people. Long-term health effects should be studied in future research.

P3.05.23
PERCEIVED BARRIERS OF YOUNG ADULTS FOR PARTICIPATION IN PHYSICAL ACTIVITY
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: This study aimed to explore the barriers to physical activity among college students Study Design: Qualitative research design Methods: Eight focus group discussions on 67 college students aged 18-24 years (48 females, 19 males) was conducted on College premises. Data were analysed using inductive approach. Results: Participants identified a number of barriers to physical activity. Barriers emerged from the analysis of the data addressed the different dimensions of the socio-ecological framework. The barriers indicated that the young adults faced a substantial amount of personal, social and environmental barriers: time constraint, tiredness, stress, family control, safety issues and much more. Conclusions: Understanding the barriers and overcoming the barriers at this stage will be valuable. This
would help to instil the habit of regular physical activity in the later adult years. Moreover, health professionals and researchers can use this information to design and implement interventions, strategies and policies to promote the participation in physical activity. Keywords: Young adults; Physical activity; Barriers; Qualitative, Socio-ecological

Abbreviations used: DS-Day Scholars; PG-Paying guests

P3.05.24
SLEEP TRAJECTORIES FROM 5 TO 17 YEARS OF AGE AND PHYSICAL AND MENTAL HEALTH OUTCOMES IN YOUNG ADULTHOOD: THE RAINE STUDY
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective Poor sleep has been linked with accidental injuries and death, increased drug use, poorer academic performance, more negative moods and poorer physical health in young people. However to date there does not appear to be a longitudinal investigation of associations between sleep trajectories across childhood and adolescence and mental and physical health outcomes in young adulthood. Methods Parent-report of sleep problems from 1993 Raine Study Generation 2 participants from 5 time points (year 5, 8, 10, 14, 17) were used in latent class analysis to estimate sleep trajectories. The questions included whether participants slept more, or slept less than age related peers and whether they had trouble sleeping. Self-report of depression, anxiety and stress (using the DASS) and DEXA assessed body fat at age 22 years were compared between members of resulting sleep trajectories using generalized linear models. Models were weighted according to probability of membership to class. Results Two sleep behaviour trajectories were identified on the basis of nominated fit criteria; 63.6% of participants were grouped in a trajectory with low reporting of sleep problems (normal sleepers) and 36.3% were grouped in a trajectory with a greater proportion of sleep problems (troubled sleepers) reported at all time points. At age 22 years, body fat percent for troubled sleepers was 32.1% (SD 12.8) compared to 30.7% (12.9) for normal sleepers, and DASS scores for troubled sleepers (23.2(SD 20.6) were significantly higher than for normal sleepers (20.5(SD 18.9); p=0.029). Conclusion Trajectories of sleep behaviour over childhood and adolescence are related to poorer mental health in young adulthood. Further research is warranted to understand the mechanism of this association.

P3.05.25
HIGH-INTENSITY INTERVAL TRAINING VERSUS CONTINUOUS EXERCISE ON AD-LIBITUM ENERGY INTAKE IN INSUFFICIENTLY ACTIVE MIDDLE-AGED ADULTS: A PILOT STUDY
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective High-intensity interval training (HIIT) has been recognized as an emerging trend in public health promotion and research has suggested that exercise can benefit appetite regulation for weight management, by modulating physiological mechanisms controlling appetite responses and total energy intake. However, there is a lack of response comparison between HIIT and continuous exercise. The purpose of this study was to compare the ad-libitum energy intake and appetite responses after a single session of HIIT versus moderate-intensity continuous exercise (MICE) and vigorous-intensity continuous exercise (VICE) in middle-aged insufficiently active males. Methods Eleven middle-aged (age: 46.8 ±smn; 7.5 yrs; body mass index: 23.4±smn; 2.1 kg m-2; VO2max : 39.5±smn;5.6 mL min-1 kg-1) insufficiently active males were recruited. Using a randomized crossover design, participants undertook three main trials (7 days apart): HIIT (10 x 1-min run at 100% VO2max interspersed with 1-min active recovery),
MICE (40-min run at 65% VO2max) and VICE (20-min run at 80% VO2max). Participants consumed an ad-libitum meal (food buffet with standardized food choices) after each trial. Every food choice was measured and recorded on the food log sheet for analysis. Perceived appetite was measured immediately before and after the exercise sessions using the Visual Analogue Scale (VAS). One-way analysis of variance (ANOVA) with repeated measure was used to determine the main effect of exercise modes. Post hoc analysis was conducted with LSD correction. P-value was set at 0.05. Results No significant difference in post-exercise ad-libitum energy intake was found between all three trials (HIIT: 645±smn; 262.9 kcal; MICE: 614.7±smn; 271.2 kcal; VICE: 623.1±smn; 249.0 kcal, p>0.05). The perceived appetite was similar before and after each exercise trial (p>0.05). Conclusions Our findings did not reveal distinct post-exercise ad-libitum energy intake and perceived appetite to an acute bout of HIIT versus both MICE and VICE in the insufficiently active middle-aged adults. Future research examining the long-term appetite responses to HIIT and different exercise modes in different populations is warranted to shed light on current exercise guidelines for weight management.

