



WalkingTheWalk

Belfast



Welcome

12th Annual Meeting 7th HEPA Europe Conference



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Welcome



On behalf of the Organising and Scientific Programme we bid you a very warm welcome to Belfast for the 12th Annual Meeting and 7th Conference of HEPA Europe. We are delighted that Northern Ireland's two universities have had the opportunity to work together to deliver this exciting conference. Indeed, partnership working will be a recurrent feature of the conference. The theme we have focussed on is 'Walking the Walk — what should the public health policy response be to the evidence for physical activity.'

Most of us started our careers, whether in research, practice or policy, to make a difference, but few have truly succeeded in meaningfully transcending the boundaries between research and practice. Belfast-born CS Lewis (author of The Chronicles of Narnia) said: "With the possible exception of the equator, everything begins somewhere". We trust that through the exciting range of keynotes, oral presentations, symposia and posters, you will find new ways to translate robust evidence into practice. Whether you are an early career researcher or a seasoned conference goer, we encourage you to make the most of the opportunity to make connections with new people, learn from best practice and take home some great memories.

As well as engaging in the scientific programme, we have a full programme of social activities, including a welcome reception and Early Career Researcher Networking Event on Wednesday

evening, and the conference dinner and Ceili dancing on Thursday in the majestic Belfast City Hall. Thursday morning is our 'ActivAM' — we hope you will sign up for one of our physical activity opportunities.

Finally, a huge thank you to the many people who have worked tirelessly over the last 12 months to allow the conference to happen, and to the delegates who submitted abstracts making this the largest and best attended HEPA Europe conference to date. We believe that the learning from this conference can make a difference — but only if you make the most of the opportunity to apply the knowledge in your local context — it is time for us all to 'walk the walk.'

Prof Marie Murphy
Ulster University
Chair of the Scientific Committee

Dr Mark Tully
Queen's University Belfast
Chair of the Organising Committee

Organising Committee

Dr Mark Tully Chair
Prof Marie Murphy
Miss Roisin Corr
Ms Colette Brolly
Ms Rose Crozier
Mrs Joan Devlin
Mr Paul Donnelly
Dr Deepti Adlakha
Ms Aoife Stephenson

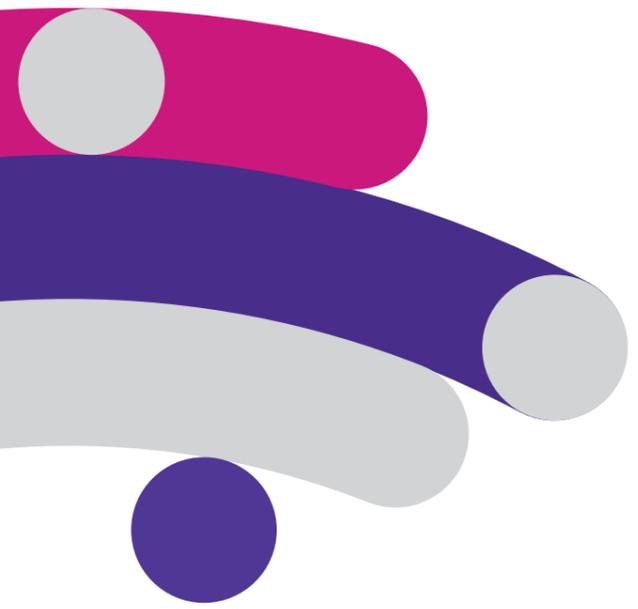
Queen's University Belfast
Ulster University
UKCRC Centre of Excellence for Public Health NI
Public Health Agency
Belfast City Council
Belfast Healthy Cities
Sport NI
Queen's University Belfast
Ulster University

Scientific Committee

Prof Marie Murphy Chair
Dr Mark Tully
Dr Ruth Hunter
Dr Jacqueline Mair
Dr Conor McClean
Dr Niamh Murphy
Dr Catherine Woods

Ulster University
Queen's University Belfast
Queen's University Belfast
Ulster University
Ulster University
Waterford Institute of Technology
University of Limerick

Campus Map



Key

- 1 Whitla Hall
- 2 South Dining Hall
- 3 Emeleus Lecture Theatre
- 4 Senate Room
- 5 Council Chamber
- 6 OG/074
- 7 Old Staff Common Room
- 8 Great Hall
- 9 Bell Lecture Theatre



Conference Programme

At a glance

Wednesday 28th September 2016

08.00-10.30	Registration
10.30-10.45	Conference Opening
10.45-11.45	Keynote: Adrian Bauman 'What gets published in physical activity research and why it seldom has an influence on policy'
11.45-12.30	EU Updates Session
12.45-13.45	Lunch and Physical Activity Opportunities
13.45-15.15	Parallel and Symposia Session
15.15-15.45	Poster Viewing Session
15.45-16.45	Parallel Oral Presentations
17.00-18.30	HEPA Europe Working Group Session
18.30	Welcome Reception
20.00	Early Career Research Networking Event

Thursday 29th September 2016

07.00-08.30	ActiveAM — Conference Jog and other Physical Activity Opportunities
08.00-09.00	Registration
09.00-10.00	Keynote: Catrine Tudor-Locke 'Getting the numbers right: step counting indices for practice and policy'
10.00-10.30	Early Career Research Plenary
10.30-11.00	Poster Viewing Session
11.00-12.30	Parallel Oral and Symposia Sessions
12.30-13.30	Lunch and Physical Activity Opportunities
13.30-15.00	Parallel and Symposia Sessions
15.15-16.00	Parallel Oral Sessions
16.00-16.30	Refreshments
16.30-17.30	Keynote/Public Lecture: Jennie Price 'This Girl Can — increasing physical activity and sports participation among girls and women'
19.00	Conference Dinner

Friday 30th September 2016

09.30-10.30	Conference Debate: Hidde van der Ploeg and Melvyn Hillsdon 'The emperors new clothes: Is sedentary behaviour just physical inactivity by another name?'
10.30-10.45	Closing Ceremony, Awards and 2017 Conference Announcement
10.45-11.15	Refreshments
11.15-14.00	HEPA Europe Annual Meeting
14.00	Lunch

Introduction to Keynote Speakers



Adrian Bauman

Adrian is a world leading public health researcher who has for over 30 years, studied chronic disease prevention and the development and assessment of prevention research methods. He is Co-Director of the WHO Collaborating Centre on Physical Activity, Nutrition and Obesity. He is a world leading authority on research relating to the health consequences of physical activity, and an expert in the consequences of prolonged sitting, including as a risk factor for CV disease and diabetes.

He is a committed advocate for physical activity and health and for research translation into practice to achieve population-wide impact and health equity. His research has demonstrated the need for cross-sectoral involvement from areas outside of health in physical activity promotion programs, including diverse sectors such as sports, transport and urban planning to achieve better outcomes. He has developed research methods for evaluating large community-wide public health campaigns, and has contributed to evaluating many public health social marketing and mass media campaigns.



Catrine Tudor-Locke

Catrine is a walking behaviour researcher and world leader in objective physical activity assessment and promotion, specifically focused on pedometer or accelerometer-determined activity. She is a trained programme evaluator and adult educator focused on practical applications in objective monitoring measurement and intervention.



Jennie Price

Jennie Price, a barrister by training, has been at Sport England since April 2007. Under her leadership Sport England has seen the number of people regularly participating in sport grow by 1.6m people since London won the bid to host the Olympic Games in 2012 and, most recently, Jennie has led the team that commissioned the 'This Girl Can Campaign', which has received widespread support and acclaim.

Prior to joining Sport England, Jennie was the founding Chief Executive of WRAP (Waste & Resources Action Programme). Before heading WRAP, Jennie Price spent 17 years in the construction industry, first as a lawyer and then as Chief Executive of the Major Contractors Group and the Construction Confederation. Jennie is a Visiting Fellow at the Cranfield School of Management, Chair of the Lottery Forum and the Youth United Foundation, and has written two text books on construction law.



Hidde van der Ploeg

Hidde is currently associate professor at the Department of Public and Occupational Health and the EMGO Institute for Health and Care Research of the VU University Medical Centre in Amsterdam. He also has an adjunct position at the School of Public Health, University of Sydney, Australia. His expertise is in physical activity and sedentary behaviour research in adults and his research interests include measurement, surveillance, epidemiology and lifestyle interventions across clinical, occupational and public health settings.



Melvyn Hillsdon

The focus of Melvyn's research is physical activity epidemiology and public health. He has published a number of articles and systematic reviews on exercise promotion in primary care and has been involved in the evaluation of a number of large community exercise interventions. He has also published a number of articles examining the prospective association between physical activity and various health outcomes using data from established cohort studies.

He was a co-author of the primary care physical activity care pathway Let's Get Moving and also produced the General Practice Physical Activity (GPPAQ) for the Department of Health. His current research is directed towards developing methods for translating raw acceleration data from objective measures of physical activity into clinically meaningful metrics. He has been a member of various National Institute of Health and Care Excellence (NICE) public health committees and is currently a member of the Chief Medical Officer's (England) Physical Activity Expert Group.

Early Career Research Star Winners

Barry Lambe

Nominated by Niamh Murphy

Barry Lambe is a lecturer in Physical Activity in Waterford Institute of Technology and programme leader for the BA (Hons) in Exercise and Health Studies. He originally trained in Physical Education in the University of Wales, Cardiff and later completed Masters Degrees in both Exercise Science and Health Promotion. He has accumulated significant experience in both physical activity promotion and health-related research. This includes working as a physical activity promotion officer with the Midland Health Board and as a researcher with the Irish College of General Practitioners. He has been a tutor for the National GP Exercise Referral Programme, a trainer for the National Men's Health Training Programme and is a member of the Motivational Interviewing Network of Trainers. In 2015, Barry completed his PhD in the area of active travel and is currently working with local authorities to evaluate regional Smarter Travel programmes.

Presentation Title

Recession, car restriction and reticence; understanding the process in Ireland's active travel towns.

Kelly Mackintosh

Nominated by Gareth Stratton

Kelly Mackintosh received a BSc (Hons) degree in Sport and Exercise Science from the University of Bath in 2008 followed by an MSc in Sports Science from Loughborough University in 2009. She then completed her PhD at Liverpool John Moores University in 2012. Kelly was appointed as a Lecturer at Swansea University in July 2012, and progressed to Senior Lecturer in October 2013. She is primarily interested in children's physical activity and health, and in particular, school-based interventions. She mainly focuses on physical activity measurement and the role of behaviour change in developing physically active young people. Working in close partnership with computer scientists and engineers has recently allowed the development of ubiquitous social goal sharing technology to enhance physical activity levels. Much work has now focused on clinical populations, including strong links with the physiotherapists and consultants within Cystic Fibrosis clinics, and Asthma UK.

Presentation Title

Using ubiquitous technology and 3D printing to promote children's physical activity levels

ECR Star Runners-Up

Ben Gray

Nominated by Malcolm Ward

Michelle Hardie-Murphy

Nominated by Catherine Woods

Social Programme

Welcome Reception

6.30-7.30pm

Wednesday 28th September

All conference delegates are invited to join us for a welcome reception. The reception will take place in the Great Hall at Queen's University. After this reception we hope you will take the opportunity to sample some of the many restaurants and Irish pubs that Belfast has to offer, all within walking distance of the conference venue.

ECR Network Session

8pm

Wednesday 28th September

Early Career Researchers are welcome to join an informal networking event. This will be held in a local Italian restaurant (<http://scalinirestaurant.co.uk>). A group will leave to walk to the restaurant from the Great Hall shortly after 7.30pm.

Pre-Conference Dinner Tour of Belfast City Hall

6.30-7pm

Thursday 29th September

A free tour of City Hall is available to a limited number of guests. To register for the event, please click here: <http://hepaconference2016cityhalltour.eventbrite.co.uk>

Conference Dinner

7pm-1am

Thursday 29th September

Delegates attending the conference dinner should meet at Belfast City Hall at 7pm. The event will start with a Civic Reception hosted by the Lord Mayor, followed by the conference dinner and Irish 'Ceili' dancing. The Ceili will be led by a local band. No experience is required to participate — just some enthusiasm.



Physical Activity Opportunities

Thursday morning is our 'ActiveAM'

Conference Jog

Meet at 7am (start at 7.15am)
Thursday 29th September

We have asked a local politician and former Mayor of Belfast to lead a gentle 30 min conference jog along the banks of the river Lagan. We will meet at the University sports centre. Shower/changing facilities are available in the sports centre.

To register for the conference jog, please click here:
<http://hepa2016conferencejog.eventbrite.co.uk>

Conference Spin Class

Meet at 7am (start at 7.15am)
Thursday 29th September

Delegates can join a 30 minute instructor-led spin class in the University sports centre. Shower/changing facilities are available.

To register for the conference spin class, please click here:
<https://hepa2016conferencespinclass.eventbrite.co.uk>

Conference Circuits Class

Meet at 7am (start at 7.15am)
Thursday 29th September

Delegates can join an instructor led 30 minute circuits class in the University sports centre. Shower/changing facilities are available.

To register for the conference circuits class, please click here:
<http://hepa2016conferencecircuits.eventbrite.co.uk>

Conference Yoga

Meet at 8am
Thursday 29th September

Delegates can join an instructor led 30 minute Yoga session. This will be held at the Whitla Hall (conference venue). Yoga mats will be provided.

To register for the conference yoga, please click here:
<https://hepa2016conferenceyoga.eventbrite.co.uk>

Summary of HEPA Europe Working Groups

National approaches to HEPA promotion

This session will give an update on recent activities related to the Policy Audit Tool (PAT), which provides a standardized approach to assessing national policies and programs on physical activity. Ongoing work supported by the Erasmus+ program to develop a new dissemination tool for the PAT results will be presented and next steps will be discussed with participants.

HEPA and sport promotion in children and youth

This session will focus on the promotion of physical activity among young people and children and give an update of the most recent projects and developments in Europe. Particular attention will be given to Erasmus+ projects. Updates on guidance and also the challenges in evaluating and monitoring the impact of interventions will be addressed. The 2017 working group program will also be discussed and drafted.

Workplace HEPA promotion

In this session, the results of a survey which expanded on a previous edition run in 2015 on overall workplace HEPA promotion will be presented. Interests in sharing strategies, documents or practices and in obtaining additional information on workplace HEPA promotion were inquired. In addition, the working group's programme for the year 2017 will be outlined and discussed.

Sport Clubs for Health

This session will focus on the practitioners' perspective on the Sports Club for Health (SCforH) project. Various practical examples will be given on how sports clubs can implement SCforH in practice. More information about the SCforH ERASMUS+ project can be found here <http://www.scforh.info>

Designing 'active healthcare' Joint session of the working groups on health care approaches, active ageing and environment

This joint session with the 'Active Environment', 'Health Care Settings' and 'Active Ageing' groups is considering the impact of the environment upon physical activity of older adults and those recovering from ill health, and the opportunities and limitations of care settings — what do we know? This will be followed by short session for the individual groups to discuss their respective work streams.

Working group on monitoring

In this session, the UKK Institute for Health Promotion Research, Finland, will share experiences with analyzing raw accelerometer data. The possibility of using similar methods in several European countries to gain comparable data on physical activity (PA) and sedentary behavior (SB) will also be discussed, with the possible goal of a large European data set to study the dose-response issues on PA, SB and health as well as regular monitoring on population level. Finally, the working group's programme of work for the year 2017 will be drafted.

Conference Programme

Wednesday 28th September

08.00-10.30	Registration Whitla Hall				
10.30-10.45	Conference opening Whitla Hall				
10.45-11.45	Keynote: Adrian Bauman 'What gets published in physical activity research and why it seldom has an influence on policy' <i>Supported by Public Health Agency R&D Division</i> Whitla Hall Chair: Niamh Murphy, Waterford Institute of Technology, Ireland				
11.45-12.30	EU Updates Session Whitla Hall				
12.45-13.45	Lunch and Physical Activity Opportunities South Dining Hall				
13.45-15.15	Parallel and Symposia Session				
Scientific Programme Listing 1	Symposium: Research and Policy Implications of Urban Green Space for Physical Activity Ruth Hunter (Chair: Queen's University Belfast, UK), Francesca Racioppi (WHO, Germany), Jasper Schipperijn (University of Southern Denmark, Denmark), Peter Craig (University of Glasgow, UK), Rodrigo Reis (University of Parana, Brazil) Emeleus Lecture Theatre	Scientific Programme Listing 5	Miss Emer O'Leary Dublin City University, Ireland Uptake to a community based chronic illness rehabilitation programme (CBCIR): Is there a gender disparity?	Scientific Programme Listing 15	Mrs Eva Martin-Diener University of Zurich From PAPRICA (Physical Activity promotion in PRImary Care) to PAPRICA Cardio: Development of a brief counseling intervention for cardiac patients
Scientific Programme Listing 2	Symposium: Golf, physical activity and health Nanette Mutrie (Chair: University of Edinburgh, UK), Andrew Murray (University of Edinburgh, UK), Erik Lundkvist (Umea University, Sweden & University of St Andrews, UK), Maria Stokes (University of Southampton, UK) Senate Room	Scientific Programme Listing 6	Miss Heli Starck The Age Institute, Finland Older people's outdoor dreams come true in the Strength in Old Age Programme	Scientific Programme Listing 16	Miss Emma Lawlor Queen's University Belfast, UK The effect of community-based cardiovascular disease secondary prevention interventions on physical activity and other behavioural risk factors: Systematic review and meta-analysis
Scientific Programme Listing 3	Symposium: Promoting Physical Activity in Children and Young People, determinants and interventions Paolo Emilio Adami (Co-Chair: Federazione Italiana Aerobica e Fitness), Anna Chalkley (Co-Chair: Loughborough University, UK), Kiara Lewis (University of Huddersfield, UK), Michelle Hardie Murphy (Dublin City University, Ireland), Jan Seghers (KU Leuven, Belgium), Narcis Gusi (University of Extremadura, Spain), Elaine Murtagh (University of Limerick, Ireland), Thomas Skovgaard (University of Southern Denmark, Denmark), Sarahjane Belton (Dublin City University, Ireland), Marie Murphy (University of Ulster, UK), Dorien Dijk (The Netherlands Institute for Sport and Physical Activity) Whitla Hall	Scientific Programme Listing 7	Prof Michael Duncan Coventry University, United Kingdom The dose-response between pedometer assessed physical activity, physical function and fatness in 50-80 year olds	Scientific Programme Listing 17	Miss Lindsay Reece Sheffield Hallam University, UK Active Everyday: development of an enhanced physical activity pathway for people affected by cancer
Theme	Active Ageing Chair: Mark Tully, Queen's University Belfast, UK Council Chamber	Scientific Programme Listing 8	Dr Deepti Adlakha Queen's University Belfast, UK Designing age-friendly societies: Impact of urban regeneration on mobility and physical activity in older adults	Scientific Programme Listing 18	Dr Hanan Amadid Steno Diabetes Center, Denmark Dimensions of Physical activity and sedentary time in identification of risk groups for future type 2 diabetes: a decision tree analysis within the ADDITION-PRO cohort
Scientific Programme Listing 4	Mrs Elina Karvinen The Age Institute, Finland Strength in Old Age ABC: Effective Model for Health Exercise	Scientific Programme Listing 9	Dr Mark Tully Queens University Belfast, UK Promoting Walking in Older Adults Living in Independent Living Communities in Northern Ireland: A Feasibility Study	Scientific Programme Listing 19	Miss Orlaith Duff Dublin City University, Ireland MedFit: The development of a mobile-application to enhance participant self-management of their cardiovascular disease
		Scientific Programme Listing 10	Dr Conor Cunningham Queens University Belfast, UK The 'Walk with Me' Study: developing a logic model for a peer-led, multi-component physical activity intervention in older adults	15.15-15.45	Poster Viewing Session <i>Supported by Northern Ireland Chest, Heart & Stroke</i> South Dining Hall
		Scientific Programme Listing 11	Dr Narcis Gusi University of Extremadura, Spain Effects on an exercise referral on depression in older people in Spain	15.45-16.45	Parallel Oral Presentations
		Theme	Disease Populations Chair: Conor McClean, Ulster University, UK OG/074	Theme	Physical Activity Determinants in Children Chair: Finn Berggren, Gerlev Physical Education and Sports Academy, Denmark Whitla Hall
		Scientific Programme Listing 12	Miss Lauri McDermott Ulster University, UK EXACT - EXercise And Colo-rectal Cancer Trial: A feasibility study	Scientific Programme Listing 20	Mr Gerrit Stassen German Sport University Cologne, Germany Which factors have to be taken into account when planning an internet platform to increase physical activity of young adults?
		Scientific Programme Listing 13	Dr Jason Wilson Queen's University Belfast, UK Using the transtheoretical model of behaviour change to inform the development of physical activity interventions for individuals with respiratory disease	Scientific Programme Listing 21	Ms Eszter Füzéki Goethe University Frankfurt, Germany German National Physical Activity Recommendations for Adults and Older Adults — Methods, data base and rationale
		Scientific Programme Listing 14	Miss Mairéad Cooney Dublin City University, Ireland 'Moving On' from Cancer: The effects of engaging in a 12 week community-based exercise programme on cancer survivors' physical and psychological well-being	Scientific Programme Listing 22	Mr Jens Troelsen University of Southern Denmark, Denmark How to increase children's recess physical activity — 12 factors to be aware of
				Scientific Programme Listing 23	Miss Suvi Määttä Samfundet Folkhälsan/Folkhälsan Research Centre, Finland Development of a randomized controlled intervention diminishing socioeconomic inequalities in energy balance-related behaviors at a preschool setting
				Scientific Programme Listing 24	Mr Rekesh Corepal Queen's University Belfast, UK Using incentives to promote physical activity and other health-related behaviours in 5-18 year olds: systematic review and meta-analysis
				Theme	Social Disadvantage Chair: Ruth Hunter, Queen's University Belfast, UK Council Chamber
				Scientific Programme Listing 25	Dr Sarahjane Belton Dublin City University, Ireland Every minute counts: Patterns and times of physical activity participation in younger children from social disadvantage in Ireland
				Scientific Programme Listing 26	Miss Teresa Greene Ulster University, UK A systematic review of community based exercise interventions for adults with intellectual disabilities
				Scientific Programme Listing 27	Miss Johanne Langlois Cnam Istna, France Physical activity motivational interviewing, a tool in school-based overweight prevention for disadvantaged adolescents
				Scientific Programme Listing 28	Dr Abdou Y Omorou Cnam Istna, France Physical activity rather than sedentary behaviour is socially determined in overweight adolescents
				Scientific Programme Listing 29	Mrs Charlotte Demant Klinker Steno Diabetes Center, Denmark Developing Communities of Practice's as an innovative approach to address physical inactivity among socially disadvantaged groups in deprived neighbourhoods in Denmark
				Theme	Policy Chair: Ronan Toomey, Healthy Ireland, Ireland OG/074
				Scientific Programme Listing 30	Prof Thomas Skovgaard University of Southern Denmark, Denmark The REsearch into POLicy to enhance Physical Activity (REPOPA) project
				Scientific Programme Listing 31	Dr Annemarie Wagemakers Wageningen University, Netherlands Dutch CPHEPA programs: contexts, mechanisms and outcomes that matter

Conference Programme

Wednesday 28th September cont'd

Scientific Programme Listing 32	Mrs Elena Bozdog Babes-Bolyai University, Romania A systematic review of evidence informed policy making in public health in Europe	Scientific Programme Listing 41	Dr Ellen de Hollander National Institute for Public Health and the Environment, Netherlands Physical activity among adults with different functional limitations. Results from a cross-sectional population study linked with national health insurance registrations
Scientific Programme Listing 33	Dr Peter Gelius Friedrich-Alexander University Erlangen-Nürnberg, Germany EU policy-making and local planning of physical activity infrastructures in Germany: Completely detached or closely intertwined?	Scientific Programme Listing 42	Mrs Tessa Strain University of Edinburgh, UK Pilot testing the 'Edinburgh Framework': Use of a novel approach to establish the validity and reliability of the Scottish Health Survey
Scientific Programme Listing 34	Dr Randy Rzewnicki European Cyclists' Federation Turn up the HEAT: Recommendations to increase use in Europe of WHO Europe's Health Economic Assessment Tool	Scientific Programme Listing 43	Dr Jana Pelclová Palacký University Olomouc, Czech Republic Pedometer-determined physical activity in Czech adults: findings from 2008 to 2013
Theme	Sport Paul Donnelly, Sport NI, UK Emealus Lecture Theatre	Scientific Programme Listing 44	Dr Alexis Lion Luxembourg Institute of Health, Luxembourg Effectiveness of promotion events of physical activity for people with non-communicable diseases in Luxembourg: an event study
Scientific Programme Listing 35	Miss Karlijn Leenaars Wageningen University, Netherlands Professionals' perceptions towards the role of the Care Sport Connector and the connection between the primary care and the PA sector in the Netherlands	17.00-18.30	HEPA Europe Working Group Session
Scientific Programme Listing 36	Dr Niamh Murphy Waterford Institute of Technology, Ireland Physical activity and sport participation in Irish students-programmes, provision and policy		Designing 'active' healthcare' — Joint session of the working groups on health care approaches, active ageing and environment Whitla Hall
Scientific Programme Listing 37	Dr Michal Kudláček Palacký University Olomouc, Czech Republic Team or individual sports? Pathways to meet the recommendations for PA		HEPA and sport promotion in children and youth Emealus Lecture Theatre
Scientific Programme Listing 38	Mr Wolfgang Ruf University of Graz, Austria Pragmatic evaluation of the JACKPOT program: A physical activity intervention initiated by the health and the sports sectors		National approaches to HEPA promotion Council Chamber
Scientific Programme Listing 39	Dr Paula Carroll Waterford Institute of Technology, Ireland 'Men on the Move' — an investigation of a community based physical activity programme for adult men		Working group on monitoring Old Staff Common Room
Theme	Non-communicable Diseases Chair: Winfried Banzer, Goethe-University Frankfurt, Germany Senate Room		Sport Clubs for Health Senate Room
Scientific Programme Listing 40	Dr Pekka Oja UKK Institute for Health Promotion Research, Finland Effects of walking on CVD risk factors: An update and dose response meta-analysis of randomized control trials among healthy inactive adults	18.30	Workplace HEPA promotion OG/074
		20.00	Welcome Reception Great Hall
			Early Career Research Networking Event (registration required)

Conference Programme

Thursday 29th September

07.00-08.30	ActiveAM — Conference jog and other physical activity opportunities (registration required) QUB PEC/Whitla Hall	Theme	Workplace Jacqui Mair, Ulster University, UK Council Chamber
09.00-10.00	Keynote: Catrine Tudor-Locke 'Getting the numbers right: step counting indices for practice and policy' <i>Supported by Public Health Agency</i> Chair: Mark Tully, Queen's University Belfast, UK Whitla Hall	Scientific Programme Listing 48	Dr Ulf Ekelund Norwegian School of Sport Sciences, Norway Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? A harmonised meta-analysis of data from more than 1 million men and women
10.00-10.30	Early Career Research 'Stars' Plenary Chair: Karen Milton, University of Oxford, UK Whitla Hall	Scientific Programme Listing 49	Dr Anna Puig-Ribera University of Vic-Central University of Catalonia, Spain Are point-of-choice prompts to increase stair climbing in worksites effective? It depends on the company...
10.30-11.00	Poster Viewing and Refreshments <i>Supported by Belfast Healthy Cities</i> Whitla Hall	Scientific Programme Listing 50	Mrs Birgit Sperlich Julius-Maximilian, Germany Do office workers desire to sit less in the workplace setting?
11.00-12.30	Parallel Oral presentations and Symposia Session	Scientific Programme Listing 51	Dr Aisling Gough Queen's University Belfast, UK Effectiveness of a Physical Activity Loyalty Scheme to maintain behaviour change: a cluster randomised controlled trial
Scientific Programme Listing 45	Symposium: Sports Club for Health (SCforH) movement in the European Union: Are we moving in the right direction? Nanette Mutrie (Chair: University of Edinburgh, UK), Brian Martin (Discussant: University of Zurich, Switzerland), Sylvia Titze (University of Graz, Austria), Pekka Oja (UKK Institute, Finland), Sami Kokko (University of Jyväskylä, Finland), Zeljko Pedisic (Victoria University, Australia), Karen Milton (University of Oxford, UK), Aoife Lane (Waterford Institute of Technology, Ireland), Susanna Geidne (Orebro University, Sweden) Council Chamber	Scientific Programme Listing 52	Dr Ben Gray Public Health Wales, Wales Cardiorespiratory fitness testing in male steelworkers; a useful addition to their annual workplace medicals?
Scientific Programme Listing 46	Symposium: Active commuting to improve health Bente Merete Stallknecht (Chair: University of Copenhagen, Denmark), Mailin Gaupp-Berghausen (University of Natural Resources and Life Sciences, Austria), Lars Ostergaard (University of Southern Denmark, Denmark), Mads Rosenkilde (University of Copenhagen, Denmark) Senate Room	Scientific Programme Listing 53	Dr Jason Wilson Queen's University Belfast, UK Do Royal Mail postal workers deliver when it comes to being physically active?
Scientific Programme Listing 47	Symposium: Where do people get their activity? — Domain-specific physical activity across the UK Elaine Murtagh (Chair: Mary Immaculate College, Ireland), Charlie Foster (Oxford, England), Paul Kelly and Tessa Strain (Edinburgh, Scotland) Marie Murphy (Ulster, Northern Ireland), Paul Donnelly (Discussant: Sport Northern Ireland) OG/074	Scientific Programme Listing 54	Dr Louise Mansfield Brunel University London, UK How did the public respond to the 2015 expert consensus guidance statement on workplace sedentary behaviour? A qualitative analysis
		Scientific Programme Listing 55	Mr Karin Proper RIVM, Netherlands Leisure-time physical activity levels of shift workers compared to non-shift workers
		Theme	Children and Young People: Community approaches Chair: Francesca Racioppi, World Health Organization Regional Office for Europe, Denmark Great Hall
		Scientific Programme Listing 56	Dr Michelle Hardie-Murphy Dublin City University, Ireland Assessment of the validity of a youth physical activity survey and longitudinal analysis of sports participation in youth as a predictor of later physical activity.

Conference Programme

Thursday 29th September cont'd

Scientific Programme Listing 57	Dr Wesley O'Brien University College Cork, Ireland 'Gaelic for Girls': Rationale, study protocol and methodological considerations
Scientific Programme Listing 58	Miss Emma Norris University College London, UK Virtual Traveller: A behaviour change intervention to increase physical activity during primary school lessons
Scientific Programme Listing 59	Prof Stuart Fairclough Edge Hill University, UK Partnership working to deliver school-based physical activity: The Born to Move pilot project
Scientific Programme Listing 60	Mrs Caroline Bloomfield Public Health Agency, Northern Ireland Active School Travel: Making the journey to school fun and healthy
Scientific Programme Listing 61	Dr Nadine Mewes Karlsruhe Institute of Technology, Germany Social inequality and intensity of exercise of German children and youth in school and out-of-school sports clubs
Scientific Programme Listing 62	Dr Roisin O'Neill Queen's University Belfast, UK The feasibility of a school pedometer competition for encouraging physical activity in adolescents: The StepSmart Project
Scientific Programme Listing 63	Dr Peter Bentsen Steno Health Promotion Research, Steno Diabetes Center, Denmark The TEACHOUT project: a quasi-experimental cross-disciplinary study of the impacts of education outside the classroom on pupils' physical activity, well-being and learning
12.30-13.30	Lunch and physical activity opportunities South Dining Hall
13.30-15.00	Parallel oral presentations and symposia session
Scientific Programme Listing 64	Symposium: How sport can be used to effectively motivate inactive people to increase their activity levels and improve health and wellbeing Chair: University of Oxford, UK), Eva Martin-Diener (Zurich University, Switzerland), Sarah Ruane (Sport England, UK), Louise Mansfield (Brunel University London, UK), Emma Adams (Loughborough University, UK), Steve Mann (UKActive Research Institute, UK), Melvyn Hillsdon (University of Exeter, UK) Council Chamber

Scientific Programme Listing 65	Symposium: Physical Activity Surveillance-System — why, how, what outcome? Experiences from Scotland, Finland and Austria Paul Kelly (Chair: University of Edinburgh, UK), Tessa Strain (University of Edinburgh, UK), Tommi Vasankari (UKK Institute for Health Promotion, Finland), Sylvia Titze (University of Graz, Austria) Bell Lecture Theatre
Scientific Programme Listing 66	Symposium: Reducing sedentary behaviour among older adults – The SITLESS Project Mark Tully (Chair: Queen's University Belfast, UK), Laura Coll-Planas (University Fundacio Blanquerna, Spain), Jason Wilson (Queen's University Belfast, UK), Katharina Wirth (University of Ulm, Germany), Paolo Caserotti (University of Southern Denmark, Denmark), Manuela Deidda (University of Glasgow, UK) Senate Room
Theme	School based interventions Chair: Catherine Woods, University of Limerick, Ireland Whitla Hall
Scientific Programme Listing 67	Dr Anders Raustorp University of Gothenburg, Sweden Physical Activity during Physical Education lessons in Sweden
Scientific Programme Listing 68	Mr Sami Kokko University of Jyväskylä, Finland The use of commercial physical activity devices and apps among Finnish adolescents
Scientific Programme Listing 69	Miss Johanne Langlois Cnam Istna, France Change in physical activity levels among disadvantaged adolescents. The PRALMAP-INÈS school-based overweight prevention program
Scientific Programme Listing 70	Dr Wesley O'Brien University College Cork, Ireland Physically active, physically educated and physically literate: The Youth-Physical Activity Towards Health (Y-PATH) Intervention
Scientific Programme Listing 71	Dr Lars B. Christiansen University of Southern Denmark, Denmark The effect of a school physical activity intervention on physical self-perception and enjoyment
Scientific Programme Listing 72	Dr Mark Hamer Loughborough University, UK The effect of major school playground reconstruction on physical activity and sedentary behaviour: a quasi-experimental study

Scientific Programme Listing 73	Mr Johan de Jong Hanze University, Netherlands Sport physical education and coaching in health (SPEACH PROJECT)
Scientific Programme Listing 74	Mr Mikkel Bo Schneller Steno Health Promotion Research, Steno Diabetes Center, Denmark Boys participating in Education Outside the Classroom are more physically active
Theme	Built & Natural Environment Chair: Wanda Wendel-Vos, National Institute for Public Health and the Environment, Netherlands Great Hall
Scientific Programme Listing 75	Miss Anne Sofie Gram University of Copenhagen, Denmark Effects of 6 months of active commuting and leisure time exercise on thrombin generation in sedentary overweight men and women
Scientific Programme Listing 76	Prof Diane Crone University of Gloucestershire, UK Urban Active Environments – shared learning and co-production from the EU SPACe project
Scientific Programme Listing 77	Miss Niamh O'Kane Queen's University Belfast, UK Investigating the association between quality of urban green space and physical activity: Findings from the PARC Study
Scientific Programme Listing 78	Miss Sara Ferguson Queen's University Belfast, UK Walking in the 'Wilderness': A spatial re-conceptualisation of walkable environments in rural Northern Ireland. The PASTORAL Study
Scientific Programme Listing 79	Dr Andy Cope Sustrans, UK A Cycling and Walking Investment Strategy for England - modelling the impacts, and aligning messaging with public health implications
Scientific Programme Listing 80	Mrs Veronica Reynolds Intelligent Health, UK Beat the Street — Getting a whole community moving
Scientific Programme Listing 81	Dr Deepti Adlakha Queen's University Belfast, UK Technological innovations for tracking human behaviour in public spaces
Scientific Programme Listing 82	Mr Kieran Turner University of Edinburgh, UK Development of a programme theory for understanding the public health impact of 20mph speed limit projects

15.15-16.00	Parallel oral presentations
Theme	Children and Young People (fundamental movement skills) Anna Chalkey, Loughborough University, UK Whitla Hall
Scientific Programme Listing 83	Mr Till Utesch Westphalian Wilhelm-University Münster, Germany Monitoring motor development: measuring physical fitness via an online data-base
Scientific Programme Listing 84	Miss Danielle Powell Dublin City University, Ireland Similarities and differences between correlates of fundamental movement skills and physical activity in adolescents
Scientific Programme Listing 85	Dr Bronagh McGrane Edge Hill University, UK Is Y-PATH (Youth Physical activity Towards Health Intervention) the answer for 'at risk' childrens' FMS and physical activity?
Scientific Programme Listing 86	Dr Wesley O'Brien University College Cork, Ireland Project FLAME: Fundamental and Functional Literacy for Activity and Movement Efficiency
Theme	Physical Activity Campaigns Andrea Backovi-Jurican, National Institute of Public Health, Slovenija Great Hall
Scientific Programme Listing 87	Dr Paul Best Queen's University Belfast, UK Time to re-brand physical activity for young people?
Scientific Programme Listing 88	Dr Ben Jane The University of St Mark & St John, UK Big Food Sponsorship of Physical Activity Schemes: Part of the solution or part of the problem?
Scientific Programme Listing 89	Dr Susana Aznar UCLM, Spain Evaluation of an urban walking strategy to promote healthy physical activity guidelines
Scientific Programme Listing 90	Miss Maria Rantala LIKES Research Center for Sport and Health Sciences, Finland "Keep on rolling, babe!" Sexual hints are rare in physical activity campaigns

Conference Programme

Thursday 29th September cont'd

Theme	Determinants/Mediators of Physical Activity Sonja Kahlmeier, Epidemiology, Biostatistics, and Prevention Institute, Switzerland Senate Room
Scientific Programme Listing 91	Dr Paula Carroll Waterford Institute of Technology, Ireland A process evaluation of the contributing factors to sustained engagement in a gender-sensitised community based physical activity programme
Scientific Programme Listing 92	Miss Jennifer Murray Queen's University Belfast, UK Mediators and moderators of maintenance of physical activity behaviour change: a systematic review.
Scientific Programme Listing 93	Miss Emma Adams BHF National Centre for Physical Activity and Health, UK Building the evidence for 'what works' in promoting physical activity: barriers, facilitators and support needs of professionals for conducting evaluation of physical activity programmes in the UK
Scientific Programme Listing 94	Dr Ruth Hunter Queen's University Belfast, UK 'Hidden' social networks in physical activity behaviour change interventions
Theme	Children and Young People measurement/determinants Chair: Joan Devlin, Belfast Healthy Cities, UK Council Chamber
Scientific Programme Listing 95	Miss Lynda Hegarty Ulster University, UK A comparison of objectively measured sedentary behaviour in primary school children, their parents and teachers
Scientific Programme Listing 96	Dr Kristin Manz Robert Koch, Germany Determinants of organized physical activity participation patterns during the transition from childhood to adolescence in Germany: The nationwide KiGGS cohort study
Scientific Programme Listing 97	Miss Suvi Määttä Samfundet Folkhälsan/Folkhälsan Research Centre, Finland Context specific objectively measured physical activity and sedentary time among preschool children
Scientific Programme Listing 98	Dr Elaine Murtagh Mary Immaculate College, University of Limerick, Ireland Mothers and Teenage Daughters Walking to Health: a behavioural analysis using the 'Capability, Opportunity, Motivation - Behaviour' (COM-B) model

Theme	Settings Chair: Olov Belander, Norwegian Directorate of Health, Norway Bell Lecture Theatre
Scientific Programme Listing 99	Dr Josef Mitáš Palacký University, Czech Republic Neighborhood settings and physical activity of Czech adolescents
Scientific Programme Listing 100	Mr Jianjun Tang Queen's University Belfast, UK Willingness-to-accept financial incentives for doing physical activity: implications for optimal incentive design
Scientific Programme Listing 101	Mr Jonas Salling Quist University of Copenhagen, Denmark Long-term effects of active commuting and leisure time physical activity of different intensities on appetite and energy intake in overweight men and women
Scientific Programme Listing 102	Miss Karoliina Kaasalainen University of Jyväskylä, Finland 'Point-of-decision' fitness tests in The Adventures of Joe Finn- campaign: A potential method to reach Finnish working-aged men at need for health behavior changes
16.00-16.30	Refreshments South Dining Hall
16.30-17.30	Keynote/Public Lecture: Jennie Price 'This Girl Can- increasing physical activity and sports participation among girls and women' <i>Supported by Sport Northern Ireland</i> Chair: Marie Murphy, Ulster University, UK Whitla Hall
18.30-19.00	Tour of Belfast City Hall (registration required) Belfast City Hall
19.00-01.00	Conference Dinner Belfast City Hall

Conference Programme and Annual Meeting

Friday 30th September

09.30-10.30	Conference Debate: Hidde van der Ploeg and Melvyn Hillsdon 'The emperors new clothes: Is sedentary behaviour just physical inactivity by another name?' <i>Supported by Healthy Ireland</i> Chair: Catherine Woods, University of Limerick, Ireland Whitla Hall
10.30-10.45	Closing Ceremony, Awards and 2017 Conference Announcement Whitla Hall
10.45-11.15	Refreshments South Dining Hall
11.15-14.00	HEPA Europe Annual Meeting Whitla Hall - New applications for membership - Activity report 2015-2016 and Work programme 2016-2017: introduction and discussion - Formal approval of the work programme 2016-2017
14.00	Lunch South Dining Hall



Symposia and Oral Presentation Abstracts

1. Symposium: Research and Policy Implications of Urban Green Space for Physical Activity

Authors: Ruth Hunter (Chair: Queen's University Belfast, UK), Francesca Racioppi (WHO, Germany), Jasper Schipperijn (University of Southern Denmark, Denmark), Peter Craig (University of Glasgow, UK), Rodrigo Reis (University of Parana, Brazil).

Summary: Urban Green Spaces (UGS) are associated with physical activity (PA), but to move the research and policy/advocacy for UGS forward, 'next generation' studies and methods focusing on causal relations and impact of changing UGS are needed. Four international presenters (15 mins each with questions) will be followed by 30 mins discussion. Topics include: Evidence and policy review on the environmental, health and equity effects of UGS interventions (Racioppi); Effects of neighbourhood renewal on adolescent PA in a low SES neighbourhood in Copenhagen (Schipperijn); Review of the risk of bias in natural experiments (Hunter); New reporting guidance for public health and policy interventions (Craig).

Goals of symposia: To present current evidence regarding the importance of UGS for PA, health and equity, and new methods for improving the quality of research and reporting. This symposium will identify evidence gaps, provide a platform for guiding future research and isolate opportunities for cross-European collaborative studies.

Relevance to policy: The symposium will provide policy makers, planners and public health practitioners with information on how to plan and design UGS and interventions to optimize the value and use of UGS for PA.

2. Symposium: Golf, physical activity and health

Authors: Nanette Mutrie (Chair: University of Edinburgh, UK), Andrew Murray (University of Edinburgh, UK), Erik Lundkvist (Umea University, Sweden & University of St Andrews, UK), Maria Stokes (University of Southampton, UK).

Summary: Golf is played by 55 million people by people of both genders and all ages. We discuss golf, participation trends, and characterise it as a physical activity in relation to aerobic, muscle strengthening, strength and balance and sedentary behaviour guidelines. We share information from the GoGolf Europe project, promoting golf as a

physical activity amongst youths in Europe. Golf is one of few sports played in significant numbers across the life-course, with particular health benefits for older adults observed.

Goals of the symposium: To a) Accurately characterise golf as a physical activity; b) Share key lessons from Europe wide initiatives; c) Highlight benefits for older adults; d) Promote discussion and build links to support further research and policy Relevance to policy: Golf is a moderate intensity aerobic physical activity; It is played across the life-course from 8 to well over 80; Collaboration at community, local, national and Europe wide level can strengthen participation.

3. Symposium: Promoting Physical Activity in Children and Young People, determinants and interventions

Authors: Paolo Emilio Adami (Co-Chair: Federazione Italiana Aerobica e Fitness), Anna Chalkley (Co-Chair: Loughborough University, UK), Kiara Lewis (University of Huddersfield, UK), Michelle Hardie Murphy (Dublin City University, Ireland), Jan Seghers (KU Leuven, Belgium), Narcis Gusi (University of Extremadura, Spain), Elaine Murtagh (University of Limerick, Ireland), Thomas Skovgaard (University of Southern Denmark, Denmark), Sarahjane Belton (Dublin City University, Ireland), Marie Murphy (University of Ulster, UK), Dorien Dijk (The Netherlands Institute for Sport and Physical Activity)

Summary: Members of the HEPA working group for Children and Youth will present examples of current research with this age group which focuses on the psychosocial determinants of physical activity and examples of school based interventions to promote physical activity.

Goals of the symposia: To explore the psychosocial moderators and mediators of children's physical activity and the potential of schools as effective settings to promote physical activity using Moving to Learn Ireland and Move for Wellbeing in Schools as case studies.

Relevance to policy and practice: The symposium will contribute to the discussion on how to effectively promote and implement physical activity programmes to children and young people.

4. Strength in Old Age ABC: Effective Model for Health Exercise

Authors: Karvinen E, Kalmari P, Starck H, Säpyskä-Nordberg M.

Background: The Strength in Old Age Programme aims to launch research-based counselling, guided strength and balance exercise, and outdoor activities for independently living older adults (75+) with decreased functional capacity. The programme is coordinated by the Age Institute and financed by Finland's Slot Machine Association and Ministry of Education and Culture, as well as in 2010–2015 by Ministry of Social Affairs and Health.

Methods: 38 municipalities (2010–2015) were chosen for the three-year development in order to implement the best practices in exercise counselling, strength and balance exercise and outdoor exercise. The municipalities committed to implementation through intersectoral collaboration without extra funding. The sectors included municipal social, health care and sports services, and NGOs. Each sector appointed one of their regular staff to coordinate and cooperate with the Age Institute. Local cross-sectoral work was supported by the mentoring of the Age Institute including counselling, training and development tools.