P3.05.26
INTERRUPTING PROLONGED SITTING AND RESTING BLOOD PRESSURE IN YOUNG MEN WITH CENTRAL OBESITY
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: Lower time spent engaged in sedentary behaviours is associated with a decreased risk of many chronic diseases (i.e., cardiovascular disease) and mortality. In previous studies, frequent interrupting sitting conditions (i.e., 3-minute walking every 30 minutes of sitting (3-min)) has been used for yielding health benefits. However, some people prefer interrupting sitting less frequently. The purpose of this study was therefore to examine the effect of 3-MIN and 6-minute walking 60 minutes of sitting (6-min) on resting blood pressure (RBP) in centrally obese young men. Methods: In a screening visit, participants were asked to wear Actigraph and activPAL accelerometers to determine their physical activity (PA) levels and sedentary time (ST). In a randomised crossover trial, 13 Chinese young men with central obesity (aged 25.08 ±smn; 3.2 years) consumed standardised meals during three 7-hour conditions: (1) prolonged sitting (SIT); (2) 3-min (at 3.2 km/h); (3) 6-min (at 3.2 km/h). Each trial was separated by 6-14 days washout. RBP was measured hourly using an electronic sphygmomanometer (mean RBP of each condition was calculated). One-way ANOVA with repeated measures was used to examine differences among three conditions. The Bonferroni post-hoc test was used for multiple comparisons where appropriate. Results: The average of moderate-to-vigorous PA and ST in the screening visit were 53.6 ±smn; 21.76 and 559.7 ±smn; 90.70 minutes per day, respectively. It shows that they were physically active but sedentary. There was no significant difference in mean resting systolic blood pressure (SBP) both 3-min (116.2 ±smn; 7.04 / 77.4 ±smn; 7.09 mmHg) and 6-min conditions (115.2 ±smn; 5.57 / 76.8 ±smn; 6.33 mmHg) in mean resting SBP (p = 0.533, 0.509, respectively) and resting diastolic blood pressure (DBP) (all ps > 0.05) when compared with SIT condition (117.8 ±smn; 7.89 / 78.1 ±smn; 7.25 mmHg). Also, there was no significant difference between 3-min and 6-min trials on both resting SBP and DBP (all ps > 0.05). Conclusions: Interrupting prolonged sitting with both 3-min and 6-min conditions cannot reduce RBP in physically active young male adults with central obesity. Interrupting prolonged sitting with activities of greater intensity, or longer duration may improve RBP.

P3.05.27
SOCIO-ECOLOGICAL INTERVENTION TO PROMOTE ACTIVE COMMUTING TO WORK: CHANGES IN EMPLOYEES’ INTENTION AND BEHAVIOR
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose Active commuting to work (ACW) increases total volume of physical activity and is beneficial for
health. More evidence is needed on effective ways to promote ACW. Thus, a socio-ecological intervention to promote ACW was implemented in two large workplace areas in Tampere, Finland. This paper reports the preliminary findings on employees' intention and behavior related to ACW. Methods The study was conducted in two phases. In Phase 1 the impacts of environmental strategies were evaluated in 11 workplaces in Area 1 before (909 employees) and after (409 employees) improvements in walking and cycling trails. In Phase 2, five more workplaces were recruited from Area 2 and all 16 workplaces were randomized to experimental (EXP, n=8) and comparison group (COM, n=8) to examine the impacts of social and behavioral strategies customized for each workplace in EXP (325 employees). The workplaces in COM (127 employees) participated in the data collection only. Employees' intention for ACW in the following week and ACW behavior were assessed with a questionnaire before and after each phase. Generalized linear mixed models with baseline adjustments were used in statistical analyses. Results After environmental strategies in Phase 1 the employees' intention for ACW increased by an average of 0.5 days per week (p<0.001). No statistically significant between-group differences in changes were detected in the intention for ACW or ACW behavior after social and behavioral strategies in Phase 2. In the whole study sample the proportion of employees reporting a car as the primary means of transportation was slightly decreased and the proportion of employees using public transportation or commuting actively was somewhat increased but not statistically significantly. Conclusions Environmental change in Phase 1 increased employees' intention for ACW in the following week. However, no change was seen in actual ACW behavior after either of the phases, which may be partly explained by the short exposure time to the strategies.

P3.05.28
A COMPARISON OF TRAINING INTENSITY BETWEEN SLOPE SKILL TRAINING AND OVER-GROUND PERFORMANCE TRAINING IN SKI ATHLETES.

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SIG: No, this does not fit in any of the above mentioned special interest groups

Introduction: Overground training and ski skill training on the slope are two popular approaches to improve the performance of ski athletes. The training intensity may vary depending on the types of training and the contents of the training. Therefore, knowing this information can help coaches to provide the systematic training plan and optimal feedback for the athletes. However, training intensity has not been systematically examined in ski athletes. Purpose: The purpose of this study is to systematically evaluate and compare the intensity of two training modes in ski athletes. Methods: 8 male (age: 23.88 ±smn; 3.4 years, height: 176.59 ±smn; 5.2 cm, weight: 77.88 ±smn; 6.42 kg) and 4 female (age: 21.5±smn;1.29 years, Height: 166 ±smn; 4.08 cm, body weight: 60.5 ±smn; 8.38 kg) Alpine-ski athletes participated in the study. The intensity of training was assessed objectively by accelerometry (Actigraph GT9X) worn at the waist for 7 consecutive days. 4 hours of slope and over-ground training data in each day for 5 days were included in the final data analysis. ActiGraph data were analyzed using Freedson Adult (1998) cut points. Descriptive for all variables were calculated and dependent t-tests were performed to examine the statistically significant difference between the intensity of slope training and over-ground training. Results: As a result, the average intensity expressed as the MET value on the slope and over-ground was 2.48 ±smn; 0.12 and 2.56 ±smn; 0.2 (n = 12), respectively. There was no statistically significant difference (p = 0.26). The maximum MET was 12.74 ±smn; 2.21 for slope training and 8.17 ±smn; 0.97 for over-ground training. The dependent t-test revealed that there is a statistically significant difference (p <0.001) between two types of training. Conclusion: with the above results, it is identified overall intensity between slope and over-ground training was similar but the higher intensity was performed in slope skill training compared to over-ground training.

P3.05.29
DAILY PHYSICAL ACTIVITY COMPARISON IN ALPINE SKI ATHLETES TRAINED IN TWO DIFFERENT COUNTRIES.

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Introduction: As a representative winter sport, ski training and performance were highly influenced by seasonal, environmental, and training factors. For this reason, many ski athletes are trained in many different countries and the patterns of their physical activity during a training period can be a good indicator of preventing injury and overtraining. However, there is no information regarding physical activity patterns during the training period. Purpose: The purpose of this study is to objectively examine overall physical activity level during training periods by using an ActiGraph GT9X accelerometer in two different countries. Methods: 3 male and 2 female Korean Alpine ski athletes (21.6 ±smn; 1.34 years, 173.2 ±smn; 9.54 cm, and 70.4 ±smn; 14.74 kg) participated in France and 3 male and 2 female Korean Alpine athletes (23 ±smn; 2.92 years, 172.54 ±smn; 6.02 cm, 72 ±smn; 9.46 kg) participated in New Zealand. Ski athlete's physical activity level was assessed objectively by the accelerometry (ActiGraph GT9X) worn at the right side of the waist for 7.5 consecutive days. Full 7 days of accelerometer data were included for the final data analysis (not excluding training period). ActiGraph data were analyzed using Freedson Adult (1998) cut points. Descriptive for all variables were calculated and dependent t-tests were performed to examine the statistically significant difference on physical activity of ski athletes between two countries. Results: Activity energy expenditure above 3 MET trained in France and New Zealand was 5468.97 ±smn; 520.68 (Kcal/week) and 4238.04 (Kcal/week), respectively. Time spent in Moderate to Vigorous Physical activity (MVPA) was 1022.8 ±smn; 159.29 (min/week) in France and 781.8 ±smn; 179.19 (min/week) in New Zealand. No significant difference was found in time spent in MVPA (p=0.055) but a statistically significant difference was found in activity energy expenditure (p=.023). Conclusion: Our preliminary results support the idea that regardless of region and training, the overall physical activity level is extremely high in ski athletes and this could be the indicative of overtraining. In a future study, it is necessary to examine the overall physical activity level and training program for ski athletes to prevent injury.