Results: As a result of intersectoral cooperation, the number of exercise groups (1,500) and participating older people (22,044) in the target group doubled. In total, 70% of the target population living in the 38 municipalities have been reached. The results of mobility tests among participants improved in 53% of the cases, remained stable in 38% and decreased in 9% of the cases. Exercise counselling activities were more than doubled (137). More than a half of key actors saw that they had learned intersectoral cooperation very well or well, and they thought that mentoring was important. An intersectoral cooperation group and the implementation of best practices was established in 30 municipalities, and in 36 municipalities the health enhancing physical activity of older people was included in the welfare strategies.

Discussion: The mentoring of intersectoral collaboration promoted the implementation of good practices of health exercise in municipalities for the elderly lacking in exercise services.

Implications: Based on good results, the Strength in Old Age Programme has been presented with permanent funding. New municipalities will be selected to the programme in the summer of 2016. The mentoring and the implementation of good practices continue.

5. Uptake to a community based chronic illness rehabilitation programme (CBCIR): Is there a gender disparity?

Authors: O'Leary E, McCaffrey N, Doyle F, Furlong B, Walsh D, Woods C.

Background: Multi-morbidity and chronic conditions pose a threat to population health. Despite known benefits of rehabilitation using structured exercise, uptake to such programmes remain sub-optimal. The aim of this study is to identify the psychosocial and health related fitness correlates of uptake to a CBCIR in men and women, with the secondary aim of identifying the rate of uptake.

Methods: Participants referred to a CBCIR via GPs and hospitals completed an induction process. This introduced them to the CBCIR programme and got them to complete a multi-section questionnaire (including instruments on physical activity, exercise self-efficacy, intentions for exercise, and perceived family/friend social support) and complete a battery of physical health measures (including the Incremental shuttle walk test (ISWT), a lower body strength test and body mass index (BMI)). Post induction participants who attended an exercise class were classified as 'Uptakers', whilst those who never came back were classified as 'Non-Uptakers'. Class attendance was objectively monitored by the researchers. Data were analysed using SPSS, and are presented using means, standard deviations and proportions, group differences are examined via t-tests and logistic regression was used to predict uptake.

Results: A total of 441 participants (56% male; average age 64.3 312 years completed induction measures. Overall, 77% were identified as Uptakers (81% female, 74% male, p=0.068, 2-sided). Among men, Uptakers reported more days of 30mins moderate to vigorous physical activity (t(111) = -2.499, p <0.05), intentions to exercise (t(241) = -4.518, p <0.05), social support from friends (t(127) = -2.122, p <0.05), social support from family (t(241) = -2.729, p <0.05) and self-efficacy for exercise (t(240) = -2.226, p <0.05) than Non-Uptakers. A logistic regression model for men with the variables intentions for exercise and social support from family proved a significant model (P<0.05). No difference was observed between women Uptakers and Non-Uptakers.

Discussion and implications: These results highlight a moderate uptake to this CBCIR with higher uptake in women than men, however there is still room for improvement. Greater social support from family and friends, intentions and self-efficacy for exercise are associated with and can predict greater uptake in men but not in women. This research identifies that males and females have different correlates of uptake to

a CBCIR. An understanding of these variables help CBCIR programme facilitators intervene to ensure greater uptake. Further longitudinal research is needed to gain an understanding of the correlates associated with uptake.

6. Older people's outdoor dreams come true in the Strength in Old Age Programme

Authors: Starck H, Säpyskä-Nordberg M, Holmi M, Honkanen A, Karvinen E.

Background: Regular outdoor exercise is part of a good old age. It improves mood and mobility. Outdoor exercise is the most important hobby of old people in Finland. More than a half of 75+ women and more than a third of 75+ men have problems with walking 500 meters. Challenging routes, balance problems, fear of falling and lack of companion make outdoor exercise difficult. In the Strength in Old Age Programme, good practices are implemented in municipalities (38) with the help of the Age Institute's mentoring efforts.

Methods: The following good outdoor practices for older people with decreased functional capacity were selected for implementation: Bus stop walks come regularly together in central locations around the city. Volunteers guide the group and collect the elderly from their homes. Outdoor routes are designed according to older people's needs and hopes. The routes include various distances with resting places. In Nature experience path the group walks a planned path in a nearby park, yard or forest. They stop 6–10 times to do different tasks from four categories: in the exercise category they train strength and balance, in the stretching category they find stretching movements to whole body, in the sense category they watch, listen, smell and touch, and in the experience category they tell stories and reminisce. The annual Go Out with the Elderly campaign promotes outdoor exercise in safe company. The Age Institute has trained campaign ambassadors from all over Finland to coordinate local campaigns. The ambassadors recruit and train private persons and members of NGOs to become outdoor friends. They participate in the campaign by walking outdoors with the elderly, recording the outdoor events in a website, telling outdoor stories, and challenging others to join the campaign. The website shows the number of outdoor events and latest outdoor stories.

Results: The Strength in Old Age municipalities (38) have increased outdoor exercise among older adults. In 2010 there were seven guided groups, after a three-year developing process the number was 78. Over 1,100 persons offered regular outdoor assistance. The campaign has been organized four times. It has especially inspired service houses and NGOs to offer

outdoor activities. Over 53,000 outdoor events in 149 municipalities have been recorded.

Discussion: The implementation activities showed that older adults with decreased functional capacity have a need to move outdoors.

Implications: Outdoor exercises for older adults is best carried out in guided group exercises and with outdoor friends near home.

7. The dose-response between pedometer assessed physical activity, physical function and fitness in 50–80 year olds

Authors: Duncan MJ, Minatto G, Ledington Wright S.

Background: Although the benefits of ambulatory physical activity (PA) are known, the dose response relationship of walking with physical function and fitness are not well elucidated in healthy adults aged 50–80 years of age. Understanding changes in physical function and how they relate to PA in adults from the age of 50 years is important in understanding issues related to pre-sarcopenia and health related transition into older adulthood. This study examined dose-response relationships of walking with multiple aspects of physical function and measures of body fatness in apparently healthy, independent adults aged 50–80 years.

Methods: 201 adults (81 male, 120 female) aged 50–80 years underwent assessment of body mass index (BMI), Body fatness using leg to leg bioelectrical impedance analysis (Tanita BF350, Japan), waist circumference (WC). Physical function was assessed using the 6minute walk, 8foot timed up and go, 30s chair stand and 30s arm curl tests taken from the Rikli and Jones (1999) Senior Fitness Test. Sealed pedometry (New Lifestyles, NL 2000, Montana, USA), worn over 7 days, was used to determine physical activity (PA). PA was categorised into 3 groups (low=2501–5000, medium=5001–7500, and high=>7501 steps/day) based on prior classifications (Dondzila et al., 2015).

Results: Results from a series of 2 (gender) X 3 (PA dose) ways analysis of covariance (ANCOVA), controlling for age indicated dose-response effects of PA for all functional fitness tests where participants classed as High PA had higher scores for arm curl, chair stand, 6 minute walk and lower scores for timed up and go test compared to those classed as Low and Medium PA. There were also significant main effects for PA dose for BMI, WC, and body fat %. Those classed as low PA had significantly higher BMI, WC and body fatness compared to those classed as medium and high PA.

Discussion: This study shows a positive dose-response trend whereby, as an individual undertakes more daily steps (based on previously established step-count groups), multiple aspects of functionality increase and anthropometric markers of overweight and obesity decrease.

Implications: Every aspect of physical function assessed in the present study, showed some form of dose-response where increased PA resulted in improved function in this group of healthy independent adults aged 50–80 years. Promotion of PA remains key to maintaining function from late into older adulthood.

8. Designing age-friendly societies: Impact of urban regeneration on mobility and physical activity in older adults

Authors: Adlakha D, Tully MA, Hunter RF, Donnelly M, Prior L, Kee F.

Background: Emerging evidence highlights that interactions between the built and social environment can facilitate or constrain physical activity (PA). However, few studies address how this impacts older adults' mobility, PA, and health. The Connswater Community Greenway (CCG) is a natural experiment which provided an opportunity to evaluate the public health impact of a major urban regeneration project in Belfast, Northern Ireland, UK. The CCG aims to physically reconnect local communities by creating a 9 km linear park with enhanced opportunities for PA through BE improvements including construction of footpaths, bicycle paths, bridges, and walkways. This qualitative study aims to assess impacts of the CCG on older adults' mobility and PA.

Methods: Semi-structured interviews were conducted with a purposive sample of adults (N=29), including older adults (N=11), on perceptions of their physical (e.g., walking, bicycling infrastructure) and social (e.g., safety, social networks, culture) environment. Interview data was coded and thematically analysed using NVivo software.

Results: Themes from interviews highlighted that environments that supported walking also promoted social interactions through greater likelihood of meeting others. Despite reduced social networks among older adults, the presence of pedestrian infrastructure such as sidewalks and crosswalks encouraged them to walk to destinations. They valued experiences of sitting on a bench, watching people, and the informal interactions these locations provided. This generated a sense of community connectedness.

Discussion and implications: By evaluating the social and built environment through a 'real world' natural experiment, this study

provides a better understanding of factors that encourage older adults to remain active and for the design of age-friendly societies.

9. Promoting Walking in Older Adults Living in Independent Living Communities in Northern Ireland: A Feasibility Study

Authors: Wright A, Kee F, Kouvonen A, Tully MA.

Background: Physical activity interventions need to occur where many older adults reside and also among older adults who would benefit the most from increased physical activity (e.g. inactive/low SES). Independent living residences are a naturally occurring community setting for applying behaviour change techniques to increase long term physical activity behaviour change (>6 months) in adults and older adults in Northern Ireland. The aim is to bridge the evidence gap by developing and testing the feasibility of a peer led, multi-component walking intervention, based upon the socio-ecological model of health, in older adults living in independent living communities within Northern Ireland.

Methods: The research design was a two-arm cluster randomized controlled trial conducted in six independent living residencies (intervention n = 3; control n = 3) with adults (>60 years). Protocol registration CLINICAL TRIALS ID 15.30 (<https://clinicaltrials.gov>). The intervention operated at an independent living residency level and consisted of scheme co-coordinators acting as walking co-ordinators and nominating two influential residents to become buddy-champions. The intervention groups (n = 3) consisted of a 12-week pedometer-driven walking program that included the use of specific behaviour change techniques, step targets and recordings of daily step counts in a walking diary. Secondary outcomes (e.g. QOL; Self-efficacy and physical and mental health) were recorded at baseline, week13 (immediate post-intervention), and 6 months in both groups.

Results: Results suggest that a walking intervention in independent living communities is both acceptable and feasible.

Discussion: This study aims to demonstrate that a fully-powered RCT is feasible.

Implications: The intervention results may produce a long term increase in walking; increase in QOL, increase in self-efficacy and an increase in physical and mental health.

10. The 'Walk with Me' Study: Developing a logic model for a peer-led, multi-component physical activity intervention in older adults

Authors: Cunningham C, Black M, Cupples ME, Farrell D, Hardeman W, Hunter RH, Kee F, Laventure B, Morgan J, Murphy MH, McDonough SM, McMullan I, Simpson L, Totten C, Tudor-Locke C, Wright A, Tully MA.

Background: The 'Walk with Me' (WwM) Study aims to develop and test the feasibility of a complex peer-led, multi-component physical activity (PA) intervention in socio-economically disadvantaged community dwelling older adults. The first phase in the complex intervention model is to develop a logic model for the implementation of the intervention, which includes the proposed causal pathways and relevant outcome measures. The Medical Research Council guidance for developing complex interventions recommends researchers use existing evidence and theories to carefully design the intervention process, but does not provide pragmatic models for how this can best be achieved.

Methods: We have developed the Integrated Model to Design Intervention Content (I-MIC), which emphasises that the voice of users is brought to bear on all aspects of intervention design, including delivery, content and evaluation. Behaviour change techniques (BCTs) were 'extracted' from previous peer-led PA interventions using the BCT Taxonomy (v1) (BCTTv1). These were grouped and mapped onto the determinants of PA in older adults, and used to identify possible causal pathways linking interventions to behaviour change, through the application of theory and the views of participants as experts in the ways to integrate PA in daily life. Consultation with programme deliverers was undertaken to ensure the design reflects the requirements of implementing the programme in real world systems.

Results: BCTs used in 'effective' peer led PA interventions were grouped and mapped onto the 'Basic Capabilities' of Social Cognitive Theory (SCT). The logic model was further developed to specify the hypothesised mechanisms between these basic capabilities and the 'Triadic reciprocity' of SCT. Outcome measures were linked to the personal and cognitive, behavioural and environmental factors, and theory-based process measures were modelled along the causal pathway. Participants and programme deliverers were consulted to design how these components would best be delivered.

Discussion: Many interventions are poorly defined in terms of hypothesised mechanism and content. This limits our

understanding of why they are effective (or not) and their replication in public health practice and policy. The logic model used in the WwM Study aims to address this by explicitly identifying intervention content and hypothesised mechanisms of action, alongside the contextual factors that might influence its success.

Implications: WwM offers a pragmatic example and method for combining behavioural theory and BCTs with the view of participants and programme deliverers, in the context of promoting physical activity, health and well-being.

11. Effects on an exercise referral on depression in older people in Spain

Authors: Gusi N, Hernandez Mocholi MA, Olivares PR.

Background: Primary and secondary depressions are the major cause of primary care visits. Exercise-medicine recommends to refer these patients to an health enhancing physical activity program with social interaction. The purpose was to analyse the effects of one year of participation in a physical activity (PA) program linked to a health care setting on depression in a large sample of community-dwelling middle-aged and older adults.

Methods: 1357 participants were recruited from a health care setting after the inclusion criteria and were assigned to an exercise group (EG) or control group (CG). Socio-demographic data and Geriatric Depression Scale questionnaires were applied by a 37 employees at the inclusion and one year later. Participants included in EG performed the program three days/week, 50–60 minutes per session including brisk walking intersticed with flexibility, strength and balance activities/exercises. Data analysis contingency tables analysis using chi-square statistics and repeated measures ANOVA.

Results: 35% of EG who reported mild to severe depression by GDS at baseline showed no depression problems after one year while the percentage in the CG remains unaltered. In detail, the percentage of depression in EG decreased from 27.5% to 9.6% in 12 months and dramatically reduced the number of primary care visits.

Implications: The cooperation between Exercise is Medicine and community exercise referrals applications by sport scientists is highly effective to reduce the percentage of persons, depression-related visits and the severity of depression in older people. Funding: Fundacion Jovenes y Deportes, Junta de Extremadura, FEDER a way of making Europe.

12. EXACT — EXercise And Colorectal Cancer Trial: A feasibility study

Authors: McDermott LA, Murphy MH, McNeilly AM, Rankin JP, Gracey JH.

Background: By 2020, 1 in 2 people in the UK will develop cancer during their lifetime. Almost 40% will survive, with the number of cancer survivors predicted to double by 2030. Colorectal cancer (CRC) is the second most common cancer in Europe. Adverse side effects from cancer and its treatments are a key issue for survivors. Evidence supports the benefits of exercise for survivors, however research into feasible methods of delivering accessible interventions are limited This study aimed to test the feasibility of a home-based walking and strengthening (HBWS) intervention for CRC survivors.

Methods: Recruitment ran for 10 months from the regional cancer centre. Patient medical files at outpatient clinics were screened, with potential eligible patients highlighted to the surgeon/oncologist for referral to the study. Intervention participants received an individualised 12-week HBWS intervention with weekly telephone support. Four visits were required; visit 1 to consent and receive activity monitor and; visits 2–4 for assessments (pre/ post/follow-up). Feasibility was measured by the number of patients screened/ consenting/ dropping- out/compliance rates with intervention and outcome assessment. Other outcome measures included; blood samples, cardiovascular fitness, strength, fatigue, quality of life, activity levels and anthropometric tests.

Results: 2,301 patients were screened, with 70 highlighted as being potentially eligible and 35 (50%) successfully referred to the study. 23 stage I-IIIb CRC patients (65.71%) consented with 2 dropouts (8.69%) occurring due to cancer recurrence and medical complications. 21 participants were included for analysis. The majority of participants were male (69.6%) with stage IIa CRC (47.82%) and an average of 24 months post treatment. The average follow-up rate between baseline and post intervention assessment was 12.8 weeks. 98.5% of the 12-weekly phone calls were complete with 90.9% of participants recording daily step counts. Participants rated phone calls, assessment sessions, outcome measures and intervention length as being 'just right' in a post-intervention questionnaire. Blood samples were drawn at baseline for 90.5% of participants. By week 12 all intervention participants had increased their activity levels to the recommended goal.

Discussion: This home-based walking and strengthening intervention is feasible, acceptable and potential method of rehabilitation for CRC survivors. Exercise diaries and pedometers were successful and

agreeable forms of physical activity measurement and adherence.

Implications: The study should inform a fully powered RCT to test the efficacy of the intervention for increasing activity levels and investigate the mechanism of health effects through an analysis of a range of blood biological markers.

13. Using the transtheoretical model of behaviour change to inform the development of physical activity interventions for individuals with respiratory disease

Authors: Wilson JJ, Kirk A, Hayes K, Bradbury I, McDonough S, Tully MA, O'Neill B, Bradley JM.

Background: The transtheoretical model has been successful in promoting health behaviour change in general and clinical populations. However, there is little knowledge about the application of the transtheoretical model to explain physical activity behaviour in individuals with respiratory disease; particularly bronchiectasis. This disease is caused by chronic inflammation in the airways and clinically presents as chronic phlegm production with recurrent respiratory infections. The aim of the study was to examine patterns of (1) physical activity and (2) mediators of behaviour change (self-efficacy, decisional balance, and processes of change) across stages of change in individuals with bronchiectasis.

Methods: Fifty-five individuals with bronchiectasis (mean age 3 SD = 63 3 10 years) had their physical activity assessed over seven days using an ActiGraph GT3X+ accelerometer. Each component of the transtheoretical model was assessed using validated questionnaires. Individuals were divided into groups depending on stage of change: Group 1 (pre-contemplation and contemplation; n = 10), Group 2 (preparation; n = 20), and Group 3 (action and maintenance; n = 25). Statistical analyses included one-way analysis of variance and Tukey-Kramer post hoc tests.

Results: Physical activity variables were significantly (P < 0.05) higher in Group 3 (action and maintenance) compared with Group 2 (preparation) and Group 1 (pre-contemplation and contemplation). For self-efficacy, there were no significant differences between groups for mean scores (P = 0.14). Decisional balance cons (barriers to being physically active) were significantly lower in Group 3 versus Group 2 (P = 0.032). For processes of change, substituting alternatives (substituting inactive options for active options) was significantly higher in Group 3 versus Group 1 (P = 0.01), and enlisting social support (seeking out social support to increase and maintain physical activity)

was significantly lower in Group 3 versus Group 2 (P = 0.038).

Discussion: The pattern of physical activity across stages of change is consistent with the theoretical predictions of the transtheoretical model. Constructs of the transtheoretical model which appear to be important at different stages of change include decisional balance, cons, substituting alternatives and enlisting social support. The current study provides support to explore transtheoretical model-based physical activity interventions in individuals with bronchiectasis.

Implications: Future research should explore the effectiveness of transtheoretical model-based physical activity interventions in this respiratory disease group and explore whether all dimensions or even new components should be investigated. Future research should also explore the longitudinal change of transtheoretical model variables as a result of intervention.

14. 'Moving On' from Cancer: The effects of engaging in a 12 week community-based exercise programme on cancer survivors' physical and psychological well-being

Authors: Cooney M, Woods C, O'Leary E, Furlong B, Walsh D, McCaffrey N.

Background: MedEx Wellness is a community-based chronic illness rehabilitation programme located at Dublin City University. It offers exercise classes in a medically supervised environment to patients with a range of chronic illnesses. MedEx 'Move On' is the oncology rehabilitation programme that caters for cancer survivors. This study aimed to determine the effect of 'Move On' on cancer survivors' physical and psychological wellbeing.

Methods: Adults with an established diagnosis of cancer, who have completed their adjunctive therapy, are referred to 'Move On'. Participants attend two 60 minute supervised exercise classes per week for 12 weeks. Recruitment to the 'Move On' programme occurs every 12 weeks, with approximately 30 participants attending per cycle. Classes are led by exercise specialists and involve a combination of aerobic and resistance training. A single arm pre-test, post-test design was used. At baseline and week 12, assessments of cardiorespiratory fitness (10m shuttle test), strength (timed sit-to-stand test), flexibility (sit-and-reach test), quality of life (FACT-G Questionnaire), depression (PHQ-8 questionnaire) and social support (Social Support for Exercise Survey) were performed. Paired sample t-tests were used to test differences.

Results: 169 cancer survivors were referred between January 2015 and January 2016. 24 participants were non-up-takers (attended assessment only). The programme completion rate was 69% (N=100). Physical tests (N=94) and questionnaire data (N=58) are presented. There was a statistically significant increase in cardiorespiratory fitness (69.1318.3 to 83.2318.3 shuttles, p<.01), strength (17.533.9 to 14.633.9 secs, p<.01) and flexibility (11.039.0 to 12.139.8 cms, p<.05). Statistically significant increases were also observed for participants' perceived social support for exercise from friends (2.13.98 to 2.53.99, p<.01) and physical (21.434.1 to 23.734.1, p<.01), emotional (18.533.9 to 20.732.7, p<.01) and functional (19.035.8 to 21.334.9, p<.01) well-being. There was a statistically significant decrease in cancer survivors' depression levels (12.7 34.3 to 11 33.0, p<.01).

Discussion: MedEx 'Move On' significantly improved the physical and psychological wellbeing of cancer survivors. However, this study had a number of limitations including a small sample size and the lack of a control group. Consequently, the research findings should be interpreted with caution.

Implications: Exercise can play a key role in the management of long term treatment related side effects and community-based exercise programmes are well placed to support cancer survivors to increase their physical and psychological well-being.

15. From PAPRICA (Physical Activity promotion in PRimary Care) to PAPRICA Cardio: Development of a brief counseling intervention for cardiac patients

Authors: Martin-Diener E, Schmied C, Schmidt C, Bize R, Martin B.

Background: One of the priorities in the strategy to prevent non-communicable diseases (NCDs) currently under development in Switzerland is prevention and health promotion in health care settings, including secondary prevention. Physical activity (PA) and exercise are particularly important to decrease mortality and morbidity among patients with coronary artery disease (CAD). However, many patients are not sufficiently active and the majority of patients who went through exercise-based cardiac rehabilitation do not maintain their PA behaviour when they are back in everyday life. With PAPRICA (physical activity promotion in primary care), a PA counselling training programme for physicians developed for the specific demands of primary health care providers has been available in Switzerland for several years. Since PAPRICA was primarily conceptualised for primary prevention and not for

patients with chronic disease, the programme is currently extended to PAPRICA Cardio for patients with existing CAD. This presentation will focus on the development and content of the intervention materials.

Methods: The Cardio material was conceptualised as supplements to the existing PAPRICA manual for physicians and to the patient brochure, respectively, and to suit both the needs of cardiologists and primary care physicians for support in patient counselling. It was developed in a consultation process with cardiologists, primary care physicians and PA specialists, including a consensus workshop.

Results: A consensus could be reached; all professions contributed to the result. The Cardio supplement to the physicians' manual comprises a theory section on the role of PA and exercise in patients with existing CAD and on the phases of cardiac rehabilitation. The practical section of the supplement covers PA recommendations for CAD patients, key elements of PA counselling in these patients, and safety management including an algorithm defining the responsibilities of primary care physicians and cardiologists respectively for different exercise intensities and health conditions in patients. The Cardio supplement to the patient brochure includes brief explanations of the benefits of PA in patients with CAD, recommendations for PA and safety management.

Discussion: Expert consensus could be reached on the content and format of a Cardio supplement to the existing PAPRICA material. Experiences from pilot testing the materials will be presented.

Implications: The PAPRICA Cardio approach has the potential to optimise PA counseling for patients with existing CAD by facilitating and coordinating support through cardiologists and primary care physicians.

16. The effect of community-based cardiovascular disease secondary prevention interventions on physical activity and other behavioural risk factors: Systematic review and meta-analysis

Authors: Lawlor E, Bradley D, Cupples ME, Tully MA.

Background: Health inequalities in cardiovascular disease (CVD) have increased; more effective methods are required to help change behavioural risk factors. The effectiveness of interventions in community-based settings which are accessible to all population sub-groups is unclear. The aim was to conduct a systematic review to assess the effectiveness of

lifestyle interventions, for secondary prevention of CVD, delivered in community-based venues, in modifying behavioural risk factors.

Methods: Five databases were searched (Medline, Embase, CINAHL, PsychInfo and Cochrane library) to identify health behaviour interventions for adults with established CVD in community-based settings. Acceptable study designs were cluster randomised controlled trials, randomised controlled trials, quasi-experimental designs which used a control population for comparison, interrupted time-series studies, and prospective controlled cohort studies. Articles were assessed independently by two reviewers for eligibility and risk of bias, with statistical analysis performed using Revman.

Results: Of 5905 articles identified, 41 were included. Interventions were multifactorial, exercise-based, educational and psychological but their content, theoretical basis and setting were poorly reported in many studies. Settings included general practice, participants' homes and non-residential retreats. Studies often had an over-representation of males in their sample, relied on self-reported measures of physical activity (PA) and tended to be heterogeneous in regards to intervention content, duration, intensity and follow-up timing. Heterogeneous outcome data hindered meta-analysis, however, aggregated data for 8 trials showed an increase in PA with core intervention components including goal setting, pedometers and follow-up contact. Intervention groups showed greater improvement than controls in steps/week (Mean Difference (MD): 8870; 95% CI: 398,1377), minutes/week (MD: 57.86; 95% CI: 22.99, 92.74), peak VO2 (MD: 2.18; 95% CI: 0.17-4.18) and SF-36 mental health sub-scale (MD 1.53; 95%CI: 0.20, 2.85).

Discussion: This review found evidence that interventions delivered within the community for the secondary prevention of CVD may result in improved outcomes for PA, exercise capacity and mental health but heterogeneity in interventions indicates results should be treated with caution.

Implications: This review provides evidence for the effectiveness of community-based services for the secondary prevention of CVD and their ability to increase participation in PA. Thus healthcare professionals should promote these opportunities to their patients and there should be greater recognition and uptake of this method of delivering care. Future research should focus on determining the most effective combination of intervention content, intensity and duration. Further, future studies need to use objective measures of PA and increase the number of females in their samples

17. Active Everyday: Development of an enhanced physical activity pathway for people affected by cancer

Authors: Reece LJ, Crank H, Clarkson S, Horlock R, Gardener S, Humphreys L.

Background: It is estimated that 4 million people will be living with and beyond cancer by 2030. Many of these people experience negative effects on health and well-being due to their disease and their treatment. Strong evidence supports the beneficial role of physical activity (PA) during and after cancer treatment and the positive influence of clinical endorsement on patient behaviour.

Methods: Active Everyday is a PA referral pathway for people living with and beyond cancer in Sheffield, representing a new approach to support patient needs throughout their cancer journey. It is embedded within the cities current physical activity offer. Individuals are offered personalised support to move more, opportunities to see a level 4 exercise and cancer specialist and access activities of their choice. Cancer survivors are enabled to self-manage via access to specialist advice and appropriate PA opportunities. Integration of existing services and resources within the city's collaborative PA strategy are key to achieving success.

Results: 104 people affected by cancer have been referred into the service with Quality of Life, Physical Activity levels, Fatigue all assessed; "Thanks to Active Everyday I have started to enjoy being active again rather than it being a chore and it gives me a positive aim to focus on, rather than looking back."

Discussion and implications: The project enhances health care professional's awareness of PA, not only optimising clinical practice, but marking a significant change in routine cancer care.

18. Dimensions of physical activity and sedentary time in identification of risk groups for future type 2 diabetes: A decision tree analysis within the addition-pro cohort

Authors: Amadid H, Johansen NB, Hansen ALS, Færch K, Vistisen D, Brage S, Lauritzen T, Witte DR, Sandbæk A, Jørgensen ME.

Background: While the protective effects of physical activity on impaired glucose metabolism (IGM) are well established, little is known about the role of specific dimensions of physical activity and their interaction with other IGM risk factors. We aimed to apply a Decision Tree algorithm to assess which dimensions

of physical activity and sedentary time are associated with IGM and how the associated physical activity dimensions differed by age, sex and obesity.

Methods: 1501 Danish middle aged men and women with different diabetes risk profiles were included in the analysis. An oral glucose tolerance test was performed and 7 days of physical activity energy expenditure was measured using a combined accelerometer and heart rate monitor (ActiHeart®), individually calibrated by a step test. A Decision Tree methodology was applied to identify sub-groups at risk for IGM, allowing different dimensions of physical activity and sedentary time to have different effects as predictors of IGM (fasting plasma glucose >=6.1 and/or 2h plasma glucose >=7.8). Age, sex and BMI were also included in the model.

Results: The Decision Tree was found to distinguish and delineate a wide range of risk profiles (Figure 1). BMI, age and sex were most predictive of IGM. Among overweight males, moderate-to-vigorous physical activity was the dominant physical activity predictor of IGM, while for overweight women time spent sedentary while awake was the main predictor. Among individuals with normal weight and aged >53 years, time spent in light physical activity was the main predictor. Only sex was predictive among individuals with normal weight aged ≤53 years.

Discussion and implications: Applying a Decision Tree algorithm to physical activity data identifies several important interactions and can provide insight to development of personalised physical activity intervention strategies for the prevention of type 2 diabetes.

19. MedFit: The development of a mobile-application to enhance participant self-management of their cardiovascular disease

Authors: Duff O, Walsh D, Monaghan D, Moran K, O'Connor NE, Woods C.

Background: Cardiovascular disease (CVD) is the leading cause of premature death and disability in Europe, accounting for four million deaths annually. Exercise-based Cardiac Rehabilitation (CR) can reduce the impact of CVD by lowering mortality and morbidity rates and promoting healthy active lifestyles. Yet adherence within CR is low. Common adherence issues relate to accessibility/parking at local hospitals, a dislike of group environments and work/domestic commitments. Mobile health (mHealth) is an emerging area of healthcare, defined as 'medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants and other wireless devices'. Research

suggests that mHealth interventions can be useful in supporting the self-management of chronic disease. The purpose of this research is to report on the development of an mHealth intervention.

Methods: For the intervention development the Medical Research Council's [7] formative process consisting of 4 stages; i) development, ii) feasibility/piloting, iii) evaluation and iv) implementation will be used. The intervention will be a theoretically informed specially designed Android App. Its aim will be to enhance disease self-management and quality of life in people living with CVD. It will be offered to graduates from hospital-based CR, with the aim of extending and augmenting their care. Like CR it will use exercise as its main modality, and provide advice on other health behaviours.

Results: A systematic review of the use of behaviour change techniques (BCTs) in physical activity eHealth interventions for CVD patients has been conducted. Seven electronic databases yielded 987 articles, 97 of which met the inclusion criteria for full text review. Preliminary results suggest an average 7.6 BCTs are used in mHealth interventions, with BCTs providing information on 'consequence, or about the behaviour-health link' and on the 'use follow up prompts' showing the most potential for sustainable behaviour change. A multidisciplinary team comprised of exercise scientists, health behaviour change and technology specialists are now using this information to develop the intervention prototype. Stage one will be followed by qualitative research on the prototype, where actual end-users will be asked to examine the intervention in order to determine its feasibility, acceptability and ultimately to improve its efficacy through a co-design process.

Discussion and implications: The lessons learned from the development of this complex mHealth intervention, the challenges faced in working with technology and in designing an intervention specifically for use with a chronically ill population will be discussed.

20. Which factors have to be taken into account when planning an internet platform to increase physical activity of young adults?

Authors: Grieben C, Stassen G, Froboese I.

Background: Current research shows that information and communication technologies (ICT), for example the internet with its interactive elements, are a promising approach aimed at promoting healthy behaviors, especially for young adults (Cullen et al., 2013). Due to the fact that most of commercial

trainees do not meet physical activity (PA) recommendations of the WHO (Robert-Koch-Institut, 2014), target-group specific interventions gain a crucial importance (Roski, 2009). In order to identify their demands and needs different stakeholders should get involved in the planning phase of an internet-based intervention (Van Gemert-Pijnen et al., 2011). The aim of the study is to evaluate relevant factors which have to be considered when planning an internet platform to increase physical activity levels.

Methods: 36 commercial trainees (19 ♀, 17 ♂, age: 22.332.7 years, BMI: 24.735.1, physically active days/week: 3.631.7) and three teachers (age: 43.038.7 years, professional experience: 13.539.3 years) were consulted in guided focus groups and expert interviews. This was followed by an evaluation according to the structuring content analysis with the analysis software MAXQDA 12.

Results: All of the activity-related platform contents should relate to the daily work of the trainees. Both groups expect and recommend modern forms of presentation, setting great store by steady updates, interactivity and mobile accessibility. Additionally, it is expressed a great value on functionality, user-friendliness and robustness.

Discussion: The qualitative research provides an appropriate framework to distinguish demand and needs of different stakeholders. This is a way to guarantee that internet-based interventions are target-group specific. To a large extent the demand and ideas of the teachers covers the needs of the commercial trainees group.

Implications: This present study makes an important contribution in terms of future actions which promote healthy behaviors of young adults. An internet-based PA intervention in the 21. century must be mobile accessible and more interactive as usual web interventions.

21. German National Physical Activity Recommendations for Adults and Older Adults: Methods, Database and Rationale

Authors: Füzéki E, Vogt L, Banzer W.

Background: National physical activity recommendations are regarded as crucial elements of comprehensive physical activity promotion strategies. To date, Germany has no such national physical activity recommendations. The aim of this study was to provide physical activity recommendations, based on a comprehensive summary of scientific evidence on the relationships between physical activity and a range of health outcomes in adults and older adults.

Methods: Recommendations were developed in a three-phase process (1. systematic literature review; 2.

development and use of quality criteria; and 3. synthesis of content) based on already existent high-quality guidelines.

Results: Based on the analysis of the documents included, the following recommendations were formulated: 1. To gain wide ranging health benefits, adults and older adults should be regularly physically active, and avoid inactivity; 2. Adults and older adults should perform at least 150 minutes/week moderate intensity, or 75 minutes/week high intensity aerobic activity; 3. Adults and older adults can reach the recommended amount of physical activity by performing activities in an appropriate combination of both intensity ranges; 4. Optimally, physical activity should be distributed over the week and can be accumulated in bouts of at least 10 minutes; 5. Adults and older adults should perform muscle strengthening activities at least twice a week; and 6. Adults and older adults should avoid long periods of sitting, and should break up sitting time with regular bouts of physical activity.

Discussion: Physical activity beyond 150 minutes/week yields substantial health benefits. At the same time, physical activity below 150 minutes/week is associated with meaningful health gains. Accordingly all adults and older adults should be encouraged to be physically active whenever possible. Regular balance exercises (3 times a week) can also reduce the risk of falling in older adults. Physical inactivity can lead to adverse events, such as musculoskeletal injuries, which can be limited through appropriate measures. All in all, the benefits of regular physical activity outweigh the risks in both adults and older adults.

Implications: The publication of guidelines must be followed by an implementation strategy at the national, regional and local levels, with the involvement of major players.

22. How to increase children's recess physical activity: 12 factors to be aware of

Authors: Pawlowski C, Tjørnhøj-Thomsen T, Schipperijn J, Troelsen J.

Background: Facilitators and barriers to recess physical activity are not well understood. To date, research on recess physical activity has predominantly focused on quantitative measures typically focusing on a narrow set of predefined factors, often constructed by adults. To really understand the factors affecting recess physical activity it is crucial to observe and listen to children to know how they engage in and perceive recess physical activity. The aim of this study was to gain knowledge on children's perceptions and experiences of factors influencing their physical activity behaviour during recess. The findings were used in the developing phase of The Activating Schoolyards Study, an intervention

study aiming to increase children's recess physical activity.

Methods: Data were collected in two studies using a combination of participatory approaches; participant observation, go-along group interview and participatory photo interview. The studies were conducted among 10-13 year-old children (grade 4-6) in the 17 Danish schools included in The Activating Schoolyards Study, and in five New Zealand schools. The socio-ecological model was used as the overall theoretical framework.

Results: Twelve factors were identified to influence the children's recess physical activity: bodily self-esteem and ability, gender, gendered school culture, peer influence, conflicts and exclusion, space and place experiences, lack of play facilities, outdoor play policy, use of electronic devices, recess duration, organised activities, and weather. These factors were located within different layers of the socio-ecological model, but were interdependent.

Implications: The findings speak for implementing a combination of actions addressing factors from different layers in the socio-ecological model to increase recess physical activity. It could imply redesign of schoolyards combined with extended recesses and regulation of smart phone use. Or initiation of organized recess activities with student driven play equipment stations supported by school policies banning indoor recess activities regardless of weather conditions. A combination of political, physical, and organisational initiatives in the school yard will lead to a self-reinforcing process with positive effect on children's recess physical activity.

23. Development of a randomized controlled intervention diminishing socioeconomic inequalities in energy balance-related behaviors at a preschool setting

Authors: Ray C, Määttä S, Lehto R, Kaukonen R, Erkkola M, Sajaniemi N, Roos E. on the behalf of the DAGIS consortium group.

Background: Effective interventions that target socioeconomic status (SES) differences to avoid the potential widening of inequalities in health are needed. Children at preschool age is a valuable intervention target since sedentary behaviors, physical activity (PA) and dietary behaviors, jointly called the energy balance-related behaviors (EBRBs), are established in early childhood. To balance SES inequalities in preschool children's EBRBs, the preschool setting can have significant supportive influence. The intervention can be delivered similarly to the whole target population, with the intensity adjusted according to

the needs of children from low SES backgrounds. The ongoing DAGIS study aims to develop a multi-component setting-based intervention which will diminish SES inequalities in pre-school children's EBRBs.

Methods: Before implementation of a six-month lasting intervention in years 2017 and 2018, a comprehensive needs assessment including several phases is conducted between years 2014 and 2017. The needs assessment includes following stages: a) focus group interviews for parents and preschool personnel in 2014 to recognize the influential factors of EBRBs; b) several pilot studies in years 2014-2015; C) a comprehensive cross-sectional study in years 2015-2016 (N=892 children in 66 preschools) to recognize the SES differences in EBRBs and associated factors with these differences; d) co-operation with a non-profit organization in development of practical methods throughout the stages; e) to plan the practical implementation of intervention, workshops for target groups are arranged in years 2016-2017.

Results: The first two phases of needs assessment have indicated that the combination of multiple levels of analysis and diverse methodologies (e.g. surveys, observations) is necessary in the cross-sectional survey. This extensive survey enables to identify the healthfulness of several environments and the well-being of persons and groups, which will lead to an evidence-based developed intervention.

Discussion: The several phases of the needs assessment in the DAGIS study will give the best knowledge to be able to plan an effective intervention which will be able to narrow the SES differences in preschool children's EBRBs.

Implications: Planning an effective intervention is a long-term process that requires multiple phases of research.

24. Using incentives to promote physical activity and other health-related behaviours in 5-18 year olds: Systematic review and meta-analysis

Authors: Corepal R, Tully M, Miller S, Kee F, Hunter R.

Background: Physical inactivity, an unhealthy diet, tobacco use, and alcohol consumption are key determinants of morbidity and mortality in adults. A decrease of 60-70% in physical activity can occur from childhood to adolescence. These other health behaviours can also begin at a young age and track into adulthood, emphasising a need for interventions to begin at a young age. Previous research has demonstrated the effectiveness of incentive schemes for behaviour change in adults. However, little is known about their effectiveness in children and adolescents.

Methods: Eight databases were searched independently by two reviewers. Eligibility criteria included controlled trials using behavioural incentives (rewards provided contingent on successful performance of the target behaviour) as an intervention component for health behaviour change. Intervention effects (SMDs and ORs) were calculated and pooled by specific health behaviour, and overall, using a random effects model.

Results: Sixteen studies (n=12725 participants) were included (n=7505 papers identified) in the systematic review, 15 of which were eligible for meta-analysis: physical activity (n=5); smoking abstinence/cessation (n=8); and healthier eating (n=2). There were promising findings that behavioural incentives may promote smoking abstinence/smoking cessation (ES=1.29, 95% CI 1.12 to 1.49). A diminishing effect of smoking interventions was observed as follow up length increased, although there was still a positive effect after 18 months (ES=1.21, 95% CI 1.07, 1.37). After combining all health behaviours, incentives showed a positive effect (ES=0.48, 95% CI 0.24, 0.70). However, caution must be used with interpreting the combined health behaviours due to clinical and methodological heterogeneity.

Discussion: Findings suggest that behavioural incentive schemes used alone or as part of a multi-component intervention may encourage uptake and initiation of health behavior change. Further study is required to determine how interventions can be adapted to facilitate maintained behavior change. The health behaviours examined are 'complex' and considering the wide variability shown in incentive designs it is evident that there is not a 'one size fits all' approach. This systematic review and meta-analysis adds to the behaviour incentive research base for young people.

Implications: There is a need for more research using innovative behavioural incentive approaches in physical activity behaviour change, particularly in younger high school students.

25. Every minute counts: Patterns and times of physical activity participation in younger children from social disadvantage in Ireland

Authors: Belton S, Breslin G, O'Brien W, Fitzpatrick B, Haughey T, Shannon S, Chambers F, Powell D, McCullagh D, Brennan D.

Background: It has long been established that physical activity (PA) in childhood is of keen importance to the health and well-being of an individual, with benefits both in childhood, and as the child progresses into adulthood. The purpose of this study was to investigate daily physical activity patterns of 8-9

year old disadvantaged Irish children, with a view to identifying critical periods for intervention.

Methods: As part of the Sport For Life: All Island study, children (n = 408, 8.7 3 0.5 yrs) attending schools in areas of social disadvantage were asked to wear an Actigraph accelerometer for a period of 8 days. Mean minutes spent in moderate-to-vigorous physical activity (MVPA) were calculated per day and per hour for each participant. Based on their mean daily MVPA accumulation, participants were grouped into gender-specific quartiles (Q) (Q4 most active, Q1 least active). Principal components analysis (PCA) was used to identify distinct time blocks for Weekday and Weekend days. Mixed between-within ANOVAs were carried out (separately by gender) to assess the impact of quartile grouping on minutes of MVPA across the distinct time blocks.

Results: Overall, 56.7% participants accumulated an average of 60 minutes MVPA/day, with males significantly more likely to do so than females. No significant difference between Weekday and Weekend MVPA accumulation was observed for either gender. PCA revealed three distinct time periods on weekdays, and four distinct periods on weekends. The total difference in MVPA accumulation between Q4 and Q1 was greatest in the After School time period for both males (49 minutes) and females (33 minutes).

Discussion: Findings suggest that Weekday After School is a particularly critical time period in terms of the gap between our most and least active disadvantaged children. Future research should investigate whether these trends vary across slightly younger and older age groups, and levels of social disadvantage.

Implications: When considering intervening with youth, regardless of age, gender or social class background, practitioners must understand the within day patterns of participation for the cohort so that specific strategies can be targeted at the most advantageous time periods.

26. A systematic review of community based exercise interventions for adults with intellectual disabilities

Authors: Greene T, Taggart L, Breslin G, Martin S.

Background: People with intellectual disabilities (ID) engage in low levels of physical activity and continue to be socially excluded due to a lack of social relationships and having poor access to community amenities, including sports clubs and gyms. Exercise interventions to promote physical activity for those with ID are emerging, yet what is still unknown is whether these interventions

address social exclusion and if they are delivered within the wider communities that people with ID reside. A systematic review of community based exercise interventions was undertaken to address these gaps in knowledge.

Methods: Peer reviewed papers in the English language that were published between 1995–2015 involving adult participants diagnosed with ID were included. Interventions were included if they contained an exercise component including any aerobic activity, strength training, balance or flexibility which took place within the participants' wider community and measured physical activity as an outcome. Randomised controlled trials (RCT), non-RCT's, observational studies and pre-post test study designs were included. Searches of CINAHL, Medline, Scopus, Embase, PschINFO and Cochrane CENTRAL databases were conducted. Following database searches and deletion of duplicate papers, 7448 papers were screened at title and abstract level for potential inclusion. Of these, 64 papers were retained for screening at full text level and their reference lists were hand searched to identify any further relevant papers, resulting in the inclusion of one additional paper (N=65). Two authors independently screened articles at full text level.

Results: Only 2 papers met the inclusion criteria. Both studies were walking interventions for adults with ID but varied greatly in their design and quality. Due to small, unrepresentative sample sizes the external validity of the studies is poor. Neither study achieved statistical significance in improving physical activity levels post intervention with both study authors placing importance on having a sustainable and reliable source of social support as an influencing factor on the results. Social inclusion was not measured as an outcome for either of the studies.

Discussion: There is a need for more research on community based exercise interventions for this population, with an emphasis on good design including sustainable sources of social support. Interventions which are based in the community should also measure social inclusion as an outcome measure.

Implications: The findings provide practitioners and researchers with a summary of the evidence for promoting community based exercise interventions for adults with ID.

27. Physical activity motivational interviewing, a tool in school-based overweight prevention for disadvantaged adolescents

Authors: Langlois J, Omorou A, Vuillemin A, Briançon S, Lecomte E, Bohme P, De Lavenne R, Gaillard C, Legrand K, Muller L, Pourcher C, Quinet MH, Saez L.

Background: Reducing overweight in adolescents requires taking into account social inequalities to motivate adolescents to reduce sedentary behaviour (SB) and increase physical activity (PA). The study aimed to investigate social factors of adolescents' participation and interest in PA through motivational interviewing.

Methods: The study was conducted on a sample of 282 overweight or obese, socially disadvantaged adolescents, aged 13 to 18 years old, who participated in group sessions and in addition have benefited from individual adapted activities within the French PRALIMAP-INÈS trial in 2012–2015. The PA motivational interview was held face-to-face for one hour by a PA professional. The objectives were to help the adolescent to describe their leisure time, their representation of PA and SB, their practice conditions, the brakes and levers to their motivation and to formulate goals adapted to their environment and desires.