P3.05.30
A MIXED-METHODS EVALUATION OF THE FRUITS & VEGGIES (FNV) CAMPAIGN INTEGRATED MARKETING COMMUNICATIONS STRATEGIES USED TO PROMOTE THE FNV BRAND AND DEMAND FOR FRUITS AND VEGETABLES AMONG MOMS AND TEENS
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Objective: In 2015, the Partnership for a Healthier America launched a branded integrated marketing communications (IMC) campaign called Fruits & Veggies (FNV) to promote sales and consumption of fruits and vegetables to moms and teens, ages 14-36 years, in California and Virginia. IMC interventions employ advertising and communication techniques to build brand awareness. This presentation describes findings from a mixed-methods evaluation of the FNV Campaign that can inform IMC strategies used to reach and generate brand awareness among target audiences in the future. Methods: Semi-structured interviews with stakeholders (n=22) were conducted (July-October 2016) to explore perspectives about the FNV Campaign, including its design, reach, and effectiveness. Qualitative data were recorded, transcribed, and thematically analyzed using NVivo 11.0 software. Quantitative data were collected from an online survey (February-July 2017) that assessed Campaign awareness and IMC strategy recall among the target audiences. The final sample included 1604 eligible respondents, teens aged 14-20 years (n=744) and moms aged 21-36 years (n=860), from California (n=746) and Virginia (n=858). Quantitative data were analyzed using descriptive statistics. Results: Interviews revealed that stakeholders felt strong potential for in-store retail as a component of IMC strategies to improve FNV awareness and recall in addition to influencing purchases and consumption. Stakeholders largely viewed social media as a useful and relevant strategy to reach audiences, but reported more uncertainty about the potential of multimedia advertisements to reach and resonate with target audiences. Stakeholders described community-sponsored activities as infrequent but promising to build awareness and recall of the Campaign. Quantitative survey data revealed that among respondents who were aware of the FNV Campaign (n=315), social media was the IMC strategy most frequently recalled (46.0%), followed by retail promotions.
(30.2%), community-sponsored activities (18.1%) and multimedia advertisements (10.2%). Conclusions: There was considerable congruence between the IMC strategies favored by stakeholders involved in the FNV campaign and strategies recalled most by survey respondents. Results underscore the importance of involving stakeholders who have valuable knowledge and expertise throughout the course of designing campaigns. These insights can inform the strategic use of IMC to improve their reach, relevance, and effectiveness among FNV Campaign target audiences.

P3.05.31
FGF21 EXPRESSION AFTER A 3-DAY KETOGENIC DIET AND DURING GRADED EXERCISE IN HEALTHY ADULTS
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SIG: No, this does not fit in any of the above mentioned special interest groups

Objective: Since fibroblast growth factor 21 (FGF21) increase glucose uptake, regulators of FGF21 have been studied extensively. Long term fasting, ketogenic diet and exercise are known to regulate FGF21 levels. However, how exercise during ketogenic diet influences circulating FGF21 levels have not been studied. Therefore, the purpose of this study is to investigate serum FGF21 levels after a three-day ketogenic diet (3DKD) at rest and during graded exercise in healthy adults. Methods: This study was a single arm, before and after comparison study consisting of a 3DKD and graded exercise. The subjects included 14 healthy adults (mean age = 26.36±3.05 years, and BMI = 24.75±4.25kg/m2). The following tests were performed after an overnight fast: body composition, VO2max test, blood sampling, and graded exercise test. VO2max tests were conducted to identify the aerobic fitness of participants first, and after a 3-day mixed diet, the participants performed a continuous exercise protocol on a treadmill with graded intensity. This was followed by a 3DKD after which participants performed the same exercise protocol again. Results: All subjects complied with the mixed and ketogenic diet regimen. The ketogenic diet stimulated significantly changes in body composition, energy metabolism, and FGF21 levels. Mean weight loss was 2.24±0.61kg (p<0.001) with equal losses of muscle mass and total body water, however there were no significant change in BMI and fat mass. Lipid oxidation levels significantly increased at rest (+0.47±0.14kcal/min, p<0.001) and during graded exercise (+0.86±0.15kcal/min, p<0.001) after 3DKD. Important finding of this study include significantly lower FGF21 levels after 3DKD compared to the mixed diet (53.62±32.53pg/ml vs. 13.61±12.70pg/ml, p<0.001). However, FGF21 levels were significantly elevated (+3.5-5pg/ml) during graded exercise and incrementally increased as the exercise intensity increased for both the mixed diet and 3DKD. Conclusions: We observed decreased serum FGF21 levels in healthy adults after a 3DKD, and increases in FGF21 during graded exercise regardless of diet. Our results also show that FGF21 levels increase as exercise intensity increases. Our findings lead us to assume that a 3DKD not only impacts body composition, and lipid oxidation in healthy adults, but also FGF21 levels.

P3.05.32
LOW INTENSITY PHYSICAL BEHAVIOURS AND BODY COMPOSITION: AN ALTERNATIVE AREA OF FOCUS. FINDINGS FROM THE MCR STUDY
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SIG: No, this does not fit in any of the above mentioned special interest groups

Purpose: The beneficial influence of physical activity (PA), particularly moderate-to-vigorous physical activity (MVPA) on measures of body composition in adults is well documented. However, adherence to the recommended MVPA dose required to elicit these health benefits is generally poor. Consequently, health professionals have turned their attention to other, potentially more modifiable PA behaviours,
including sedentary time (ST), standing time (StT) and light-intensity physical activity (LIPA), and their association with markers of health. This study explored the relationships between ST, StT and LIPA, and body mass, BMI, percentage body fat, fat mass and fat-free mass. Methods: Three-hundred and sixty-eight participants (64.64 (5.32) years, 45.7% female) from the Mitchelstown Cohort Rescreen (MCR) Study provided measures of body mass, BMI, percentage body fat, fat mass and fat-free mass. Objective measures of ST, StT and LIPA were obtained using a seven-day wear protocol with an activPAL3 Micro, using a combination of the devices postural classification system and specifically developed and validated cut-points (Powell et al 2016). Multiple linear regression analysis was used to examine the relationships between the PA behaviours and body composition measures, adjusting for age, sex, disease status and lifestyle factors. Results: In the fully adjusted model, ST was detrimentally associated with body mass (B=1.441; 0.501, 2.382), percentage body fat (B=0.655; 0.232, 1.079), fat mass (B=0.948; 0.356, 1.541) and fat-free mass (B=0.498; 0.079, 0.918). Beneficial associations were observed between LIPA and body mass (B=-4.610; -7.188, -2.032), BMI (B=-2.057; -3.165, -0.950), percentage body fat (B=-3.297; -4.442, -2.151) and fat mass (B=-4.190; -5.798, -2.582). No associations were observed between StT and any of the body composition markers. Conclusions: The beneficial associations between LIPA and body composition measures observed in this study suggest that increased LIPA, replacing ST, may reduce body fat, fat mass and BMI. Whilst directionality cannot be established from this cross-sectional data, there is a strong case for an evaluation of the benefits of interventions to increase LIPA in this age group, rather than just targeting increased MVPA.

P3.05.33
THE FEASIBILITY OF A COMMUNITY-BASED LIFESTYLE INTERVENTION PROGRAMME FOR MIDDLE-AGED OVERWEIGHT CHINESE ADULTS WITH PRE-DIABETES: A PILOT STUDY
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SIG: No, this does not fit in any of the above mentioned special interest groups