Results: 150 adolescents participated in the interview in PA (53.2%). Participation was significantly greater in girls, middle school adolescents, among those who participated in the sport school association and who reported having no friends with that practice. The levels of PA and SB were not associated with participation. In 2014–2015, their main obstacles to practice PA were pain during practice (37.8%), the lack of time (37.8%) and will (35.1%). Few mentioned a lack of means (13.5%). Their main motivations to practice PA were to improve their health and to slim (91.9%) and the need to let off steam (51.4%). The purchase voucher to get PA equipment was a lever of motivation for PA projects. 72% of adolescents found the interview useful.

Discussion: PA motivational interviewing can be an important tool to mobilize the overweight socially disadvantaged adolescents. In the overweight care management of disadvantaged adolescents, this individual approach, acting on motivation and taking into account the individual as a whole is crucial.

Implications: Individual support that takes into account the needs of adolescents should be provided for those who are disadvantaged in overweight prevention. Health programs should act both on the levers for participation and behaviour changes.

28. Physical activity rather than sedentary behaviour is socially determined in overweight adolescents

Authors: Omorou AY, Langlois J, Legrand K, Böhme P, Quinet MH 4, Muller L, Lecomte E, Vuillemin A, Briançon S. and the PRALIMAP-INÈS group (Gaillard C, De Lavenne R, Pourcher C, Saez L).

Background: Social gradient (SG) is defined as a linear relationship between health indicators and social class. Overweight prevalence is being stabilised or decreased in socially advantaged while it continue to increase in socially less advantaged resulting in worsening social inequalities. The study aimed to investigate the importance of the SG of physical activity (PA) and sedentary behaviour (SB) in overweight adolescents.

Methods: The French cohort (PRALIMAP-INÈS) included 1142 (13–18 year old) adolescents. At the inclusion visit adolescents were measured (weight, height, waist circumference) and filled in questionnaires on their social status (FAS: Family affluence scale), PA and SB (IPAQ). FAS score ranges from 0 to 9 and defines 5 social classes: significantly less advantaged (HLA), less advantaged (LA), intermediate, advantaged and highly advantaged (HA). PA referred to weekly frequency and duration of vigorous, moderate and walking activities and SB referred to time spent sitting (school, transportation, screen-viewing and other leisure-time). Cross-sectional SG of weight status, PA and SB were described according to the FAS classes (slopes) and evidenced using linear trend test (p).

Results: The higher the social class, the lower the weight status: BMI ($\beta=-0.6$ kg/m², p<.0001), BMI z-score ($\beta=-0.08$, p=.0009), waist circumference ($\beta=-1.4$ cm, p=.0001) and obesity prevalence (OR=0.75, p=.003). The weight SG was consistent with PA but not with SB. High social class was associated with high total PA ($\beta=+214$ METs.min/week, p=.008), high vigorous ($\beta=+189$ METs.min/week, p=.0004), high proportion of leisure-time PA (OR=1.4, p<.0001). Whatever the context (school, transportation, screen-viewing and other leisure-time), no significant association was found between social class and SB.

Discussion: SG was significantly and linearly distributed in adolescents regarding weight status as well as PA (total PA, vigorous PA and leisure-time PA). Conversely, whatever the context, no linear association was found between SB and social class.

Implications: Promoting PA in less advantaged adolescents may be an important way of tackling weight social inequalities.

29. Developing Communities of Practice's as an innovative approach to address physical inactivity among socially disadvantaged groups in deprived neighbourhoods in Denmark

Authors: Demant Klinker C, Bredvig S, Aagaard-Hansen J, Terkildsen Mairdal H.

Background: Physical inactivity is a well-known risk factor for non-communicable diseases. Physical activity levels among low socioeconomic status (SES) groups in Denmark remain lower than in high SES groups. The neighbourhood is recognised as a setting for promoting physical activity and for strengthening social participation. Despite this, evidence is lacking on how socially disadvantaged groups in deprived neighbourhood's best can be involved in physical activity interventions. This study examines if building Communities of Practice's (CoP) between public health promoters and private social housing employees can lead to the development and implementation of activities increasing physical activity and wellbeing. This study takes place in deprived neighbourhoods in Denmark with a high proportion of socially disadvantaged groups. Genuine participation of residents and a broad concept of health are implemented in the CoP. CoP can be defined as 'groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly'.

Methods: A public-private-partnership (2015–2017) between three municipal health promotion departments, 11 private social housing organisations and a research institution has been created. The development and implementation of activities runs until summer 2017 and are continuously documented using standardized activity development schemes. CoPs are assessed by interviews (winter 2015, n=21) and a survey (summer 2016, n=50) among employees from municipalities and social housing organisations. This paper presents results on the development of CoP and activities.

Results: Partnerships consisting of public health promoters and private social housing employees have been formed in 11 neighbourhoods. Results from baseline interviews shows that one partnership can be characterized as a CoP. A total of 13 activities have been developed and are being implemented in 8 neighbourhoods, nine of which have physical activity as primary outcome, while four have wellbeing.

Discussion: This study takes on an innovative approach to target hard-to-reach groups. This is done by forming CoP between professionals working with different practice backgrounds (health and social workers) but with the same aim — to improve health and wellbeing among socially disadvantaged groups.

Implications: Development of CoPs between professionals working in deprived neighbourhoods may hold the potential for developing activities that are context specific and sensitive to the citizens' priorities and needs. This is important to motivate socially disadvantaged groups to participate in activities that can enhance wellbeing and physical activity.

30. The REsearch into POLicy to enhance Physical Activity (REPOPA) project

Authors: Skovgaard T.

Background: REPOPA is a five-year project funded by the European Commission, where researchers from seven countries work together to build future evidence into policy making. The general project aim is to integrate scientific research evidence and expert know-how with policy-making processes to promote health among Europeans. This presentation highlights results from REPOPA activities specifically based on Knowledge-to-Action (K2A) approaches for efficient evidence utilization. The overall K2A approach is grounded on a framework developed by the Canadian Institutes of Health Research (CIHR). The CIHR framework constitutes a multidisciplinary approach for getting evidence into practice in which active exchange between researchers and knowledge users is promoted through dynamic and iterative processes of co-production. For a number of years it has been stressed that such processes must ensure the combination of best available research evidence and local contextual knowledge by facilitating close interaction between researchers, end users and other relevant stakeholders.

Methods: Level of knowledge application and use of research in connection with the development of 21 physical activity policies from six European countries was assessed. Desk research was conducted and a total of 86 stakeholders were interviewed to identify facilitators and barriers in relation to making use of research and other types of scientific knowledge in policymaking. Subsequently, two types of interventions, both implemented in three countries, were developed. Though different in design and content, both interventions build on the premise that tailoring knowledge to particular settings, organizations and end users is a key component of K2A approaches seeking to facilitate close interaction between stakeholders in connection with knowledge production and utilization.

Results: Unique data from six countries is presented and discussed in order to establish whether particular K2A based interventions increases the level of evidence-informed policy making in selected case studies on health-enhancing physical activity. To a certain degree the interventions did increase awareness, appreciation,

critical thinking and also requests for research knowledge and other types of evidence among policymakers. However, the trends are not clear-cut and differences between countries are visible. Furthermore, it is challenging to sustain positive changes.

Discussion and implications: The K2A approach showed promising results when applied in different settings and in a number of European countries. Importantly, integrating the approach into specific knowledge translations interventions is, to some extent, linked to increased interest in, request for and use of research and other types of evidence by key stakeholders, especially at national level.

31. Dutch CPHEPA programs: Contexts, mechanisms and outcomes that matter

Authors: Herens M, Wagemakers A, Vaandrager L, Van Ophem J, Koelen MA.

Background: Dutch policy promotes community-based health-enhancing physical activity (CBHEPA) programs to tackle physical activity inequity in socially vulnerable groups. CBHEPA programs are usually so-called natural experiments by design, embedded in an on-going field practice. This requires an evaluation approach which is sensitive to the operational conditions of such programs as part of larger complex systems in order to indicate what works, how and in which conditions. Using a realist synthesis approach, this study aimed to identify key combinations of contextual factors (C) and mechanisms (M) that trigger outcomes (O) in Dutch CBHEPA programs.

Methods: Our multiple case study included six CBHEPA programs. Data were collected between 2012 and 2014. Five semi-structured interviews were conducted with program coordinators and exercise trainers (n=9), covering the six programs, followed by focus groups with all involved actors (project coordinators, exercise trainers and representatives from local organisations and networks, n = 39) after 12 to 18 months using a timeline technique. Interviews and timeline sessions were all recorded, anonymised and transcribed at verbatim. Analysis of CMO configurations was data driven and thematic using a realist synthesis protocol.

Results: Outcomes of interest revolved around community outreach, program sustainability, intersectoral collaboration, and enhancing participants' active lifestyles. CMO configurations indicated that past experiences with sport and physical activity projects and target group commitment of actors involved, were strong supportive contextual factors for outcomes of interest, alongside exercise trainer's drive and responsiveness as dominant mechanisms

in sustained programs. Restraining contextual factors related to volatile project-based approaches causing discontinuity in actor involvement and access to resources, and a trainer's stand-alone position.

Discussion: Program theory of CBHEPA programs advances by showing how actors target group commitment and passion for, and experiences with, sport and physical activity are key mechanisms triggering outcomes. As yet however, local governance structures appear to often lack adaptive capacity to accommodate multilevel processes for sustained CBHEPA programs. The use of realist synthesis contributed to evidence-informed theorising about how and in what circumstances CBHEPA programs work.

Implications: Strong evidence was found on how contextual dynamics shape local CBHEPA initiatives and on the need for responsiveness and adaptive mechanisms, in order to realise sustained CBHEPA programs. CBHEPA program development is grounded in the local contextual realities and geared towards the creation of sustained tailored programs within these specific contexts. Consequently, these process and value-driven approaches are hard to align with project-inspired views on lifestyle interventions.

32. A systematic review of evidence informed policy making in public health in Europe

Authors: Rus D, Baragan EA, Bozdog ME, Chereches RM, Syed A, Aro AR.

Background: The importance of research evidence in public health decision making processes is widely recognized. However, how it is utilized in real world practice is unclear. This study analyses the extent to which evidence is used in public health decision-making process, highlighting differences (if any) between various domains of public health.

Methods: To identify eligible studies, 7 bibliographic databases (PubMed, Scopus, Cochrane Library, Science Direct, Web of Science, ClinicalKey, Health and Safety Science Abstract) were screened (search dates: 1990–September 2015). In addition, general internet searches were also conducted. Studies were included if they were primary research or systematic review reporting on the use of research evidence in public health policy in Europe. Studies considered for inclusion were assessed by two reviewers using extracted data on objective, methods, population, and results. Studies were grouped into the following categories — qualitative research, quantitative research, and systematic review. Data were synthesized as a narrative review.

Results: Of a total of 2564 publications initially identified, 2525 titles and abstracts were screened. A total of 30 articles describing how or why research evidence was used/not used in public health policy met the inclusion criteria — majority involved interviews and/or surveys (N=17). One study was longitudinal while the rest were cross-sectional. Eight systematic reviews and five case studies were included. Excepting systematic reviews, most studies examined the use of evidence in public health policies in one country, although 9 studies included multiple countries. The type of evidence used was identified in 22 studies, with 13 using primary research, 11 using systematic reviews and the other looking at the use of a combination between formal and non-formal research (personal experience, surveillance data, local data, needs and impact assessments etc.).

Discussion: The key focus of publications is on barriers and facilitators on the use of research evidence rather on the process of actually using evidence and its impact on policy. Studies did not describe the use of evidence well and the types of evidence were rarely explicitly stated.

Implications: There is an urgent need for research to support implementation of research evidence in public health decision making.

33. EU policy-making and local planning of physical activity infrastructures in Germany: Completely detached or closely intertwined?

Authors: Gelius P, Rütten A.

Background: Policy science holds that structure and agency in more operational policy arenas are partially determined by decisions at more basic levels (Ostrom, 2007; Rütten & Gelius, 2011). Consequently, national or international health promotion and infrastructure policies should have an ascertainable impact on the planning of physical activity infrastructures, which, in many countries, takes place at the local level. Recent years have seen the publication of several international policy documents dealing with physical activity infrastructures, including the EU's Physical Activity Guidelines (2008) and its Council Recommendation on HEPA across sectors (2013) or WHO's European Physical Activity Strategy (2015). But do these documents have any impact on lower-level policy arenas, or are they simply too far detached from the reality of local communities?

Methods: This contribution investigates the specific case of EU physical activity policy and its impact on the planning of physical activity infrastructures in Germany. It identifies key EU policies, German national initiatives and local

planning endeavors, and relevant research projects in the field, analysing both their sequence in time and their potential content-related links.

Results: Analysis indicates that there has been a trickle-down effect from the EU level (specifically the EU Physical Activity Guidelines of 2008 and the subsequent HEPA Council Recommendation of 2013) to national policy-making in the German National Alliance for Sport Infrastructure development (established in 2015). The work of the alliance, in turn, has implications for concrete planning efforts at the local level (e.g. via the planned revision of the 2010 German Memorandum on Municipal Sport Infrastructure Development). At the same time, however, it becomes clear that developments at the local level also have had an impact on national and international policy. The main conduit for this "trickle-up" effect have been researchers who were involved in local level planning, national and international research projects, and who provided expertise to EU policy development.

Discussion and implications: International physical activity infrastructure policy does have a specific impact on infrastructure planning at the local level in Germany. Conversely, there are opportunities for the local level to have an impact on shaping national and international policy-making. Knowledge about these mechanisms is important, both to advocates of international physical activity policy and to actors at the local level wishing to influence decisions at higher levels. In addition, there is a complex interplay between the domains of policy-making, planning practice, and research, which may be of particular interest for further research.

34. Turn up the HEAT: Recommendations to increase use in Europe of WHO Europe's Health Economic Assessment Tool

Authors: Cavill N, Kahlmeier S, Rzewnicki R.

Background: The World Health Organization's Health Economic Assessment Tool for Walking & Cycling commonly known as HEAT approaches its 10th anniversary, having been used in many countries across Europe, and elsewhere in the world. It enables users to estimate the societal value of reduced mortality that results from physical activity through regular walking or cycling. However, only a limited number of countries have the HEAT as an integral part of the process for decision-making regarding investments in active transport. A study was commissioned with the goal of generating recommendations to increase the use of the HEAT for Cycling across Europe.

Methods: A multi-language literature review on the HEAT, a survey of users and follow up, in depth interviews were conducted by experts involved in the development of HEAT.

Results: The study found the following learning points: 1. National-level endorsement of the HEAT is increasing; 2. The HEAT is solid and respected; this is not a barrier to its wider use; 3. The use of the HEAT largely depends on an enthusiastic 'early adopter'; 4. The most impressive thing about the HEAT are the numbers it produces; 5. HEAT is more useful in countries with low levels of cycling; 6. HEAT is more applicable in countries where economic appraisal is established; 7. HEAT is often used to justify existing decisions; 8. Communication and dissemination of HEAT and specific results — and its timing — can greatly influence its uptake.

Discussion and implications: Recommendations for a strategy to increase the use of HEAT, generally in Europe, and specifically by member states of the European Union: 1. Focus on countries with the highest potential; 2. Create a network of HEAT 'super-users'; 3. Encourage key stakeholders to 'give it a try'; 4. Encourage its use in larger-scale modelling and scenarios; 5. Aim for the HEAT to be recommended for use by national transport administrations and the European Commission; 6. Invest in data collection; 7. Promote its use more generally.

35. Professionals' perceptions towards the role of the Care Sport Connector and the connection between the primary care and the PA sector in the Netherlands

Authors: Leenaars KEF, Florisson AME, Smit E, Wagemakers A, Molleman GRM, Koelen MA.

Background: The Netherlands policy is aimed at preventing illness and promoting health in the neighbourhood. In 2012, Care Sport Connectors (CSCs) were introduced, to whom a broker role has been ascribed. These CSCs are 40% funded by the state; the remaining 60% is funded by the municipality or other local organisations. The defined outcome of CSCs is an increased number of residents participating in local PA facilities and being physically active in their own neighbourhood. Therefore, CSCs are employed to connect the primary care and the PA sector and to guide primary care patients towards local PA facilities. The aim of this study is to assess perceptions of primary care, welfare, and PA professionals towards the CSC role and the connection between the primary care and the PA sector.

Methods: Nine focus groups were held with primary care, welfare and PA professionals within the network of CSCs (n= 45). In these focus groups the CSC role and the connection between the sectors were discussed. The focus groups were audiotaped, transcribed and analysed with Atlas.ti. Both top-down and bottom-up codes were used to analyse the focus groups.

Results: Professionals ascribed three roles to the CSC: 1) broker role; 2) referral; and 3) facilitator. Professionals were enthusiastic about the CSC role and how the current connection was established by the CSC. However, barriers relating to their own sector were currently hindering the connection. For example the lack of suitable PA activities and adequate PA instructors, and the current insurance system in the Netherlands, which only reimburses primary care professionals for their curative treatments, hinder these professionals from participating in projects aimed at prevention or health promotion.

Discussion and implications: This study provides further insight into the CSC role and the connection between the primary care and the PA sector from the point of view of primary care, welfare, and PA professionals. This study showed that use of a CSC helps to bring the sectors together but changes in the way the primary care and the PA sector are organised are necessary to overcome some of the identified barriers and to make a success of the connection.

36. Physical activity and sport participation in Irish students-programmes, provision and policy

Authors: Murphy NM, Murphy MH, Woods C, MacDonncha C, Murphy J, Ferguson K, Neville A.

Background: While the physical activity levels of children and adults across Europe are well established, information on engagement of third level students in physical activity or sport is lacking or inconclusive, particularly in representative or random samples. In Ireland, almost half of young adults progress to third level education, so the potential to influence uptake and maintenance of physical activity behaviours is vast during this time.

Methods: A study was undertaken across 33 institutions on the island of Ireland. It assessed i) the environment, provision and support for student sport and physical activity; ii) self-reported participation in sport and domain specific physical activity within and outside college and associated health outcomes; and iii) the determinants, motivators and barriers to participation. A nationally representative random sample of over 8,000 students participated in the

survey, which was conducted as part of a collaborative, sustainable research process whereby 'champions' in each institution facilitated data collection according to stringent protocols.

Results: 64% of respondents met physical activity guidelines, measured using the short form IPAQ instrument (58% of females and 71% of males) with gym based exercise the most popular activity. On weekdays, 72% of students spent more than 7 hours sitting per day. Accelerometer measurements in a subsample of students showed that third level students, though highly active, spend 86% of their time in sedentary behaviour. Total sports club membership in excess of 32,000 students across 847 clubs was observed. Males accounted for 66% of the total club numbers. Funding models generally favoured traditional team sports and competitive structures with little emphasis on active transport as a means to increase physical activity. Of the 65% of students who reported participating in sport, three in four of them were deemed to be taking sufficient physical activity, reflecting the important contribution of sport in helping students to be active enough to benefit their health. The remaining 35% non-participants stated that 'cheaper admission prices', 'people to go with' and 'access to coaching' might entice them to play sport in future.

Discussion: Each institution received individualised data alongside national norms and participated in meetings with the research team to clarify the policy implications of the work for future advocacy and planning.

Implications: The study protocol is replicable and the model of collaborative research and targeted dissemination is noteworthy. The process increases the likelihood of policy impact and contributes to capacity building amongst the third level physical activity and sport sector.

37. Team or individual sports? Pathways to meet the recommendations for PA

Authors: Kudláček M, Hamřík Z, Sarková M.

Background: The aim of this article was to investigate and analyse associations between amount of physical activity and specific types of sport activities assessed by intensity.

Methods: This study is based on an international Health Behaviour in School-aged Children (HBSC) study and is consistent with its methodology. It was conducted in November 2013 in Czech Republic and Slovakia. We obtained data from 905 adolescents in Czech Republic and Slovakia (random sample). Final sample consisted of 417 Czech (51.8% boys) and 488 Slovak (53.5% boys) primary school pupils.

Physical activity was measured by an item asking adolescents about the number of days over the past week that they were physically active for a total of at least 60 min per day. Responses were in a range from 0 to 7 days. This item was dichotomized so we could divide respondents into two categories as follows: (1) active and (2) less active.

Results: The results have showed the significant association between intensity in team sports and physical activity per week. Involvement in team sport activity with high intensity increases 2.5 time probability of being more physically active per week (OR = 2.48, 95% CI 1.16–5.27). The significant association between intensity in individual sports and physical activity per week was not found [OR OR= 2.61, 95% CI 0.62–10.99]. Among the most preferred sport activities in boys throughout both age categories are dodgeball, football and floorball, meanwhile the most preferred sport activities among girls are dodgeball, handball, volleyball and basketball.

Discussion: Team sports seem to be better strategy for meeting recommendations for physical activity and should be promoted more within PA interventions with the aim to improve lifestyle and quality of life.

Implications: The knowledge of micro-determinants of each type of activity — e.g. individual or team — can serve as a better moderator for more successful strategy to PA promotion. It can help to create more efficient interventions/ strategies to improve the quality of life through PA of any kind of sub-population.

38. Pragmatic evaluation of the JACKPOT program: A physical activity intervention initiated by the health and the sports sectors

Authors: Ruf W, Lackinger C, Großschädl L, Strehn A, Titze S.

Background: The collaboration among different sectors is emphasised in various WHO documents and in many national physical activity (PA) action plans, including the one in Austria. It is assumed that successful partnerships have a synergistic impact on population PA behaviour compared to single sector measures. In this project we take the advantage of two sectors by combining the strengths of health insurances and organized sports. People who have completed a three-week residential stay in health resorts are approached and encouraged to attend HEPA courses provided by sport clubs in their respective neighbourhoods. The aim of this study is to quantify the flow of participants starting from the identification of activity level before the health resort stay to the participation in fitness tests after the residential stay.

Methods: The target group for residential stays are adults between 30 and 65 years who show one or more health risks. PA level was measured with an accelerometer over 7 days before the residential stay in 11 regions of the Styria province (8 intervention and 3 control regions). Those who do not meet the WHO PA recommendations are invited to participate in our study. During the health resort stay the participants receive a voucher for 12 HEPA-units in a sports club and they are asked via a telephone call to participate in follow-up measurements as well as in fitness tests, which take place shortly after the health resort stay.

Results: Considering the first three months, 128 people received an accelerometer before the start of the health resort stay. Of those 98 (77%) measurements were valid. Fifteen people met the optimal PA guidelines and were excluded. After the health resort stay, 32 (55%) of people in the intervention group agreed to the follow-up measurements and 23 (40%) participated in the fitness tests after the health resort stay. In the three control regions, 12 (48%) people agreed to the follow-up measurements and 9 (36%) fitness test results are available.

Discussion: There are two interfaces within this project. (1) People at the health resorts are approached by researchers via telephone call and (2) Participants meet the trainer of the HEPA-units at the JACKPOT-program. We put a lot of emphasis in communication skills of the researchers and trainers in order to facilitate those two transitions: agreeing to participate in the study, and visiting the 12 HEPA-units.

39. 'Men on the Move' An investigation of a community based physical activity programme for adult men

Authors: Carroll P, Kelly L, Richardson N, Harrison M, Keohane A, Donohoe A, Robertson S.

Background: Men in Ireland are less likely than women to engage in healthy lifestyle behaviours, and more likely to become inactive and overweight with increasing age. Physical activity (PA) is a prophylactic to many chronic conditions affecting men. Men are more likely to engage in 'men friendly' approaches to promoting PA. This study aims to report on physical fitness and body morphology characteristics of sedentary Irish males recruited to participate in a larger controlled study assessing the impact of a 12-week community based PA intervention up to 52 weeks post; the 'Men on the Move' (MOM) programme.

Methods: 906 sedentary males were recruited across 8 counties (4 'intervention' [n=489], and 4 'comparison-in-waiting' [n=417]) by

Local Sports Partnerships. Participants were/will be assessed at baseline, 12, 26 and 52 weeks post intervention. Outcome measures will include height, weight, body mass index, waist circumference and time-to-complete one mile. The intervention programme consisted of structured group exercise for 1 hour twice weekly, along with health-related workshops. Baseline, 12, 26 and 52 weeks' data for both groups will be analysed using repeated measures ANOVA ($p \leq 0.05$) to determine the impact of MOM.

Results: Comparative data examining key outcome measures between 'intervention' and 'comparison-in-waiting' counties 26 weeks post baseline data collection will be presented (data input in progress). Preliminary baseline data indicate that the programme succeeded in reaching its target population, with just 10% of men recruited being of 'normal' weight.

Discussion: Previous studies suggest that supporting sedentary men to increase their physical fitness via PA, can lead to significant reductions in weight and health risks.

Implications: MOM is the first step to establishing a nationwide PA programme that specifically targets inactive men.

40. Effects of walking on CVD risk factors: An update and dose response meta-analysis of randomized control trials among healthy inactive adults

Authors: Oja P, Kelly P, Murtagh E, Murphy M, Foster C, Titze S.

Background: Recent systematic review (Jan 1971–June 2012) of randomized control trials (RCTs) concluded that walking interventions show clinically relevant improvements on many cardiovascular disease (CVD) risk factors (Murtagh et al. 2015). The dose required for these effects remains unclear: how often, what pace, and how long to walk? We have updated the review (to Dec 2015) and studied the dose-response relations between the walking characteristics and the CVD outcomes.

Methods: Four electronic databases and reference lists were searched for RCTs of walking interventions lasting ≥ 8 weeks and including inactive healthy adults. The effects of the interventions on 12 CVD risk factors and the dose response relations between nine dose metrics and the risk factors were studied by meta- and meta regression analyses with the random effect model.

Results: All together 40 walking RCTs were identified. The studies included 1917 participants (80 % women) with an age range of group means of 30–84 years. Walking interventions varied in frequency (1–15 sessions/

week), intensity (%VO₂max 45–83, or METs 1.7–5.8), bout duration (10–90 minutes), and total duration (8–52 weeks). Our findings show that walking improves aerobic fitness (standardised difference in means, SDM, 0.498, $p < 0.001$), and reduces body mass (SDM -0.187, $p < 0.001$), systolic (SDM -0.239, $p < 0.001$) and diastolic (SDM -0.184, $p = 0.004$) blood pressure, and fasting blood glucose (SDM -0.305, $p < 0.001$), but has non-significant effects on blood lipids. Meta-regression analysis suggested a positive dose response between METmin/week walking exposure and VO₂max ($p < 0.001$) and systolic blood pressure ($p = 0.082$), and a negative dose response for blood glucose ($p = 0.023$).

Discussion: The pooled effects indicated substantial benefits in CVD risk factors within wide range of walking exposures. Preliminary dose-response analyses suggest that weekly metabolic cost of walking appears to determine the type and level of the benefits. Further dose-response analyses are underway.

Conclusions: Our updated systematic review and pooled data analysis yield increasing evidence for the health benefits of walking and suggests a dose-response relationship that may guide public health walking interventions. Murtagh et al. The effect of walking on risk factors for cardiovascular disease: An updated systematic review and meta-analysis of randomized control trials. Preventive Medicine 2015;72:34–43.

41. Physical activity among adults with different functional limitations. Results from a cross-sectional population study linked with national health insurance registrations

Authors: de Hollander EL, Proper KI.

Background: Knowledge about physical activity (PA) levels among people with different functional limitations contributes to the development of suitable PA promotion measures. Therefore, the associations between different types of functional limitations using health insurances registrations and PA were examined.

Methods: Data from the Dutch Public Health Monitor 2012 including 321,917 adults aged 19 years and older were used to assess adherence to the PA guideline and time spent on at least moderate intense PA as well as on vigorous intense PA. People with a motor, visual or hearing limitation were identified by using a registry with health claims data of mobility, visual and hearing aids from all national health insurances. Generalised estimated equations were used to estimate the association of PA with the three types of functional limitations, adjusted for confounders.

Results: People with a motor limitation had a lower adherence to the PA guideline (-35%) compared to people without any of the three limitations. Time spent on at least moderate intense PA was 473 minutes per week lower, but 4 minutes per week higher for vigorous intense PA as compared to those without a limitation. However, among those with a motor limitation, people with an arm or leg prosthesis and people with aids like a reclining mobility chair spent less minutes per week on vigorous intense PA (-15 min/wk and -7 min/wk) as compared to those without a limitation. People with simple mobility aids like walkers and crutches were the ones spending more time on vigorous intense PA (+5 min/wk) as compared to those without a limitation. People with visual and hearing limitations had a lower adherence to the PA guideline (-26% and -12%, respectively) compared to those without a limitation. People with visual and hearing limitations spent 363 min/week and 196 minutes per week less time on at least moderate intense PA, respectively. However, they spent 5 minutes/week and 8 minutes per week more time on vigorous intense PA, respectively.

Discussion and implications: Our study shows that people with motor, visual and hearing limitations are less physically active as compared to people without any of these limitations with the exception of vigorous intense activities. There are differences among types of functional limitations; therefore, future research should focus on the needs and barriers for each target group to improve the connection between demand and supply.

42. Pilot testing the 'Edinburgh Framework': Use of a novel approach to establish the validity and reliability of the Scottish Health Survey

Authors: Strain T, Baker G, Fitzsimons C, Kelly P.

Background: The 'Edinburgh Framework' is a novel approach to establish the validity and reliability of physical activity (PA) and sedentary behaviour measurement (Kelly, Fitzsimons, & Baker, IJBNPA 2016). It encourages researchers to consider all aspects of validity and reliability, and ensure evidence is appropriate for the purpose of the measurement. The Scottish Health Survey (SHeS) is the national surveillance method for determining the proportion of adults that meet the aerobic PA guidelines in Scotland. However, its validity and reliability properties are unreported. This study undertook the first practical application of the 'Edinburgh Framework' to establish the validity and reliability of the SHeS.

Methods: Evidence relating to the validity and reliability of the 2012–2015 adult SHeS PA questionnaire was identified through a directed but non-systematic ‘snowballing’ search strategy. This included annual reports, survey documentation, Scottish Government publications, and academic articles. The theoretical framework outlined in Kelly et al. (2016) was used to guide data collection. Identified evidence was categorised under the relevant validity or reliability sub-type (e.g. convergent validity, test-retest reliability). Each sub-type was rated as good, unclear, unresponsive, or insufficient. These formed a summary rating.

Results: The validity and reliability evidence for the SHeS’s ability to determine aerobic PA guideline prevalence was unclear. We rated evidence for external validity as good, convergent validity as unclear, internal reliability and face validity as unresponsive, and all other sub-types as insufficient. The issues raised by the unresponsive evidence concerned high volumes of moderate-and-vigorous PA reported and occupational PA measurement. The Edinburgh Framework was a useful practical tool to guide this process.

Discussion: These results enable a more nuanced interpretation of SHeS data, as we have identified possible sources of error or bias, and their potential implications. Further work should investigate the issues raised by the unresponsive evidence, and address the areas of insufficient or unclear evidence. The process highlighted areas where the Edinburgh Framework could be improved in future iterations, such as factoring in the quality of the evidence. We recommend developing tools that make the process quicker and/or easier, e.g. a PRISMA-style check-list.

Implications: The Edinburgh Framework is a useful practical tool to assess validity and reliability evidence. It has the potential to re-frame the way we conceptualise the constructs, and how we evaluate them. Policy-makers, academics, and other data users should consider the limitations of the validity and reliability evidence when using the SHeS to determine aerobic PA guideline prevalence.

43. Pedometer-determined physical activity in Czech adults: Findings from 2008 to 2013

Authors: Pelclová J, Frömel K, Mitáš J.

Background: The aim of the study was to examine trends in pedometer-determined physical activity over six-year period in adult Czech population.

Methods: Data of 4,647 participants (aged 25–65 years, 44.3% men) recruited within Czech national six-year cross-sectional survey ‘Physical

Activity and Inactivity of the Inhabitants of the Czech Republic in the Context of Behavioural Changes’ were included into trend analysis. Pedometer (Yamax Digiwalker SW-700) data were obtained for seven consecutive days from spring and autumn seasons. The pedometer-determined outcomes were examined using step-defined categories (physically inactive: taking <7,500 steps/day and highly active: taking >12,500 steps/day) and analyzed using ordinal and logistic regression models.

Results: Significant decline in steps/day was observed in both men (from 10,543 to 9,600; -943) and women (from 10,463 to 8,941; -1,522) between 2008 to 2013 with the sole exception in 2012. Decreases in percent of person classified as very active (men 5.4%; women 11.7%) and increases in percent classified as physically inactive (men 15.5%; women 12.3%) were observed during the same period.

Discussion: The national six-year survey suggests a reduction in steps/day in Czech adults, especially noticeable in women, and a shift in the population distribution in step-based categories.

Implications: These findings are very important from the perspective of Czech public health initiatives. However, further confirmation of this trend is needed.

44. Effectiveness of promotion events of physical activity for people with non-communicable diseases in Luxembourg: An event study

Authors: Lion A, Delagardelle C, Urhausen A, Sax A, Hardy C, Seil R, Theisen D.

Background: The Sport-Santé project aims to promote physical activities for people with non-communicable diseases in Luxembourg. The project-related website (www.sport-sante.lu), which contains theoretical and practical information, was launched in April 2015. Following the launch, numerous events (e.g. articles of scientific popularization in local newspapers, booths) have been proposed to promote Sport-Santé project and its website. This study aimed to evaluate the effectiveness of the promotion events on the popularity of www.sport-sante.lu.

Methods: Event study techniques were used to analyse the impact of the different promotion events on the daily number of sessions of www.sport-sante.lu, which was collected with Google Analytics from August 2015 to March 2016. The period from April 2015 to August 2015 has been excluded due to unexpected variability of the outcome. The period from August 2015 to September 2015 was considered as the reference period, due to the lack of promotion event. The mean daily

number of sessions on websites from the same field and the same country was collected with the benchmarking tool of Google Analytics and was considered as a control. Fourteen promotion events were identified. The potential effect of those events was estimated up to two days after the events.

Results: This event study identified eight promotion events which increased by a factor of 3.58 (3.154) the number of sessions. Three events (2 booths and 1 scientific popularization article) had significant immediate effect (the day of the event). Significant increases occurred one day after two events (1 booth and 1 article) and two days after two other events (1 booth and 1 article). One article had effects during the two days following its publication. The significant increases in number of sessions were often followed by significant decreases.

Discussion: The participation of Sport-Santé at major events (with large visibility) and the publication of scientific vulgarisation articles in the local specialized journals, both promoting sport and health, are valuable to increase the popularity of the project and its website. The effort concerning the promotion must be kept and new ways of communication should be explored (e.g. TV, radio, major national newspapers, nudge marketing). The best sustainable strategies are always those that tackle the problem in many ways.

Implications: The systematic evaluation of effectiveness of communication events can help to select the most efficient way to promote the health-related project. It may contribute to adjust the content of the communication (e.g. tailored animations on the booth).

45. Symposium: Sports Club for Health (SCforH) movement in the European Union: Are we moving in the right direction?

Authors: Nanette Mutrie (Chair: University of Edinburgh, UK), Brian Martin (Discussant: University of Zurich, Switzerland), Sylvia Titze (University of Graz, Austria), Pekka Oja (UKK Institute, Finland), Sami Kokko (University of Jyväskylä, Finland), Zeljko Pedisic (Victoria University, Australia), Karen Milton (University of Oxford, UK), Aoife Lane (Waterford Institute of Technology, Ireland), Susanna Geidne (Orebro University, Sweden)

Summary: With more than 60 million members, European Union (EU) sports clubs are among organizational settings with the greatest capacity for health promotion. In 2011, Sports Club for Health (SCforH) Guidelines were developed to assist sports clubs in their efforts to promote health-enhancing physical activity. As proposed by the

Council of the European Union, national implementation of these guidelines was listed as one of the 23 indicators to evaluate HEPA levels and policies in the EU member states. This symposium will present the latest findings about: [i] health benefits of specific sport disciplines; [ii] sports club as a setting for health promotion interventions; and [iii] implementation of the SCforH guidelines in the EU member states.

Goals of symposium: To summarize emerging evidence relevant to health promotion through sports clubs in the EU and discuss about future directions for EU public health efforts in this area.

Relevance to policy: The symposium intends to motivate further development of national- and EU-level policies supporting health promotion through sports clubs.

46. Symposium: Active commuting to improve health

Authors: Bente Merete Stallknecht (Chair: University of Copenhagen, Denmark), Mailin Gaupp-Berghausen (University of Natural Resources and Life Sciences, Austria), Lars Ostergaard (University of Southern Denmark, Denmark), Mads Rosenkilde (University of Copenhagen, Denmark)

Summary: Physical activity can take place in different domains of everyday life; at home, as transport, during work and in the leisure time. A large number of trials have investigated the health-enhancing effects of leisure time physical activity, but the health-enhancing effects of active commuting are less well elucidated.

Goals of symposia: This symposium will give an overview of the measures to promote active mobility and present how bicycling to/from school or work affects various metabolic health factors in children and overweight adults, respectively. The three speakers will each present for maximally 20 minutes followed by 10 minutes for discussion.

Relevance to policy: A priority area in the ‘Physical activity strategy for the WHO European Region 2016–2025’ is to reduce car traffic and increase walking and cycling suitability. Research into active commuting can provide evidence for the health effects of this form of physical activity and attract attention of politicians to this area.

47. Symposium: Where do people get their activity? Domain-specific physical activity across the UK

Authors: Elaine Murtagh (Chair: Mary Immaculate College, Ireland), Foster Charlie (Oxford, England), Paul Kelly and Tessa Strain (Edinburgh, Scotland) Marie Murphy (Ulster, Northern Ireland)

Summary: Understanding the correlates and determinants of physical activity including the individual-level factors and the physical and social environments that support physical activity helps to inform policy intervention (Baumann et al 2012). In addition, a comparison of the sources of physical activity between those who are sufficiently active and those who are not, by key demographic variables such as age and gender may inform interventions designed to increase physical activity among those who are currently inactive.

Goals: The aim of this symposium is to use large representative UK survey datasets to examine domain specific physical activity

Relevance to policy: An examination of differences in domain specific physical activity across age and gender could inform the design of age and gender specific physical activity policy and interventions.

48. Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? A harmonised meta-analysis of data from more than 1 million men and women

Authors: Ekelund U, Steene-Johannessen S, Brown WJ, Fagerland MW, Owen N, Powell KE, Bauman A, Lee IM.

Background: High amounts of sedentary behaviour have been associated with increased risk of several chronic conditions and mortality. However, it is unclear whether physical activity attenuates or even eliminates the detrimental effects of prolonged sitting. We examined the associations of sedentary behaviour and physical activity, with all-cause mortality.

Methods: A systematic review for which prospective cohort studies which: 1. provided individual level exposure and outcome data; 2. provided data on both daily sitting or TV-viewing time and physical activity; and 3. reported effect estimates for all-cause mortality, cardiovascular disease mortality, or cancer mortality, were gathered. We included data from sixteen studies. Fourteen were identified through a systematic review, and two were additional unpublished studies with pertinent data available. All study data were analysed according to a harmonised protocol which categorised reported daily sitting time and TV-viewing time into four standardised groups, and physical activity into quartiles. Data across all studies were then combined to analyse the association of daily sitting time and physical activity, with all-cause mortality. Estimated summary hazard ratios were estimated using Cox regression. Analyses were then repeated using TV-viewing time, instead of daily sitting time.

Results: The study included a total of 1,005,791 individuals who were followed up for 2–18 years, and during which 84,609 (8.4%) died. Compared with the referent group (i.e., those sitting <4 hrs/day and in the most active quartile), mortality during follow-up was 12–59% higher in the two lowest quartiles of physical activity. Daily sitting time was not associated with increased all-cause mortality in those individuals within the most active quartile of physical activity. Compared with the referent group (<4 hours of sitting per day and highest quartile of physical activity [>35.5 MET-h/week]), there was no increased risk of mortality during follow-up in those who sat for more than 8 hours per day, but who also reported >35.5 MET-h/week of activity (HR=1.04; 95% CI 0.99–1.10). By contrast, those who sat the least (<4 hours/day) and were in the lowest activity quartile (<2.5 MET-h/week) had a significantly increased risk of dying during follow-up (HR=1.27, 95% CI 1.22–1.31). Six studies had data on TV-viewing time (N=465,450; 43,740 deaths). Watching TV for more than 3 hours per day was associated with increased mortality, regardless of physical activity, except in the most active quartile where mortality significantly increased only in people who watched TV for 5 hours/day or more (HR=1.16, 1.05–1.28).

Discussion: High levels of moderate intensity physical activity (i.e. 60–75 minutes per day) appears to eliminate the increased risk of death associated with high sitting time. However, this high activity level attenuates, but does not eliminate, the increased risk associated with greater TV-viewing time.

Implications: These results provide further evidence on the benefits of physical activity, particularly in societies where increasing numbers of people have to sit for long hours for work purposes, and may inform future public health recommendations.

49. Are point-of-choice prompts to increase stair climbing in worksites effective? It depends on the company...

Authors: Puig-Ribera A, Senyé-Mir A, De Lara N, Milà R, Thomas E, Eves FF.

Background: Point-of-choice stair climbing (SC) interventions can increase SC in public settings but evidence of such effect in worksites is limited. In the need to identify effective SC interventions that can be transferred to various worksite settings across European countries, this study tested the effectiveness of two worksite campaigns prompts developed cross culturally and targeting heart health to increase objectively measured SC in employees from four large companies in Barcelona.

Methods: A quasi-experimental interrupted time series design was used. Campaigns 1 and 2 (C1; C2) were developed from focus groups conducted with university employees from UK (n=10; 59 employees) and Spain (n=6; 36 employees) respectively. The Campaigns effects on SC (C1-Stair climbing protects your heart; 7 minutes of stair climbing a day can reduce your risk of a heart attack. There are 1,440 minutes in a day; can you spare 7 to live longer? C2-Stair climbing protects your heart; 5 minutes of stair climbing a day can reduce your cholesterol levels) were tested over 14 weeks in several workplaces from Barcelona (Roche Spain, Volkswagen-Audi Spain, Almirall, Lucta) with the last one acting as a control. In a crossover design, a baseline period (2 weeks) was followed by exposure to C1 (4 weeks), a 4-week washout period and C2 (4 weeks). SC was monitored objectively and continuously with automated counters (Solva NL) installed in the bottom floors of the companies buildings. The main SC message was displayed on A3 posters positioned between stairs and the lift on each floor, with a further A4 prompt positioned above the lift button. Differences in SC between phases were identified using a linear model regression analysis adjusted by campaign and worksite.

Results: A total of 319,340 observations were registered. SC at baseline ranged from 37.3% to 49.3% across companies. Compared to baseline, C1 and C2 significantly increased SC by 4.16% (95% CI: 1.14–7.18) in Almirall (p<0.05), showed no effect in Roche Spain (-0.82% ; 95% CI:-3.84–2.20) and, increased SC in Volkswagen by 2.12% (95% CI:-1.73–5.97) but differences were not significant. In the control worksite, SC was reduced significantly by 8.30% (95% CI:-11.67 to -4.93; p<0.05) over the same period.

Discussion: Prompt-of-choice campaigns to increase SC have different effects in different worksites and the absence of any campaign can be associated with a decrease in occupational SC.

Implications: Effectiveness of point-of-choice interventions to increase SC in worksites seems to be influenced by company-related factors that need further exploration.

50. Do office workers desire to sit less in the workplace setting?

Authors: Wallmann-Sperlich B, Froboese I.

Background: Prolonged sitting time is identified as a health risk factor. In developed countries, prolonged and uninterrupted sitting is extremely prominent in the desk-based working setting, so that numerous activities

are undertaken to counteract and interrupt workplace sitting. However, no knowledge exists on how long desk-based workers actually desire to stand, walk or perform physically demanding tasks at their workplace. Hence, the aim of this study was to investigate the actual proportion of sitting, standing, walking and physically demanding tasks in the desk-based working setting, as well as the desired proportion of these four.

Methods: A cross-sectional sample of adult German workers in a desk-based setting (n = 733; 386 men; 41.0 ± 13.8 years) were interviewed by telephone, applying the Occupational Sitting and Physical Activity Questionnaire (OSPAQ) and were asked questions concerning their desired proportion of sitting, standing, walking and physically demanding tasks. A paired t-test examined differences in the stated and desired proportion of sitting, standing, walking and physically demanding tasks.

Results: Desk-based workers sit 73.1%, stand 11.4%, walk 13.8% and are physically demanded 4.8% of their working hours. They wish to sit 53.5% (<.001), to stand 17.4% (<.001), to walk 23.4% (<.001) and to be physically demanded 9.3% of their working time.

Discussion: The present findings show that reducing sitting time in the workplace setting is not only important to promote health, but is also the desire of desk-based workers. Interestingly, the stated amount of 53.5% of sitting during a working day fits well to the recent published expert statement commissioned by Public Health England and the Active Working Community Interest Company (Buckley et al., 2015) who recommend at least 2 h/day progressing to a total accumulation of 4 h/day of standing and light activity during working hours. However, the present study also shows that not only activities have to be addressed to increase the standing proportion, i.e. through sit-and-stand work stations, but also to introduce arrangements for promoting walking within the workplace setting.

Implications: Activities to reduce sitting time in the workplace setting are supported by the desire of the desk-based workers, which is a good foundation for workplace actions. However, besides promoting standing in the workplace setting, there is a need for actions addressing more walking and physically demanding tasks in the workplace setting.

51. Effectiveness of a Physical Activity Loyalty Scheme to maintain behaviour change: A cluster randomised controlled trial

Authors: Hunter RF, Brennan SF, Tang J, Smith O, Tully MA, Patterson C, Longo A, Hutchinson G, Prior L, French D, Adams J, McIntosh E, Kee F.