Aim: International clinical trials demonstrated that lifestyle interventions targeting at least 5% weight loss in individuals with pre-diabetes can prevent type 2 diabetes. This study aims to pilot test a culturally appropriate community-based diabetes prevention programme for middle-aged overweight Chinese people with pre-diabetes. Methods: This is a 12-month pilot study which recruited 10 middle-aged adults (7 female, mean age 50.4 ±smn; SD 7.5 years) who were overweight/obese (mean BMI 27.0 ±smn; SD 3.2 kg/m2) and prediabetic (with impaired fasting glucose IFG, impaired glucose tolerance IGT and/or impaired glycated haemoglobin HbA1C). The study culturally and linguistically adopts the key aspects of a successful Diabetes Prevention Program. The intervention targets weight loss of at least 5% over 6 months through restriction of caloric intake (goal of 1500 to 1800 kcal, <30% of total daily calories from fat and <10% from saturated fat) and increased physical activity (goal =150 minutes of moderate physical activity per week). The programme proceeded in two phases. During Phase 1 (0 to 6 months, active phase), participants received 6 group-based lifestyle intervention sessions and one individual face-to-face session. During phase 2 (7-12 months, maintenance phase), participants will receive monthly telephone contact from the research team. Weight loss, insulin sensitivity, glycemic control, blood pressure and blood lipids are measured at baseline, 6 and 12 months. Preliminary Results: At baseline, 3 participants was IFG alone, 3 with impaired HbA1c, 2 with IFG and impaired HbA1c, 1 with IGT alone and 1 with both IFG, IGT and impaired HbA1c. The mean fasting insulin and Homeostatic Model Assessment of Insulin Resistance, HOMA-IR were 7.2 ±smn;3.3mU/L and 2.04±smn;1.1, respectively. At baseline, 3 participants was IFG alone, 3 with impaired HbA1c, 2 with IFG and impaired HbA1c, 1 with IGT alone and 1 with both IFG, IGT and impaired HbA1c. The mean fasting insulin and Homeostatic Model Assessment of Insulin Resistance, HOMA-IR were 7.2 ±smn;3.3mU/L and 2.04±smn;1.1, respectively. 9 of the 10 participants have hyperlipidemia. At 3 months, 4 participants lost at least 5% of their baseline weight. The mean weight loss for the group was 2.6 ±smn;1.4kg. The active intervention phase will be completed in April. Conclusion: The community-based lifestyle intervention pilot study was able to reach high risk middle-aged individuals and motivate them to lose weight.
Workshop descriptions

WORKSHOP: Half day #1 - Planning interventions for implementation in practice: What to think about, why to think about it and how to do it
Facilitators: Harriet Koorts – Deakin University, Melbourne, Australia
Dr. Femke van Nassau – Department of Public and Occupational Health, Amsterdam Public Health Research Institute at the VU University Medical Center, Amsterdam, The Netherlands
Dr. Rachel Laws – Institute for Physical Activity and Nutrition (IPAN), Deakin University, Melbourne, Australia

Short Synopsis: One of the most critical issues impeding improvements in public health is the vast gap between what we know can improve health and what actually gets implemented in everyday practice. In real-world settings, interventions can either fail to be adopted or report lower effect sizes and may be less likely to be sustained over time. Interventions may also rely on external organization funding, resourcing and delivery, which may affect widespread adoption and sustainable delivery over time. Identifying ways to achieve active engagement from key stakeholders and incorporating factors associated with effective implementation early within the research process is thus essential.

This workshop will facilitate discussion on how researchers develop or adapt interventions to increase the likelihood that they can be implemented in practice and sustained at scale. Participants will actively workshop their own intervention idea and research strategy by:

1. Characterising parameters of the “real-world” intervention implementation context (i.e. non-research setting)
2. Identifying key stakeholders and potential barriers to implementation, including discussing strategies to overcome them, and
3. Exploring how to use the information gained to inform decisions regarding their intervention design or research strategy.

WORKSHOP: Half day #2 - Quantifying and Visualizing Physical Behaviour: An alternative to energy expenditure estimation in the evaluation of physical activity interventions.
Facilitators: Malcolm Granat – School of Health Sciences, University of Salford, Salford, United Kingdom
Kate Lyden – PAL Technologies Ltd, Glasgow, Scotland, United Kingdom

Short Synopsis: It has been suggested that physical activity is about “the relationship between human beings and their environment” and the “strengthening of that relationship”. However, the primary physical activity outcome has invariably been energy expenditure, with definitions of different aspects of physical activity based on levels of energy expenditure. It is proposed that the pattern of robustly defined activities, Physical Behaviour (PB), can provide an alternative construct to energy expenditure estimation.

The workshop will: a) demonstrate how we can develop person-centred outcomes of PB in individuals and populations; c) show how we can derive new outcomes of lying, cycling and car travel from body-worn accelerometer data; and d) present novel methods of visualizing PB data. Interactive features of this workshop will include a structured discussion on the derivation of outcomes.
based on the patterns of activities, data analysis showing how we can derive new outcomes of lying, cycling and car travel from body-worn accelerometer data and group working analyzing sample data.

WORKSHOP: Half day #3 - Emerging Technologies in Promoting Physical Activity and Health
Facilitators: Zan Gao – School of Kinesiology, The University of Minnesota at Twin Cities, United States of America
Jung Eun Lee – The University of Minnesota at Duluth, United States of America
Nan Zeng – The University of Minnesota at Twin Cities, United States of America
Wenxi Liu – The University of Minnesota at Twin Cities, United States of America

Short Synopsis: As technology becomes an ever more prevalent part of everyday life and population-based physical activity programs seek new ways to increase lifelong engagement with physical activity, so the two have become increasingly linked. This workshop attempts to offer a thorough, critical examination of emerging technologies in physical activity and health promotion, considering technological interventions in different contexts, exploring the challenges of integrating technology into physical activity promotion and offering solutions for its implementation. This workshop will occupy a broadly positive stance toward interactive technology initiatives and, while discussing some negative implications of an increased use of technology, offers practical recommendations for promoting physical activity through various emerging technologies, including: active video games (exergaming); social media; mobile device apps; health wearables; global positioning and geographic information systems; and virtual reality settings. Offering a logical and clear critique of emerging technologies in physical activity and health promotion, this workshop will provide hands-on experience and practical implications for researchers, practitioners, and students in the fields of public health, kinesiology, physical activity and health, and healthcare.

WORKSHOP: Half day #4 - Creating Healthier Local Food Environments – A Guide for Local Government
Facilitators: Lisa Atwell (SA Health)

Short Synopsis: Healthy individuals live, work and play in thriving healthy communities, and local government plays a key role in creating these environments. Having consistent access to affordable, nutritious and safe food is fundamental to good health and is an essential part of a healthy community. Creating healthier local food environments has physical as well as social, environmental and economic benefits to a community.

Local Government’s can create healthier local food environments by:
- increasing the availability and accessibility of healthy food and drink choices,
- encouraging local food production and sharing,
- improving knowledge and awareness, and
- supportive policies, plans and advocacy.

The Creating Healthier Local Food Environments (CHLFE) guide and checklist provide a way to assess a local government’s current policies and plans in relation to supporting healthy food practices. Additionally, the guide describes a process and achievable actions to improve the healthy food environment.
WORKSHOP: Half day #5 - Integrating research, clinical practice, policy and community resources to address nutrition – and physical activity – related health disparities
Facilitators: Susie Nanney – University of Minnesota, United States of America
Jerica Berge – University of Minnesota, United States of America

Short Synopsis: Despite decades of efforts, obesity trends are increasing globally, demanding bold and innovative solutions – we developed an approach expected to accelerate and maximize obesity prevention efforts. The University of Minnesota’s Healthy Eating and Activity across the Lifespan (HEAL) initiative began two years ago and consists of concerned scientists, health practitioners, and policy wonks who are working authentically with communities to redefine solutions to prevent persistent weight-related health problems, especially disparities. The HEAL approach requires 4-point solutions that harness the collective power of academic research, community resources, clinical practice and policy. At the conclusion of this 4-hour workshop participants will be able to: define the functions of an integrator entity; describe the HEAL development, implementation, and evaluation process; apply the action steps and tools using two real community-based pilot projects; and translate the HEAL process for integration into their own settings. Attendees will receive materials to read in advance.