Background: In the UK, the consequences of physical inactivity are estimated to cost the NHS over £1bn annually. As a large proportion of the UK workforce is employed in sedentary occupations, worksite interventions have the potential to contribute significantly to the health of the population. The UK Government is encouraging the use of financial incentives to promote healthier lifestyles but there is a dearth of evidence regarding effectiveness and sustainability of workplace-based physical activity incentive schemes.

Methods: A large cluster RCT is underway, incorporating nested behavioural economic field experiments and process evaluation, to evaluate the effectiveness of a physical activity loyalty scheme. Sedentary employees were recruited from public sector organisations in Northern Ireland and randomised to Intervention or Control groups. Intervention Group participants were encouraged to partake in 150 minutes of physical activity per week through provision of retailer vouchers to those who met targets during a 6 month intervention. Minutes of physical activity were monitored when participants passed sensors (holding a keyfob) placed along main walking routes nearby participating organisations. Participants in the Control Group completed the same outcome assessments (waiting-list control). The primary outcome is steps per day measured via Yamax Digi-Walker CW701 pedometers. Secondary outcomes include health and wellbeing (Short Form-8, EuroQoL-5D-5L, Warwick Edinburgh Mental Well Being Scale), and work absenteeism/presenteeism. Data is collected at baseline, 6, 12 and 18 months. Information on key fob/ website usage, voucher downloads and redemption will be collected as part of a comprehensive process evaluation.

Results: In total, 701 participants have been recruited (n=12 organisations). Participants have been randomised to intervention (n=375) and control (n=326) groups. Baseline and 6 month data has been collected. Findings regarding the effectiveness of the intervention from the 6-month follow-up data will be presented.

Discussion: This study will address the gap in knowledge regarding the effectiveness and cost-effectiveness of a workplace-based financial incentive scheme to promote physical activity. Workplace-based interventions have significant potential in terms of encouraging employees to partake in physical activity during the working day which could lead to substantial improvements in physical activity levels overall.

Implications: If this intervention proves to be both effective and cost-effective, there is great potential to contribute significantly to the health and wellbeing of the workforce in the

future. Improvements in the physical and mental health of employees may in turn lead to economic benefits for the employer, such as reduction in rates of absenteeism and increased productivity.

52. Cardiorespiratory fitness testing in male steelworkers: A useful addition to their annual workplace medicals?

Authors: Gray B.

Background: Cardiovascular disease (CVD) and type 2 diabetes (T2DM) remain two of the greatest public health challenges facing Europe. Evidence has previously demonstrated that occupational physical activity has a protective benefit on the development of these two conditions. However, emerging research has observed an increasing prevalence of cardiometabolic risk factors in a number of occupations perceived to be physically demanding. One cardiometabolic risk factor overlooked in clinical practice is cardiorespiratory fitness (CRF), despite strong associations between levels of CRF and the risk of CVD and T2DM. This study investigated the potential benefits of adding CRF testing to an existing workplace-based CVD and T2DM risk assessment in a group of male steelworkers in South West Wales.

Methods: Analysis was performed on 81 male steelworkers (aged ≥40 years) with no prior history of CVD or T2DM. Risk assessments took place during normal working hours, and lasted 60 minutes, during which demographic, anthropometric measures, and blood pressure were recorded, and capillary blood samples obtained. Physical activity levels of the steelworkers were calculated using the GPPAQ, and CRF levels assessed using the Chester Step Test. The risk of CVD was predicted using the QRISK2, JBS3, SCORE and ASCVD equations. The risk of T2DM was predicted using Leicester Practice Risk Score, QDiabetes, FINDRISC and ADA assessments/questionnaires. Between-group CRF categories (Excellent/Good vs. Average/Below Average) and GPPAQ indices (Active/Moderately Active vs. Moderately Inactive/Inactive) were analysed. Individual relationships between CRF levels and predicted risk scores were investigated using Pearson's correlation.

Results: Grouping employees by CRF categories identified more differences (p<0.05) in cardiometabolic risk factors (BMI; waist circumference; total cholesterol; TC:HDL ratio; non-HDL cholesterol; triglycerides; HbA1c) than grouping by GPPAQ indices (waist circumference and triglycerides). These differences in risk factors translated into observed significant differences between CRF groups in risk scores in all four T2DM risk assessments, and the two UK CVD risk equations (QRISK2 and

JBS3). In addition, negative relationships (p<0.05) were observed between individual CRF levels and risk scores in three CVD risk equations (QRISK2, JBS3 and ASCVD), and all of the T2DM risk assessments/questionnaires.

Discussion: The introduction of CRF testing in male steelworkers revealed a number of interesting observations that would have likely not been observed if self-reported PA levels were used instead of CRF.

Implications: CRF assessments appear to be a useful addition to existing annual medicals, and could be an important measure in identifying male employees at risk of cardiometabolic conditions.

53. Do Royal Mail postal workers deliver when it comes to being physically active?

Authors: Wilson JJ, McClean CM.

Background: Since the seminal work of Jeremy Morris, occupational physical activity levels have been investigated in several studies. Postal workers are of particular interest due to the varying levels of physical activity required by employees in different job roles. However, there is a lack of research using objective methods to explore physical activity profiles in different groups of postal workers. The aim of this study was to quantify differences between three groups of postal workers in terms of physical activity levels.

Methods: Twenty-six Royal Mail postal workers (22M/4F; age 46.039.1 years; body mass index 27.133.1 kg/m²) recruited from a Northern Ireland delivery office wore an ActiGraph GT3X accelerometer on ≥6/14 days for ≥10 hours per day. Participant groups included walkers (n=10), van drivers (n=8) and management & counter staff (n=8). Statistical analyses included repeated-measures ANOVA and Tukey-Kramer post-hoc testing.

Results: Significant differences between groups included: higher daily light physical activity in van drivers (408.9343.5 minutes; p=0.048) versus management & counter-staff (343.9361.4 minutes); higher total daily moderate-vigorous physical activity in walkers (92.9335.6 minutes; p=0.002) and van drivers (76.8330.4 minutes; p=0.05) versus management & counter-staff (40.9312.4 minutes); higher daily moderate-vigorous physical activity in ≥10 minute-bouts in walkers (53.9334.6 minutes; p=0.01) versus management and counter-staff (15.639.3 minutes); and higher daily step counts in walkers (1604134032; p=0.002) and van drivers (1452332566; p=0.025) versus management & counter-staff (976232307). Current physical activity guidelines (i.e. ≥150 minutes of moderate physical activity per week in ≥10-minute bouts) were met in 8/10 walkers, 6/8

van drivers and 2/8 management & counter-staff respectively.

Discussion: Levels of physical activity varied greatly between different postal worker groups. Walkers had the most favourable physical activity profile while management & counter-staff seemed to be the least physically active group. In general, most participants' physical activity profiles compared well to normative estimates of physical activity in the general public.

Implications: Although management & counter-staff completed relatively high amounts of daily step counts, future research looking to develop interventions aimed at improving daily moderate-vigorous physical activity in this group may be warranted. It would also be interesting for future research to explore sedentary behaviour variables such as total sedentary time, number of sit-to-stand transitions and the temporal distribution of sedentary bouts.

54. How did the public respond to the 2015 expert consensus guidance statement on workplace sedentary behaviour? A qualitative analysis

Authors: Gardner B, Smith L, Mansfield L.

Background: Successful public health policy may depend on public acceptability. On 1st June 2015, amid growing evidence of the health risks of sitting, even amongst those who meet physical activity recommendations, the first public health guidance on workplace sedentary behaviour was published. This expert consensus statement recommended that desk-based office workers displace sitting with 4 daily hours of standing and light activity (Buckley et al., 2015). Several news media outlets reported on the accompanying press release. Public comments posted online in response to the story provide a valuable insight into: 1. the acceptability of this novel public health message about a new-found health-related behaviour; and 2. views towards public health more broadly. This qualitative study aimed to describe public responses to the 2015 workplace sedentary behaviour guidance.

Methods: Data included public posts on UK news media outlet websites or Twitter, made in response to a news report regarding the 2015 consensus statement. Six of eleven national newspaper websites reported on the consensus statement, and five outlets tweeted about the statement. A total of 598 responses (573 website responses, 25 tweets) were thematically analysed.

Results: Three themes were extracted. These included challenges to the credibility of: 1. the workplace sedentary behaviour guidance; 2. public health more generally; and 3. knowledge

exchange between respondents. Four aspects were challenged: 1. the novelty; 2. the credibility of authors; 3. the strength of the evidence base; and 4. its applicability to UK workplaces. Public health was commonly mistrusted, viewed as a tool for scaring and controlling the public, in order to serve a paternalistic agenda set by a conspiracy of stakeholders with hidden non-health interests. Responses that were more accepting of the guidance sought to: 1. correct others' misinterpretations; 2. raise awareness of its historical or scientific context; 3. debate current workplace health policies, or; 4. share experiences of sitting and standing, or how to adhere to the guidance.

Discussion: While the guidance provoked exchanges of health-promoting ideas among those who accepted it, the predominantly unfavourable, mistrusting responses revealed significant hostility towards public health.

Implications: Views of those who comment publicly on news of the workplace sedentary behaviour guidance may not represent those of the general public. Nonetheless, results imply that concerns about the credibility and purpose of public health may be assuaged via greater public consultation and involvement, and more systematic, rigorous and transparent evidence review processes, that articulate the quality of evidence in the development of public health guidance.

55. Leisure-time physical activity levels of shift workers compared to non-shift workers

Authors: Proper K, Loef B, Hulsegge G, Wendel-Vos W, Verschuren M, Vermeulen R, Bakker M, van der Beek A.

Background: Lack of physical activity (PA) has been hypothesized as an underlying mechanism in the adverse health effects of shift work. However, information about differences in PA levels between shift workers and non-shift workers is scarce. Our aim was to compare leisure-time PA levels between shift workers and non-shift workers. Furthermore, exposure-response relationships for frequency of night shifts and years of shift work and PA levels were studied.

Methods: Data of 5,980 non-shift workers and 532 shift workers from the European Prospective Investigation Into Cancer and Nutrition-Netherlands (EPIC-NL) were used in these cross-sectional analyses. Participants reported their time spent (hours/week) in different PA types (walking, cycling, exercise, chores) and intensities (moderate-intensity, vigorous-intensity). Furthermore, sports were operationalized as: playing sports (no/yes), individual vs. non-individual sport, and non-vigorous-intensity sport vs. vigorous-intensity sport. PA levels were

compared between shift workers and non-shift workers and by frequency of night shifts (0, 1-4, ≥5 night shifts/month) and years of shift work (0, <10, 10-19, ≥20 years) using generalized estimating equations linear regression and logistic regression, with adjustment for socio-demographics, lifestyle factors, and occupational PA.

Results: Shift workers reported to spend more time walking than non-shift workers (B=2.3 (95%-CI=1.2-3.4)), but shift work was not associated with other PA types and any of the sports activities. Shift workers who worked 1-4 night shifts/month (B=2.4 (95%-CI=0.6-4.3)) and ≥5 night shifts/month (B=3.7 (95%-CI=1.8-5.6)) spent more time walking than non-shift workers. No exposure-response associations were found between years of shift work and PA levels.

Discussion and implications: Shift workers spent more time walking than non-shift workers, but we observed no differences in other leisure-time PA levels. Based on the current study, it is unlikely that there are large differences in the average leisure-time PA levels of shift workers and non-shift workers. However, to better understand if and how PA plays a role in the negative health consequences of shift work, our findings need to be confirmed in future studies that take into account different PA types and intensities, and frequency and years of shift work. In addition, research focused on specific timing of PA, e.g. PA during night shift periods, is needed.

56. Assessment of the validity of a youth physical activity survey and longitudinal analysis of sports participation in youth as a predictor of physical activity in later life.

Authors: Hardie-Murphy M, Rowe DA, Belton SJ, Woods CB.

Background: Physical activity (PA) research and surveillance is reliant on the use of valid measurement tools. The PACE+ PA survey is used globally in youth, but has not been validated in a European sample. The validation of such an instrument would advocate its use as part of wider PA research, for example in examining the relationship between sport and PA. Current evidence demonstrates that sport is positively correlated with overall PA levels, but the contribution of sports related factors to predicting long-term PA remains unclear. The purpose of this study is: 1. to validate the PACE+ survey in a sample of 10-18-year-old Irish youth; and 2. to examine factors related to sports club participation (participation frequency; number of sports engaged in; type of sport; standard achieved) in youth as predictors of PA five years later.

Methods: In examining the validity of the PACE+ survey, participants (n=419, 45.7% male) completed self-report surveys, and wore accelerometers for eight consecutive days. Analyses compared self-reported PA, as measured by the PACE+ survey, and accelerometry data in participants with ≥5 and 7 valid accelerometer days. As part of a larger 5-year longitudinal study, participants (n=873, baseline age 10-18 years) completed self-report surveys including the PACE+ survey and sports club participation questions. ANCOVA analyses examined predictors (sports participation at baseline) of PA (follow-up), adjusting for: 1. age and sex and; 2. age, sex and baseline PA.

Results: Spearman correlations between self-reported PA levels and accelerometry derived minutes of moderate-to-vigorous PA per day were small to moderate ($\rho = 0.27-0.34$). Agreement level was high (78-90%). The accuracy of classifying those not meeting the guidelines was moderate to high (67-95%). The longitudinal analysis illustrated that greater sports participation frequency at baseline significantly predicted PA at follow-up ($p < 0.01$). Further, involvement in club sports at an elite level had a medium-to-large effect on PA levels five years later ($d = .75$ adjusting for (a); $d = .60$ adjusting for (b)).

Discussion and implications: The PACE+ survey has acceptable validity for assessing non-achievement of the adolescent PA recommendations. The continued use of the tool is recommended, and will allow for comparability between studies and tracking of PA over time. Club sport plays a valuable role in sustaining PA involvement, and results advocate for engagement at a competitive level in sport. PA promotion strategies should include frequent, high quality opportunities for sports participation.

57. 'Gaelic for Girls': Rationale, study protocol and methodological considerations

Authors: Farmer O, O'Brien W, Cahill K.

Background: During childhood, Ireland is at the forefront of an unprecedented rise in levels of obesity, physical inactivity and sedentary behaviour (Heinen et al., 2014). Most recent evidence suggests that a substantial proportion of nine-year-old female children (30%) in Ireland are overweight (Layte, & McCrory, 2011), with a further 81% of primary school children not meeting the recommended minimum of 60 minutes moderate to vigorous physical activity (MVPA) everyday (Woods et al., 2010). Many studies, however, suggest that childhood participation in community-based sport or physical activity (PA) may lead to enhanced psychosocial development and physical health outcomes (Coalter,

2007 & Gray et al., 2014). The purpose of the current research will be to gather baseline data (March to May 2016) on Irish female children (8-12 years old), in order to inform the development of a targeted community sport-based intervention, specifically identified as the 'Gaelic4Girls' (G4G) programme.

Methods: As part of this longitudinal mixed-methods research design, cross-sectional data on PA levels (using self-report and accelerometry), psychological correlates of PA, anthropometric characteristics, and culturally relevant fundamental movement skill (FMS) proficiency data amongst 300 female children (8-12 years old) has been collected. A subsample (n = 50) are currently participating in focus group interviews to explore their perceptions of health and identify barriers/motivators to participation in community sport-based initiatives.

Results: All baseline data will be analysed, with results expected by August 2016, ultimately guiding the design and development of the G4G programme for Irish female children.

Discussion: Participation in organised youth sports (OYS), specifically team sports (Eime, 2013) has been recommended as an opportunity to increase young peoples' levels of MVPA participation (Guagliano, 2014). This is particularly important for girls, as research shows that they are less physically active than boys (Hardy et al, 2010). An array of physical and psychosocial health benefits are associated with childhood participation in OYS, namely increased self-esteem, positive peer relationships (Eime, 2013), higher physical and social functioning (Snyder et al, 2010). The G4G programme will be the first evidence-base in Gaelic Games for PA promotion in Ireland, particularly for vulnerable, at risk for drop-out girls and may hold promise as an innovative community sport-based intervention. The proposed development of the G4G programme, as guided by baseline findings may positively contribute to increasing female participation in PA, improve FMS proficiency for Ladies Football performance, enhance psychosocial wellbeing and promote the development of physical literacy amongst Irish youth participants.

Implications: Practitioners should consider that an OYS intervention, such as the G4G programme in Ireland has the potential to be a powerful health-promoting initiative for children (Geidne, 2012).

58. Virtual Traveller: A behaviour change intervention to increase physical activity during primary school lessons

Authors: Norris E, Shelton N, Dunsmuir S, Duke-Williams O, Stamatakis E.

Background: Children spend a large amount of their time in obligatory seated school lessons, with notable effects on health and cognitive outcomes. The 'Virtual Traveller' programme is the first to test Virtual Field Trips (VFTs) as physically active lessons and Behaviour Change interventions. These utilise existing classroom interactive whiteboards to integrate globe-based educational content with related physical movements. This study aimed to test the effects of a 6-week 'Virtual Traveller' intervention on health and educational outcomes in primary-school children.

Methods: Design — A Randomised Controlled Trial compared pupils receiving the Virtual Traveller Intervention and waiting-list control. Participants — N=264 pupils from ten Year 4 classes (8-9 years old) provided usable data across all data collection points Measures — Data was collected before (T0), during (T1 & T2), 1 week- (T3) and 3 months- (T4) post intervention. Physical activity was assessed via Actigraph GTIM accelerometers, on-task behaviour was observed using the Observing Teachers and Pupils in Classrooms tool (OPTIC) tool and student engagement was assessed with the Student Engagement Instrument — Elementary Version (SEI-E) questionnaire. Analysis — Multilevel modelling was used to assess outcomes.

Results: Intervention pupils demonstrated significantly less sedentary behaviour and more light, moderate and vigorous physical activity and significantly better on-task behaviour during lessons (T1 & T2) than control pupils. No difference in outcomes was found at T4.

Discussion: Virtual Traveller was successful at increasing classroom physical activity and on-task behaviour. Using the Behaviour Change Wheel and Behaviour Change Techniques allows development of replicable health interventions in applied settings such as schools.

Implications: Physical activity can be successfully integrated into classroom teaching and the teaching curriculum with positive effects on physical activity and educational outcomes.

59. Partnership working to deliver school-based physical activity: The Born to Move pilot project

Authors: Fairclough SJ, McGrane B, Sanders G, Taylor S, Owen M, Curry W.

Background: In schools, Physical Education (PE) lessons provide the formal opportunity for promotion of health-related physical activity. The quality of PE though varies between and within schools, particularly in primary schools where most teachers are non-

PE specialists. This study evaluated a pilot class-based physical activity programme delivered in partnership with a commercial organisation.

Methods: Participants were 139 children aged 10-11 years from four primary schools. For six weeks, children in two schools received a twice-weekly pilot 'Born to Move' (BTM) physical activity and fitness programme alongside one regular PE lesson. Children in the two comparison (COM) schools received their regular twice weekly PE lessons. Outcomes were lesson time and whole-day physical activity (PA) and sedentary time, muscular fitness, cardiorespiratory fitness (CRF), and lesson-specific perceived exertion, enjoyment, and perceived competence assessed at baseline (T0), midway through the programme (T1), and at the end (T2). Programme fidelity was measured using child and teacher surveys at T2.

Results: The BTM group engaged in moderate PA for significantly more lesson time (29.4%) than the COM group (25.8%; $p = .009$, $d = .53$). Moderate-to-vigorous PA (MVPA) during the BTM lesson contributed 14.0% to total MVPA compared to 11.4% for the COM group PE lesson ($p < .001$, $d = .47$). The BTM group were also significantly more active during the whole-day ($p < .05$) and the school-day ($p < .01$). The BTM group rated their enjoyment of the BTM lesson higher than the COM group rated PE ($p = .02$, $d = .56$). In both groups, push-up test performance ($p < .001$), perceived exertion, enjoyment, and perceived competence increased ($p < .05$), and CRF test performance decreased ($p < .01$). The children's and teachers' responses to the programme indicated that the delivery aims of enjoyment, engagement, inclusivity, and challenge were satisfied.

Discussion: The BTM pilot programme has potential to positively impact on physical activity, fitness, and psychosocial outcomes. Further, BTM was enjoyed by the children, and valued by the teachers.

Implications: Though having specialist PE teachers in all primary schools is desirable, it is not currently a realistic aspiration. As a result, PE and school-based physical activity are often delivered by commercial organisations. The results of this pilot project demonstrate that a programme facilitated by effective partnership working between a commercial organisation, schools, and a local school sport partnership can be beneficial to children, sustainable, and co-exist alongside regular PE provision.

60. Active School Travel Making the journey to school fun and healthy

Authors: Bloomfield C, Grieve A, Clarke G.

Background: The Active School Travel programme enables pupils in 191 schools across Northern Ireland to walk, cycle and scoot to school. This improves their physical activity levels, improves their physical and emotional health and helps them arrive at school energised and ready to learn.

Methods: The Department for Regional Development and the Public Health Agency jointly fund the programme which is delivered in schools by Sustrans. The programme provides support to schools by: delivering activities, events and curriculum sessions that are tailored to each school, giving the entire school community opportunities to increase the number of pupils cycling or walking to school; helping schools identify and address local barriers to cycling and walking; providing cycling skills training, workshops and personalised travel information to teachers, parents and young people to help them overcome any barriers; supporting teachers to enable them to develop active travel plans and policies as well as curriculum resources and lesson plans; Linking schools together through information sharing, and local training and networking events.

Results: The first two years of the programme have demonstrated encouraging results. Schools that participated in 2013/14 saw walking and cycling increase by an average of 17%, whilst in 2014/15, there was an increase of 20%. If other forms of active travel such as scooting/skating and combo journeys (travelling by car and then walking/cycling for at least 10 minutes) are included, there was a 26% increase in 2013/14 and a 36% increase in 2014/15.

Discussion: The programme has been very well received by schools, and has shown positive benefits in modal shift to active forms of travel. It also lays a foundation for developing active travel habits which will be carried into adult life.

Implications: As the first phase nears completion, DRD and PHA have agreed to tender a further programme. This new programme will also bring in Department of the Environment and Department of Education as formal partners. This will draw together into one programme the various strands of work currently undertaken by each body, such as the Cycling Proficiency Scheme and infrastructure improvements in and around schools. It is anticipated that this will lead to a more joined up and effective programme.

61. Social inequality and intensity of exercise of German children and youth in school and out-of-school sports clubs

Authors: Will N, Schmidt S, Woll A.

Background: The higher the socioeconomic status (SES) of German children and youth, the higher their participation in sports clubs (Mess, Everke-Buchanan, Jekauc & Woll, 2010). Due to the rising amount of all-day schools in Germany, athletic extracurricular activities have become more popular. The question arises if sports clubs lose participants due to these changes, if social inequality in athletic extracurricular activities is as common as in sports clubs, and to what extent the intensity of sports is comparable in these two settings.

Methods: This study derived from a subsample of the Motorik-Modul Longitudinal Study (MoMo) which is based on a cohort-sequence design (Wagner et al., 2014). Nationwide representative physical activity data of N=3539 6-17-year-olds at baseline (2003-2006) were compared with N=3595 6-17-year-olds of wave 1 (2009-2012) using the MoMo physical activity questionnaire (MoMo-PAQ). Intensity and SES were assessed using a three-staged scale from low over middle to high intensity respectively SES.

Results: Overall, the participation rate of children and youth in both settings increased by 8% from baseline to wave 1. In sports clubs, rates still depend on SES but disparities have become less over time. In athletic extracurricular activities no social inequalities became apparent for the whole sample with the exception that 14-17-year-old girls with low SES showed remarkably low participation rates. The intensity of athletic extracurricular activities was rated less than in sports clubs but still higher than in physical education. Self-rated intensity decreased by age and boys rated the intensity higher than girls.

Discussion: In summary, the results demonstrate that social inequalities manifest themselves mainly in sports clubs while they are hardly present at all in athletic extracurricular activities. The comparatively low rated intensity of physical education and athletic extracurricular activities is worrying from a health perspective but due to the educational responsibility, intensity cannot be the ultimate goal of sports in schools. The question arises if the low self-rated intensity reflects the actual intensity or if it is mediated by other variables. The age and gender-related differences can be explained by biological and social influences.

Implications: Concluding, sports clubs still need to further incorporate the needs of children and youth with a low SES whilst school seems to be an excellent setting for activity and health-

related interventions that target these children and youth. Physical education needs more scientific supervision to clarify the concordance of self-rated and actual indicators of intensity.

62. The feasibility of a school pedometer competition for encouraging physical activity in adolescents:

The StepSmart Project

Authors: Best P, Corepal R, O'Neill R, Tully MA, Miller S, Dunne L, Connolly P, Kee F, Hunter RF.

Background: Self-report data suggests only 30-40% of young people (< 18 years) are sufficiently active to meet current recommended guidelines of 60 minutes moderate-to-vigorous physical activity (MVPA) per day. As physical activity (PA) behaviours formed during childhood track into adulthood, the importance of regular PA from a young age cannot be overstated. Pedometer interventions have shown promise but there is a dearth of research investigating the influence of team-based competition on PA.

Methods: Five schools agreed to take part in a two phased 24-week pedometer competition called StepSmart. School was the unit of randomisation with follow-up data collected at 24 weeks. Recruitment, retention and completion rates of primarily (physical activity using GTX Actigraph accelerometer) and secondary (mental well-being and environment questionnaire) outcomes were used to assess trial feasibility. The acceptability of the research design and intervention was assessed through a rigorous programme of qualitative work using focus group data collection methods.

Results: 224 pupils completed baseline measures. Retention to the trial at 24 weeks was 95%. 61.6% of pupils returned valid accelerometer data at 24 weeks. Response rates for secondary outcome measures at 24 weeks were 88.1%. Mean daily MVPA for the control schools at week 24 were 52.4 minutes (SD 23.5) with the intervention schools recording an average MVPA of 32.0 minutes (, SD 14.7). Daily steps increased significantly (p<0.05) among girls in the intervention group from baseline (7540.1 steps, SD, 2480.5) to 24 weeks (9898 steps, SD 3770.9). Pedometers were viewed positively by participants and appeared to increase light intensity activity. Qualitative data suggested that team competition was a key motivator males whereas for females this was described as a barrier. Final data collection (52 weeks) took place in May 2016 and will also be presented.

Discussion: Focus group interviews revealed notable gender differences in how participants perceived PA and the value of the team based competition. Males often described their motivation through external recognition whereas females noted more intrinsic motivators.

Implications: Team based competition may provide a viable context in which to encourage physical activity males in particular. For females, the type of social support (i.e. within pre-established friendship groups) appears of critical importance. More research is needed into the implications of increased light intensity PA at an early age and whether this represents a more realistic approach to increasing PA in the long term.

63. The TEACHOUT project: A quasi-experimental cross- disciplinary study of the impacts of education outside the classroom on pupils' physical activity, well-being and learning

Authors: Nielsen G, Mygind E, Bølling M, Otte CR, Schneller MB, Ejbye-Ernst N, Schipperijn J, Bentsen P.

Background: The TEACHOUT project is a quasi-experimental, cross-disciplinary study which examines the impacts of Education Outside the Classroom (EOTC) on Danish children's PA, well-being, social relations, motivation, and learning. We present and discuss the study design, measurements and analytical strategies.

Methods: In total, 16 schools with a total of 19 EOTC school classes and 19 non-EOTC parallel classes participated and data were collected over a school year. Using standardised questionnaires and tests, measures of the children's social relations, motivation for school, well-being, and academic performance were collected at the beginning and at the end of the school year. Data on PA levels were collected over ten day periods during the school year using accelerometers. The amount and characteristics of the actual EOTC provided in both EOTC and non-EOTC classes were monitored day-to-day throughout the school year using an online teacher survey platform. The effects of EOTC was mainly analysed by comparing EOTC pupils to non-EOTC (i.e. control) pupils on their scores of the outcome variables at the end of the school year adjusting for the baseline values (from the beginning of the year).

Results: EOTC is an example of an 'add-in' or holistic school-based health promotion strategy as it aims to promote both learning, PA, social relations, motivation, and well-being. The TEACHOUT study represents a novel approach in the fields of educational and school health promotion research through its study design, cross-disciplinary and mixed methods approach, and 'holistic' focus on the interdependent relations between learning, PA, social relations, well-being, and motivation.

Discussion: Presenting and discussing the TEACHOUT study design is relevant because there is a growing need for developing, implementing and evaluating

complex real-life school-based health promotion strategies that have a holistic approach and objectives.

Implications: The TEACHOUT study will result in a comprehensive picture of school health promotion and children's health and well-being which will broaden the understanding of the potential benefits of EOTC in school health promotion and primary education. These results can be used to inform and guide future policy and practice.

64. Symposium: How sport can be used to effectively motivate inactive people to increase their activity levels and improve health and wellbeing

Authors: Charlie Foster (Chair: University of Oxford, UK), Eva Martin-Diener (Zurich University, Switzerland), Sarah Ruane (Sport England, UK), Louise Mansfield (Brunel University London, UK), Emma Adams (Loughborough University, UK), Steve Mann (UKActive Research Institute, UK), Melvyn Hillsdon (University of Exeter, UK).

Summary: Following a systematic review assessing the ability of sport to engage inactive people (2012), Sport England launched the Get Healthy Get Active Fund (GHGA), to improve the evidence base for the effectiveness of sport in improving health. £13.8 million (approx €17.1 million) has been invested into 33 interventions supporting >83,000 inactive people to move into sport, each incorporating academic research. Methods range from randomised controlled trial to pre and post design evaluation. This symposium introduces the latest international perspectives on the evidence alongside programme-level analysis, research results from academics researching four interventions and a panel discussion.

Goals of symposia: Disseminate and translate the latest evidence for the role of sport in supporting inactive people into activity and preventing and managing long term health conditions to inform future interventions; Explore how cross sectoral partnerships can work differently to support inactive people to get active to influence population health.

Relevance to policy: The session incorporates comparisons between UK and European Policy for sport, physical activity and health, supporting the implementation of evidence based approaches to support policy outcomes.

65. Symposium: Physical Activity Surveillance-System — Why, how, what outcome? Experiences from Scotland, Finland and Austria

Authors: Paul Kelly (Chair: University of Edinburgh, UK), Tessa Strain (University of

Edinburgh, UK), Tommi Vasankari (UKK Institute for Health Promotion, Finland), Sylvia Titze (University of Graz, Austria).

Summary: Surveillance is an ongoing and systematic data collection and analysis at the population level. It can inform policy and help to evaluate national level progress. A comprehensive physical activity (PA) surveillance-system includes measures of PA behavior and measures of variables from the socio-ecological model. A recent milestone was the worldwide publication of national 'physical activity cards' organised by the Global Observatory for Physical Activity. This initiative includes a call for an 'Increase by 50% in the number of countries with continuous surveillance of physical activity practice.'

Goals of symposium: The aim of the symposium is to provide insight into different strategies and challenges for how to implement a PA surveillance-system (PAS-S) taking Scotland, Finland, and Austria as example cases. All three presenters will provide an overview about the PAS-S in their respective country and will discuss its strengths and limitations as well as provide learning and recommendations for a future Euro PAS-S.

Relevance to policy: Many European countries have developed their own PAS-S partly based on their particular research strengths. Overall, approaches to provide comparable data on the physical activity levels between countries are desired.

66. Symposium: Reducing sedentary behaviour among older adults — The SITLESS Project

Authors: Mark Tully (Chair: Queen's University Belfast, UK), Laura Coll-Planas (University Fundacio Blanquerna, Spain), Jason Wilson (Queen's University Belfast, UK), Katharina Wirth (University of Ulm, Germany), Paolo Caserotti (University of Southern Denmark, Denmark), Manuela Deidda (University of Glasgow, UK).

Summary: To promote active and healthy ageing, reducing sedentary behaviour (SB) among older adults remains a challenge alongside increasing their levels of physical activity (PA). However, complex behaviour change is required to achieve and maintain benefits gained from specific interventions. SITLESS aims to provide new evidence on how to develop a robust complex intervention combining the effects of a PA intervention with self-management strategies to decrease SB in community-dwelling older adults, and test it using objective and validated measures.

Goals of symposia: To provide an overview of the SITLESS project, a multicentre clinical trial aimed at reducing SB and increasing PA by enhancing

existing exercise referral schemes with self-management strategies; To present the results of two systematic reviews conducted as a previous study to define the intervention, the feasibility study and the definitive trial; To discuss methodological challenges of reducing and measuring SB, as well as how to assess the cost effectiveness of this international intervention.

Relevance to policy: This symposium will contribute to the discussion on how to improve existing exercise referral schemes across Europe to achieve a lasting impact on SB reduction and PA.

67. Physical Activity during Physical Education lessons in Sweden

Authors: Fröberg A, Raustorp A, Pagels P, Larsson C, Boldeman C.

Background: Public health organizations encourage youth to engage in a minimum of 60 minutes per day of moderate-to-vigorous physical activity (MVPA). Recently, provision of recurrent MVPA in Physical Education (PE) lessons was stressed by the WHO, as a part of creating health-promoting environments to reduce risk factors associated with non-communicable diseases. A meta-analysis of seven studies with objective measures suggested that 45 percent of the PE lessons were spent in MVPA. No full-scale study examining the pattern of accelerometer-measured sedentariness and PA during PE lessons in Sweden does exist. Therefore, the aims were to i) measure percent of sedentary (%SED), light PA (%LPA) and MVPA (%MVPA) during PE lessons in Swedish 2nd, 5th, and 8th graders; and ii) analyze %MVPA in terms of gender by grade and PE lesson content and, %MVPA during PE between seasons.

Methods: During September, March and May in 2012–13, 39 PE lessons were observed and categorized according to seven lesson categories; i) Ball play; ii) Ball games; iii), Dance; iv), Fitness; v,) Playing games; vi) Orienteering; vii) Gymnastics. %SED, %LPA and %MVPA during PE was estimated using accelerometers (ActiGraphTM GT3X+, US Pensacola) and height respectively weight were measured.

Results: %MVPA was in average 25 percent of the PE lessons with 27 and 23 percent for boys and girls respectively. Mean %MVPA ranged in regard to lesson content from 4 to 33 (girls) and 6 to 37 (boys) percent in the Dance and Fitness categories respectively. Except in 2nd graders no significant gender difference in %MVPA was seen.

Discussion: The relatively low volumes of %MVPA during PE lessons may be explained by the educational components of PE containing instructions and demonstrations and even theoretical lessons, suggesting that maintaining high

volumes of MVPA throughout a PE lesson is rather challenging.

Implications: The potential of the PE subject to contribute to public health goals is obvious with individuals within a particular lesson content to reach two thirds of their daily recommendation. The ability to reach youth PA on a regular basis in PE urge for more coherence between public health goals such as reaching recommendations and school curricula in the subject PE. Research on PE classroom management to increase PA when appropriate within the given curriculum, i.e. time effective instructions to minimize time waiting, and inclusive activities, seems urgent.

68. The use of commerical physical activity devices and apps among Finnish adolescents

Authors: Ng K, Tynjälä J, Hämylä R, Kokko S.

Background: Mobile phone applications for monitoring and promoting physical activity (PA) are extremely popular among adults. Devices that work with these applications are attractive and affordable with its multi functioning abilities which are available through the commercial markets. Studies have reported an increase in PA levels among people with devices, however less is known if the effect can be transferred into adolescent populations. Therefore, the objective of this study was to investigate the usage of PA tracking devices or mobile phone applications among adolescents and its association with daily moderate-to-vigorous physical activity (MVPA) after considering family affluence.

Methods: A National representative sample consisting of approximately 2000 adolescents in each grade 5 (11y), 7 (13y), and 9 (15y) took part in an online questionnaire about physical activity behaviours during school time. The respondents were asked, “Do you have any of the following physical activity measuring devices?”, “smartphone application”, “heart rate monitor/sports watch”, “other”. Response categories included “I do not have”, “Yes, but do not use actively”, “Yes, and use it actively”. A single item was used to determine MVPA behaviour over the past 7 days was the outcome variable. Items from Family Affluence Scale III were also included in the survey. Two way ANOVA were used to test the difference between FAS groups, and those with and without activity devices with (MVPA).

Results: PA monitor devices have been categorized into three types accessible to adolescents; smartphone applications; heart rate monitors or sport watches; and, other types. In this study, we report the relationship between its usage and PA levels after considering family affluence.

Discussion: This is the first study that describes the situation in Finland with adolescents using PA monitors with PA. Indications of its usage are discussed. Further studies in this area are needed.

Implications: Social inequalities are maybe further created through the promotion of commercial PA devices among adolescents.

69. Change in physical activity levels among disadvantaged adolescents. The PRALMAP-INÈS school-based overweight prevention program.

Authors: Langlois J, Omorou A, Legrand K, Vuillemin A, Brianchon S, Lecomte E and the PRALMAP-INÈS group (Böhme P, De Lavenne R, Gailliard C, Muller L, Pourcher C, Quinet MH, Saez L).

Background: Tackling social inequalities is a key challenge in reducing adolescents' overweight and increasing non sitting time and physical activity (PA). The study aimed to investigate PA and sedentary behaviour (SB) changes after a 1-year intervention between less advantaged teens as compared to advantaged ones.

Methods: The French PRALIMAP-INÈS cohort included 1411 grade 9 and 10 (13–18 year old) adolescents. In 2 visits, pre and post interventions, adolescents were measured (weight, height, waist circumference) and filled in questionnaires assessing the social status (FAS: Family affluence scale), PA and SB (IPAQ). 1-year interventions consisted of a standard education care management including 5 collective sessions (A.S) associated to a strengthened care management including mainly individual activities among 2 third of the less advantaged (LA.S.S). PA referred to weekly frequency and duration of vigorous, moderate and walking activities and SB referred to time spent sitting (school, transportation, screen-viewing and other leisure-time). PA and SB were described according to the group and evolution was explained through longitudinal linear and logistic models.

Results: Among the 941 A.S and 470 LA.S.S TO adolescents 649 and 333 participated at T1. More than 20% were obese (18% A.S vs 24.9% LA.S.S). High social inequalities were exhibited for weight, nutritional habits (diet and PA) and general health. The inequalities were not aggravated at T1 and even reduced, especially for the vigorous PA spent time (10.7 vs -2.5 min per day $p < .01$) with less often decrease and more often increase among A.S (31% and 46% vs 41% and 37%). No differences were observed for SB. Overall the social gradient as measured by FAS in 5 classes tended to be less sharp at T1 than at T0 indicating that interventions

allowed for better participation and adherence to the programme.

Discussion: Offering additional and adapted interventions to less advantaged adolescents may not worsen health determinants as PA inequalities and even reduce them. Schools appear to be a relevant setting on the way to implement prevention programs intending to avoid worsening inequalities.

Implications: The proportionate universalism approach appears to be a solution by implementing universal prevention activities especially in PA addressing the whole population and by acting on each sub-population category according to their needs.

70. Physically active, physically educated and physically literate: The Youth-Physical Activity Towards Health (Y-PATH) Intervention

Authors: O'Brien W, Belton S, Powell D, McGrane B, Issartel J.

Background: Most recently, the concept of physical literacy across the lifespan has been subject to strategic action planning globally. Critical philosophical debate around physical literacy began in the mid-1990s, yet, there is now a global emphasis towards the promotion of physical literacy through the enactment of multi-sectoral approaches, with education firmly positioned as a platform for delivery. The purpose of this study is to highlight that many of the well-established components associated with physical literacy promotion (such as fundamental movement skills, physical activity, health-related knowledge and awareness) are currently being delivered in Irish second level schools for adolescent youth, aged 12 to 15 years old, as part of the evidence-based longitudinal Youth-Physical Activity Towards Health (Y-PATH) intervention programme.

Methods: Cross-sectional data (n=256, 2010/11), a longitudinal experimental trial (n=176, 2011/12) and a cluster randomised controlled trial (CRCT) (n=524, 2013/14) on physical activity levels (using self-report and accelerometry), psychological correlates of physical activity, anthropometric characteristics, focus group interviews and the fundamental movement skill proficiency of Irish adolescent youth (N=954) has been collected over a five year period.

Discussion and philosophy: Preliminary findings from the longitudinal experimental trial (2011/12) suggest a positive effect for the Y-PATH intervention and provide support for its potential in increasing physical activity and fundamental movement skill levels of adolescent youth (data analysis from the CRCT phase is still

ongoing). The Y-PATH school-based physical education intervention for adolescent youth was developed in 2011, as guided by the contextual Irish need for physical activity promotion and the subsequent wealth of literature surrounding this thematic field. In terms of novelty and innovation, participants are introduced to the guiding principles of the intervention, specifically the educational and philosophical focus towards the promotion of physical literacy for adolescent youth. The domains of the Canadian Assessment of Physical Literacy include 'physical activity behaviours, physical fitness, motor skills, awareness, knowledge and understanding'; it is clear that the Y-PATH programme is targeting the promotion of physically literate secondary school youth through the medium of physical education, as delivered by specialist teachers. This evidence-based school programme is a timely addition to the recent 2016 governmental launch of the Irish National Physical Activity Plan (NPAP).

71. The effect of a school physical activity intervention on physical self-perception and enjoyment

Authors: Christiansen LB, Lund-Cramer P, Smedegaard S, Holt AD, Skovgaard T.

Background: Physical activity at school can improve mental health of all children, especially if it is tailored to children's needs and conducted in a positive social climate. The purpose of the present study was to examine the effect of a multicomponent school-based physical activity intervention on physical self-perception and enjoyment of physical activity among children and youth aged 10–13 years.

Methods: The intervention is based on the Self-Determination Theory and developed and pilot tested in close co-operation with schools, and targets 1) physical education, 2) in-class activity and 3) physical activity in recess. Using a cluster-randomised design, 24 Danish schools were randomised to either intervention or control. Study population included 3.136 children aged 10–13 years at baseline. Student survey was carried out prior to intervention and after 9 months. Physical self-perception was measured with the Children's Physical Self-Perception Profile (C-PSPP) and physical activity enjoyment was measured with the Shortened Physical Activity Enjoyment Scale (S-PACES).

Results: At baseline 2.892 children (92%) completed the survey. Mean physical self-perceptions were generally high. On a scale from 1–4 the mean self-perceived athletic competence was 2.95, body attractiveness 2.75, and physical self-worth 3.12. However, a large minority had low self-perceptions. Mean Physical Activity Enjoyment was

rated on a scale from 7–35 and the overall mean was 28.7. Follow-up data will be collected in May 2016 and the study examines the difference at follow-up controlled for baseline values.

Discussion: There is compelling evidence that physical activity can have a positive effect on emotional well-being, but unfortunately many children and young people engage insufficiently to reap such positive effects. Several school-based physical activity intervention studies find mixed results, and have difficulties motivating the least active. The current study centres extensively on this group, by focusing on the social climate generated by e.g. teachers, and by tailoring activities which ensure positive experiences for all and by involving the students in decision making.

Implications: The evaluation of this study will show if the evidence-based approach, focusing on the least active and most disengaged children, can increase self-perception and enjoyment of physical activity. If so, physical activity promotion for all should increase the focus on the Self-Determination Theory as a lever for increasing motivation. Solving the global inactivity problem is likely to be dependent on more children and youth having and maintaining positive experiences with human movement in an inclusive social climate.

72. The effect of a major school playground reconstruction on physical activity and sedentary behaviour: a quasi-experimental study

Authors: Hamer M, Aggio D, Kipps C, Shankar A, Smith L.

Background: A large proportion of children in the UK do not achieve current physical activity recommendations, and this is particularly apparent in deprived inner city areas. The physical school environment is a promising setting to increase children's physical activity, although robust evidence is sparse. We examined the effects of a major playground reconstruction on physical activity and sedentary time in primary schools using a quasi-experimental design (comparison group pre-test/post-test design).

Methods: Five experimental and two control schools from a deprived area of inner city London were recruited at baseline. The new playground design was facilitated through consultation with children, teachers and parents. The main outcome was physical activity and sedentary time, which was measured from objective monitoring (Actigraph accelerometer) at one year follow-up.

Results: A total of 347 pupils (mean age = 8 years, 55% boys; 36% Caucasian) were recruited into the study at baseline.

303 provided valid baseline Actigraph data. Of those, 231 (76%) completed follow-up (n=169 intervention; n=62 control). In the overall sample, 77.4% recorded at least 4 days of Actigraph wear. In mixed-models adjusted for age; sex; ethnicity; ratio activity or sedentary wear time at baseline; wear time at follow-up; and school (as a random effect), no differences were observed in moderate-vigorous activity (B= -1.4, 95% CI, -7.1, 4.2 min/day), light activity (B= 4.1, 95% CI, -17.9, 26.1 min/day), or sedentary time (B= -3.8, 95% CI, -29.2, 21.6 min/day) between groups. In sensitivity analyses stratified by age, we observed significant reductions in total sedentary (-28.0, 95% CI, -1.9, -54.1 min/day, p=0.037), and increases in total light intensity activity (24.6, 95% CI, 0.3, 48.9 min/day, p=0.047) for children aged under 9 yrs old in the intervention. These effects were largely seen during school time, and no negative compensation was observed outside school.

Discussion: Major changes to the physical school environment reduced sedentary time in younger children. Different approaches may be required to influence physical activity in older children.

Implications: The physical school environment is an important target for physical activity promotion.

73. Sport physical education and coaching in health (speech project)

Authors: De Jong J, Skovgaard T, Knudsen LS.

Background: Main goal of the SPEACH Project is to increase awareness and behavioural change regarding HEPA in sport professionals and European citizens. To achieve this, HEPA related educational modules are being developed based on the wishes and needs of current and future physical education (PE) teachers and sport coaches. This developmental process is based on a multi-step needs analysis including data from seven European countries. Results from the needs analysis are presented.

Methods: A three-step strategy was conducted: 1) data was collected on the knowledge, interest and attitudes of future sport coach and physical educators, the students, in relation to HEPA via a digital survey; 2) input on current organisational perspectives, as to the integration of HEPA related modules into existing educational structures, was collected through interviews with representatives of key national organisations from the sport coaching and/or PE sector; 3) input was collected via a focus group with key experts.

Results: A total of 660 students were included and the following HEPA themes were deemed most important and relevant: changing behaviour; personal leadership; physical activity for special target groups; health policy; testing & prescription; nutrition. Students stated that the optimal curriculum should focus on: practice oriented learning; training-, group- and classroom based learning; internship; involving/reflective learning. Importantly, both content areas and learning methods must be defined in accordance with the knowledge, skills and competences students need to build.

Discussion: Opportunities should be given to develop professional communication skills and pedagogic competences enabling full-fledged students to support and coach various target groups to acquire an active and healthy lifestyle. A strong recommendation from the focus group meeting was that the developed modules should be flexible and differentiated from master to vocational level.

Implications: The SPEACH/HEPA modules should be thematic and integrated in nature meaning that several content themes need to be included. Regarding the didactics, a mixed method should be promoted including forms like: training, internship, group- and classroom based teaching. Finally, the modules should be flexible and offer differentiated levels so they can be implemented at vocational, bachelor as well as master level.

74. Boys participating in Education Outside the Classroom are more physically active

Authors: Schneller MB, Duncan S, Schipperijn J, Nielsen G, Mygind E, Bentsen P.

Background: Schools are an important arena for health promotion, as they include all children and represent a large part of their awake time. Education Outside the Classroom (EOTC) is a curriculum based activity that has shown positive results for physical activity and academic learning in case studies. EOTC has gained political interest and is now widely practised in Denmark and we therefore wanted to investigate whether pupils who received regular EOTC spent more time being physically active than their non-EOTC peers.

Methods: Classes in the quasi-experimental intervention study TEACHOUT were recruited pairwise so each EOTC class had a non-EOTC parallel class at the same school and grade to act as control. A two-day seminar on EOTC practice was offered to participating EOTC teachers. Pupils in 17 EOTC classes and 16 control parallel classes across Denmark wore an Axivity

AX3 accelerometer taped to the lower back once during the school year 2014/15 with seven consecutive days of 24 hours wear time as inclusion criteria, resulting in 201 EOTC (63.3% girls, age 10.82 3 1.05,) and 160 control (59.3% girls, age 10.95 3 1.01) pupils. The extent of EOTC practised during measurements was recorded. Associations of time spent in different physical activity intensities with EOTC group and sex were assessed using generalised linear models (normal distribution with an identity link) adjusted for age. Significance levels for all post-hoc pairwise comparisons were adjusted using the Bonferroni correction method.

Results: EOTC pupils spent around nine minutes more in MVPA per day than control pupils (P < 0.05). EOTC boys did 19 minutes more MVPA per day than control boys, while there was no difference between girls in the two groups.

Discussion: EOTC is an add-in to the core mandates and curriculum-based obligations of a teacher and our results show that implementing EOTC is a viable way to increase PA for boys in grades three through six and was implemented at a low cost and effort, as the two-day seminar on EOTC practice was the only part of the intervention that required time and money outside the daily routine.

Implications: For boys, EOTC is associated with more MVPA during school hours. For girls, no difference was found. We argue that EOTC can act as one part of a more active living with a substantial positive impact on boys' time spent in both vigorous physical activity and moderate physical activity.

75. Effects of 6 months of active commuting and leisure time exercise on thrombin generation in sedentary overweight men and women

Authors: Gram AS, Bladbjerg EM, Rosenkilde M, Petersen MB, Quist JS, Stallknecht B.

Background: Increasing prevalence of obesity and unhealthy health behavior are typical indicators in Czech adolescents. Therefore the aim of this study was to find out how the type of neighborhood environment influence the level of physical activity in Czech adolescents.

Methods: Standardized method using the IPEN adolescent protocol was used to get the subjective and objective measures on physical activity (PA) and neighborhood environments across Czech regional cities. The research is running from 2014 to 2016. Total of 1772 adolescent respondents participated in the study. Current results include sample of 558 respondents who met the including criteria (wearing pedometer for objective measures of PA and fulfilled the IPEN questionnaire for the neighborhood characteristics).

Results: Meeting the level of 10000 steps/day was not suitable for 36% of Czech adolescents with more than 13% not reaching the level of 7500 steps/day. Variety of neighborhood walkability indicates different level of adolescent's PA. In high walkable areas (the city center and surrounding neighborhoods) reported adolescents significantly more steps (average 15454 steps/day for boys and 13838 steps/day for girls) than those living in low walkable neighborhoods (average 11353 steps/day for boys and 10748 steps/day for girls) on the outskirts of the cities (p<.00). This neighborhood variety influence on physical activity is also consistent in school and weekend days for both boys and girls.

Conclusions: Environmental influence on the level of physical activity is clearly verified in both adults and adolescents. It also has implications for understanding ways in which transport, workplace and recreation policies, and urban planning may be used to influence MVPA. The policy and school authorities should reflect these indicators in creating supportive environments to deal with epidemics of obesity and unhealthy lifestyle especially in youths. Supported by the research project of Czech Science Foundation 'Multifactorial research on built environment, active lifestyle and physical fitness in Czech adolescents' (No. 14-26896S).

76. Urban Active Environments Shared learning and co-production from the EU SPACe project

Authors: Crone D, Kahlmeier S, Cavill N, Foster C, Colt R, Ganea S, Ndukwu R, Onatsu T, Kinnunen L, Silina Z, Zvagule D, Goudas M, Skayannis P, Zalvara O, Aznar Lain A, Sánchez-Mora Moreno D, Sánchez García A.

Background: Urban environments are central to facilitating the promotion of physical activity for public health. The 3-year Erasmus+ SPACe project (Supporting Policy and action for Active Environments) involves 10 partners including local government, academia and NGO's in developing policies and interventions to promote physical activity-friendly environments in five implementation sites: Latvia [Tukums], Italy [Palermo], Romania [Brasov], Spain [Castilla-La Mancha], and Greece [Trikala].

Methods: The first part of the project involved a review of good practice including case studies from across the EU and specifically the project partner countries. This has resulted in the first output from the project, an evidence of good practice summary with case study examples. The second part of the project involves partners from the intervention sites developing Urban Active Environments (UActive) Action

Plans, based on international evidence and guidance for healthy urban planning. This stage includes establishing working groups with relevant stakeholders to ensure both the development of an achievable action plan and consultation with organisations key to ensuring its resulting implementation. Remaining project partners include universities (Gloucestershire, Oxford, Zurich, Thessaly) and the Fit for Life programme (the National physical activity promotion program, Finland) who provide support and advice incorporating current evidence, healthy urban planning and mentoring. The third stage of the project involves training partners in the HEAT tool and the implementation of the UActive Action Plans.

Results: Outcomes to date include a review of evidence of good practice summary with case study examples, a reflection of the process in the project, and the five UActive Action Plans.

Discussion: This project details how multi-agency, transnational collaboration can produce real-life UActive Action Plans in five countries in the EU, based on published evidence, real-life experience and consultation and collaborative working with other organisations across the EU. It demonstrates shared learning and co-production in the development of action plans to promote and develop urban active environments.

Implications: Learning from the processes adopted within this project will demonstrate how public health, local government and transport agencies across and within the EU, can work together to create healthy environments that have the aim of facilitating active behaviour, even in times of constrained public budgets.

77. Investigating the association between quality of urban green space and physical activity: Findings from the PARC Study

Authors: O'Kane N, Tully MA, Kee F, Hunter RF.

Background: Urban green space (UGS) has an important contribution to make to public health with potential physical, psychological, social, economic and environmental benefits. The availability and accessibility of UGS offers the opportunity for recreation and active travel at little or no cost to the individual, thus with the potential to address socioeconomic gradients in physical activity (PA). PA has been shown to have positive associations with proximity, access, size and quality of UGS. However, we know little about the association between the quality of UGS and UGS usage and PA.

Methods: Data were collected on quality and usage of eight UGS sites

in Belfast (Northern Ireland) as part of the Physical Activity and Rejuvenation of Connswater (PARC) study. Data on usage of UGS was collected using the System for Observing Play and Recreation in Communities (SOPARC) over 7 consecutive days by trained community members. Quality of the UGS was assessed using the Environmental Assessment of Public Recreation Spaces (EAPRS) tool at each site. Quality scores for each UGS were generated according to five categories drawn from EAPRS; features enabling PA, general space, aesthetics, access and safety. A Fisher's exact test was conducted to investigate correlation between quality of UGS and UGS-based usage and PA. Further, usage of UGS was analysed by age, gender and activity.

Results: All UGS sites included in the study had high quality scores (>40). Analyses showed no statistically significant association between UGS usage and the five UGS quality categories; features enabling PA (p=0.29), general space (p=0.27), aesthetics (p=1.00), access (p=1.00) and safety (p=0.23). The demographics of UGS usage showed that there were more male than female UGS users, and more adults than any other age group (57.4%). Seniors were under-represented in the UGS with only 7.3% of overall users.

Discussion: Results showed no significant association between overall UGS quality and UGS usage. However, these findings should be interpreted with caution as there was little variation of quality scores across the included UGS sites. Further research is required to investigate this relationship across a broader range of UGS sites, and in relation to specific UGS features and usage. Also, findings highlighted the need for further research targeted at use of UGS by seniors.

Implications: A broader approach which recognises the role of supportive environments that can make healthy choices easier is required. The provision of UGS can make a significant contribution to public health, and increase population PA.

78. Walking in the 'Wilderness': A spatial re-conceptualisation of walkable environments in rural Northern Ireland. The PASTORAL Study

Authors: Ferguson S.

Background: Physical activity determinants are multifaceted, and promotion efforts require comprehensive consideration of both individual- and environmental-level influences. With the renowned benefits of walking, there has been extensive research attention garnered towards the characterisation of 'walkable' environments. However,

as environments are spatially heterogeneous, the generalisability of evidence concerning the walkability concept could be questioned, particularly beyond its original urban confines. The PASTORAL Study examines the concept from a rural perspective, exploring relationships between physical activity, settlement typologies and opportunities for rural active living.

Methods: Built and natural environment attributes which either facilitated or impeded walking opportunities and behaviours were identified and incorporated into a conceptual framework, following the completion of a qualitative visually-based photo-elicitation exercise with rural participants. Framework components were incorporated into an inventory instrument and quantitatively measured using a GIS-based approach. Objective measurements were affiliated with spatially referenced physical activity data obtained from a regional Sports and Physical Activity Survey. This enabled detailed statistical analysis and the identification of physical environment correlates of rural walking.

Results: Rural physical activity is primarily performed in either home or workplace settings, with limited walking activity being performed in the wider neighbourhood environment. Walking facilitators and impediments were categorised into five physical environment themes: accessibility, availability, appeal, assurances of safety and acceptability. Quantitative analyses revealed several correlates, with evident variations according to; walking type, and the spatial context, or settlement typology within which walking occurred.

Discussion: Similar to the urban context, the built environment has an influential role upon walking behaviours, particularly within the rural settlement. Provisions of, and access to, recreational and non-recreational services, facilities and infrastructure, promote increased walking. However, the aesthetics, vitality, and safety within settlements should not be overlooked. Conversely, physical environments have a lesser, but also a more negative influence upon walking in the open countryside, whereby walkers are deterred by the absence of built infrastructure provisions, dispersed developments, and the prevalence of non-accessible natural environments.

Implications: With rural populations being increasingly at risk of inactivity, these research findings can be used to promote increased levels of both recreational and utilitarian walking. The results highlight potential for both physical and policy environment changes and interventions, which can be implemented by actors from a wide range of sectors. However, of fundamental importance is the recognition that any interventions and changes must be both population-and place-specific.

79. A Cycling and Walking Investment Strategy for England: Modelling the impacts, and aligning messaging with public health implications

Authors: Cope A.

We present a direct response to the question of 'what should the public health policy response be to the evidence for physical activity'. The presentation is a case study in developing and emerging policy responses for cycling and walking in England. In particular, we use as a focal point modelling work that supports policy design and implementation.

Background: A draft Cycling and Walking Investment Strategy for England is currently under consultation. The Strategy has emerged from several strands of a major investment programme from the Department for Transport. These investments have had mixed degrees of regard for and emphasis on public health. Sustrans has modelled the likely impacts of investment in economic and in wider terms, including the public health implications. This modelling work looks set to become a key component of detailing the potential for change, estimating the extent of impact anticipated, and defining the investment resource need.

Methods: The presentation will run through the approach to modelling at a national and city-region level. Measured outcomes from a wide range of intervention types are used as the basis for forecasting.

Results: The modelling exercise will be completed in time for submission to the consultation – summer 2016. Significant investment will realise huge public health benefits.

Discussion: The major issue is the extent to which the Cycling and Walking Investment Strategy is supported by committed investment. The inclination of Government is that resourcing is adequate if local authorities are minded to pursue it. But sustainable and active travel is effectively competing alongside other transport, housing and planning, technology, training and health for Government funding. This introduces the risk that sustainable and active transport is not prioritised.

Implications: We consider how the case can best be made to ensure adequate support for the investment in sustainable and active travel, and how Sustrans and other parties are supporting local authorities to prioritise securing funding for these areas. This often includes identifying where different policy agendas overlap – transport and health being a major case-in-point. We will touch on transport appraisal guidance (WebTAG and HEAT), the role of public engagement initiatives (such as

the Bike Life bicycle account reports), the importance of academic evidence (notably the forthcoming Connect/iConnect report), and future modelling and evidencing needs.

80. Beat the Street: Getting a whole community moving

Authors: Reynolds V.

Background: Beat the Street has now been rolled out in 25 areas across the UK and Europe as a real-life walking and cycling game for the whole community. A further 25 Beat the Street interventions are planned for 2016.

Methods: Participants are recruited through schools, with every schoolchild in a town being given an RFID fob to tap on sensors located across the area. Each time they tap two sensors or 'Beat Boxes', they score points for their team. Teams are made up of schools, community groups and workplaces. Schoolchildren take home RFID cards for parents and the wider community is invited to take part by picking up a card from key distribution points including GP surgeries, libraries and leisure centres. The game is played over a period of 7 weeks during which time teams and individuals compete to win prizes and to reach a pre-set target such as 'walking to the moon'. During and after the live game phase, participants are signposted to other activities in their area and encouraged to explore their local parks, green spaces and footpaths. Schools are supported to continue to encourage physical activity and walking to school in particular. To date, more than 250,000 people, 60% of whom are children, have taken part in Beat the Street. Physical activity is measured at registration, at the end of the live game and 6 months post the live game phase by means of a single item self-report question. In addition, the data from the Beat Boxes is analysed to estimate the amount of walking and cycling activity including the number of journeys, the estimated time spent walking and cycling and the frequency of the activity.

Results: The data shows a significant increase in self-reported physical activity levels at the end of the live project which is sustained up to 8 months later. Survey questions also ask participants to report on the changes they have made as a result of Beat the Street which include exploring and discovering new areas and new places to walk and cycle, walking more as a family and walking to school more frequently.

Discussion and implications: A fun and engaging mass participation event such as Beat the Street serves to 'normalise' behaviour like walking and cycling to school and 'reminds' people how easy it can be to keep active, often spurring them on to take up other regular activities.

81. Technological innovations for tracking human behaviour in public spaces

Authors: Adlakha D, Mantiega A, Hipp A

Background: Outdoor public spaces, such as parks, plazas, and civic squares can play an important role in the promotion of physical activity (PA). Large scale studies seeking to understand and quantify how public spaces impact pedestrian behaviour and PA are time intensive and expensive, deploying masses of research assistants to conduct interviews and field observations. This project presents a grand scale-up of capturing public spaces and is a methodological step forward in advancing a real-time, non-labour intensive assessment using webcams and crowdsourcing.

Methods: The Archive of Many Outdoor Scenes is a big data project which captures and archives images from publicly available, online, outdoor webcams every 30 minutes. We used webcams located across 23 plazas to capture 2276 images. Image analysis was crowdsourced from Amazon Mechanical Turk. An average of 99 images per plaza were analysed for pedestrian visitors during plaza events and variations across time of day and temperature.

Results: The average number of individuals annotated per image was 22.47 (SD=31.34). Among plazas which had more people during events than non-events (N=11), t-test results indicated that eight of those differences were significant. Plazas with a significant increase in event-based visitation (241 images) included temporary athletic events (e.g., sports equipment) (48 images/20%; two plazas), fair/carnivals (carnival rides present) (45 images/19%; four plazas) and markets (tents with individuals are selling goods) (92 images/38%; three plazas). Across all images with available temperature data (9 plazas), the average temperature was 75°F. Overall, there was a slight, positive correlation between temperature and plaza visitation [$r=0.083$, $n=786$, $p=0.02$].

Discussion: Findings suggest that webcams and crowdsourcing demonstrate potential in the study of pedestrian behaviours in public, outdoor spaces. The use of public webcams and crowdsourcing offers an inexpensive (US\$0.03/image) means to evaluate patterns of pedestrians over time in a variety of environments and conditions.

Implications: This project presents a grand scale-up of capturing public spaces and is a methodological step forward in advancing a real-time, non-labour intensive assessment using webcams, crowdsourcing, and eventually machine learning. This research agenda is innovative in: (1) its potential to characterize pedestrian behaviours over the time-scale of years and with orders of magnitude more

measurements than would be feasible by standard methods, (2) the ability to use data to characterize complex interactions between pedestrian behaviour patterns, seasons, and weather, and (3) its capacity to be an ongoing, systematic surveillance system of outdoor environments and activities.

82. Development of a programme theory for understanding the public health impact of 20mph speed limit projects

Authors: Turner K, Baker G, Kelly P, MacDonald B, Jepson R.

Background: Evidence suggests that transport initiatives such as 20mph speed limits can impact positively on public health through reducing traffic-related casualties. Further studies are required to assess their impact on active travel, perceived pleasantness of communities and health inequalities. In Edinburgh (Scotland), the city council are implementing city-wide 20mph speed limits (from Aug 2016) using signage and road markings, complemented by legislation, enforcement and an education campaign. This study reports on the development of a programme theory aimed at elucidating the public health impact and the potential explanatory mechanisms of change of this complex intervention.

Methods: An initial logic model was developed (Sept 2015) using a review of existing literature. This model was refined using data from interviews (Nov/Dec 2015) with: i) 15 key informants and stakeholders involved in, or directly affected by, the 20mph speed limit implementation; and ii) 10 focus groups and interviews with the general public representing key local demographics. Data analysis was both inductive and deductive in nature, conducted using the framework method based around the logic model.

Results: The initial theories of change theorised were that a 20mph speed limit, supported by education and enforcement, would result in: i) lower traffic speeds leading to a reduction in traffic collisions and casualties; ii) perceptions of increased safety (and actual safety) leading to an uptake of active travel; iii) residents identifying their communities as more pleasant places to live; and iv) perception of longer car journey times leading to a modal shift away from car use.

Discussion: Themes from the qualitative data supported the initial hypotheses, in particular anticipated reduced road casualties, and increased perceptions of safety and levels of active travel. One identified mechanism for increasing perceived safety by cyclists was via a reduced on-road speed differential between cars and bicycles. Potential

moderators of change (e.g., level of public awareness and/or support) were also identified. The qualitative data provided an in-depth understanding of the underlying assumptions held regarding the impact of the implementation of a 20mph speed limit in Edinburgh.

Implications: Many other cities across Europe are considering implementing 20mph (30kmph) speed limits. The refined logic model and programme theory is evidenced by literature, key informants and the general public. It provides a framework for developing and selecting appropriate measurement tools, testing potential mechanisms of change, and assessing outcomes within the evaluation of 20mph speed limit programmes.

83. Monitoring motor development: Measuring physical fitness via an online data-base

Authors: Utesch T, Dreiskämper D, Naul R

Background: Motor development plays an important role in children's overall health as enhanced physical fitness was found to promote physical activity behaviour (Stodden et al., 2014). Monitoring the motor development of children along with the implementation of powerful intervention and promotion programs is therefore a joint challenge for politics, science, and education (Kriemler et al., 2011). However, the basis of such programs must be reliable and valid assessments, which are frequently used to quantify physical fitness in the context of physical activity research. These assessments should be adequate to the context and environment of application (here: educational settings), allow proper parsimonious monitoring coming along with scientific supervision, and ensure easy handling in educational settings. We present a multilingual online-database that facilitates comprehensive monitoring of motor development including real-time feedback. Specific user-related output is provided for scientists, students, teachers, schools and communities. Hence, the second aim of this study is to present how motor assessments should be analysed before being implemented into a monitoring program, accordingly, to ensure invariance across age and valid categorizations.

Methods: Data from seven items (e.g., sit-ups, 6min-run, balancing backwards) from the in Germany frequently used NRW Motor Test (Bös et al., 2010) were collected from German and Dutch children (age 6–9 years; N6years=790, N7years=1371, N8years=1331, N9years=925; 48.2% female; HCSC-project, Naul et al., 2012; funded by the EU). Including sex and age as covariates, the data was transformed into five 'normally distributed' and five 'evenly distributed' categories to investigate

which transformation meets quality criteria. Data were analysed by means of so-called item response theory models (IRT) by using a Mixture-Distribution-Model (Mixed-Rasch-Model) to examine the dimensionality and properties in the given item set.

Results: The analyses generated very specific and fruitful results showing that equally-distributed categorizations violate quality criteria. For the normally distributed categories a one-dimensional motor score was validated showing item- and person-homogeneity for six- to eight-year-olds (one-class, $pCR > .05$, $pP-\chi^2 > .05$, $RA > .75$). For nine-year-olds balancing backwards was excluded from the latent variable 'physical fitness' due to unordered threshold parameters in the upper proficiency level violating the assumed categorical order. Further item analyses regarding relative item difficulty showed stability and revealed, for example sit-ups is well discriminating for six-year-olds.

Discussion: In sum, this study demonstrates a program how an online-database providing real-time feedback facilitates monitoring motor development using well-validated assessments for all involved parties.

Implications: By this, an adequate and helpful feedback for motor development of children is possible.

84. Similarities and differences between correlates of fundamental movement skills and physical activity in adolescents

Authors: Powell D, Issartel J, McGrane B, and Belton S.

Background: Fundamental movement skills (FMS) are basic observable movement patterns (e.g. running, catching, throwing, kicking) (Gallahue & Ozmun, 2006). FMS give rise to more sports specific skills which allow engagement in lifelong physical activity (PA) participation (Gallahue & Ozmun, 2006; Haywood & Getchell, 2014). FMS proficiency is linked to PA participation in childhood and adolescence (Lubans, Morgan, Cliff, Barnett, & Okely, 2010). Extensive research has focused on identifying the psychosocial correlates of PA behaviour in youth. Yet little has been undertaken with respect to the correlates of FMS. Given the association between PA and FMS, the psychosocial correlates that are associated with PA may be similar for FMS. The purpose of this study is to investigate a) the relationship between psychosocial correlates of PA and FMS; b) the role of PA as a mediator between psychosocial correlates and FMS; and c) the relationship between FMS proficiency and PA.

Methods: Two hundred and twenty two adolescents (50% male) aged 12.80

3 .45 years were recruited from 20 schools. Adolescent PA self-efficacy, perceived barriers to PA, and PA social support were collected. PA (Actigraph accelerometers) and fifteen FMS (TGMD, TGMD-2, Victorian Skills Manual) were also measured.

Results: A significant relationship was not found between FMS proficiency and PA self-efficacy ($\tau = 0.05$, $p = .44$), barriers to PA ($\tau = -.08$, $p = .24$) or PA social support ($\tau = .08$, $p = .69$). Eighty one percent of the relationship between self-efficacy and FMS was mediated by PA, and 62% of the relationship between social support and FMS. There was a significant positive relationship between PA and FMS in all models ($\beta = 0.21$, $p = .00$; $\beta = 0.19$, $p = .01$; $\beta = 0.20$, $p = .01$). There was a significant positive relationship found between self-efficacy and PA ($\alpha = .21$, $p = .00$) and social support and PA ($\alpha = .23$, $p = .00$). The relationship between barriers to PA and PA was not significant ($p = .75$).

Discussion: Correlates traditionally associated with PA are not associated with FMS proficiency but PA acted as a mediator between such correlates and FMS. Positive associations between FMS and PA were consistently identified.

Implications: If seeking to increase FMS proficiency, directly targeting PA participation is recommended.

85. Is Y-PATH (Youth Physical activity Towards Health Intervention) the answer for 'at risk' childrens' FMS and physical activity?

Authors: McGrane B, Dr. Belton SJ, Fairclough S, Powell D, Issartel J.

Background: Fundamental movement skills (FMS) have been defined as basic observable patterns of movement (Gallahue & Ozmun, 2006). These FMS must be developed in order to progress to sport specific skill development (Gallahue & Ozmun, 2006). A recent review highlights a strong positive relationship between FMS and PA in both children and adolescents (Lubans, Morgan, Cliff, Barnett, & Okely, 2010). The vicious circle associated with FMS, BMI and PA is summarised by postulating that because children with movement difficulties perceive themselves less competent than other children, they are less likely to be physically active and show preferences for sedentary activities which may also lead to an increase in BMI (Cairney, Hay, Wade, Faught, & Flouris, 2006). For this reason the Y-PATH intervention was developed to improve childrens' low FMS and PA levels. This study assesses the affect Y-PATH had on overweight and obese (OWOB) children and also inactive children.

Methods: Twenty schools completed FMS, PA (accelerometry) and BMI

measures at baseline with 532 participants (baseline mean age 12.7 3 1.02 years) from 20 first year class groups involved. 10 of these first year groups received the Y-PATH intervention to improve FMS and PA while 10 received their normal PE curriculum. All participants repeated these measures at the end of the 9 month intervention and again 3 months later at follow up. Mult-level modelling statistical analysis was performed to analyse the data using MLwiN.

Results: At follow-up significant intervention effects were observed for OWOB ($\beta=2.97$ (95% CI = 1.11, 4.83), $p=.002$), and those classed as active ($\beta=2.54$ (95% CI = 0.56, 4.52), $p=0.12$) and inactive ($\beta=3.22$ (95% CI = 1.02, 5.42), $p=0.004$). The effects on Total Locomotor at follow-up were OWOB ($\beta=2.43$ (95% CI = 0.62, 4.23), $p=0.008$), and inactive children ($\beta=2.88$ (95% CI = 0.49, 5.27), $p=0.018$). The Y-PATH was seen to be effective at follow-up for the OWOB ($\beta=5.03$ (95% CI = 1.36, 8.70), $p=0.007$), as well as the active ($\beta=4.14$ (95% CI = 0.22, 8.06), $p=0.04$) and inactive children ($\beta=5.58$ (95% CI = 1.17, 9.99), $p=0.013$).

Discussion: The results highlight that Y-PATH was an effective intervention among the OWOB and inactive population and has the potential to improve PA levels and sports participation among this group.

Implications: Since the FMS levels are so low of this population Y-PATH presents itself as a viable solution to help improve FMS and consequently the PA levels of this at-risk population.

86. Project FLAME: Fundamental and Functional Literacy for Activity and Movement Efficiency

Authors: Lester D, O'Brien W

Background: Recent research has shown that the majority of post-primary Irish youth are insufficiently active and fail to reach a level of proficiency in basic movement skill execution (O'Brien et al., 2013; 2015; Belton et al., 2014). Fundamental Movement Skills (FMS) are the basic observable building blocks of movement (Hands, 2012), whereas, Functional Movement Screening (FMS™) assesses biomechanical patterns and functional limitations (O'Connor et al., 2011). Physical activity (PA) participation levels decline dramatically during adolescence and evidence suggests that competency in a range of FMS may serve as a protective factor against this trend (Lubans et al., 2012). By critically examining FMS and FMS™, the aim of this baseline study (2016) is to assess participants' psychomotor competencies within a range of selected movement tasks. From this, the next phase of the project will seek to design, develop, implement and examine the effectiveness of a movement-oriented intervention for Irish youth.

Methods: Cross-sectional data is being collected in 2016 on 200 adolescents, aged 12 to 16 years old, across two urban post-primary schools in Cork, Ireland. Data gathered during physical education class includes FMS proficiency, functional movement screening, perceived movement competency, physical activity participation (self-report and accelerometry) and anthropometric characteristics. The specific data in relation to adolescent movement is being assessed using established instruments, namely the Test of Gross Motor Development-2 (TGMD-2) (Ulrich, 2000) and the Functional Movement Screen (Cook et al., 1998).

Discussion: These baseline findings will guide the development of an appropriate and innovative movement focused intervention ('Project FLAME'), specifically designed to improve the quality of motor development during adolescence. This project will extend the evidence-base for feasible childhood programmes, aiming to increase overall health, wellbeing and PA participation.

Implications: This study is the first of its kind in Ireland, seeking to critically examine adolescent movement skill proficiency, at both a fundamental and functional level. The findings from the study may not only support previously successful movement-oriented interventions worldwide but also be used to guide teacher education, coaching science, professional learning, school and public health policy.

87. Time to re-brand physical activity for young people?

Authors: Best P, Tully MA, Corepal R, Kee F, Hunter RF.

Background: Mass public health communication campaigns are commonly used by Government and public health organisations to increase public knowledge of how much physical activity is required for health benefits. This is done in order to improve attitudes and intentions, which may lead to better informed choices and subsequent changes in PA behaviour. However, this 'one size fits all approach' is often criticised in favour of more targeted approaches aimed at higher risk sub-populations. Moreover, little consideration has been given to the applicability of this approach to affect real change in younger populations. This study investigates the relationship between knowledge of the current UK physical activity guidelines and amount of daily physical activity using a sample population of 11-16 year olds in Northern Ireland.

Methods: A repeated cross-sectional survey design using data from the 2010 and 2013 Young Persons' Behaviour and Attitudes Survey of 10,790 young people provided information on physical activity, knowledge of UK guidelines

and socio-demographic characteristics. Multinomial logistic regression was used to analyse the data.

Results: Results from 2013 showed 67.0% of respondents were aware of PA guidelines with 15.4% reporting meeting them. Males were more likely to meet PA guidelines than females (OR 3.36, 95% CI 2.47, 4.59). Males who were active for 60 minutes or more, 7 days per week were less likely to be aware of guidelines (OR = 1.51, 95% CI 1.02, 2.24). For females, knowledge of PA guidelines had no significant association with amount of daily PA (OR = 1.74, 95% CI 0.99, 3.07). Those who did not enjoy being active were less likely to meet the guidelines (OR = 0.05, 95% CI 0.02, 0.12).

Discussion: Results have shown that increasing knowledge of physical activity guidelines was not associated with increased physical activity behaviour in a large, representative sample of young people. Consequently, threshold based messaging containing recommended minimum physical activity guideline information may not be appropriate for this age group.

Implications: These results have implications for future targeted health promotion campaigns aimed specifically at young people by highlighting the importance of enjoyment in relation to PA behaviour. Therefore, results suggest that it may be time to 're-brand' PA mass media campaigns for young people and explore approaches and processes through which PA can be made more enjoyable.

88. Big Food Sponsorship of Physical Activity Schemes: Part of the solution, or part of the problem?

Authors: Jane B, Gibson K.

Background: The Public Health Responsibility Deal proposed that public health is the responsibility of all, and that businesses can help to create the right environment for good health. ParkLives is such a scheme, and is a physical activity programme delivered by Local Authorities across the UK, in partnership with Coca-Cola. Such partnerships are commonly termed Corporate Social Responsibility (CSR) strategies, and in addition to their stated philanthropic aims, they have been shown to have the potential to create economically beneficial returns for the business (Du et al, 2010). This study explores how Coca-Cola's involvement in Parklives manifests in the experiences of participants, as shared on social media, and considers how this might subsequently influence the wider ecological environment.

Methods: A content analysis of related social media output, taking a critical approach to the interpretation of visual

images, was conducted. A systematic approach to the analysis of images was taken by reviewing all images, and related text, published on Twitter containing the hashtag '#Parklives'. This was in accordance with Rose (2016), who recommended that sampling should be representative and significant. Content was analysed using a coding system, whereby codes used were exhaustive, exclusive, enlightening and replicable (Rose, 2016).

Results: All tweets (n=150) with the hashtag #Parklives were analysed. Data for the chosen coding categories will be shown, with examples of the tweets and text.

Discussion: Many of the activities were designed to engage with young people, and through many of these, participants were exposed to both physical activity and the Coca-Cola brand. The process of delivering the programme, and then producing, publishing and broadcasting such images alongside the Coca-Cola brand would appear to be successful as a CSR project. In the environmental context, Parklives has enabled Coca-Cola to become one of UKActive's eight membership council members, holding a position of influence involved in lobbying government on physical activity and health issues. In their 'Responsible Marketing Charter', Coca-Cola UK are clear about their stated intentions to avoid marketing their brand to children under 12, clearly acknowledging the potential for harm. Nevertheless, many of the programme activities are specifically targeted at under-12s, hence contravening this stated aspiration.

Implications: Local Authorities need to consider all consequences of allowing Coca-Cola access to their communities, as this has potential implications at both individual and environmental levels.

89. Evaluation of an urban walking strategy to promote healthy physical activity guidelines

Authors: Gonzalez E, Pinilla I, Martin E, Delgado R, Jimenez F, Ortega J, Martinez J, Romero C, Cabanillas E, Aznar S.

Background: Despite the well known benefits of physical activity, sedentary behavior is still growing in western societies. Therefore, it seems that the promotion of an easy, accessible, physical activity community strategy could benefit all people independent of their age, gender or ethnic group. The present study designed and evaluated a local itinerary (i.e. route) in Toledo city, from Castilla La Mancha, Spain. The idea of the route was to promote walking in such a way, that the person will achieve the scientific healthy physical activity guidelines, and then the route could become an active public health tool.

Methods: The study sample comprised 68 voluntary participants (49 women and 19 men) aged between 40 to 58 years old. All subjects' weight and height were recorded, and they all answered a PAR-Q and a basic demographic questionnaire prior to starting the walk. An Actiheart accelerometer was worn during the walk. The walk was performed twice with a week interval. Firstly, all participants walked with no previous information provided except for the route map, and secondly, they walked with the route map plus the information about intensity using the Talk test tool.

Results: Results indicated that all variables: Kcal, METs values and heart rate, were closer to the healthy parameters to achieve the physical activity guidelines in the second walk. The mean values of METs (4,6 3 0,9) and Kcal (169 363) achieved in the first walk were significantly ($p < 0,01$), ($t = 0,13$ and $t = 9,5$ respectively) lower than the METs (5,4 3 0,9) and Kcal (195349) achieved in the second walk. The mean of heart rate in the first walk (100 3 20) was significantly ($t = 3,04$; $p < 0,05$) lower than in the second walk (110 328). Duration time was not significantly different between the first and second walk (45,49 3 16) vs (47,84 37); $t = 2,39$ $p = ,394$).

Discussion and implications: In conclusion, a walking route provided by the town hall, can be an easy and accessible strategy for all people once the local and urban environment follow the criteria for the healthy physical activity guidelines. It seems important to adequately design the route, the distance, clarify the intensity and, if possible, combine it all, with cultural interest places.

90. "Keep on rolling, babe!" Sexual hints are rare in physical activity campaigns

Authors: Rantala M.

Background: Previous studies related to physical activity campaigns have mainly focused on evaluating the effectiveness and cost-effectiveness of the campaigns. However, the content of the campaign messages has been studied less. As a part of a wide content analysis of physical activity campaigns, the present study investigated how sexual connotations and representations, which are typically used in marketing, are included in the content of PA campaigns.

Methods: Material for the study consisted of 710 posters used in Finnish physical activity campaigns between 1941 and 2010. The purpose was to investigate the kind of representations these campaigns have tried to create regarding physical activity or inactivity and the people who are physically active or inactive. The study considered both what was presented as well as not

presented in the advertisements. The material — both images and text — was analysed from a constructive view-point utilizing Roland Barthes' terms denotation, connotation and myth.

Results: As expected, the majority of campaigns combined PA to happiness (59 %), fitness (43 %) and health (21 %). Sexual connotations were identified in only 41 (6 %) posters. From this research material, there were 5 posters identified where sexual tension was created between people appearing in the pictures. In 27 posters contact was created between a character in the poster and the person looking at the poster. A person appearing in a poster was seen to be a sexual object in 16 posters. Sexual hints in the text were present in 6 posters. Sexual tension was particularly present in those campaigns where the target group was a specific gender.

Discussion: PA campaign material utilises sex and flirting significantly less than other advertising (e.g. tobacco, oral health, alcohol). The connection between sex and sport has been strong for a long time, but PA and sex have not found each other yet, at least in Finland. Is PA itself considered to be so pleasant and attractive that this point of view can be disregarded when marketing PA?

Implications: Currently, PA campaigns mainly just share information and hope that people would begin PA based on that information. Would there be better results by including more emotion and, for example, sexual hints in the messages?

91. A process evaluation of the contributing factors to sustained engagement in a gender-sensitised community based physical activity programme

Authors: Carroll P, Donohoe A, Richardson N, Keohane A, Kelly L, Harrison M, Robertson S.

Background: In response to the burden of ill-health experienced by men, Ireland was the first country in the world to publish a National Men's Health Policy (NMHP). This policy calls for the development of gender competency in the delivery of health and social services and specifically identifies the community as a setting in which to promote health among men (DOHC, 2008). Men on the Move (MoM) is a 12-week community based physical activity programme aimed at adult men who are inactive and is delivered through the Local Sports Partnership (LSP) network. The goal of the programme is to improve the physical fitness and overall health and well-being of men through structured group exercise (2*1 hour sessions/week). To support engagement in MoM, the programme design and delivery are gender sensitised in context (men only), content (information presented

in a scientific manner, use of gadgets, competitive element) and style of delivery (participative and peer supported, use of humour and banter). The branding of MoM is standardised across each county. All staff involved in the MoM evaluation also underwent ENGAGE training — Ireland's national men's health training programme. Eight counties were involved in the MoM evaluation and each county had 3 community sites. 4 counties (12 community sites) were in the intervention group and 4 counties (12 community sites) were in the comparison group. Intervention counties received the MoM programme while, participants in comparison counties were invited to attend repeated health checks.

Methods: The purpose of this research was to investigate the factors with contributed to facilitating both the initial engagement [intervention counties — registration evening; comparison counties — first health check] and thereafter sustained engagement in the MoM programme using a qualitative process evaluation approach. Focus groups and semi-structured interviews (n=11) were conducted with LSP coordinators and their team; all data was digitally recorded, transcribed verbatim and the thematic analysis is ongoing.

Results: In total, 906 men initially engaged attended the registration evenings [intervention counties] and the health checks [comparison counties]; 489 men in the intervention group and 417 men in the comparison sample. Within the intervention sample [n=489] 70% of men (n=340) had an attendance rate of 50% or higher.

Discussion and implications: The findings of this study may inform others who wish to develop community based health promotion interventions for men in the future.

92. Mediators and moderators of maintenance of physical activity behaviour change: A systematic review

Authors: Jennifer Murray, Dr. Sarah Brennan, Prof David French, Prof Chris Patterson, Prof Frank Kee, Dr. Ruth F. Hunter.

Background: Adults should undertake 150 minutes of moderate physical activity (PA) weekly for reduced risk of non-communicable disease. Physical inactivity levels are high, calling for effective methods of maintaining PA behaviour. Interventions are limited in achieving PA maintenance, and causal mechanisms are poorly understood. This review investigated potential mediators and moderators for maintained PA behaviour.

Methods: Six databases were searched (Medline, EMBASE, PsycINFO, CINAHL, Cochrane, Web of Science). Search terms: 'Physical activity', study design,

'behaviour change', 'maintenance'. Eligibility criteria: adults; non-clinical; validated PA measure at baseline and 6 months (maintenance); comparison group. Mediators were separated according to studies testing effect on the mediator, association with PA, or carrying out formal mediation tests. Number of studies, tests and percentage significant effects were reported. Moderators were separated according to subgroup analyses or formal tests. Number of studies and percentage significant effects were reported.

Results: 57 studies were included (26 examined mediators, 18 examined moderators). 49 mediators were categorised using the Theoretical Domains Framework. Variables with strongest empirical support in formal mediation tests were: revitalisation (passing 4/4 tests), self-concept (1/1), behavioural processes of change (6/7), positive intentions (2/4), self-regulation (1/2). 18 variables were used in moderator tests. These focused on demographic variables but environmental accessibility showed potential (one study favoured high access).

Discussion and implications: Formal mediation tests should have theoretical justification. Assessments should incorporate longer timeframes and relevant maintenance constructs such as habit, coping planning, recovery self-efficacy or outcome satisfaction. Consideration of the interplay between mediators and moderators should lead to theoretical developments.

93. Building the evidence for 'what works' in promoting physical activity: Barriers, facilitators and support needs of professionals for conducting evaluation of physical activity programmes in the UK

Authors: Adams E, Steer R.

Background: In order to identify effective national approaches for physical activity promotion and to 'scale-up' interventions, it is important to understand 'what works' at local level through robust evaluation. A diverse set of physical activity interventions are being delivered in practice in the UK however there is wide variation in the extent and quality of evaluation being conducted. Recent research found that from 952 case studies only 3.8% (n=36) met the criteria for promising or good practice and there was limited consistency in the evaluation approaches and measures being used across projects, making comparisons difficult. This paper reports on professionals' barriers and facilitators for conducting evaluation in practice and their support needs to improve evaluation frequency and quality.

Methods: An online survey was distributed to physical activity

professionals in the UK using a variety of approaches including targeted e-mails, newsletters, Twitter and word of mouth. The survey asked about barriers and facilitators to conducting evaluation, awareness and use of the Standard Evaluation Framework for Physical Activity Interventions (PASEF), confidence in undertaking evaluation activities and support needs for improving evaluation activities.

Results: 222 professionals responded to the survey of whom 60.2% were female and 60.5% were aged 25-44 years. Respondents held a variety of roles including developing or managing services (29.9%) and delivering services (20.9%). The main barriers to conducting evaluation were no capacity (53%), no funding (48%), too expensive (36%), participant burden (36%) and not having the skills/expertise (31%). Only 62% were aware of the PASEF and, of those, 63% had used it for planning evaluation, to understand evaluation or to choose outcome measures. A low proportion of respondents were fully confident in using rigorous evaluation methods (8.6%), developing and using evaluation frameworks (15.1%), engaging stakeholders in evaluation development (17.8%), identifying validated questionnaires (14.5%), conducting data analysis (11.8%) and writing evaluation reports (23.8%). Respondents indicated that training on the PASEF (56%), a database of validated questionnaires (62%), simplified evaluation resources (48%), data collection templates (46%) and a forum for disseminating evaluation findings (40%) would facilitate conducting evaluation.

Discussion and implications: Further training and easy to use resources are needed for professionals to improve the quality of evaluation conducted in practice. Increased management support and investment to create capacity and funding for evaluation activities will also be required. Co-production of physical activity interventions by researchers and practitioners may help improve the quality of evaluation being undertaken to develop the evidence base.

94. 'Hidden' social networks in physical activity behaviour change interventions

Authors: Hunter RF, McAnaney H, Davis M, Tully MA, Valente T, Kee F.

Background: Many interventions do not account for the interaction among individuals and how such interactions may affect outcome, thereby negating the influence of social networks. The purpose of this study was to explore the unintentional 'hidden' networks in a complex physical activity intervention.

Methods: Using RFID (radio frequency identification) technology embedded in swipe cards which participants

scanned at sensors placed around the environment when undertaking physical activity, social connections were inferred based on spatio-temporal co-occurrences involving card scans: (1) on the same day; (2) at the same sensor location (at least at 3 or more co-occurrences); and, (3) timestamps within 10 seconds. The social ties were investigated using a range of mathematical network parameters, including network density (proportion of ties in the network) and degree centrality (number of connections a node has).

Results: Of the 406 participants, 225 engaged in physical activity involving social connections with at least one other individual, with 5,578 social connections inferred over the 12-week intervention with 282 distinct pairings of participants, demonstrating clear evidence of unintentional 'hidden' networks within the behaviour change intervention. Illustrations of how the social networks change over the 12-week intervention demonstrate the shortcomings of previous methods of collecting self-report sociometric data.

Discussion: Results showed evidence of unobserved social networks in the intervention and illustrated how the network evolved over short periods and affected behaviour. Behaviour change interventions should account for the interaction among participants (i.e., social networks) and how such interactions affect intervention outcome.

Implications: Social networks are inherent in our interventions; they are currently under-utilised. Such networks have the potential to encourage maintained behaviour change. Further research is required to investigate how best to utilise social networks within our interventions for physical activity behaviour change.

95. A comparison of objectively measured sedentary behaviour in primary school children, their parents and teachers

Authors: Hegarty LM, Mair JL, Kirby K, Murtagh E, Murphy MH.

Background: Sedentary behaviour is emerging as a risk factor for poor metabolic health in children and adults independent of physical activity. It is reported that UK children spend approximately 80% of their day sedentary. The aims of this study were to objectively measure the sedentary behaviour of primary school children, their parents and the children's teachers and determine the relationship between child, parent and teacher sedentary behaviour in Ireland.

Methods: A sample of 101 primary school children, 113 parents and 9 teachers participated in the study. ActivPALs measured sedentary

behaviour for seven days, 24 hours per day. In total, 64 children (49% male; 10.1 3 0.3 years), 72 parents (45% male) and 7 teachers (43% male) met criteria for data analysis. Data were collected from November 2014 to April 2015. The relationship between child, parent and teacher sedentary time was assessed.