WORKSHOP: Half day #6 - Exploiting behavioural science for nutrition and physical activity interventions
Facilitators: Jorinde Spook – Wageningen University and Research, Netherlands
Ellen van Kleef – Wageningen University and Research, Netherlands

Short Synopsis: The use of behavioural science to improve the health of individuals has been blossoming in the past two decades. Even though evidence of the effectiveness of interventions is accumulating, overall study results are mixed. Interventions to change behaviour in nutrition and physical activity are usually complex. Progress in the field is hampered by studies that focus on one-shot approaches without a solid theoretical base. A theoretical base has been shown to improve the effectiveness of health promotion interventions. It is increasingly important to pay attention to the underlying causal processes by which interventions influence behaviour and identify contextual barriers and facilitators to change. Behaviour change theories allow the study of possible mechanisms or so-called ‘active ingredients’ of interventions. In this way, interventions can be improved and fully understood.
With this workshop, we aim to:
1. to present state-of-the-art research in behavioural science theories,
2. to familiarize with theory-based behavioural change techniques and taxonomies that provide good starting points for the design and understanding of interventions,
3. to experience how theory and taxonomy can be used to design interventions, and
4. to reflect on the relevance and implications of behavioural science for intervention development.

WORKSHOP: Half day #7 - Surveillance Study of Movement Behaviours in the Early Year
Facilitators: Anthony (Tony) Okely – Early Start, University of Wollongong, Australia
Mark Tremblay – Children’s Hospital of Eastern Ontario, Ottawa, Canada
John Reilly – University of Strathclyde, United Kingdom
Guan Hongyan – Capital Institute of Pediatrics, Beijing, China
Alex Florindo – University of Sao Paulo, Brazil
Cathi Draper – University of Cape Town, South Africa

Short Synopsis: This workshop will be led by the Leadership Group of the recently established SUNRISE Study. SUNRISE is an international surveillance study of movement behaviours in the early years. Leveraging the release of the first 24-hr movement Guidelines for the Early Years in Canada and Australia, and the WHO guideline on physical activity, sedentary and sleep behaviours in children under five years of age currently being developed, SUNRISE will collect international surveillance data in a range of countries using the new movement guidelines as benchmarks. SUNRISE will provide the first such international data for the early years and help the global community move towards preventing young children from developing obesity and ensuring that they reach their developmental potential. The study will initially seek to recruit 16 countries, four each from the Low, Medium, High, and Very High levels of the Human Development Index. This workshop will outline the methods of the study and provide an opportunity for participants to learn more about the study and how their country may be able to be involved as a study site in the future.

WORKSHOP: Full day #1 - ISBNPA Student and ECR workshop

Facilitators: Sofie Compernolle – Ghent University, Belgium
Wendy Van Lippevelde – University of Agder, Kristiansand, Norway and Ghent University, Belgium
Jenna Hollis – University of Newcastle, Australia
Paul Estabrooks – University of Nebraska Medical Center, United States of America

Short Synopsis: The ISBNPA Early Career Researcher and Student Workshop is aimed at ECRs and students who are interested in learning about topics related to career development such as developing leadership skills, building collaborations and networking, grant writing tips, insight into the journal publication process, learning to write quality peer reviews for journal articles, and tips for time management. Presenters will include ISBNPA fellows, keynotes from the conference, and other senior and junior researchers in the field of behavioural nutrition and physical activity. Participants will also have the opportunity to network with the presenters, and with other students and ECRs. The workshop format will include presentations from experts, interactive Q&A sessions, and round-table discussions.

WORKSHOP: Full day #2 - Integrating ‘failure conversations maps’ to behavioural practices

Presenters: Moria Golan – Tel Hai Academic College & Hebrew University of Jerusalem, Israel

Short Synopsis: The phenomenon of personal failure has grown exponentially over recent decades. Never before has the sense of failing to be an adequate person been so freely available to people, and never before has it been so willingly and routinely dispensed. People increasingly feel the pressure of these high expectations and struggle with the burden they impose. This workshop will explore therapeutic options relevant to addressing the sense of personal failure with respect to behavioural change. Offering a map to guide therapeutic explorations in this area and interspersed with transcripts of therapeutic conversations using narrative and motivational interviewing practices.
The ‘failure conversations map’ can assist in looking at the expectations more closely, the influences of culture, gender, ethnicity, sexuality and much more and the impact of dominant discourses associated with the feeling of failure to assist clients and family members to implement behavioural change (healthy habits or battling obesity status).

It can also assist in exploring new doors that might be opened following the failure and enhance motivation to adhere to once’ personal values and behavioural change.

During the workshop, the practices of outsider-witness will be demonstrated and exercised. Participants will practice ‘failure conversations’ exercises with respect to behavioural change associated with healthy lifestyle. ‘Failure conversations’ are practices that were originally driven by the Narrative approach. We will discuss how it can be integrated into the various disciplines used along motivational interviewing practice.
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