Results: Mean sedentary time per day was 9.6 3 1.6 hours (children); 8.4 3 1.7 (mothers); 9.1 3 1.6 (fathers); and 8.6 3 1.2 (teachers). Mean standing time per day was 3.4 3 1.0 hours (children); 5.4 3 1.6 (mothers); 4.5 3 1.4 (fathers); and 6.0 3 1.0 (teachers). Mean stepping time per day was 2.2 3 0.6 hours (children); 2.0 3 0.6 (mothers); 2.1 3 0.7 (fathers); and 2.0 3 0.5 (teachers). Sedentary time accounted for 63.2% of total wear time for children, 52.2% for mothers, 58.0% for fathers and 51.8% for teachers. The mean number of sit-to-stand transitions per day were 87 3 16 (children); 58 3 14 (mothers); 65 3 23 (fathers); and 37 3 16 (teachers). Mean sedentary time for children was 9.3 3 2.5 on weekdays and 9.0 3 3.7 on weekend days. A moderate positive correlation was found between child mean sedentary time and father mean sedentary time, $r = 0.453$, $n = 20$, $p = 0.045$.

Discussion: The results showed that the majority of the children's time was spent sedentary with higher levels than the adults. However, the children were more likely to interrupt their sitting. Reducing sitting time in childhood may help influence less sitting in adulthood; thus, health risks may be reduced. This may help prevent a decline in public health.

Implications: This study highlights the large portion of time spent sedentary by primary school children and supports messages such as those by the British Heart Foundation which emphasises the need to reduce extended periods of sitting for pupils.

96. Determinants of organized physical activity participation patterns during the transition from childhood to adolescence in Germany: The nationwide KiGGS cohort study

Authors: Manz K, Krug S, Schienkiewitz A, Finger J.

Background: Organized physical activities (OPAs) are characterized by high intensity levels and can thus be more beneficial for health than other types of physical activity. However, studies suggest that OPAs decline from childhood to adolescence and determinants of OPA change are widely unknown. Therefore, this study aims at investigating changes in OPA participation during the transition from childhood to adolescence and the role of factors influencing OPA change.

Methods: Data from the German Health Interview and Examination Survey for Children and Adolescents (KiGGS) cohort study were used. Participants aged 6–10 years at KiGGS0 being in the age of 12–16 years at KiGGS1 were included ($n = 3790$). The outcome variable was 'OPA participation' between KiGGS0 and KiGGS1 with the categories 'maintenance' (reference), 'dropout', 'commencement' and 'abstinence'. Relative risk ratios were calculated using multinomial logistic regression to identify potential predictors for OPA patterns. Socio-demographic, family-related, health-related, behavioral and environmental factors were considered as independent variables.

Results: 48.5% (95%-CI 46.2–50.8) maintained OPA, 20.5% (18.7–22.4) dropped out, 12.3% (10.8–14.0) commenced OPA, and 18.7% (16.8–20.8) were abstinent between KiGGS0 and KiGGS1. Girls, children with low socioeconomic status (SES), and children with a below-average motor fitness had a higher risk to be in the non-maintenance OPA groups (dropout, commencement, and abstinence). In addition, older children had a higher risk to dropout and commence. Children from single parent families and with a high screen-based media use had a higher risk to commence, and children with psychopathological problems and from rural residential area had a higher risk to be abstinent.

Discussion: In particular girls, children from families with low SES and children with below-average motor fitness did less frequently maintain their OPA participation. Girls and children with low SES might receive less parental and peer support. Furthermore, a shift in interests for girls and costs of equipment and fees for children with low SES could be reasons. Children with poorer motor proficiencies probably enjoy OPA less.

Implications: Health promotion efforts should focus on bringing young children into OPA and preventing adolescents stop doing OPAs when they reach puberty age. Special attention should be paid to the needs and preferences of girls, children with low SES as well as to children with low motor fitness to prevent health inequalities in the future.

97. Context specific objectively measured physical activity and sedentary time among preschool children

Authors: Suvi Määttä, Carola Ray, Eva Roos

Background: Little is known about preschool children's objectively measured moderate-to-vigorous-physical activity (MVPA) and sedentary time (ST) levels at different times of week, and if there are gender differences in MVPA and ST. This research studies

MVPA and ST levels among 3–6 years old Finnish children at different times of week and possible gender differences at different age groups.

Methods: Total 892 children participated in the DAGIS cross sectional survey between autumn 2015 and spring 2016. Children wore Actigraph wGT3X-BT accelerometer for seven days, 24 hours per day. Five outcome variables for both MVPA and ST were formed: total time during week, preschool time, home time at preschool days, weekend, and non-preschool-weekday. All these variables were divided by wearing hours and multiplied by 60 minutes to illustrate an average hour at different times of the week. Kruskal-Wallis tests or Univariate analysis of Variance stratified with age were used to test gender differences in MVPA and ST levels.

Results: On average, one hour during total time of week consisted of 28 minutes of ST and 5,5 minutes of MVPA. At the age of 4, girls had more total time ST. Boys ages four to six had more total time MVPA. One hour in preschool consisted of 26 minutes of ST and 6,5 minutes of MVPA. Girls at ages four to five had approximately 2 minutes more ST in preschools than boys, whereas boys at ages four to six had about 1,5 minutes more MVPA than girls. One hour at home in preschool days consisted of 30 minutes of ST and 5 minutes of MVPA. At the age of four, boys had 1 minute more MVPA, whereas girls had 1 minute more ST at home. One hour in weekend consisted of 28 minutes of ST and 5 minutes of MVPA. Boys had 1,5 minutes more MVPA ages four to six than same-aged girls during weekend. One hour on non-preschool-weekday consisted of 29 minutes of ST and about 5 minutes of MVPA. No gender differences were found.

Discussion: There were gender differences on MVPA and ST levels among preschool children. These differential associations between activity levels and gender at different periods of week are important because they highlight the need to examine MVPA and ST in different contexts to fully understand the activity levels of children.

Implications: Further research should study the contextual correlates of MVPA and ST separately for boys and girls.

98. Mothers and Teenage Daughters Walking to Health: A behavioural analysis using the 'Capability, Opportunity, Motivation – Behaviour' (COM-B) model

Authors: Murtagh EM, Morgan PJ, Lubans DR, Barnes AT, McMullen J.

Background: The decline in physical activity (PA) during adolescence is substantial, particularly among girls. Engaging mothers in the promotion of PA for their teenage daughters may be key to successful behaviour change. Comprehensive understanding of the factors that influence behaviour is essential for designing effective interventions. The aim of this study was to comprehensively analyse PA and parenting behaviours to guide the design of a multi-component intervention.

Methods: The COM-B model provides a basis for designing interventions aimed at behaviour change. It contends that changing the incidence of any behaviour involves changing capability, opportunity or motivation relating to either the behaviour itself or behaviours that compete with or support it. A review of published literature was conducted with respect to adolescent girls and their mothers' walking for exercise, and mothers' parenting for PA. The COM-B Behavioural Diagnosis Form framed the evidence relating to capability, opportunity and motivation for change in PA.

Results: A wide range of factors were noted across all elements of the COM-B model. For capability, it was found that that there are minimal physical barriers to females walking for exercise. Greater understanding about why regular PA is important and new strategies for increasing PA may be needed. Given that many families are time poor, both time and accessibility may influence opportunities for PA. There was extensive evidence that support from others influences social opportunity to be regularly active. Findings demonstrated a need to develop the belief that PA would be a good thing to do and so enhance reflective motivation. For mothers, greater understanding of the benefits of, and how to enact an authoritative parenting style, may be required. Mothers' attitudes to and support for PA is essential to provide PA opportunity for their daughters. Assisting mothers to develop plans to 'parent for PA' may boost reflective motivation.

Discussion: These findings identify key elements that need to be in a targeted intervention for adolescent girls. Analysis of capability, opportunity and motivation for the positive PA and parenting behaviours to occur allows a comprehensive understanding of the complex interactions involved

in behaviour change. The next stage will involve selection of appropriate interventions functions using the Behaviour Change Wheel to design an intervention to bring about the desired change.

Implications: The COM-B model, a framework based on behaviour change theory, can scaffold analysis of existing evidence in order to understand physical inactivity and inform intervention development.

99. Neighborhood settings and physical activity of Czech adolescents

Authors: Mitáš J, Frömel K, Dygrýn J, Rubín L, Chmelík F, Vorlíček M.

Background: In 2012 an estimated 17.5 million people died from cardiovascular disease (CVD), representing 31% of all global deaths. Its multifactorial nature and well-known association with obesity and physical inactivity have made CVD the number one cause of death globally. Short term physical exercise (< 3 months) exerts beneficial effects on classic CVD risk markers such as lipoprotein profile and blood pressure, but the effect of regular physical activity on haemostatic risk markers is not well-established. In a recent study (Gram et al., EJAP, 2015) we demonstrated that daily exercise at vigorous intensity (~70% VO2max) for 12 weeks in overweight men exerts an effect on the thrombin generation potential in the direction of anticoagulation. While these results suggest that daily exercise of vigorous intensity reduces CVD risk, it is unknown whether this effect is consistent with other exercise exposures such as active commuting and exercise at moderate intensity. Exercise is health beneficial, but from a public health perspective it is a time consuming behavior. Sedentary hours spent on transportation have increased and this raises the question whether implementing active commuting in a daily lifestyle routine is equally health beneficial to leisure time exercise in CVD prevention. We aim to answer this question in an ongoing strictly controlled randomized exercise trial.

Methods: In total, 130 younger (20–45 years), sedentary, healthy, overweight (BMI: 25–35 kg/m²) male and female subjects were randomized to a sedentary control group (CON, n=18), active commuting (BIKE, n=35), or leisure time exercise of moderate (MOD, ~50% VO2max, n=39) or vigorous intensity (VIG, ~70% VO2max, n=38) for 6 months. The weekly exercise regimen comprised 5 bouts of exercise corresponding to an exercise-induced energy expenditure of 2100 kcal in men and 1600 kcal in women. The exercise intervention was monitored with the use of heart rate monitors and exercise prescription was individually adjusted after 6 and 12 weeks to comprise

changes in VO2max and body weight. Measurements of body weight and composition (DXA scan) and maximal aerobic capacity (VO2max) were performed and thrombin generation (Calibrated Automated Thrombogram method) was assessed in fasting plasma samples at baseline, 3 and 6 months.

Results: The study is ongoing till early June 2016 and the final data and blood analyses will be conducted and prepared for presentation at the 2016 HEPA meeting.

100. Willingness-to-accept financial incentives for doing physical activity: Implications for optimal incentive design

Authors: Tang J, Longo A, Hutchinson G, Hunter RF, Brennan S, Smith O, Kee F.

Background: Although the UK government has been advocating for the use of financial incentives to encourage healthy lifestyles, for example increasing physical activity, previous studies have not shown significant effects of financial incentives for increasing physical activity in workplace settings. One reason may be that the incentives employed have been insufficient to stimulate behaviour change. The purpose of the study is to investigate the optimal levels of financial incentives required to encourage physical activity behaviour change.

Methods: We use contingent valuation method which is a stated preference method. It is a 'direct' valuation method where individuals are given hypothetical scenarios and asked to state directly their willingness to accept for doing physical activity. We apply a double-bounded dichotomous choice which asks a dichotomous choice question followed by another question depending on the previous answer. A joint maximum likelihood estimation of the two dichotomous choice questions is used to obtain willingness-to-accept estimates. 752 office-based participants from Lisburn and Belfast, Northern Ireland completed the web-based questionnaire.

Results: The results from the contingent valuation show that the willingness-to-accept for doing 30 minutes of general physical activity is at least £1.35 and £2.85 for 60 minutes.

Discussion: It needs to be tested whether the effectiveness and cost-effectiveness of financial incentive interventions are improved if financial incentives are designed at a proper level by means of the method proposed in this study. In addition, the design of financial incentive schemes will be of more interest to both public health and businesses if they are coupled with a sustainable model in which financial incentives are provided in the format of retail vouchers rather than cash payments.

Implications: Since little is known about the level of financial incentives required for health behaviour change, future interventions should take into account the fact that the level of optimal financial incentives for doing physical activity can be obtained. In a broader sense, the method can be applied in any behavioural change study which provides financial incentives.

101. Long-term effects of active commuting and leisure time physical activity of different intensities on appetite and energy intake in overweight men and women

Authors: Quist JS, Rosenkilde M, Petersen MB, Gram AS, Sjødin A, Stallknecht B.

Background: Exercise training has been associated with disappointing weight loss outcomes which may be due to compensatory responses in appetite and energy intake. However, there is a lack of randomised controlled trials of longer duration investigating effects of exercise on appetite and energy intake. Objective: To examine the effects of active commuting or moderate or vigorous intensity leisure time physical activity on appetite and energy intake in response to a standardised meal and an acute bout of exercise after 3 months in an ongoing 6-month intervention. Final 6 months testing will be conducted end of May 2016.

Methods: The subpopulation and per protocol analyses presented here include 88 sedentary overweight and obese (BMI: 25–35 kg/m²) men and women that were randomly allocated to active commuting (BIKE), leisure time physical activity of moderate intensity (MOD, 50% VO₂-max) or vigorous intensity (VIG, 70% VO₂-max), (all groups, 420 kcal/d (M)/320 kcal/d (F), 5 d/week) or control (CON). During a test day (0–315 min) at 0 and 3 months, subjective appetite ratings were obtained fasting and in response to a standardised breakfast meal (time: 0–180 min) as well as to an acute bout of exercise (60% VO₂-max, 420 kcal (M)/320 kcal (F)) (time: 255–315 min) and ad libitum energy intake was assessed 60 min after the exercise bout (time: 315 min).

Results: Fasting appetite ratings were not changed in any of the groups, but postprandially ratings of prospective food consumption were decreased in VIG (p=0.01) compared to CON (p=0.01). Post exercise ratings of appetite did not change in any of the groups. Relative to body weight energy intake increased in BIKE (0.87 (0.44; 1.70) kcal/kg, p=0.04), MOD (0.78 (0.08; 1.48) kcal/kg, p=0.03) and CON (1.69 (0.43; 2.18) kcal/kg, p=0.01). In VIG energy intake was lower compared to CON at 3 months (-1.75 (-3.46; -0.04)

kcal/kg, p=0.04). Body weight was lower in VIG compared to CON at 3 months (-3.7 (-6.5; -0.9) kg, p=0.01).

Conclusion: Our preliminary findings in this subpopulation suggest that 3 months of leisure time physical activity of vigorous intensity reduce ratings of prospective food consumption and prevent an increase in energy intake after an acute exercise bout. Testing of the total study population at 6 months will assess the long-term effects and the results will be presented at HEPA 2016.

102. 'Point-of-decision' — fitness tests in The Adventures of Joe Finn campaign: A potential method to reach Finnish working-aged men at need for health behavior changes

Authors: Kaasalainen K, Kasila K, Komulainen J, Malvela M, Poskiparta M.

Background: The understanding of effective male-specific health promotion methods has increased but less is known about gender-sensitive public health campaigns. An innovative effort to fill this gap is the Finnish health campaign 'The Adventures of Joe Finn', which offers free fitness tests, feedback, and good-humored public events for men. This study explored health behaviours and psychosocial factors among campaign participants. Another purpose was to investigate associations between changes in self-reported physical activity (PA) and psychosocial factors over three years.

Methods: Baseline data were collected from campaign events in 2011 (T1) and follow-up by e-mail survey in 2014 (T2). Physical fitness was estimated with a body fitness index (BFI) based on the Inbody 720-analysis, Polar OwnIndex-test and hand grip test. Self-reported PA, phase for PA change (intention/action) and psychosocial factors (knowledge, skills, social support, goal setting and self-efficacy) were elicited by questionnaire. T1 participants were 900 working-aged men (Mean age=43.9, SD=12.7) of which 19% had low and 42% moderate BFI. For further analyses, 361 of these men were located in a 'need-for-change'-group on the basis of low or moderate BFI, body mass index (BMI)>25 kg/m² and indications of abdominal obesity. At T2, 102 of these men completed a follow-up questionnaire. T2 participants were older, scored higher in PA skills and reported more social support at T1 than dropouts. Data were analyzed with logistic regression analyses, structural equation models and group comparisons with t-test.

Results: At baseline, 66% of the men in the 'need-for-change'-group had intention to increase PA. They also engaged in PA less than 3 h/week.

PA change during the recent year (Action phase) was positively related to younger age, higher scores for self-efficacy and promoters for PA, fewer barriers to PA and healthier eating habits. Follow-up results indicated that BMI had decreased among T2 participants and the least active men (PA<1h/wk) reported increases in PA. High score in goal setting at baseline and high self-efficacy were related to greater self-reported PA in T2.

Discussion: Majority of the participants in the 'need-for-change'-group intended to increase PA, but they seemed to have insufficient self-efficacy and skills to overcome barriers and implement changes on their own. Point-of-decision fitness tests and a male-specific approach may be pull-factors for participation among inactive men. However, further research should investigate to what extent and how PA counselling could be integrated in the population-wide campaigns and offered to this hard-to-reach group.

Poster Abstracts

Poster Session: Wednesday 28th September

1. A school excursion to a museum can promote physical activity behaviours in children by integrating movement in curricular activities

Authors: Mygind L, Kryger TB, Sidenius G, Schipperijn J, Bentsen P.

Background: Since children spend a large proportion of their time in institutional settings, such as schools, health promotion researchers have identified this as an important setting to promote PA. Apart from physical education (PE), PA could be integrated in the school curriculum in other ways. Therefore, the aim of this study was to examine whether a school excursion to a museum can increase primary school students' PA and reduce sedentary time.

Methods: One hundred and fourteen primary school students, aged 12 or 13, from three Danish schools wore accelerometers for five consecutive days of which one consisted of an excursion day to a museum.

Results: An excursion to a museum significantly reduced sedentary time, but was in itself not sufficient to increase MVPA. While a reduction in the amount of sedentary time was observed, students did not spend more time in MVPA during the visit to the museum than on a regular school day. However, over the full excursion day, the students accumulated more MVPA. One school used active transportation to and from the museum which contributed to significantly more MVPA compared to the other schools.

Discussion: While a single or sporadically occurring excursion is unlikely to contribute substantially to student's health, our findings suggest that using cultural institutions, such as a museum, holds potential to integrate low-intensity PA in curriculum-based learning activities. If combined with other regularly occurring excursions, as it is practiced in education outside the classroom it is likely that the overall PA levels are influenced and that this will have positive health outcomes — at least in the form of reduced sedentary time. While our study was largely descriptive, there is a need for experimental research designs involving interventions and control groups for assessing causality.

Implications: Firstly, it seems that school excursions hold potentials for integrating movement in the curriculum as an add-in activity. Secondly, active transportation to and from external learning settings, such as museums, is

an easily applied and cheap modality for enhancing student's, and probably also teachers', daily PA. Integrating this into school policies might raise awareness in teachers' everyday practice for planning excursions. A third recommendation and potential direction for school excursions, PA and health could be a focus on more inclusive practices for both sexes.

2. The role of documentation in evidence-informed policy making: Findings from a Romanian National Conference

Authors: Bozdog ME, Rus D, Sandu P, Chereches RM, Castellani T, Tudisca V, Valente A.

Background: Relationships between scientific research and policy making were deeply investigated in the last decades by several specialists from many disciplines. As part of the project REPOPA ('Research into policy to enhance physical activity'), we focused on the objective of developing and policy briefs and guidance resources to foster evidence-informed policy making (EIPM) as a final research outcome. To this aim, national conferences were organized among participating countries, including Romania, to contextualize, implement and test with stakeholders four thematic sets of measurable indicators for EIPM, built on the basis of the previous phases of the project. In this presentation we will focus on the results of the Romanian national conference concerning one of the thematic sets: 'documentation — retrieval/production'.

Methods: Eight Romanian experts at national or local levels with expertise in various fields — sport for all, health promotion/public health, political sciences, education — attended one half-a-day national conference. Participants analyzed the sets of indicators, 'documentation — retrieval/production' being one of them with six indicators, mapping the individual indicators to policy phases by means of an online questionnaire before the conference and applying the SWOT analysis during the face to face meeting. Lastly, they gave recommendations regarding the use of the indicators in Romanian policy making context.

Results: Indicators in category 'documentation — retrieval/production' were mapped to 2 out of 4 available policy phases: policy formulation and policy evaluation. The indicators 'Defined procedures for ensuring a review of relevant scientific literature', 'Citation of peer-reviewed research

articles in policy documents' and 'Citation of reports and other documents containing evidence in policy documents' were mapped in the policy formulation phase. The indicator 'Availability of reports on policy results from policy making organizations of different municipalities/regions/countries' was mapped in the evaluation phase. Finally, 'Publication of scientific articles related to the policy developed' was considered relevant for both policy formulation and evaluation phases. During the SWOT, some of the emerging recommendations were: building international partnerships among organizations with experience in evidence-based policy making; funding, organizing and using scientific research for policy making.

Discussion and implications: The set of measurable indicators for EIPM 'documentation — retrieval/production' is recommended to be used while formulating and evaluating a policy in order to insure the policy is well-informed. Further discussions can be focused on how to make the recommendations received from experts more frequently used in Romania, where the process of evidence informed policy development is at its starting point.

3. Long periods of uninterrupted sitting behavior: A challenge for the 21st century

Authors: De Meester F, Van Acker R.

Background: Reducing long periods of uninterrupted sedentary behavior, or time spent sitting, has been proposed as one of the great challenges to achieve major public health advances in the 21st century. To assist Belgian policy makers and health professionals in better interpreting the diversity of findings concerning the health risks, the prevalence and the correlates of different types of sedentary behavior, The Flemish Institute for Health Promotion and Disease Prevention (VIGeZ-Belgium) synthesized the current evidence in a report. This synthesis report also provides an overview of recommended interventions targeting sedentary behavior.

Methods: A literature search was conducted to identify the current evidence concerning the health risks, the prevalence, the correlates and the interventions to promote sedentary behavior. A structured electronic bibliographic database search was used to retrieve review studies and large-scale studies (sample > 100.000).

Studies with Belgian data were also included because of the relevance for the Belgian context. Reviews and studies were included if the main outcome or one of the outcomes was an objective or self-reported measure of sedentary behavior (e.g. total level of sedentary behavior or other types of sedentary behavior such as tv-viewing, gaming, screen time), the sample consisted of toddlers (3–6 years), children (6–12 years), adolescents (12–18 years) or adults (>18 years) and the results were published in English or Dutch.

Results: Of the 1674 potential references retrieved by the searches, 56 systematic reviews and 34 Belgian studies met the inclusion criteria and were synthesized in a systematic manner. The synthesis of this extensive body of evidence shed light on the health risks, the prevalence and the correlates of different types of sedentary behavior and this separately for the four age groups. Further, potential intervention approaches to be considered were identified. The main results of this synthesis report also provide the evidence base for a shorter document for professionals: a fact sheet which informs the most important findings using several infographics.

Discussion and implications: The synthesis report describing the current evidence concerning sedentary behavior raise some demands on the Belgian agenda of public health promotion: it makes a persuasive case that long periods of interrupted sitting should now be considered as an important stand-alone health hazard. The fact sheet together with the synthesis report supplies policy makers and health professionals with recommendations in order to translate research into practice, and it offers guidelines for a variety of age groups and settings.

4. Influence of using the Internet and online Social Networks as information sources on Physical Activity Behaviour

Authors: Esteves D, Brás R, O'Hara K, Pinheiro P.

Background: Physical inactivity increases the risk of developing several highly prevalent diseases (cardiovascular disease, diabetes, hypertension, some cancers, and obesity). As large proportions of the population are not meeting physical activity guidelines, increasing physical activity (PA) is a public health priority. As such, intervention strategies that can reach many people in a cost-effective manner are desired. New technologies are recognized as an important repository of information about physical activity (PA), providing information to large numbers of people at low cost. However, there is little research on the effect of using the Internet and social

networks as sources of information on behavior related to AF. The objective of this research is to understand to what extent the increased use of information technology corresponds to a higher level of knowledge of individuals.

Methods: To try to understand this relationship we used a variable related to the level of physical activity that each individual must make and compared with the use of different sources of information. The study included a randomly recruited sample of 200 subjects (53% males; 47% females), age 31.6312.6 years old. A survey was designed to (1) identify where people find physical activity-related information, considering age, gender and education differences and (2) compare the influence of each information sources on PA knowledge and PA levels.

Results: Results show that Internet and social networks present the lowest usage as PA information source (21.5 and 5.0% respectively). The Internet is used as PA information source equally by genders (21.7 males % vs female 21.3%), mainly by and young adults (31.3%), and educated people 31.4%. Social networks are used mainly by males (6.6% vs female 3.2%), young and young adults (8.3 and 6 %), and equally (and less used) be low and educated people (5.5 and 5.7%).

Discussion: Looking for PA information in Internet sites does not influence nor in PA knowledge nor in PA level, whereas looking for PA information in social networks show no influence on PA knowledge, but present a positive influence on PA level. This is an important finding, in the sense that the use of social networks as PA information source seems to have a positive impact on embracing an active lifestyle.

Implications: The study suggests that interventions to promote active lifestyle should combine the use of new technologies in conjunction with classroom sessions involving professional sports, to maximize its effect.

5. Treatment fidelity in behaviour change interventions: A Scoping Review

Authors: O'Shea OM, McCormick R, Bradley JM, O'Neill B.

Background: Assessment of treatment fidelity is important for enabling the translation of research findings into clinical practice particularly for complex interventions. The National Institute of Health Behavioural Change Consortium provide 5 key domains of fidelity (Study Design, Training of Providers, Delivery of Treatment, Receipt of Treatment and Enactment of Treatment skills) (Bellg et. al 2004). The aim of this review is to identify the definitions used for treatment fidelity in the behaviour change literature and to explore the extent to which the assessment of

fidelity has been reported according to these 5 domains.

Methods: Three data bases (Scopus, Medline Ovid and CINAHL) were searched using key terms. Results were limited to studies published between 2012 and 2015. Only studies that included a method of fidelity assessment/monitoring were included. Definitions/summaries of treatment fidelity and methods for assessing/monitoring treatment fidelity were extracted. These methods were then summarised and categorised according to the 5 domains.

Results: Sixty-four papers were included for analysis. A definition of treatment fidelity was provided by n=35 studies; n=9 defined fidelity according to Bellg et. al 2004; 'methodological strategies used to monitor and enhance the reliability and validity of behavioural interventions and the methodological practices used to ensure that a research study reliably and validly tests a clinical intervention'. In the context of treatment fidelity n=9 reported on study design; n=21 reported including an element of training of providers; n=56 papers reported on delivery of treatment; n=12 included a report on receipt of treatment; and n=10 reported on enactment of treatment skills. A few papers (n=3) included methods they described as fidelity monitoring/assessment that could not be defined according to the 5 domains.

Discussion: Treatment fidelity was inconsistently defined in the literature and the extent to which it has been reported was limited. Delivery of treatment was the most frequently reported component of treatment fidelity but other important aspects were poorly reported. The potential consequence of this is that translation of research interventions into clinical practice may not be optimised.

Implications: Treatment fidelity is paramount for the translation of effective research interventions into practice. A comprehensive method to monitor/assess treatment fidelity should be included during the development, execution and reporting of complex interventions.

6. Effects of playground activities on development of motor skills in 5 years old children

Authors: Tortella P, Fumagalli G.

Background: Levels of motor competence influence amount, intensity and level of physical activity performed by children. In turn, motor competence is built up on acquisition of both gross and fine motor skills. With this study we investigated in 110 five years old children the effects on motor skills of 10 sessions of outdoor motor activities played in the

'Primo Sport 0246' playground (Treviso, Italy) where equipment and their distribution are controlled.

Methods: One hundred and ten children 5 years old from 4 kindergartens in Treviso, Italy were studied. Of these, 71 (experimental group) played once a week for 10 consecutive weeks (March to May) in the 'Primo Sport 0246' playground. Activities were organized as 30 minutes of free play and 30 minutes of controlled structured activities; the tools available to the children (monkey bars, hanging bar, climbing a net, climbing a rope, a rope ladder, gymnastic rings, balance tools) were aimed at training gross motor skills. The control group did not attend the playground. All 110 children were analyzed before and at the end of the 10 session period with sets of procedures aimed at measuring gross and fine motor skills (1, 2, 3).

Results: Analysis of pre and post-training tests showed significant differences in the experimental but not in the control group in four gross motor tasks (one-leg balance-left foot, balance on beam, balance of platform, and putting a medicine ball). No significant differences were found in fine motor tasks.

Discussion: The data indicate that a (relatively limited) experience at the 'Primo Sport 0246' playground positively stimulates improvements of gross motor skills but not fine motor skills. As the program in the playground was mainly focusing on training gross motor skills, the results may demonstrate that increasing performance within fine motor skills may be regarded as specific.

Implications: Appropriate design of environment, including playgrounds and kindergarten, can foster development of basic specific motor skills. This is a relevant information for teachers as well as public administrators for their planning of the best condition for development and health of children and citizens.

7. The 'Walk with Me' Study: developing a peer-led, multi-component physical activity intervention in older adults

Authors: Cunningham C, McMullan I, Simpson L, Cupples ME, Hardeman W, Black M, Farrell D, Hunter RH, Kee F, Laventure B, Morgan J, Murphy MH, McDonough SM, Totten C, Tudor-Locke C, Wright A, Tully MA.

Background: Physical activity (PA) declines with age. Low levels of activity are associated with declining health, as well as increased social isolation and loneliness in older adults. There is a need to develop interventions that encourage social interaction in combination with PA. Inactive older adults have previously reported their desire to be 'socially active', but also be given an individually

tailored PA programme, which take place outside of intimidating settings such as gyms. The aim of this study was to explore older adults views on what should be delivered in a peer led PA intervention.

Methods: In the 'Walk with Me' Study (a peer-led, multi-component PA intervention in older adults), semi-structured interviews were conducted with a purposeful sample of 11 older adults. Their views on the feasibility and acceptability of behaviour change techniques commonly used in similar interventions (goal setting and self-monitoring, problem solving, social support, and behavioural practise and rehearsal) were explored. Interviews were audio-recorded and transcribed verbatim. Transcripts were analysed independently by two researchers. Initial codes were identified and themes collated. In discussion with a third researcher these themes were reviewed and refined ensuring clear definition. After 11 interviews, data saturation was achieved and a final interview was completed to seek confirmation of the analyses.

Results: The majority of participants agreed that PA is beneficial for health, however few demonstrated an understanding of current recommended guidelines for PA. Increased social support from a peer mentor was perceived as a vehicle to increase self-efficacy to be active through learning from the experience of others as well as feelings of increased safety from their presence. The nature of the relationship that develops with the peer mentor was seen as key to ensuring that an increase in PA was successful and sustained. Therefore a 'matching' exercise regarding interests should be carried out so the planned activities meet the needs and preferences of participants.

Discussion: In order to increase PA, peer-led interventions should highlight the key benefits of PA and the recommended PA guidelines. Peer mentors should seek to provide tailored social support aimed at increasing confidence and enjoyment of taking part in PA.

Implications: Taking account of the views of participants may enable the intervention to avoid potential barriers, and to incorporate elements which are perceived to facilitate PA, such as social activities like meeting friends or engaging in hobbies.

8. VirtualEX exercise to promote physical activity and health in people with limited mobility and pain: A model in fibromyalgia

Authors: Gusi N, Collado-Mateo D, Dominguez-Muñoz FJ, Garcia-Gordillo MA, Adsuar JC.

Background: Persons with limited mobility and pain require a specialised, individually tailored feedback exercise programmes to prevent aging (e.g. falls, doing daily living tasks, cardiorespiratory fitness). However, exercise experts are usually expensive and/or concentrated in urban centres. The purpose was to test the effects and feasibility of a specific virtual exercise program with motor-control feedback.

Methods: Firstly, VirtualEX a serious exergame was developed. This was based on kinect, which could modulate the load of exercises (speed and distance of movements according to the achievements in previous exercises and professional criteria), and include dance exercises. A randomised controlled trial was performed on women with fibromyalgia, with a control group (usual care) (n=46), and experimental group (n=46) that practised 3 one-hour sessions per week for 3 months. We tested fitness, health-related quality of life, and motor control, as measured by a 3-D non-wearable biomechanical system.

Results: Completed data was gathered from 45/46 participants in experimental group, and 41/46 of control group. VirtualEX was feasible (only one drop-out in exercise group due to controversies with other patients), and effective at improving: :subjective health (comparative improvement -ce-19.8%, p=.036, Effect Size -ES=-0.058); 6-min walking test (ce= 5.27%, p=.025; ES=0.069); and 30-s chair stand (ce= 13.19%, p=.001, ES=0.134). The motor pattern improved in climbing stairs and walking by reducing horizontal oscillations of limbs and centre of gravity.

Discussion: This is a pioneer study which shows the feasibility and effectiveness of an exergame in preventing the deterioration of fitness, and reducing fall risk and motor control in women with fibromyalgia (limited mobility and pain). Experimental group demonstrated improvements in the above mentioned parameters, while control group participants continued in the fitness aging process.

Implications: Virtual exercise could be a helpful tool for promoting adequate exercise to prevent premature fitness aging in persons with limited mobility, and painful conditions, especially in disadvantaged areas with difficult accessibility to expert professionals.

9. Heterogeneity in fitness response to a self-selected lifestyle intervention in high-risk individuals

Authors: Færch K, Kennedy A, O'Donoghue G, Durkan E, Kenny H, Cleary S, McCaffrey N, Andersen GS, Nolan J, O'Gorman D.

Background: The term pre-diabetes covers subgroups of individuals with

distinct pathophysiology. Despite this heterogeneity, the current approach to diabetes prevention is uniform. We aimed to examine the heterogeneity in responsiveness to a self-selected lifestyle intervention in individuals with: normal glucose tolerance (NGT); isolated impaired fasting glucose (i-IFG); isolated impaired glucose tolerance (i-IGT); combined IFG&IGT; and screen-detected type 2 diabetes (T2D).

Methods: A total of 243 high-risk individuals (mean age (SD): 54 (11) years; BMI (SD): 31(5) kg/m²; 50.1% men) participated in a 12-week supervised exercise training programme accompanied with dietary advice. At baseline and follow-up, oral glucose tolerance and VO₂max tests were performed. Heterogeneity in VO₂max response to the lifestyle intervention was analysed using linear regression analyses, with baseline glucose tolerance status selected as the explanatory variable. Analyses of VO₂max changes were adjusted for age, sex, and baseline level of VO₂max.

Results: At baseline, VO₂max levels were 10–23% lower in individuals with i-IGT and IFG+IGT, compared with participants having NGT or i-IFG (P<0.05). We observed heterogeneity within the groups in 12-week changes in fasting glucose (P=0.027) and VO₂max (P=0.034). Mean (95% CI) reduction in fasting glucose was 0.3 (0.2;0.4) mmol/L in i-IFG, and 1.0 (0.7;1.3) in T2D. Other groups did not reduce fasting glucose levels significantly (P>0.05). Improvement in VO₂max was: 2.6 (1.6;3.6) ml/min/kg in NGT; 3.4 (2.5;4.3) in i-IFG; and 3.0 (1.3;4.7) in IFG&IGT; and only 1.0 (-1.5;3.5) ml/min/kg in i-IGT.

Discussion: Compared to individuals with NGT, cardiorespiratory fitness levels are reduced in pre-diabetic individuals with i-IGT and IFG+IGT, but not in those with i-IFG. Paradoxically, improvement in fitness levels after the 12 week intervention was not seen in individuals with i-IGT.

Implications: Our findings suggest that lifestyle strategies for prevention of type 2 diabetes may not be equally beneficial in all subtypes of pre-diabetes.

10. Healthy Urban Living and Ageing in Place (HULAP): Physical activity, built environment and knowledge exchange in Brazilian cities

Authors: Cleland CL, Hunter RF, Murtagh B, Sengupta U, Tully MA, Kee F, Melo S, Hino A, Florindo A, Duarte F, Reis R, Ellis G. In partnership with Belfast Healthy Cities and Embarq, Brazil.

Background: Healthy urban ageing is a global issue. Non-communicable diseases are a public health priority and there is a need to focus on the rise of obesity and to ‘scale-up programmes,

policies and actions’ (p.10) to address physical inactivity (Schmidt et al. 2011). A major concern relating to healthy urban ageing is the rapid social and built environment changes exposing vulnerable populations (low socioeconomic status, older adults and women) to lower levels of physical activity (PA) due to motorized transportation, urbanization and low access to public infrastructure in Low-Middle Income Countries (LMICs). The study aims to investigate the built, social and policy environments in the UK and Brazil to ensure healthy urban ageing in rapidly urbanising and ageing populations in LMICs.

Methods: The HULAP Study comprises of five work packages (WP), including: the generation of spatial data from UK/ Brazil and the evaluation of existing models of walkability (WP1); collection of PA, health and environmental data in older adults in UK (linked to the NICOLA Study) and Brazil (n=600)(WP2); analysis of the governance of healthy ageing(WP3); briefing papers providing targeted, evidence-based guidance on policy relating to opportunities for older adults in Brazilian cities(WP4); and creating opportunities for exchange of good practice and other experiences between European and Brazilian stakeholders(WP5).

Results: Three themes will be explored to answer a set of research questions: 1) Urban design, Planning, Housing and Infrastructure — to determine if the built environment at different geographic scales facilitates/impedes older adults, PA; 2) Health Inequalities and Justice — will address specific healthy ageing challenges to determine opportunities for improving the well-being of older adults so they can enjoy independence and a high quality of life and make a contribution to society; and 3) Leadership, Governance and Institutions — explore the governance context for healthy ageing in Brazil/UK, to examine the capacity of institutions to respond and identify key stakeholders involved in this policy arena.

Discussion: This study will provide a conceptual and empirical understanding of the influence of the built, social and policy environments on healthy urban ageing. Previous evidence will be enhanced and new evidence and policy tools will be developed, enhancing policy effectiveness and improved institutional collaboration.

Implications: Lessons learned from understanding the association between the built, social and policy environments and PA in older adults in these contexts can provide a foundation to inform policies and practice in LMICs that will face similar healthy ageing issues in the future.

11. SPRITE — Stroke Prevention Rehabilitation Intervention Trial of Exercise: A Feasibility Study

Authors: Heron N, Kee F, Donnelly M, Cupples ME.

Background: Approximately 1,700 transient ischaemic attacks (TIAs) occur annually in Northern Ireland, with TIA survivors often being left with considerable functional impairment. TIAs and strokes share common risk factors with cardiovascular disease. Cardiac rehabilitation post-myocardial infarction has shown significant reductions in morbidity and mortality, with home-based programmes producing better adherence and similar outcomes to hospital and community-based programmes. However, the value of rehabilitation programmes, particularly home-based, for stroke prevention following a TIA or minor stroke is unclear. Aims To undertake a feasibility study of a novel rehabilitation programme, ‘The Healthy Brain Manual’, for use in the acute period following a first TIA or ‘minor’ stroke.

Methods: Patients attending two TIA clinics in Belfast within 4 weeks of their first TIA/minor stroke will be invited to participate. Those who agree will attend a baseline assessment and will be allocated randomly to one of 3 groups: (1) standard care; (2) standard care plus a manual which will be used to deliver a 6-week novel home-based comprehensive rehabilitation, including a physical activity component; (3) standard care, manual plus a pedometer (to promote physical activity by encouraging goal-setting, self-monitoring and providing feedback). Follow-up assessments will take place after 12 weeks. Interviews with health professionals who are involved in recruitment and focus groups of participants will be employed to assess the interventions’ acceptability.

Results: We aim to recruit 15 patients, with 5 in each group. Rates of recruitment, retention and of outcome measure completion, with a thematic framework analysis of qualitative data will determine the feasibility of a definitive trial and inform refinement of the intervention, including the manual’s design. Secondary outcome measures, including assessment of cardiovascular risk factors, will inform determination of sample size for further study.

Discussion: This is the first study to assess the feasibility of a home-based cardiac rehabilitation programme for people with TIA and/or minor stroke. The findings will inform the development of a novel secondary prevention programme, ‘The Healthy Brain Manual’ and of a trial to test its effectiveness.

Implications: Early initiation of a comprehensive home-based rehabilitation programme, with emphasis on physical activity, for patients with

TIA/minor stroke should provide optimal opportunity for secondary prevention and avoidance of major stroke. This feasibility study will allow the further development of a novel rehabilitation manual, and of a randomised controlled trial to test the effectiveness of this programme, which has the potential to improve long-term outcomes for patients with TIA/minor stroke.

12. Participation in golf: More to win than the Ryder Cup

Authors: Daines L, Murray A, Archibald D, Hawkes R, Grant L, Mutrie N.

Background: 2016 may be the biggest year in the recent history of golf, with 4 major championships, the Ryder Cup, and the reintroduction of golf as an Olympic sport. But the prizes may be greater for the general public. As a form of moderate intensity physical activity, golf may be important in the promotion and improvement of population health and longevity.

Methods: Using established methodology, a scoping review was conducted to explore the relationship and effects of golf on physical and mental health. The search strategy was employed across 7 electronic databases: Medline, Web of Science, SPORTDiscus, PsychInfo, WHO international clinical trials registry platform, Google Scholar and ProQuest. Searches were completed in October 2015. Titles and abstracts were screened against eligibility criteria before full text screening and subsequent data extraction using a standardised form.

Results: 4944 studies were screened of which 8 were directly relevant to golf and longevity. The 2010 Global Burden of Disease study highlighted physical inactivity in the top 5 causes of death in North America, Western Europe and in Australasia; the 3 regions where golf is most frequently played. Golf is associated with an increase in life expectancy regardless of age, gender, or socio-economic status. The most striking conclusion in a study of 300,818 golfers was a 40% reduction of mortality rates in golfers when compared to non-golfers after adjustment for socio-economic status.

Discussion: Scoping review evidence identifies population level studies associating golf with increased longevity, and golf popular in countries where low levels of physical activity exist. Further studies are merited in different golfing populations, particularly North America where golfing demographics, the pattern of participation, and the mode of golf (for example riding a golf buggy) are different to existing older and European studies.

Implications: Golf is a sport where a large volume of moderate intensity physical activity can be achieved,

even in a single outing. Playing golf is associated with an increase in life expectancy. Participation in golf offers health enhancing physical activity, and can be encouraged at a population level across the life-course, regardless of gender, or socio-economic status.

13. The effect of positive attitudes toward Physical Education on the level of aerobic capacity performance

Authors: Boronyai Z, Csányi T, Vass Z

Background: The PE setting plays an important role in the shape of attitudes toward physical education (PE) in the present and through that towards the future physical activity (PA) We assume that there are direct associations between attitudes towards PE and PA and aerobic capacity (AC) , but the direction of the relation was not examined. The purpose of this study was to determine whether students with positive attitudes toward PE have better chance to perform in a healthy fitness zone, ergo have better AC.

Methods: The questionnaire was filled by N=961 high school students. The sample was random stratified. We used cross-tabulation and Chi-square probe to examine the association between the attitudes toward PE and the probability to perform in healthy zone in AC. To determine the direction of the association we calculated adjusted standardized residuals, and only the results higher than +/- 2 were taken into consideration.

Results: We found that there is significant association (approximately 15%) between positive attitudes toward PE and the level of AC performance. The adjusted standardized residuals showed that only the positive attitude toward PE has an effect on the level of AC performance. The level of AC performance has no significant association on the attitudes toward PE.

Discussion: The association between attitudes toward PE and the level of AC performance is significant although it only works in one direction. From a pedagogical perspective it can be stated that within PE the enhancement of physical fitness should not only be focusing on the amount and intensity of physical activity, but at the same time on building positive attitudes toward PE and PA as well.

Implications: Positive attitudes toward PE implicates a higher chance for one to perform in healthy fitness zone in a pacer test therefore to have better AC. Better AC although does not mean more positive attitude toward PE. Only PE with a certain quality aspects has positive effect on attitudes toward PA which can contribute to the improvement of students’ AC on in and beyond school.

14. Keep Youngsters connected and involved in sport

Authors: Dijk D.

Background: Keep youngsters connected and involved in sport Even though the Netherlands is on top of the list of the highest proportion of memberships at a sport club in Europe, there is the problem of a big drop off of youngsters in between the age of 12–19. In the Netherlands (and similar in other EU countries) many youngsters in between 12 and 18 year drop off participating in sport in sport clubs. At the end of primary school, when children are about 12 year old, still 87% is active.

Methods: In the transition to secondary school (in the Netherlands at 12/13 year) children start to drop off. About 50% of youngsters in between 12 and 18 stop being active in a sport club (Netherlands, NOC*NSF-Kiss-measure of number of memberships of 2012/2013). Different studies have shown that sports clubs are found to be an important site to create and cultivate a supportive environment for health promotion, as well as for the development of social skills and attitudes, like cooperation, responsibility, empathy, leadership and building positive peer relations. It also has been detected that youngsters with continued club sports participation between 11–15 years of age referred to personal factors (e.g., enjoyment of the provided activities), social factors (e.g., motivation by other friends), as well as structural factors (e.g., quality and accessibility of sports facilities), as important correlates of persisting/ staying in a club during adolescence.

Results: Because of research results on memberships of youngsters in the KCSportNL and NOC*NSF started to co-operate on this issue 2 years ago. To keep more youngsters involved at grass-root level in sport and physical activities there has been done research at different levels. KCSportNL and NOC*NSF have developed different tools and products to help grass root sport to have a better answer to the needs of this target group. Tools are for example: tips, tricks and recommendations to sport clubs within the model of Paul Baar 2003 (individual factors of decision making in sport), measure instrument of how youth friendly your sport club is, action plan for sport clubs, short movie with interviews of youngsters why they drop out and interventions to create more involvement of youngsters in sport. This presentation is research and practice orientated.

Discussion and implications: The KCSportNL (2015 Netherlands Institute for Sport and PA-NISB) is committed to the connection of practical and scientific knowledge of sports and physical activity.

15. Purposeful walking

Authors: Acheson A.

Background: I don't walk for fun, leisure, pleasure or exercise.

Methods: I walk to go places I need to go to. That to me is purposeful walking. The built or natural environment through which I walk is a major influence on my perception of the distance of the walk and therefore for me, its viability as a means of transport and whether I choose to walk or take the car or bus. I have asked myself what factors give me the perception that travel distances are short and come up with the following answers. 1. The weather – a walk in good weather always seems shorter – too hot, too cold or too wet makes the walk seem longer. 2. Levels – uphill walks seem longer 3. Being able to see or sense the destination – and landmarks on the way to it. 4. Attractions along the way – interesting shops, markets, views and accessible open space – these may divert me and make the walk longer but it may seem shorter. 5. Listening to music or voice – the familiar sight of walkers with earphones connected to an electronic device demonstrates how this diverts attention away from the time and makes the walk seem shorter; it can also cause distractions and danger of not hearing an oncoming something or other. 6. Bringing the dog – like attractions, the dog may actually make the walk longer but it may seem shorter. 7. Bringing a friend – conversation makes a walk seem very short indeed. 8. Needing to go to a place – whether for a specific time or not, having an actual destination in mind and needing to get there can make a walk seem shorter. 9. Familiarity – walking along a familiar route seems shorter than setting off for the first time to a destination.

Results: On accessible, pleasant routes that inspire and which have combinations of the above ways to make distances appear shorter, I walk more.

Discussion: When I walk more, I am told that I am fitter. When I am fitter, I am healthier.

Implications: Routes that make distances seem shorter, through any or all of the methods above, do cause me to walk more. Therefore routes must be assessed qualitatively as well as in distance if we are to confirm their benefit for people walking and living healthier lives as a result.

16. The use of the Hybrid Delphi methodology in the evidence-informed public health policy development: Results of a literature review

Authors: Bozdog ME, Rus D, Sandu P, Chereches RM, Castellani T, Tudisca V, Valente A.

Background: Evidence-informed policy making is widely promoted to be used by policymakers in order to increase the effectiveness of policies. One of the recommended methodologies to be used in the development of the evidence informed policies is the Hybrid Delphi. It is a qualitative research methodology that combines the Delphi method with other participatory methods such as focus groups, face-to-face meetings, interviews, etc. in order to collect knowledge from a group of experts in a particular field and reach consensus upon the discussed topic. The aim of the literature review was to investigate the use of the Hybrid Delphi methodology as a tool for evidence-informed policy making in public health.

Methods: The selection of the articles followed four steps. First, the search was performed within five databases using the following keywords: policy health Delphi. The relevance of the papers was tested by scanning titles and abstracts. The articles were then scanned using the following keywords in title and abstract: indicator, tool, guidelines, consensus, agreement, scenario, recommendation. At the end, the articles using a Hybrid Delphi methodology were selected checking the presence of at least one of the following key words in the abstract: Nominal group, focus group, interview, conference, workshop, meeting, round table, cafe, metaplan, open space technology, consensus technique, scenario planning, structuration model of collaboration, policy forum.

Results: After an initial search, the use of Hybrid Delphi methodology in public health policy making was found in 573 articles, as follows: PubMed: 17, Cochrane Library: 1, Google Scholar 20, ScienceDirect: 71 and Scopus: 464. After applying the above mentioned criteria, the final number of selected/relevant articles was 69. The geographical range of the studies found in the review is wide, but most of them are from Europe and Canada. The selected articles from the public health field, focusing on policy makings, show that the use of the Hybrid Delphi methodology explores various subjects, such as: health management, obesity policies, unintentional injuries, physical activity, etc.

Discussion and implications: The Hybrid Delphi is a consensus methodology widely used in the decision making process in the public health field, with successful results. There are researches that prefer combining the classic Delphi method with other instruments such as focus groups, face-to-face meetings, interviews, etc. in order to obtain more detailed information regarding the context of their research topic and more accurate results, thus making the evidence-informed policy making process more insightful.

17. Physical activity as a key part of psycho-social health at generation 50+

Authors: Grzywacz, R.

Background: Physical activity behaviour during leisure time is especially important given the current risks connected with civilization. Insufficient activity results in numerous disorders and increased risks of diseases in adults and the elderly. Research into physical activity, carried out in different years and different regions of Poland, confirms the alarmingly low level of physical activity in the 50+ generation. The subject of research in the material are determinants of psychosocial making physical activity and healthy behaviors of the elderly. The study results will be analyzed in this paper. It will attempt to identify determinants of physical activity and other healthy behaviors by people in the age group 50+. The research question is: Do sports and recreational institutions fulfil important social functions in the shaping of senior citizens' physical activity?

Methods: The survey included groups of senior citizens (n= 690), aged 50-60, and over 60. In the paper the author used the following methods: observation, which will serve as a complement to the data resulting from the survey questions, and as a source of information, thoughts, requests, opinions concerning this topic issue. A fundamental method used to develop the research problem is a diagnostic survey method.

Results and discussion: Based on statistic analysis, there is a relationship between sex, sporting traditions, instructors' encouragement, the assessment of the standard of living and the respondents' assessment of their physical fitness. There is only a strong statistical relationship between the respondents' standard of living and the factors that make it difficult for the respondents to take part in physical activity. There is a statistical relationship between age and the preferred forms of physical activity. There is a relationship between instructors' encouragement and the fact that the senior wants to spend his or her free time after organized activities or not.

Implications: There is a strong need to support the elderly with participation in physical activity. The main purpose of the material research was to analyze the current state of selected health facilities that contribute to the promotion of physical activity and healthy lifestyle among the generation 50+. A wide range of options for physical activity gives an opportunity to all social groups – generation 50+.

18. A systematic review of physical activity and diet interventions designed to improve maternal and fetal outcomes for women with Gestational Diabetes Mellitus (GDM)

Authors: Hillyard, M, Sinclair, M, Murphy MH and Casson, K.

Background: Gestational Diabetes Mellitus (GDM) is glucose intolerance, which begins or is first diagnosed during pregnancy (Metzger and Coustan 1998). It can cause complications in pregnancy such as preeclampsia and having a macrosomic baby. In addition, women diagnosed with GDM are six times more likely to go on to be diagnosed with type 2 diabetes in the future (Bellamy et al. 2009). The objective of this review was to evaluate the effectiveness of PA and/or diet interventions to improve maternal and fetal outcomes in pregnant women with GDM.

Methods: Five databases were searched from inception to 16th November 2016; CINAHL Plus, Embase, Medline, PsychINFO, Cochrane CENTRAL library and Google Scholar. Studies were included if they were an RCT, had a control group, included women with GDM, were PA and/or diet interventions and included maternal and/or fetal outcomes. Risk of bias was assessed using the Cochrane Handbook for Systematic Reviews of Interventions and the GRADE guidelines were used to evaluate the quality of evidence and strength of recommendations.

Results: 7139 papers were identified from searching the five databases, after duplicates were removed and screening performed, 22 papers were included in the review. The studies were published between 1989 and 2015 and were conducted across 10 countries. 16 involve a diet intervention, 5 involve a PA intervention and one included both PA and diet. There were 3998 participants in total, mean age of participants was 31.1 years. Interventions included a range of diets-low GI, the DASH (Dietary Approaches to Stop Hypertension) diet and calorie-restricted diets. PA interventions included elements such as home based cycling and resistance training. Few studies found statistically significant differences in maternal and/or fetal outcomes between the control and intervention groups. 4 studies found a significant reduction in caesarean sections, 5 studies found a significant reduction in birth weight and 4 studies found a significant difference in insulin requirements, with those in the intervention group requiring less.

Discussion: The results show the lack of clarity and consensus around what works in regards to PA and diet interventions for women with GDM. More evidence is needed to assess what type, duration and timing of interventions are most

effective. The evidence needs to be of high quality RCTs with low risk of bias.

Implication: PA and diet interventions may be a potential way of improving outcomes and reducing need for medication for mothers with GDM, however further research is required.

19. An investigation into the factors affecting physical activity levels of preschool children

Authors: Hillyard M, McKee, D and Murphy MH.

Background: Until recently, the early years were viewed as a time when children were active enough (Timmons et al., 2014). However, more recently evidence has emerged to suggest children in the early years are not sufficiently active (Reilly, 2010). The early years are an important time for establishing positive health behaviours (Barber, 2014) that will continue into adulthood (Craigie et al., 2011). Teachers have the potential to impact physical activity behaviours of children in a preschool setting. The objective of this study was to evaluate the effectiveness of a teacher training intervention on children's physical activity in preschool.

Methods: Through an 'Active Belfast' programme 53 out of 64 nursery teachers opted to attend at least one training session, aiming to increase the PA levels of the children in their class. 312 children from seven preschools (4 where teachers had attended the programme and 3 where they had not) within the Belfast Education and Library Board (BELB) were invited to take part in the study. PA was assessed via accelerometers (Actigraph GT3X) over two days and children were included in the analysis if they had a minimum wear time of 180 minutes on both days. Preschooler's percentage of time was calculated for sedentary, light, moderate, vigorous, MVPA and LMVPA. T-tests (with Bonferoni adjustment) were carried out between the control and intervention groups and between genders.

Results: Accelerometry data was collected from 138 children (46.4% female) between May and June 2014. 112 children were included in the analysis due to missing accelerometer wear time from 26 children. The children ranged in age from 43 months to 61 months, mean age was 54.4 (3 3.9) months. No significant difference in MVPA was found between the control and intervention group (P=0.392). However, the mean percentage MVPA scores of boys (11.16% 33.42) was significantly higher (p<0.001) than that of girls (8.4% 3 2.81).

Discussion: The results suggest that this teacher education programme may be insufficient to alter physical activity behaviour in preschool

children and highlights the difficulties of implementing an effective PA intervention in the preschool setting.

Implication: Future initiatives to increase preschool physical activity should include multifactorial interventions, with a particular focus on increasing girl's PA levels.

20. 'Small Steady Steps' The evaluation of a pilot community based physical activity referral programme for those living with and beyond cancer

Authors: McQuade S, Rankin J, McGarry S, and the Active Belfast Cancer Sub-group.

Background: There is evidence to show the impact of physical activity for managing cancer treatment side effects, and helping to reduce mortality and the risk of recurrence; there is also preliminary evidence that physical activity (post-diagnosis) may be associated with improved survival.

Methods: Active Belfast piloted a physical activity community-based programme for people affected by cancer. 'Small Steady Steps' was supported by Active Belfast, Belfast Health and Social Care Trust, The HEART project and Macmillan. The pilot engaged 19 users in 2013/14. The evaluation included: Social Return of Investment (SROI) and Impact Mapping. SROI captures social, as well as financial, value. Quantitative and qualitative research methods were used. Aim: To promote physical activity for patients living with and beyond cancer.

Results: Participants were now at 79% of their optimum level of health, compared to 46% before. An 84% increase in the level of physical activity and increased awareness of the benefits of/facilities available for physical activity leading to an overall physical wellbeing improvement. The 'feel good index' score suggested a significant improvement in participants feeling more positive, happier and experiencing reduced feelings of anxiety and depression (initially 60% with an improvement to 99%) Additional outcomes: increased confidence, fitness/feeling healthier, motivation and levels of resilience and engagement in 'usual activities', such as work, family or leisure activities. 90% were continuing to engage in physical activity. The evaluation has identified positive economic and social impact: a return of approximately £9 for every £1 invested in the pilot Physical Activity Referral Programme, giving a value of £5,669 per person.

Discussion and implications: The aim is supported by the programme with participants referring to key

benefits of improved physical health, relationships, ability to manage strong feelings, improved coping mechanisms, and finding positive meaning in their lives despite the difficult events experienced. The SROI signifies a significant improvement in all aspects of the holistic assessment and demonstrates added value to the patient experience. This project has informed a further pilot and a cancer coach has since been employed by the Belfast Health and Social Care Trust; to date partnerships with many referring groups has proved to be very successful with an improvement in patient overall experience and, in particular, that of cancer survivorship.

21. Analysis of the surveillance system of physical activity and sedentary behavior in France

Authors: Rivière F, Vuillemin A.

Background: National surveillance of physical activity (PA) and sedentary behavior (SB) in general population is of first importance for the elaboration and evaluation of national policies. Standardized surveys are required to allow comparability of results over time and between surveys, and to estimate the impact of physical inactivity and SB on health outcomes. The purpose was to analyze the methodology used in French national surveillance surveys to assess PA and SB.

Methods: French national surveys of PA and SB were identified through literature review and contacting experts. The methodology used to assess PA and SB were described, analyzed and compared on different criteria.

Results: Overall, 7 and 4 surveys have measured PA and SB in adult and youth, respectively, with the first one in 2002. From these surveys, 6 in adult (0 in youth) allowed to estimate the prevalence of the population reaching the recommendations for PA. Most of the surveys used different questionnaires (6 different questionnaires were identified) and one survey used a complementary objective measurement (accelerometers), in both adult and youth populations. Differences were observed in: population (sample size, method of recruitment, demographic characteristics), period of the year of measurement (various seasons), and questionnaire's content (number of items, recall period, construct and dimensions measured), validity, and mode of administration (face to face-, telephone- or self-administered).

Discussion: Limitations in methods restrict the interpretation of the results and differences reduce the comparability of the results between surveys and within survey over time.

Implications: The example of France seems not unique and highlights the

need to pursue efforts to develop sustainable, well-designed and standardized national surveillance systems of PA and SB. It is also important to decrease the gap between surveillance for these major health determinants compared to surveillance of other disease factors.

22. Step-by-Step Powerfull (Stapjefitter)

Authors: Stiggelbout M, Meiborg K.

Background: Step-by-Step Powerfull (SSP) is an intervention to support unemployed adults who don't participate actively in society, with a unhealthy lifestyle, to become more active, and to develop a healthier lifestyle. Participants should increase their social participation.

Methods: The re-integration consultants of Ferm Werk, a regional social work organisation, select potential participants from their dossiers. Then it starts with a fitness test and health questionnaire, after which the participant formulates own goals in an interview with the coach and re-integration consultant. After the 18 weeks program period the testing is repeated to monitor, and evaluate the results. Then one participates in a group program once a week during 3 hours for 18 weeks. During the whole program period there is also language training for the participants who have a lack of knowledge of the Dutch language. The manner this is offered may differ per group. During the first weekly session participants receive the weekly information on exercise by a lifestyle coach and healthy nutrition by a dietician (8 weeks), and they also participate in a 30-minute lesson about physical exercises. After the initial period they receive information on voluntary work and are promoted to start doing voluntary work. The second weekly session lasts for the whole 18 weeks, and is totally sports based. Participants work on several competencies which may be useful for (voluntary) work. A welfare coach offers insight into several ways and methods of voluntary work. During several weeks participants visit organisations where voluntary work is carried out, and they also participate in these activities to get the feeling. The idea is that participants choose their own type of volunteer work to continue after the intervention period.

Results: There was a significant increase of compliance to the exercise guidelines and the nutrition guidelines, the fitness score, and the social participation. Participants scored higher on their perceived exercise, nutrition score, and perceived health score. Both fat percentage, and BMI decreased significantly.

Discussion and implications: The intervention is successful in activating

the unemployed by the combination of lifestyle, voluntary work and language education. It should be implemented broader, and offers opportunities for more regions and countries. It could also be implemented for the target group refugees.

23. Health coaching and pedometers to enhance physical activity and prevent falls in community-dwelling people aged 60 years and over: Study protocol for the CHAnGE cluster randomised controlled trial

Authors: Tiedemann A, Rissel C, Howard K, Tong A, Merom D, Smith S, Wickham J, Bauman A, Lindley R, Lord S, Vogler C, Simpson J, Allman-Farinelli M, Lester D, Sherrington C.

Background: Physical inactivity and falls in older age are major public health issues that can substantially impact health and independence. Physical activity has many health benefits, however promoting physical activity among older people without specific fall prevention advice may actually increase fall rates (Ebrahim, Thompson, Baskaran, Evans, 1997 and Lawton, Rose, Elley, Dowell, Fenton, Moyes, 2008). The Coaching for Healthy AGEing (CHAnGE) trial primarily aims to establish the impact of a combined physical activity and fall prevention program compared to a healthy eating program on physical activity and falls among people aged 60+ years.

Methods: A cluster randomised controlled trial involving 60 groups of community-dwelling people aged 60+ years will be conducted. Participating groups will be randomised to: a) a physical activity and fall prevention intervention (30 groups), involving an in-person fall risk assessment, tailored fall prevention and physical activity advice, provision of an activity tracker, telephone-based health coaching and written information; or b) a healthy eating intervention (30 groups) involving telephone-based health coaching and written information. Primary outcomes will be objectively measured physical activity (Actigraph) at 12 months post randomisation and prospectively measured falls over 12 months (monthly calendars). Secondary outcomes will include: the number of fallers, the proportion of people meeting physical activity guidelines, body mass index, mobility goal attainment, mobility-related confidence, quality of life, fear of falling, risk taking behaviour, mood, wellbeing, self-reported physical activity, disability, eating habits and health system and community service utilisation. The between group difference in the number of falls per person-year will be analysed using negative binomial regression models. For the continuously-scored primary

and secondary outcome measures, Gaussian GEE regression adjusted with their corresponding baseline scores will assess the effect of group allocation. Exchangeable correlation structures will account for correlation between individuals within the clusters. Analyses will be pre-planned, conducted while masked to group allocation and will use an intention-to-treat approach.

Discussion and implications: This trial will address a key gap in evidence regarding physical activity and fall prevention for older people and will evaluate two healthy ageing programs that could be directly implemented within Australian health services. Trial registration: ACTRN 12615001190594.

24. Free to move: Promotion of active and sustainable home-to-school mobility behaviour using precede-proceed model for needs assessment and planning

Authors: Giorgio C, Cristina S, Pellizzari S, Bonomini A, Uzunwhango E, Tirelli L, Fummi V, Pasquali A, Ignoti C, Guastoni A, Magistrali G, Borciani E.

Background: Obesity epidemic among children is particularly concerning in mediterranean countries, as Italy, and lack of physical activity is considered one of the main underlying causes. Promoting active behaviour and an environment comfortable and safe for children's physical activity along home-to-school path is a promising strategy to improve physical activity level and general health: in North Italy only 8% of primary school children reaches school autonomously, and 52% do it by car. Advocacy interventions for healthier transport policies and for physical activity promotion in primary schools are still not extensively carried on in Emilia-Romagna region. According to the regional 2015-18 prevention action plan, effective strategies are to be evaluated and implemented.

Aim of this project was to identify environmental and educational factors, that affect children and families home-to-school mobility behaviour, and implement interventions using the PRECEDE-PROCEED participatory approach.

Methods: We developed a 4 step strategy: 1. Identification of a intersectoral promoter group, including the Piacenza municipality and local health and educational authorities; 2. Building a group of community and school stakeholders; 3. Participatory based research on factors affecting autonomy and mobility choices of children and their families; 4. Planning, implementation and participatory evaluation of activities by school stakeholders, supported by promoter institutions.

Results: Evaluation considered process and impact. Promoter institutions

formalised a memorandum of understanding for active and sustainable home-to-school mobility and sustained the participatory approach. Consultation with stakeholders was associated with review of scientific data, WHO recommendation and good practices. The stakeholders group effectively shared information about actions already carried on, and implemented a complementary intervention: a comprehensive whole school program to empower children with competence to move autonomously and eco-friendly, and critically assess urban environment characteristics. Intervention was implemented by 21 teachers, involved community associations, and reached 360 children belonging to two schools. Qualitative evaluation carried on by teachers showed a good development of competencies in children. A manual was edited to support dissemination.

Discussion: The project confirmed effectiveness and efficiency of a participatory approach, carried on the basis of precede-proceed logical framework, to advocate need for physically active and sustainable transport policies and to empower communities and children at the local level.

Implications: This project might strengthen, at a local and regional level, adoption of strategies that take into account locally identified educational and environmental factors, drawn upon participatory approaches and structured logical frameworks.

25. Physical activity and well-being among adolescents

Authors: Baldursdottir B, Valdimarsdottir HB, Krettek A, Sigfusdottir ID, Tæhtinen RE, Elvarsson BTH.

Background: Physical activity among adolescents is diminishing and worldwide only about 20% of 13-15-year-old adolescents meet the public health guidelines of minimum 60 minutes of daily physical activity of at least moderate intensity. This decline in physical activity has serious consequences as lack of physical activity adversely affects physical and mental health. As physical activity patterns develop during childhood/adolescence and are tracked into adulthood, diminished physical activity during adolescence can negatively influence health and well-being later in life.

Methods: First, cross-sectional, semi-longitudinal population-based data from Iceland were used to examine differences in age-related physical activity and depressive symptoms. Second, in a pilot-study, a 2-x-2 factorial design was applied to test the effects of a pedometer- and diary-based intervention. Finally, a randomized controlled trial (RCT) with 4-x-4 factorial design was applied to test

the effectiveness of using pedometers, diaries or combination of both in a physical activity intervention.

Results: Physical activity decreased from the age of 15 and depressive symptoms increased during the age from 10 to 19 in Icelandic adolescents. Gender differences were apparent with girls being less active and having higher levels of depressive symptoms than boys. The intervention in the pilot-study was effective in increasing physical activity among 15-16-year-old adolescents as the intervention group had significantly higher step-count compared to the control group at follow-up. Additionally, subjective sleep quality improved over time in the intervention group. The RCT demonstrated further the effectiveness of the intervention with pedometers alone being equally effective in increasing physical activity as pedometers in combination with diaries.

Discussion: The most prominent differences in both physical activity and depressive symptoms occur among Icelandic adolescents between ages 15 and 16 or around the transition from compulsory to upper-secondary school. The intervention studies showed promising results as immediately following a 3-weeks physical activity intervention adolescents with pedometers took significantly more daily steps compared to their peers in the control group. Additionally, the intervention was effective in enhancing subjective sleep quality and adolescents that were more physically active fell asleep faster than their less active peers.

Implications: This research provides important information about when to tailor public health efforts to enhance physical activity and well-being among adolescents. Brief physical activity interventions based on pedometers were effective in increasing daily steps and improving sleep quality among adolescents. This has important public health relevance as the intervention is cost-effective and can easily be disseminated and incorporated into schools' curricula.

26. Bidasoatik Mundura: An active worldwide tour fostering physical activity in adolescents

Authors: Iturrioz I, Ponce S, Erregerena I, Uranga A, Roa P, Perez I, de Castro V, Lasa MB, Jauregi M.

Background: Physical activity plays a key role in health and wellbeing of adolescents. It contributes to their physical, social, emotional and psychological development. The World Health Organization has established a minimum recommended given that physical activity should reach the adolescent population to prevent disease. Certain conditions lead to adolescence as a period of special relevance in promoting physical activity.

On the one hand there seems to be that habits that are installed in adolescence such as making physical activity, take fruits or vegetables, drinking or smoking usually persist. Moreover, these habits are often difficult eradication in adulthood. Moreover, in these ages a significant decrease in activity levels is observed, specially among girls .

Methods: An intervention program to promote healthy lifestyle has been designed and implemented. The program is aimed at students (12–14 years old) of 10 schools in Irun and Hondarribia (Basque Country). The intervention consisted of the ‘Bidasoatik Mundura, Sasoi Erronka’ program that encouraged students to join the challenge of going around the world through an imaginary tour and performing activities of different countries. The study is a quasi-experimental pre-post study with a control group (2 different schools) and an intervention group. The program addresses three aspects: physical activity by participating in activities designed and related to different countries; healthy eating with educational training by experts and creativity by developing a video summary of what happened in the quarter. Also, students received two educational workshops given by two nutritionists whose content will focus on the importance of healthy lifestyles. For the development of the program the website www.bidasoatikmundura.eus has been launched. It is an interactive, intuitive, attractive and updated website that serves as a reference for the different activities that are being performance in schools tool. Surfing the webpage, the students learn about the activity they need to develop, meet weekly scores and standings, can find information about healthy habits and can answer to questionnaires on diet and they can view videos developed by each school.

Results: 10 of 12 existing institutes took part in the program. More than 50% of 1st and 2nd year students was engaged in a team of his school and participated in the program. A total of 780 from 1,454 students inscribed in the program. The 45% were girls. The program reached the involvement of all the directors of the schools. Students are moving more. The average is 42% of participation in all the proposed activities. Participant adolescents also filled 3 questionnaires on healthy eating and each school presented 2 videos resuming their participation in the world tour.

Discussion: Managing emotional concerns and adventure terms may open an interesting way to link physical activity and young people and so fostering healthy behaviours between adolescents. The school is an ideal place to promote healthy lifestyles, and all adolescents (12–14 years old) are in compulsory education and it is the age in which the personality develops,

making it easier to acquire habits of place life.

Implications: A new intervention process may be investigated using an adapted approach which can link better adolescents and healthy lifestyle, using emotions and adventure sense to attract and recruit young people to intervention programs.

27. Physical activity, physical fitness, fatness and their associations with executive function in overweight and obese children: The ActiveBrains project

Authors: Mora-Gonzalez J, Cadenas-Sanchez C, Migueles JH, Esteban-Cornejo I, Henriksson P, Catena A, Ortega FB.

Background: Overweight/obese children have been shown to have worse cognitive performance than normal-weight children. In this context, physical activity (PA) and fitness might help to improve cognition. However, further studies are needed to corroborate this hypothesis. Hence, the aim of the present study was to examine the association of physical activity, physical fitness and fatness with executive function in overweight/obese children.

Methods: A total of 98 overweight/obese children (10.06 ± 1.10 years; 59.2% boys) were included in this cross-sectional analysis of baseline data from the ActiveBrains trial. PA was measured by hip-worn accelerometers (GT3X+, ActiGraph, Pensacola, USA). Physical fitness was assessed following the ALPHA health-related fitness tests battery for youths. Cardiorespiratory fitness, muscular strength (upper and lower-limb) and speed-agility were tested using 20m shuttle run, handgrip, standing long jump and 4x10m shuttle run tests, respectively. Body mass index, waist circumference and percentage body fat estimated from skinfold thickness, were used to assess fatness. Executive function was assessed using the Design Fluency Test (DFT) and Trail Making Test (TMT). We performed linear regression analyses controlling for age, sex and maternal education.

Results: There was no significant association between PA and fatness with executive function (all $p > 0.05$). Higher cardiorespiratory fitness, upper and lower-limb strength, and speed-agility were significantly associated with higher executive function measured by DFT ($\beta = 0.288$; $p = 0.002$; $\beta = 0.226$; $p = 0.019$; $\beta = 0.211$; $p = 0.019$; and $\beta = 0.322$, $p = 0.001$, respectively). We also observed a significant association between higher cardiorespiratory fitness and better performance in TMT ($\beta = 0.207$; $p = 0.050$). No significant associations were found between rest of

physical fitness outcomes and TMT (all $p > 0.05$).

Discussion: There is evidence suggesting that high levels of PA and physical fitness might be positively associated with executive function in children. However, it seems like these findings are still uncertain, especially in terms of benefits of type, amount or frequency of PA on cognition. In this regard, our results provide further evidence that cardiorespiratory fitness, muscular strength and speed-agility may positively influence executive function. On the other hand, PA and fatness were not associated with executive function. Future studies are needed in order to confirm our findings.

Implications: Current school organization and public policies should take into consideration the promotion of physical activities that involves cardiorespiratory exercises and motor tasks contributing to a better physical and cognitive health in overweight/obese children. Hence, some strategies such as increasing number of physical education classes and its quality should be taken into account.

28. Daily sedentary time, physical activity and step counts are associated with body composition in overweight/obese children: The ActiveBrains Project

Authors: Migueles JH., Cadenas-Sanchez C., Mora-Gonzalez J., Esteban-Cornejo I., Henriksson P., Martin-Matillas M., Ortega FB.

Background: Childhood overweight/obesity is a great public health issue. Daily sedentary time (SED) and physical activity (PA) may play an important role in order to improve the body composition of overweight/obese children, but we need valid and objective measures of SED, PA and body composition to confirm or contrast this hypothesis. Therefore, this study aimed to explore associations between objectively assessed SED, PA and step counts with body composition measures in overweight/obese children.

Methods: A total of 104 children (10.131.1 years; 26.933.7 kg/m²; 61 boys) were included in this cross-sectional analysis of baseline data from the ActiveBrains trial. SED, PA and step counts were measured through hip-worn GT3X+ accelerometers (ActiGraph, Pensacola, USA). Children wore GT3X+ during 7 complete days (24h). Body composition measures included body mass index, waist circumference and fat mass and fat-free mass index (measured by DXA, Hologic). Linear regression analyses were conducted adjusting for age and sex.

Results: SED and PA level (assessed as counts per minute) were associated

to body mass index (SED: $r = 0.254$, $p = 0.010$; PA: $r = -0.333$, $p < 0.001$), waist circumference (SED: $r = 0.280$, $p = 0.004$; PA: $r = -0.280$, $p = 0.004$), and fat mass indexes (SED: $r = 0.258$, $p = 0.009$; PA: $r = -0.357$, $p < 0.001$). Furthermore, moderate-to-vigorous PA (min/day) was negatively associated to body mass index ($r = -0.257$, $p = 0.009$) and fat mass index ($r = -0.332$, $p < 0.001$). We also found associations of step counts with body mass index ($r = -0.314$, $p = 0.001$) and fat mass index ($r = -0.334$, $p < 0.001$). No significant associations were observed between SED, PA or step counts with fat-free mass index (all $p > 0.050$).

Discussion: A positive association between PA level and body composition has been shown in previous studies, yet it is relevant to highlight that SED and PA were mostly measured through questionnaires. Our results suggest that objectively assessed SED and PA are associated with body composition in overweight/obese children. Previous studies have shown that increasing daily PA can improve physical fitness in different populations. This improvement in both PA and physical fitness might also have an impact on body composition measures.

Implications: Promotion of PA may improve body composition in overweight/obese children, by decreasing fat mass. However, further randomized controlled trials are needed to confirm or contrast this.

29. The association of physical activity, step counts and cardiorespiratory fitness with academic performance in overweight/obese children: The ActiveBrains Project

Authors: Cadenas-Sanchez C, Mora-Gonzalez J, Migueles JH, Esteban-Cornejo I, Henriksson P, Mena-Molina A, Torres-López L, Martin-Matillas M, Ortega FB.

Background: Physical activity and physical fitness might be associated with benefits for children’s brain and academic performance. However, further studies are needed in order to corroborate or contrast previous contradictory findings. Therefore, the aim of this study was to examine the associations of physical activity, step counts and cardiorespiratory fitness with academic performance in overweight/obese children.

Methods: This study included cross-sectional baseline data from the ActiveBrains trial. A total of 106 children (mean age: 10.031.1 years; 60 boys) participated in the study. Physical activity and step counts were measured using accelerometry data. Children wore the accelerometer GT3X+ (ActiGraph, Pensacola, USA) on the right hip during

7 complete days. Cardiorespiratory fitness was tested through a 20m shuttle run test. Academic performance was assessed by the Woodcock-Johnson III®. For this analysis, we used reading; writing; mathematics; and science components, and the total academic performance score. Likewise, an exploratory analysis with school grades (i.e. language, mathematics, science, arts, physical education and foreign language) was performed in a subsample (n=83). Linear regression analyses were performed, adjusting for potential confounders (age, sex and maternal education).

Results: No significant associations were observed between physical activity, step counts and academic performance measured by Woodcock-Johnson III® (all $p > 0.050$). Moderate-to-vigorous physical activity and vigorous physical activity were related to physical education school grade ($\beta = 0.037$, $r = 0.268$, $p = 0.007$ and $\beta = 0.012$, $r = 0.303$, $p = 0.017$, respectively). No significant associations were observed with the rest of the school subjects. Cardiorespiratory fitness was positively associated with writing score ($\beta = 0.478$, $r = 0.278$, $p = 0.004$) and total achievement ($\beta = 0.320$, $r = 0.214$, $p = 0.030$). School grades showed associations of cardiorespiratory fitness with: 1. Physical education ($\beta = 0.043$, $r = 0.427$, $p < 0.001$) and 2. Arts ($\beta = 0.044$, $r = 0.367$, $p = 0.001$).

Discussion: Previous studies showed inconsistent results regarding an association between physical activity and academic performance, and a clearer positive association between cardiorespiratory fitness and academic achievement. Overall, our results suggest that neither physical activity nor step counts were related to academic performance (measured by Woodcock-Johnson III® and school grades), except with physical education grades, in which participants with higher moderate-to-vigorous physical activity and vigorous physical activity performed better. Furthermore, better cardiorespiratory fitness was associated with better performance in: total achievement; writing; physical education; and arts. Further studies should confirm or refute these findings.

Implications: Promoting physical activity intervention programs aimed to increase physical activity levels and thus, cardiorespiratory fitness, may improve academic performance in overweight/obese children. Public health programs should focus their preventive strategies on physical activity as a tool to promote academic performance.

Poster Abstracts

Poster Session: Thursday 29th September

30. Physiotherapy Lead Exercise Prescription and Intervention for People with Learning Disabilities in a Hospital Environment

Authors: Bingham GM, Sloan J, Wright S, Donnelly C.

Background: Over 80% of adults with learning disabilities engage in levels of physical activity below the minimum recommended by the DOH, a much lower level of physical activity than the general population (53–64%) with people of a lower ability in more restricted environments at increased risk of inactivity. Challenging behaviours (aggression, self-injury) are shown by 10–15% of people with learning disability; prevalence peaking between the ages 20 and 49. The aim is to reduce behaviours and improve health outcomes based on the NHS guidelines. It would appear that the learning disability section of the community and those in a hospital assessment unit may not benefit from current government policy.

Methods: The pilot was led by physiotherapy staff and involved patients with a learning disability who reside in an assessment and treatment facility; some of who exhibit challenging behaviours, forensic issues and included those with identified health risks. Following assessment and discussion with the patient, key staff and where appropriate carers/family, the current levels of exercise, other variable activities not of moderate-intensity or completed regularly were included and additional prescribed exercise were recorded and outcome measures assigned according to need and goals agreed. Ward based strengthening exercises was to be completed as per Physiotherapy Exercise Programme, All patients had a formal 'Contract of Practice — Exercise Prescription.'

Results: The programme was evaluated by positive outcomes such as exercise improvement, flexibility, weight reduction, changes in behaviours and attitude to health. Participants and staff were very positive in that the programme has helped to educate and raise awareness of the benefits of a healthy lifestyle to the user group and a wider audience and reduce health risks. An interactive and active mode of delivery for such a programme reinforces the outcomes and gives the participants ownership.

Discussion: Duty of Care and Legal responsibilities under the Northern Ireland Act 1998 where a public authority shall, in Northern Ireland, have

a due regard to the need to promote equality of opportunity between persons with a disability and persons without will be partially addressed through this initiative.

Implications: Forging further links with local health authorities' and key stakeholders to extend this exercise prescription from a hospital setting into the wider community where people with learning disabilities reside. This type of prescription for exercise can form part of a referral process for the persons annual health check via their GP.

31. Exploring the feasibility of walking interventions for promoting physical activity within the school environment

Authors: Carlin A, Murphy MH, Gallagher AM.

Background: Physical activity (PA) levels have been shown to decline as children move into adolescence, with this decline most notable amongst adolescent females. Schools have the potential to contribute to daily PA in adolescents. The aims of this study were firstly, to evaluate the experiences of adolescent females who participated in a peer-led school-based brisk walking intervention (the WISH study) and secondly, to evaluate the potential for schools to further promote PA through walking programmes delivered within the school setting.

Methods: A sample of female participants who participated in the WISH study were randomly selected from 5 post-primary schools to participate in focus group discussions to explore their experiences of the intervention. Discussions were audio-recorded, transcribed verbatim and analysed thematically. In addition, an online survey was distributed to all post-primary schools (n=208) in Northern Ireland to assess the current provision of extra-curricular PA and to evaluate the feasibility of the WISH study within the school setting. The questionnaires were completed by a member of school staff familiar with the extra-curricular provision of PA (excluding PE staff).

Results: In total, 6 focus groups were conducted comprising a total of 45 adolescent females (mean age 13.1 3 0.6 years). Helping participants overcome current barriers to PA, support from friends and peers and the provision of activities that met the needs of adolescent females within the school setting were all highlighted as possible strategies to promote PA. Walking

during the school day was viewed as an acceptable form of PA, providing opportunities to be active with friends, and helped participants overcome a number of barriers previously associated with PA during school recess. 59 post-primary schools completed the online survey. Responding schools identified adolescent females and 'non-sporty' pupils as sub-groups that would benefit most from participation in a school-based walking programme. The majority of responding schools did not currently offer walking programmes. A number of barriers were identified by schools in relation to walking, for example, safety concerns and supervisory/staffing issues.

Discussion and implications: This study has highlighted that the delivery of a walking programme within the school setting is feasible. Incorporating strategies such as social support and peer mentoring may be effective in promoting PA during school recess. Positive experiences identified in this study should be reinforced when recruiting adolescent females onto future PA interventions, and the barriers identified by schools in relation to safety and staffing concerns should be addressed.

32. A nested feasibility study of recruitment of older adults from general practice to physical activity research

Authors: Collins D, Steele K, Cupples ME, Tully MA.

Background: Physical inactivity is a growing global health concern. Only around one third of adults take sufficient physical activity (PA) and PA declines with increasing age. A large proportion of older people's healthcare is delivered by General Practitioners (GPs), who have access to relevant information on their health and lifestyle habits. However, there is limited evidence on appropriate methods of engaging GPs in research, or about the barriers that hinder participation, particularly in PA studies.

Methods: Six general practices in geographical areas in which peer mentors are recruited to the host study, a RCT of a community based, peer led walking programme for older people in socio-economically disadvantaged areas, will be invited to participate. Those selected will have at least three GP partners and will include rural, urban and different socio-cultural settings. They will be invited to post study invitations to patients aged 60–70

years, with no known inability to walk or complete the outcome measures. They will also be asked to identify other recruitment methods for their practice, including verbal invitations in surgery and the display of posters and leaflets. Eligible participants will be invited to a baseline consultation, for objective measurement of their PA, ascertainment of their source of invitation and random allocation to a treatment group. The intervention will be delivered by peer-mentors. After assessment at 12 weeks, questionnaires and focus groups will be used to ascertain participants' views of positive and negative aspects of the recruitment process and intervention. Semi-structured telephone interviews with GPs will explore their views on different recruitment methods.

Results: Percentages of postal and verbal invitations accepted will be recorded, and numbers who participated after reading posters or leaflets. Rates of study retention and completion of outcome measures will be described in relation to participants' source of recruitment and characteristics. Thematic analysis of questionnaire, focus group and GP interview data will identify barriers and facilitators to recruitment.

Discussion: The findings will inform approaches to future PA research in the community, and will indicate whether or not GPs' involvement in recruitment is appropriate.

Implications: GPs are well placed to identify people in the community who would benefit most from increasing their PA. Identification of effective ways of engaging their interest in promoting recruitment to PA research is important.

33. Migrant and ethnic minority families' health and wellbeing: A scoping review

Authors: Curry WC, Dagkas S.

Background: Currently Europe is experiencing the largest migration patterns post WWII. The emerging population complexity has created unique challenges with regards to how we identify and respond to health and well-being needs of migrant families.

Methods: The aim of the paper is to present findings from a scoping review providing a general overview into migrant families and their understanding of health and wellbeing, especially notions of participation in physical activity for health. The main research questions that the scoping review addressed are: (1) What are the experiences, understanding and needs of migrant and ethnic minority families in terms of health and well-being; and (2) What are the mechanisms and processes in which migrant families develop understanding physical activity for health and well-being?

Results: The review highlighted that there is a scarcity of research about health and well-being knowledge of migrant families and the concept of physical activity for health amongst migrant families.

Discussion: The findings of this scoping review indicate that there are large gaps in the literature on health and well-being of ethnic minority and migrant children. Young people of ethnic minority and migrant descent are at great risk for health inequalities as a consequence of poor health. This review highlights the need for further research into how children and their families develop understanding of health and well-being in relation to physical activity within their immediate family and social environment.

Implications: Future studies should investigate the mechanisms and processes by which migrant children and families develop health literacies and pedagogies as well as the experiences, understanding and needs of migrant families. Successful health interventions are underpinned by a strong research base, therefore if interventions targeting ethnic minority children are to be successful additional high quality research must be undertaken.

34. Feasibility of incorporating physical activity consultation into a pre-retirement course for NI Civil Servants

Authors: Hillyard M, Murphy MH, Mutrie N and Fitzsimons C.

Background: Regular physical activity (PA) has been shown to lower the risk of and help manage many chronic conditions. Compared with inactive individuals, those who were active for -1 ½ hours/week have been shown to live 3 years longer (Wen et al 2011). People who are physically active as they age are more likely to stay healthy and lead independent lives. However, data from the NI Sport and Physical Activity Survey of 2010 show that only 32% of adults aged 66–70 years met the current PA recommendations (Murphy et al 2011). Major life events, such as retiring, are known to influence the amount of activity. The point of retirement may offer a 'teachable moment' to deliver guidance on PA. This feasibility study is designed to look at the logistics of incorporating group based PA consultation into standard retirement packages to determine if people retiring are interested in this support and what they think of it.

Methods: The feasibility study was conducted in the NI Civil Service between January and February 2015. We tested the feasibility of incorporating a group PA consultation with written and supporting materials into existing company pre-retirement courses. Participants received a one-hour PA consultation during their

pre-retirement course. Following the course participants were asked to complete a demographic questionnaire and a feedback questionnaire on course content and the printed material received. This was followed up with telephone interviews with 8 participants.

Results: Men and women approaching retirement (n=15) took part in a one-hour PA consultation (10 males and 5 females, mean age=58 years). Response rate to the questionnaire was 53%. Participants reported that course content was timely and informative; all felt elements of the course were relevant to them, although some felt it was aimed at those who were very inactive. Participants reported that the best bits were: getting a pedometer and progressive walking plan and learning about the negative impact of sitting. Participants thought the course could be improved by; providing some low impact exercises; acknowledging the wide range of people on the course and adapting the language for Northern Ireland.

Discussion: The study suggests a physical activity module incorporated into a company retirement course is feasible and appealing to course participants.

Implications: Physical activity modules delivered at retirement may be a potential method to increase physical activity levels in older adults. Findings from this study will inform refined intervention materials for a pilot study.

35. An Evaluation of Instructor Fidelity in the Evidence-Based Tai Ji Quan: Moving For Better Balance Fall-Prevention Exercise Program in Older Adults

Authors: Jones DL, Selfe TK, McCormick S, Li F.

Background: Tai Ji Quan: Moving for Better Balance (TJQMBB) is an evidence-based, community-delivered exercise program that improves balance and reduces falls. Observer-rated fidelity of instructors with its core components has not been evaluated. This study evaluated TJQMBB instructor fidelity as part of a 16-week intervention in older adults.

Methods: Sixteen classes were held at 17 faith-based organizations for 237 participants. Nineteen instructors, with no tai ji quan experience, led the classes. Three TJQMBB-trained observers (exercise/fitness experts) visited one class per instructor during the first 6 weeks of Phase 1 (weeks 1–12), and one class during Phase 2 (weeks 13–16) to complete a fidelity checklist. Compliance was rated with: 1) time spent on warm-up (5–10

minutes), cool-down (2–3 minutes), core movements (40–45 minutes), and total class time (60 minutes); 2) number of sets performed (Phase 1, 2–4 sets; Phase 2, 4–5 sets); 3) form progression (visit 1, 4 or fewer forms; visit 2, 8 forms); 4) performance of at least 2 mini-therapeutic movements; 5) use of 4 teaching strategies (clear instructions and demonstrations); 6) adherence to 11 core principles; 7) delivery of a well-integrated class; and 8) an efficient teaching pace. The checklist items were summarized descriptively.

Results: Compliance rates at visits 1 (n=15) and 2 (n=14), respectively, were: 1) warm-up 73%, 71%, cool-down 100%, 100%, core movements 60%, 46%, and total class time 67%, 64%; 2) number of sets 91%, 64%; 3) form progression 53%, 71%; 4) mini-therapeutic movements 93%, 100%; 5) teaching strategies (ranges) 85–100%, 36–93%; 6) core principles (ranges) 71–100%, 71–93%; 7) integration 87%, 79%; and 8) efficient teaching pace 93%, 86%.

Discussion: The classes were mostly well integrated and taught efficiently. Compliance was good with performing the appropriate number of sets (in Phase 1), teaching at least 2 mini-therapeutic movements, and applying core principles and Phase 1 teaching strategies. Compliance could be improved in ensuring delivery of a 60-minute class with the 8 forms gradually introduced over the first 12 weeks. In Phase 2, instructors could have performed more sets and used more teaching strategies as the participants' skills advanced.

Implications: This study shows that the TJQMBB program can be successfully delivered by trained community instructors with good implementation fidelity. It also suggests that program fidelity can be enhanced through refresher training courses to ensure that instructors' teaching skills are updated and remain current.

36. Relationship between leisure-time physical activity and pain among middle-aged employees: Cross-sectional study

Authors: Danijel Jurakic.

Background: Pain has been recognized as a global health problem. It was estimated that 20% of adults suffer from different kind of pain. Some studies have shown that physically inactive people more often experience pain and have higher pain unpleasantness ratings. The aim of this study was to determine relationship between musculoskeletal pain and leisure-time physical activity among middle-aged employees in Croatia.

Methods: We conducted a cross-sectional study using home-based

face-to-face interviews of 766 randomly selected middle-aged employees (52% females). Back, neck, arms, and legs pain frequencies were assessed using single items with five possible answers — never, seldom, sometimes, often, and always. Leisure-time physical activity was assessed by International Physical Activity Questionnaire (IPAQ — long form). The relationship of back, neck, arms, and legs pain with leisure-time physical activity was determined using Spearman's rank correlation coefficients.

Results: Among males all variables of musculoskeletal pain were significantly negatively correlated to leisure-time physical activity ($p < .05$) and can be described as small to medium effect size ($r = -0.18$ to -0.25). In females only arms and legs pain were significantly negatively correlated to leisure-time physical activity ($p < .05$) with small effect size ($r = -0.11$ to -0.13). The highest correlations were determined for arms and legs pain in both males and females.

Discussion: Our study showed that there is significant relationship between musculoskeletal pain and leisure-time physical activity among middle-aged employees in Croatia. Relationship is stronger in males compared to females. We might assume that physical activity prevents pain or helps cope with the pain in middle-aged employees. Although it is possible that the association between musculoskeletal pain and physical activity is bidirectional, we believe that these is less plausible explanations of the correlation. Future studies should further investigate longitudinal relations between these phenomena.

Implications: These data might be used as an argument for implementing physical activity promotion programs for middle-aged employees within their worksites.

37. Clustering of protective and risky health behaviours in Irish third level students: Comparisons for age, body mass index and field of study

Authors: Murphy J, Murphy MH, Murphy N, MacDonncha C, Nevill AM, Woods C.

Background: University students often consider themselves immune to ill-health, but there is growing evidence that sizeable proportions experience poor physical health. Traditionally third-level years are a time when young adults may engage in a variety of both protective and risky behaviours that impact their current and future health status. Studies often look at how a single behaviour is associated with a population, but research reports that common lifestyle factors cluster among adults, and may cluster differently between genders and faculties.

Methods: 8122 participants from 32 third level institutions in Ireland completed an online survey that measured physical activity (PA) levels using the IPAQ-SF, along with the frequency of risky health behaviours (alcohol consumption, smoking, drug use) and diet quality (fresh and convenience foods). A two-step cluster analysis was used as an explanatory tool to identify specific lifestyle patterns. Differences were assessed between clusters for students' age, BMI and field of study.

Results: Analysis was performed on 5702 participants (49.9% male; 23.3 3 6.8 years). A two-step cluster analysis revealed five distinct clusters for each gender. An 'Ideal Healthy' cluster contained 23% of males and predominantly more health, welfare and exercise students. A 'Poor Diet & Low PA' cluster containing 23% were significantly older, had a higher BMI and were predominantly from science, maths and computing. 'Smoking & Drug Use' contained 24% who were significantly older and were predominantly from humanities, arts and education. A 'High Alcohol' cluster contained 16% and 'High Convenience Diet' cluster contained 14% of males. An 'Ideal Healthy' cluster was identified containing 32.5% of females who like males, were predominantly from health, welfare and exercise related courses. A 'High Convenience Diet' cluster containing 25% was significantly older and predominantly from business, law and tourism, while a 'Low Fresh Diet' cluster containing 13% of females were significantly older. A 'Smoking and Low PA' cluster contained 25% of females and predominantly more business, law and tourism students. A 'High Alcohol' cluster contained 11% of females.

Discussion and implications: Lifestyle behaviours cluster within Irish students, which suggests that multi-behaviour interventions may be more beneficial at increasing health. Behaviours clustered differently between genders suggesting that gender specific interventions may also be more effective. Interventions that are demographic specific (i.e. age & gender) and designed to tackle specific faculties and biological factors (i.e. BMI) may help to direct the appropriate information to particular student groups, leading to more efficient and successful health interventions for this population.

38. A gender comparison between self and proxy efficacy and its relationship with attendance at a community based chronic illness rehabilitation programme

Authors: O'Leary E, McCaffrey N, Doyle F, Furlong B, Walsh D, Woods C.

Background: Physical activity is a principal intervention in primary and secondary prevention of chronic

illness. While the benefits of community based rehabilitation is acknowledged, the rate of attendance and adherence remains sub optimal. Self-efficacy is acknowledged to be a key factor relating to adherence in rehabilitation but the construct of proxy efficacy, defined as one's confidence in the skills and abilities of a third party to function effectively on another's behalf, is less often studied. This paper examines the relationship between gender and 'self' and 'proxy-efficacy' and their potential role in attendance to a community based chronic illness rehabilitation (CBCIR) programme.

Methods: Participants attending induction at the programme completed a questionnaire assessing demographics and both self (9 items) and proxy efficacy for exercise (9 items) which was assessed on a Likert scale from 0 (not confident at all) to 10 (very confident), with a higher score indicating greater efficacy. Subsequently, attendance was objectively monitored by researchers at exercise sessions for 24 weeks.

Results: 69 participants (M age=65.5 +9.8 years, 56% Male) completed all measures. Mean proxy-efficacy and mean self-efficacy is significantly greater in women compared to men ($p < 0.05$). Mean proxy-efficacy was found to be higher than mean self-efficacy in both males (proxy-efficacy=8.7+1.2, self-efficacy=8.3+1.8) and females (proxy-efficacy= 7.7+2.2, self-efficacy=6.5 +2.0) with no correlation between the variables. Correlational analyses found a moderate significant positive correlation between proxy efficacy and number of weeks attended in the 24 weeks ($r = .440$, $p < .05$) in women with no correlation observed between self-efficacy and weeks attended. No correlations are observed between either form of efficacy and attendance in men.

Discussion: Participants report greater confidence in the proxy agent than themselves as the agent. This was furthered in women with an association identified between proxy efficacy and 24-week attendance. These results suggest the importance of the proxy for women in a CBCIR setting but further longitudinal research should be carried out in the area of proxy efficacy and attendance at community based chronic illness rehabilitation programmes.

Implications: An understanding of these variables help CBCIR programme facilitators intervene to ensure greater attendance.

39. Body Mass Index of Montenegrin athletes participating in waterpolo at the London 2012 Summer Olympics

Authors: Popovic S, Bjelica D.

Background: It is well-known that physical activity across the lifespan is an important factor of improving human health; however, contemporary sport trainings are designed to improve the performance of high level athletes. Among preforming optimum capacity in terms of biomechanics and physiology, all athletes needs specific anthropometric characteristics to achieve maximum performance. Hence, the purpose of this study was to describe body height, body weight and body mass index of Montenegrin water polo players participated at the London 2012 summer Olympics and to detect possible differences in relation to sedentary subjects from the same country.

Methods: Thirty-three males were enrolled in the study. They were divided into two groups: twelve water polo national team players participated at the London 2012 summer Olympics (28.7533.05 yrs.) and twenty-one healthy sedentary subjects from the same country (20.9433.10 yrs.). All subjects were assessed for the anthropometric measures, using the standardized procedure recommended by the International Biological Program (IBP) standards. Height and weight was measured to the nearest 0.1 cm. Body mass index (BMI) was calculated as body mass in kilograms divided by height in meters squared (kg/m^2). The descriptive statistics were expressed as a mean (SD) for each variable. Independent-samples T test was carried out to detect the effects of water polo sport on each variable: body height, body weight and body mass index (BMI).

Results: The mean of the body height was 191.2530.05 centimeters for water polo players and 184.1430.07 for non-athletes, body weight was 96.0838.16 (athletes) and 82.66314.11 (non-athletes) and BMI was 26.2331.42 (athletes) and 24.3433.71 (non-athletes). A significant difference was found for body height ($p = 0.005$), body weight ($p = 0.005$), while it was not found for body mass index ($p = 0.101$).

Discussion and implications: The results of this study revealed that although most of the sedentary subjects are not regularly trained; they didn't show significant differences in body mass index. Hence, these findings suggest us to conclude that sedentary boys in Montenegro have great body composition assessment and they are not obese. On the other hand, water polo players are significantly taller and heavier, comparing to sedentary subjects, and this is caused by selection of young people for this sport.

40. Methodologies aimed at increasing collaboration and evidence use in local HEPA policymaking: A step-by-step approach to develop a policy game intervention in 3 European countries

Authors: Sandu P, Rus D, Chereches RM, Bozdog EM, Spitters HPEM, Lau CJ, van de Goor LAM.

Background: The use of evidence, i.e. research evidence and experience and expertise of multi-sector stakeholders, in health enhancing physical activity (HEPA) policies has been indicated to lead to more effective and impacting policies. However, evidence is rarely used in HEPA policy-making. Cross-sectoral collaboration can facilitate the use of different types of evidence in HEPA policy processes and is therefore a desirable behavior to stimulate. The scope of the study was to develop a policy game intervention to stimulate collaboration between stakeholders involved in HEPA policies in three European Countries: The Netherlands, Denmark and Romania.

Methods: For developing the policy games, first the local settings in the three participating countries were analyzed by means of document analysis, followed by stakeholders' interviews and consultation. Online (conference calls, email exchanges) and face-to-face communication between the three country research teams were conducted under the guidance of a policy game expert, in order to finalize the systems analysis and to develop the other elements necessary for conducting the policy game in the three settings. The rules and game materials aimed to stimulate collaboration across stakeholders participating in the policy game.

Results: Three local level HEPA policy systems' analysis were developed and compared between the three countries. A generic policy game was developed based on common game building blocks for all 3 games: 1) the game script, 2) the main roles, 3) the materials, 4) the rules, 5) the game flow, 6) the leader/facilitator and participants' roles. Next, three policy games, involving local level HEPA policy stakeholders, were derived from the generic game and conducted at 3 to 6 months intervals in The Netherlands, Denmark and Romania, between February and October 2014. The games' theme was developing an implementation plan for the local HEPA policies targeting children and youth. **Discussion:** The need for increased resources of time and experience/expertise have to be discussed in the attempt of 'mass-delivery' of this potential product aimed at increasing collaboration and evidence used in local policy processes.

Implications: An internationally developed and locally adapted policy game was successfully employed in three different European settings, targeting stimulating cross sector collaboration in HEPA policy networks. The results show potential for use of this method at larger scale in multiple European settings with the aims of increasing collaboration and stimulating evidence use in HEPA and health promotion policies in general.

41. Lessons learnt from Scotland's Exemplar Physical Activity Employer Award (EPAE) pilot

Authors: Tornow M.

Background: The national physical activity implementation plan for Scotland 'A More Active Scotland' (Scottish Government, 2014) aims to identify employers delivering exemplary practice in promoting physical activity within the workplace. In response NHS Health Scotland developed and is now (April 2016) piloting a series of EPAE standards delivered within 8 Scottish workplaces ranging from Scottish Government departments to small private industries. These workplaces will evidence how they are meeting the standards and their evidence will be assessed by assessors. The outcome of this 6 month pilot will determine the feasibility and scale of future roll out of this model across Scotland. The standards, subject to testing are available at <http://www.paha.org.uk/Resource/exemplar-physical-activity-employer-award>. Standards include the need to assess employee PA knowledge and PA levels, development of an inclusive PA plan and the delivery of relevant policies (active travel), environment (bicycle parking) and PA opportunities (free workplace based activities).

Methods: To evaluate the pilot, qualitative interviews will be conducted with both employers and assessors. These will include open-ended semi-structured and closed fixed response questions. Assessors and employers will be asked different questions.

Results: An EPAE pilot report is due late September 2016. This will be made available prior to the conference, with findings reported in full. The EPAE pilot results will highlight facilitators and barriers for a variety of employers, employees and workplace settings associated with application and assessment of the award. Opportunities and challenges experienced by assessors in undertaking assessments will also be identified. Although not within the scope of the pilot impact on behaviour may be recorded and reported on by employers.

Discussion: Are there differences in PA knowledge and participation levels and barriers across employer types? Are

exemplary physical activity standards for a workplace equally achievable across a range of workplace types? What are the resource implications for award hosts, assessors, employers and employees? Are these standards unique to Scotland or are they potentially a starting point for a discussion of an international set of workplace standards? Are there similar standards in place across Europe?

Implications: It is anticipated pilot evaluation findings when published will reveal implications for award hosts, assessors, employers and employees. Evaluation findings will be available before the HEPA Europe conference, and these will inform future roll out of EPAE in Scotland and wider discussion for European partners in pursuit of similar work based interventions through the use of a standard based approach.

42. Stability of physical activity in middle and older adults: Longitudinal study 'Health to participate' in the municipality Bad Schönborn

Authors: Wittelsberger R, Schmidt S, Martin A, Woll A, Bös K.

Background: The longitudinal study 'Health to participate' analyses since 1992 the middle and older adults of the community Bad Schönborn due to activity, fitness and health. In 2015 the 5th investigation took place. In this article the results of the stability of physical activity in adults over a time span of 23 years will be presented.

Methods: The physical activity was measured with a questionnaire. With the two items "Do you participate in sport activities?" and "Are you doing some fitness or gymnastics?" the persons were categorized in physically active and physically inactive persons. The stability was measured since 1992 in gaps of 5-10-18- and 23 years.

Results: In 1992 about 58% of participants state that they are physically active. From these persons 94% are still active in 1997, 86% in 2002 and only 74% in 2010. The physical activity increases slightly during the measuring time. The stability of physical activity decreased with higher time interval. In 5-years-interval the coefficient of stability is .52. With 10-years and 18-years-interval it decreases upon .38 and .27.

Discussion: The high amount of physically active participants is been proved through earlier studies. In general the behavior of activity is only moderate stable and decreases with a higher time interval. This is mostly due to the sport beginners.

Implications: Further studies should analyze what causes result in a Drop-

Out of activity, in a Maintenance or in an Admission to physical activity in a municipal setting.

43. The development of a National Exercise Referral Framework (NERF) for Ireland

Authors: Woods, C, Furlong B, D'Arcy L, Murphy M, Harrison M, Glynn L, O'Riordan J, O'Neill B, Jennings S, Peppard C, McCaffrey N.

Background: The publication of the World Health Organisation's European Physical Activity (PA) for Health Strategy (2015); and Ireland's first National Physical Activity Plan (2016) provided a timely context for the development of a National Exercise Referral Framework (NERF) for Ireland. This paper presents its development process.

Methods: Seven stages were involved. 1. Review of literature on the evidence for exercise referral (ER) and factors influencing its effectiveness. 2. Review of lessons learned from the existing GP-exercise referral programme through an analysis of its report and consultation with the steering group and local coordinators. 3. Consultation with an advisory panel of 56 representatives from both the health (e.g. healthcare professional representative bodies) and non-health sector (e.g. exercise professional representative body, sport and physical activity bodies) tasked with the implementation of a NERF. 4 Expert symposium during which 5 international experts outlined their country's current ER practice and consulted with the advisory panel. 5. Expert panel review whereby the international experts advised on how best to develop a NERF for Ireland. 6. Consultation with a business advisory group to develop a sustainable business model for the NERF. 7. Full public consultation online.

Results: The aim of NERF is to increase PA levels and improve health in individuals living with an established non-communicable disease (NCD) or mental illness. Participants are categorized into category A, those who require high levels of supervision and category B, those who require medium level supervision. The Participant Pathway includes 5 stages — recruitment, screening, intervention, active participation and review. The referring practitioners are appropriately trained healthcare professionals from both primary and secondary care in both acute and community settings. The service providers are appropriately trained PA professionals from both facility based (e.g. leisure centers) and community located (e.g. local community or primary care centers) settings. The Exercise Referral Unit provides support for referring practitioners and service providers and is responsible for management of the

NERF. The inbuilt Evaluation Framework comprises process and outcome evaluation measures, with the option of minimal or optimal dataset. Finally, a business model is presented for NERF.

Discussion and implications: NERF outlines a multi-disciplinary, multi-sectoral approach to increasing PA levels and consequently improving the health in individuals living with an established NCD or mental illness.

44. Prioritising future areas of research into the promotion of physical activity

Authors: Laiou E, Ntzani E, Holmes C, Brandi ML; on behalf of the Credits4Health Consortium.

Background: Strong evidence shows that physical inactivity increases the risk of many adverse health conditions, leading to shortened life expectancy. The EU DG Research and Innovation invited five ongoing FP7 and Horizon 2020 research projects on health enhancing physical activity (PA) to share their experience with other stakeholders, to discuss how to enhance PA, to share best practices and to draw recommendations for policy makers. A workshop was organised by the research projects themselves, in collaboration with EC services. The project teams worked together organizing sessions to explore common themes and to learn from one another, enhancing their own knowledge with insights from their peers.

Methods: Our research project's (Credits4Health) session engaged the participating European researchers in identifying and prioritising future areas of research into the promotion of PA. This task was implemented through a four part approach: a systematic review of meta-analyses of PA behavioural interventions; a subsequent pictorial review of current behavioural science knowledge presented to participants as a starting point for discussion; a brainstorming exercise, generating research concepts; an opportunity for participating researchers to prioritise the research themes they would most like to invest in.

Results: The systematic review of meta-analyses identified a need for further research in the areas of social and psychological mechanisms of motivation and the contexts that are most responsible for changing refractory sedentary behaviours. The Credits4Health task resulted into 8 research themes prioritized as follows: 1. Inequality — interventions for the most disadvantaged; 2. Cross-Discipline Working — a need for mixed methods and multi-disciplinary work; 3. Multiple Level Interventions — Acting on across environment, cognitive behaviour change, and incentives ; 4. Understanding (In)activity —

Understanding the psychological role of inactivity; 5. Learning from Others — Informing physical activity interventions from other disciplines and contexts; 6. Personalised Interventions — How to tailor more sophisticated behaviour change regimens; 7. Integrating Technical Knowledge — What can technology help us to achieve?; 8. Capturing Research Data — Designing more visual interfaces for research and interventions

Discussion: A series of PA research priorities were identified. Based on the meta-analyses review and proposed research themes, there appears to be a need for creating more diverse research consortia, seeking to develop a deeper understanding of physical inactivity and multi-disciplinary approaches and to tackle inequality through multi-level interventions.

Implications: National approaches to PA promotion might benefit from similar stakeholder engagement and from the formation of diverse research consortia, seeking to tackle inequality through multi-level interventions.

45. National Health Enhancing Physical Activity Action: 'The Symbiosis of a Movement'

Authors: Zupancic-Tisovec B, Pleško A, Backovic-Jurican A.

Background: All key epidemiological studies on physical activity of Slovenians show that a lack of physical activity is one of the most important factors of an unhealthy lifestyle. In the periods even before birth and throughout the whole lifecycle, each person needs an adequate amount of physical activity to positively influence development; maintain and enhance health; generate independence; and prevent the development of diseases.

Methods: In response to the emerging needs of the social environment, an inter-sectoral collaborative project 'the Symbiosis of a movement' was created. It is a volunteer-based, inter-generational project and has been running for three consecutive years (since 2014). Each year, sports and recreational events and workshops are organised during specific periods (varies annually) at specific hours in the morning and in the afternoon. Key characteristics of these events are that they are adjusted to individuals in order to enhance and maintain the health and HEPA promotion. Health-friendly messages and choices are based on professionally supported evidence. Campaign goals are to: promote HEPA in order to strengthen the health of the entire population, including all generations (from - 9 months to 100 years +); stimulate individuals and convince them to follow healthier lifestyles; follow substantive values captured in the motto 'A movement

is a life and the life is the movement'; provide free opportunities to learn about new forms of physical activity, including recreational or sport activities and exercise programmes for all ages; create harmony through inter-generational cooperation; follow the idea that there would be as many (physical) activities in the nature as possible; and achieve networking of partners and stakeholders.

Results: The project's network is increasing each year (by personnel and number of participants). The evaluation of the project in the year 2015 highlighted that: project activities were implemented across 476 locations; over 18,452 individuals participated in the project activities; 132 different organizations collaborated and 140 kindergartens, primary and secondary schools; 27 municipalities and 27 local ambassadors have undertaken an important strategic role in the local community; many institutions offered their facilities for recreational and sport events; and the most frequently implemented activities were inter-generational exercises classes, and guided walks.

Discussion: Regular physical activity is one of the cheapest ways to achieve good quality of life in all life-stages. Therefore, the leader of a project (Symbiosis Genesis, a social enterprise) with it's national partners (National Institute for Public Health, National Olympic Committee, Faculty of Sports, Slovene Federation of Pensioners' Associations and the Ministry of Health), plan a new country-wide Slovenian campaign for a third time between 10th and 16th October 2016.

Implication: 'The Symbiosis of a Movement' has become a traditional HEPA event, and is part of the National Nutrition and Physical Activity Action Plan supported by Ministry of Health in Slovenia.

46. Acceptance of the European Fitness Badge within Belgian and German adults

Authors: De Clerck IL, Klemm K, Van Houtte B, Lancriet S, Maes K, Van den Bulcke S, Demilde M, D'Hondt L, Bös K.

Background: Although people are becoming increasingly aware of the importance of health related physical activity and physical fitness, 42% of Europeans never exercise or play sport. This sedentary behaviour has not improved in 11 years (Eurobarometer, 2013). Improved health and well-being are claimed to be the main motivators to engage in sport. Therefore an increased awareness of one's personal physical fitness might promote an increased motivation to exercise. To create an awareness, an innovative two-level 'European Fitness Badge' (EFB) was developed, providing

personal information about all major health-related dimensions (i.e. strength, flexibility, endurance, coordination, posture and body composition). All test items are generalisable in any setting and challenging for both sedentary as physical active adults. The aim of the present study is to evaluate the acceptance of the EFB.

Methods: 203 Belgian and 86 German adults (equal distribution of men and women, aged 18-81) participated in level 1 (L1, not physically active, n=22) or level 2 (L2, physically active, n=267). Acceptance was evaluated using a written survey (5-tier Likert scale) which questioned the perceived feasibility and motivation of the EFB. The significance level was set at $p < 0.05$.

Results: Both L1 as L2 test items scored high for feasibility, except for push-up (L1, 2.831.3) and flamingo balance (L1, 2.431.0). Test instructors (n=5) also scored those tests as less feasible (2.030.7; 2.231.1). Test difficulty was rated as fair for most test items, with mean scores between 1.3 and 1.9. This was also acknowledged by the test instructors. Moreover, participants had fun during the tests, stating that it increased motivation (L1: 1.430.6; L2: 1.530.6) and that they would like to perform the EFB again (L1: 1.730.8; L2: 1.630.8). In general there are small differences between male and female respondents. Females had significantly more fun during the flamingo test (L2). Finally, participants aged over 50 rated both the jump test and the push-up test significantly less feasible, and more difficult than the younger participants.

Discussion: Results indicate that both the participants, and the test takers, rate the EFB as feasible and motivating. It is recommended to make small adjustments to upgrade the feasibility of the balance and push-up tests.

Implications: In follow-up studies, identifying measures to motivate more non-physically active Europeans to take part in the EFB are recommended.

47. Segmentation of Active Outdoor Recreation

Authors: Williams SA.

Background: Increasing physical activity is a key public health objective in Wales, requiring robust monitoring and evaluation. This new research takes an innovative approach to analysing population level data to understand the unique contribution that participation in outdoor recreation makes to physical activity. The study uses the emerging results from the national Welsh Outdoor Recreation Survey to understand the complexity of participation and how this translates into different physical activity levels.

Methods: This study used new data from the 2014/15 Survey, which

covered detailed questions on a range of topics relating to participation in outdoor recreation, including: • Activity preferences • Activity duration • Frequency of participation • Intensity of participation • Motivations and Barriers The analysis utilised a mix of statistical methods, including descriptive statistical tests of participation and multivariate analysis, to provide a segmentation of the population using the World Health Organisation's physical activity criteria relating to intensity, frequency and duration.

Results: The research found that the population can be divided into 7 segments, with varying combinations of these three aspects. The groups can be summarised using a 'traffic light system' as follows: • 2 'Red' Groups: those who do not participate at all, or only very rarely • 3 'Amber' Groups: those who do participate, but who are limited in terms of either frequency, intensity, or duration • 2 'Green' Groups: those that meet the WHO minimum level of physical activity, through either participating frequently (5 x 30 min) or for a long duration (150 min).

Discussion: The results of this work have provided a unique insight into the 'range' of physical activity. Moving beyond a simple binary division of 'active' and 'inactive', this analysis identified distinct groups based on different combinations of the three variables: intensity, frequency, and duration. In doing so, it has identified the relative impact of socio-demographic variables, geographical factors, and recreation-specific attributes such as activity and place preferences, to provide a detailed insight into active recreation.

Implications: This research provides the outdoor recreation and health sector in Wales with the evidence required for more effective interventions. In combining the three variables of intensity, frequency, and duration it makes it transparent where different interventions aimed at increasing physical activity should be focused. The full socio-demographic profiles also enable distinct groups to be identified, which accounts for the complexity of physical activity participation more than a single demographic approach.

48. 'Over to You' A Physiotherapy partnership programme with Leisure Services in the Newry & Mourne District

Authors: Brackenbury S.

Background: The Over to You scheme is an exercise based programme which has been running in the Newry & Mourne area for over 10 years. It is delivered through partnership working between the Physiotherapy Department, Daisy Hill Hospital and Newry & Mourne

District Council, specifically with their Leisure Services. The Over to You scheme was set up and developed in response to an identified and unmet rehabilitation need within the local population, following successful Big Lottery funding in the initial phases. Funding was then secured by the Southern Trust.

Methods: This innovative service requires patients to attend a gym or water-based exercise programme once a week for up to eight weeks. A specifically designed exercise programme is devised for each individual patient by a Clinical Specialist Physiotherapist. Referrals to the programme are received from GP's, Consultant's and Health professionals, This person-centered exercise scheme takes into account the assessed needs of the individual in all aspects of their physical ability and rehabilitation needs. Throughout the Over to You programme, patients are educated on the promotion of physical activity and on completion of the scheme they are encouraged to continue independently with this in the long-term for the benefit of their own health and well-being.

Results: The result of attending the scheme is the empowerment of patients to self-manage their long term condition. As the Over to You scheme has developed over the past ten years numbers of referrals have increased significantly, both in terms of referral source and in the variety of patients with chronic, long term and complex conditions eg COPD, Chronic LBP, Cardiac conditions, Rheumatology conditions. The use of patient and disease specific outcome measures allow for evaluation of their condition during the Over to You programme. Eg Quality of life outcomes.

Discussion: The Over To You scheme is a unique partnership in N. Ireland and has demonstrated leadership in the area of public health and interagency working within a community setting. It sets the bar province wide by meeting the DHPSS Public Health principles of empowering healthy living in the community.

Implications: The Over to You programme is what it says on the tin! That if we can educate patients with Long Term Conditions on how to manage these conditions and empower them to do this in community settings then it has an impact to greatly affect the pressure on acute services and hospital admissions.

49. Measuring Physiotherapists' Physical Activity Promotion Practices

Authors: Campbell C, Kerr D, McDonough SM, Murphy M, Tully MA.

Background: Physiotherapists come in contact with thousands of patients each year in a variety of settings which places them in an ideal position to promote good health by promoting physical activity (PA). There is evidence that a number of factors influence the promotion of physical activity such as personal PA levels of the healthcare practitioner, training and the quality of information provided to patients. Therefore the aim of this study was to investigate how physiotherapists in the Belfast Trust promote PA and whether or not this is influenced by their personal PA levels.

Methods: A questionnaire was created which asked physiotherapists to report their physical PA and sedentary behaviour (SB) levels, current health promotional practices, training in this area, practical methods used to promote PA and knowledge of current UK guidelines.

Results: Health promotion was very common amongst physiotherapists with 94.6% of physiotherapists reporting that physical activity recommended for health promotion reasons. Providing advice was the most common method for promoting PA (70.2%) followed by signposting (20.6%) and providing a written prescription (18.2%). When providing advice 47.2% of physiotherapists did not specify the intensity of PA and of those that did discuss intensity only moderate intensity was encouraged (52.3%). Frequency of PA was always discussed by 60.5% of physiotherapists and duration was always discussed by 46.5%. Although 50% of physiotherapists reported receiving training in health promotion, actual awareness of the current guidelines was low. Only 14.9% were able to report all three aspects of the PA guidelines with 6.2% correctly stating the SB guidelines. Physiotherapists have higher levels of PA and lower levels of SB than the general population however there was no significant difference between personal PA and health promotion practice ($p=0.24$).

Discussion: Physiotherapists subjectively reported that their promotion of PA was high and providing advice was the main method used. Despite high levels of health promotion their knowledge of guidelines is low and they do not routinely discuss intensity, duration or provide a written prescription.

Implications: Low levels of training and a poor knowledge of the guidelines have been highlighted in this study. These findings have been fed back

to the Belfast Trust and will provide an evidence base for their 'Physical Activity Strategy.' Based on the gaps identified, specific training for staff will be provided to improve the quality of information provided to patients and further optimise physiotherapists' role in health promotion.

50. A shared 'decision tool' ('SHARE-D') for health professionals and patients to help initiate healthy lifestyle change: Feasibility study

Authors: Cole J, Cupples ME, Hart N, McKinley M, Heron N, Tully MA.

Background: Healthier lifestyles, including physical activity behaviours, reduce the risk of heart disease and stroke and, for those with established disease, can prevent further problems. However, making and sustaining lifestyle changes is difficult. More information is needed about effective ways to help people begin to change their lifestyle behaviours.

Methods: We propose to recruit 25 patients with coronary heart disease from general practices in order to test a decision tool aimed to motivate them to improve their lifestyles. We will use questionnaires at baseline and at one-month and three-month follow-up points to quantitatively assess physical activity and diet. At baseline the decision tool will be used to guide a discussion between the patient and their health professional (GP and/or practice nurse): the tool is a paper-based questionnaire designed to help people think about their personal circumstances, their motivations, capabilities and priorities so that they can be better supported in making healthy changes. Focus groups and interviews at the end of the study will explore patients' and healthcare professionals' views of the decision tool's value and influence. Analyses will be iterative, using a thematic framework.

Results: Rates of recruitment, retention and of completion of the decision tool and outcome measures will be recorded. Comparisons of RPAQ scores, and DINE fibre, fat and unsaturated fat scores will describe change in physical activity and dietary habits over the three-month period. Accelerometer data (minutes of moderate and vigorous physical activity) will provide objective physical activity assessment at baseline and three months. Themes will be identified in relation to the decision tool's usefulness.

Discussion: The feasibility of using this tool will be determined by rates of uptake, and of its completion. Its potential value will be assessed by examining changes in physical activity and diet over the period of the study. Patients' and healthcare professionals'

views of the decision tool's value and how it influenced decisions to make healthy lifestyle changes will help improve the tool's design.

Implications: Participants' opinions regarding the format and method of delivery of the decision tool will inform future plans for its refinement and use in helping people to begin to change their behaviour and achieve healthy lifestyles. The results will inform the design of a definitive tool, methods of its administration and a randomised controlled trial to test its effectiveness in supporting lifestyle change and improving secondary prevention and quality of life for people with heart disease and stroke.

51. A systematic review concerning the influence of physical activity during pregnancy on maternal, fetal or infant heart rate variability

Authors: Dietz P, Watson E, Sattler M, Ruf W, Titze S, Van Poppel M.

Background: Physical activity (PA) during pregnancy has been shown to be associated with several positive effects for mother, fetus, and offspring (Clapp, 2003; Dye et al., 1997). Heart rate variability (HRV) is a non-invasive and surrogate marker to determine fetal overall health and the development of fetal autonomic nervous system. In addition, it has been shown to correlate strongly with maternal HRV and is significantly influenced by maternal behaviour (Graca et al., 1991). However, the influence of maternal PA on HRV has not yet been systematically reviewed. Therefore, the aim of this systematic review was to assess the influence of regular maternal PA on maternal, fetal or infant HRV.

Methods: A systematic literature search following a priori formulated criteria of studies that examined the influence of regular maternal PA on maternal, fetal or infant HRV was performed in the databases Pubmed and SPORTDiscus. Quality of each study was assessed using the standardized Quality Assessment Tool for Quantitative Studies, QATQS (Effective Public Health Practice Project, 2008).

Results: In total, 124 articles were screened by title and abstract. Of these, nine articles passed the a priori formulated criteria and were included into the present systematic review: two intervention studies, one prospective longitudinal study, and six post-hoc analysis of subsets of the longitudinal study. Of these articles, four assessed maternal HRV, five fetal HRV, and one infant HRV. Four of five articles regarding the influence of maternal PA on maternal HRV indicated contrary results. Four of five articles regarding the influence of maternal PA on fetal HRV showed increases of fetal HRV

on most parameters depending on maternal PA. The overall global rating for the standardized quality assessment of the articles was moderate to weak.

Discussion: Based on the current evidence available, our overall conclusion is that the hypothesis that maternal PA influences maternal and infant HRV cannot be supported, but there is a trend that maternal PA might increase fetal HRV.

Implications: We recommend that further studies on the influence of maternal PA on HRV should be performed.

52. A systematic review of interventions designed to increase objectively measured physical activity in children and adolescents with intellectual disabilities

Authors: Anne Johnston, Laurence Taggart and Marie Murphy.

Background: Physical activity (PA) has physical and mental health benefits for children and adolescents. Despite the known benefits, there are low levels of physical activity in children and adolescents with intellectual disabilities (ID), with less than 20% meeting the minimum recommended level of 60 minutes moderate to vigorous PA per day. The purpose of this review is to evaluate if interventions are effective in increasing objectively measured PA in children and adolescents with ID.

Methods: Literature searches were conducted across five databases; Medline, PsychInfo, Web of Science, SPORTDiscus and CINAHL. Results were screened for eligibility by title and abstract. Studies were included for review if they met the following criteria; (1) full text available in English, (2) an intervention in which the main component or one of the main components is aimed at increasing PA levels, (3) one of the main study outcomes is a measure of PA (objective), (4) children with ID, mean age of up to 18 years. As a result, 7543 papers were identified, 48 full text papers were assessed for eligibility and 7 were deemed eligible for inclusion in this review.

Results: The 7 papers included in this review had a range of sample sizes from between 10 to 68 participants. Interventions included muscle training programmes (n=2), progressive resistance training (n=1), bicycle riding (n=1), treadmill intervention (n=1), personal exercise plan (n=2). Duration of interventions ranged from 5 days to 12 weeks. The measurement tool for the majority of studies was the accelerometer (n=4). The setting for the majority of the studies (n=4) was in the home, whilst 3 were in a community

setting. None of the studies were underpinned by an explicit theoretical framework. The majority of studies (n=5) reported an increase in objectively measured PA levels at follow up.

Discussion: Results indicate that objectively measured PA can be increased among children and adolescents with ID. Limitations of the studies included are the study designs and lack of randomisation. The small number of studies eligible for inclusion and the small sample sizes indicate there is a need for further research on PA interventions for children and adolescents with ID.

Implications: This review highlights that PA interventions can be effective in increasing objectively measured PA in children and adolescents with ID, however further research is required. A lack of school based interventions has been highlighted, which may provide a focus for future research in this population.

53. A systematic review of computer based and mobile application interventions to change sedentary behaviours

Authors: Stephenson A, Mair J, Nugent C, McDonough SM, Murphy M.

Background: High levels of sedentary behaviour are associated with poor health and increased risk of mortality. Given the ubiquitous nature of sitting in modern society, developing effective ways to change sedentary behaviour is a priority. Technologies such as software agents, mobile applications, activity monitors and websites are being harnessed to interrupt and reduce sitting time. The objective of this study was to systematically review the literature and evaluate the effectiveness of computer-based and mobile application interventions to change sedentary behaviours in adults.

Methods: PubMed; MEDLINE (Ovid platform); EMBASE; CINAHL; PsycINFO; IEEE Xplore were searched for articles reporting on randomised-controlled trials (RCTs) or RCT pilot in adults >18, up to February 2016. Articles were included in the review if they evaluated a computer-based or mobile application intervention that aimed to reduce or interrupt sedentary behavior in otherwise healthy adults as a primary aim. Included studies had a control or active comparator group and a pre-post measure of sedentary behaviour. Studies were screened for inclusion, data was extracted to evaluate study characteristics, intervention type and efficacy on SB. Risk of bias was assessed using the Cochrane risk of bias tool.

Results: 8 RCTs and 1 pilot RTC studies were identified out of 21619 returned by the systematic search. 5 studies were European, 2 Australian and 2 American

in origin. All included studies were published between 2012 and 2015. A total of 346 participants received a computer based or mobile application intervention with participant numbers ranging from 10 to 257 per study. Interventions included: e-coaching (1 study), email prompts (1 study), software prompts (4 studies), website (1 study), combination of website and an online self-monitoring device (2 studies). Intervention duration ranged from 5 days to 12 months. No included studies used a mobile application intervention. 7 studies reported significant decreases in sedentary behaviour. 2 studies reported no significant changes in SB (combination intervention and software prompts).

Discussion: Available evidence suggests that it may be possible to reduce sedentary behaviour in adults using computer based technology. More RCTs of high quality and low bias are needed to determine if computer based SB interventions are sufficient to produce clinically meaningful and sustainable reductions in sedentary time. There is a need for RCTs to be conducted to assess the effectiveness of mobile applications in reducing sedentary behavior.

Implication: Computer based technologies may be promising approaches to intervene to reduce sedentary behaviour in adults.

54. Yoga-based exercise improves balance and mobility in people aged 60 and over: A systematic review and meta-analysis

Authors: Youkhana S, Dean C, Wolff M, Sherrington C, Tiedemann A.

Background: One-third of community-dwelling older adults fall annually (Lord, Sherrington, Menz, Close, 2006). Exercise that challenges balance is proven to prevent falls (Sherrington, Tiedemann, Fairhall, Close, Lord, 2011). Little is known about yoga's effect on independence in older age, measured by balance and mobility, and no randomised controlled trials have evaluated the impact of yoga on falls in older age. We conducted a systematic review with meta-analysis to determine the impact of yoga-based exercise on balance and physical mobility in people aged 60+ years.

Methods: Searches for eligible trials were conducted on the following electronic databases: MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, CINAHL, Allied and Complementary Medicine Database and the Physiotherapy Evidence Database (PEDro) from inception to February 2015. Trials were included if they evaluated the effect of physical yoga (excluding meditation and breathing exercises alone) on balance in people aged 60+

years. We extracted data on balance and the secondary outcome of physical mobility. Standardised mean differences (SMD, Hedges' g) and 95% confidence intervals (CI) were calculated using random-effects meta-analysis models. Methodological quality of trials was assessed using the 11-point PEDro Scale.

Results: Six trials of relatively high methodological quality (mean PEDro Scale score=6.7), totaling 307 participants, were identified and provided data that could be included in a meta-analysis. Overall, yoga interventions had a small effect on balance performance (SMD = 0.40, 95% CI 0.15-0.65, I² = 0%, P = 0.615, 6 trials) and a medium effect on physical mobility (SMD = 0.50, 95% CI 0.06-0.95, I² = 51.8%, P = 0.126, 3 trials).

Discussion: Yoga interventions resulted in small improvements in balance and medium improvements in physical mobility in people aged 60+ years. Further research is required to determine whether yoga-related improvements in balance and mobility translate to prevention of falls in older people.

Implications: Health professionals can confidently recommend yoga for those aged 60+ to improve balance and physical mobility. Yoga-based exercise shows promise as a fall prevention intervention. PROSPERO Registration number CRD42015015872.

55. Public health care nurses in enhancing physical activity

Authors: Kivimäki S, Ylönen A, Komulainen J.

Background: The Fit for Life Program promotes physically active lifestyle among sedentary working-aged population in Finland and is funded by the Ministry of Education and Culture and the Ministry of Health and Social Affairs. The program creates physical activity services at local level, produces efficient means and channels for cross-sectoral collaboration and plays an important role in implementing national strategy for physical activity promoting health and wellbeing entitled 'On the move'. One of the guidelines in the 'On the move' strategy is to highlight physical activity as a vital element in enhancing health and wellbeing, prevention and treatment of diseases and in rehabilitation. Health-care professionals have an essential role in reaching sedentary adults, promoting physical activity and guiding to more active lifestyle. The Fit for Life Program and The Finnish Union of Public Health Nurses have, in co-operation, carried out 19 seminar events across Finland in 2015-2016 for health-care professionals.

Methods: The goal of the seminar events was to give tools for physical activity counselling and strengthen the role of

physical activity promotion in everyday life of public health nurses. Seminar events were interactive, conversational and practical. Seminar events contained 1) physical activity in health promotion and disadvantage of sedentary lifestyle, 2) motivational communication and the stages of behaviour change, 3) tools and methods of physical activity counselling and 4) the role of health care professionals in physical activity promotion.

Results: 800 public health care professionals have attended the seminar events. In collected feedback participants expressed that they received motivation and encouragement to physical activity counselling, more information of the role of physical activity in maintaining health and tools for motivational communication.

Discussion and implications: Seminar events were very much needed and further training was wished for. Health care professional have an important role in health promotion, not only in the treatment of diseases. Physical activity counselling should further be strengthened as a part of health promotion in all health care professionals. 10 more seminar event will be held in 2016 across Finland and approximately 1200 in total will participate in seminar events. In 2017, more material will be published to further help with everyday counselling. The role of public health care nurses in physical activity promotion will strengthen even more.

56. A systematic review of the effects of school-based peer relations on children's physical activity

Authors: Jürgensen A, Nielsen G, Bentsen P.

Background: Schools and friends have been identified to have a central position in promoting physical activity; however, current evidence within this field is limited. To develop effective interventions and strategies to improve physical activity it is therefore essential to determine the predictors for physical activity among children and adolescents. The aim of this review is therefore to synthesise the evidence on the influence of different types of peer relation parameters and determine how and the extent to which peer relations are associated with children's and adolescent's physical activity.

Methods: A systematic literature review was carried out in eight scientific databases covering different disciplines in June 2015. Eligible studies should assess quantitatively peer relations' association with physical activity, and focus on children and adolescents (6-16 years) within a school setting. Peer relations included peer support, peer influence and social networks.

Results: A total of 2147 articles were identified and yielded 12 studies eligible for inclusion. Overall, peer relations in school influenced physical activity and three main themes emerged: (1) peer support from friends was associated with enhanced physical activity; (2) the perceived physical activity of friends was associated with greater physical activity of the individual; and (3) friendships with active friends enhanced the physical activity level of the individual. Gender was found to influence the findings, and especially social support had a stronger impact on girls compared to boys.

Discussion: The findings propose that among friends; social norms in relation to physical activity, role modelling and spending time together being active are key ways to achieving involvement in physical activity and important ways in which social relations' effect on school-based physical activity can be reinforced. Most of the included studies were cross-sectional making it difficult to infer about causation. Nevertheless, the included randomized controlled study showed that the increased support for being physically active from friends increased the individuals' daily physical activity.

Implications: This review emphasise the significance of children's school-based peer relations, which should be considered in any new initiative promoting physical activity. Also, development of gender-specific interventions may be effective. Future studies should aim to include children younger than nine years of age to investigate if friends play a different influential role on PA at this age. This study revealed a lack of evidence to draw decisive conclusions concerning the association. Future studies should thus apply longitudinal research designs and controlled intervention studies.

57. 'Walk30X5': The development and feasibility evaluation of a physiotherapy walking programme for people with mild to moderate musculoskeletal conditions

Authors: Minns Lowe CJ, Kelly P, Milton K, Foster C, Barker K.

Background: People with long term musculoskeletal conditions are more likely to be inactive and at increased risk of developing further co-morbidity than their peers. Walking is a suitable, popular and accessible form of activity and NICE guidelines (2012) call for the development of walking programmes for insufficiently active adults. This study aimed to: 1. Develop and refine an evidence-based, web-based physiotherapy walking programme intervention including podcasts and website; 2. Test the feasibility and acceptability of the intervention.

Methods: Three stages were included. 1: Development of intervention via literature review and consensus groups incorporating the opinions of lay, clinical and research people (n=31). 2: Feasibility trial. 41 adults with mild/moderate long term musculoskeletal conditions were randomised to: One physiotherapy advice and assessment session, including goal setting, plus a follow up session OR One physiotherapy session to teach the walking programme intervention (progressing to 30 minutes of moderate physical activity 5 times a week) and one follow up. Outcomes: Timed-6-minute walk (primary outcome), steps/day, pain, fatigue, happiness, Daily Activities Questionnaire (DAQ), Energy Expenditure (Axivity accelerometer), PANAS (mood), global health rating, adherence, self-efficacy, EQ-5D-SL, BP, resource use. Assessments: Baseline, 3/12 months (post-intervention). 3. Qualitative interviews of trial participants (n=10) and physiotherapists (n=4) exploring views regarding treatments. Analyses: Recruitment, retention numbers, baseline characteristics, adverse events, flow through the trial were described. The suitability of outcomes for a future Phase III trial was explored. Interpretative Phenomenological Analyses were used for qualitative data.

Results: Eight (progressive) walking podcasts and a website were produced. No adverse events occurred. Recruitment target was reached. Loss to follow up n=3 (7%). Between groups difference for the primary outcome (timed-6-minute walk) was p=0.07 at 3/12. The new programme was accepted and positively valued by participants and physiotherapists.

Discussion: Intervention development proceeded successfully and was safe and acceptable to participants. Recruitment and loss to follow up rates were considered acceptable. Timed 6 minute walk test and step count proved suitable outcomes; DAQ and Axivity accelerometers were not acceptable to patients. Between group differences at three months demonstrated promising potential for the walking intervention.

Implications: This intervention is now ready for evaluation in a future, appropriately powered, phase III trial. Long-term follow up and adherence will need to be included. If effective, the intervention will provide a feasible, cheap, highly accessible web-based intervention to enable large numbers of patients with mild/moderate long term common musculoskeletal conditions to gradually improve/achieve recommended physical activity guidelines.

58. Utilisation of an existing cardiac rehabilitation service to assist the recovery of patients with cancer

Authors: Lahart IM, Tipson R, Carmichael AR

Introduction: Core components of a cardiac rehabilitation programme [physical activity (PA), diet modification and weight management] are also key to the rehabilitation of cancer survivors. A common rehabilitation programme may be appropriate for meeting many of the needs of both cardiac and cancer patients. The aim of the current study was to pilot the effectiveness of utilising an existing PA-based cardiac rehabilitation service to improve the health-related quality of life (HRQoL), perceived physical function and mental health, self-esteem, PA levels and body mass of cancer survivors.

Methods: Thirty cancer patients (post-adjuvant therapy=97%; female=93%; breast cancer=60%; 97%= white English; age=5639 y; BMI=29.036.4 kg/m²) completed a 12-week supervised cardiac rehabilitation facility-based physical activity (PA) intervention. The intervention group received face-to-face PA counselling at the beginning of a supervised PA intervention aimed at encouraging the achievement of current recommended PA guidelines (i.e. 150 minutes per week of moderate-vigorous PA). All patients were evaluated for our primary outcome, HRQoL (via European Organization for Research and Treatment of Cancer QLQ-C30 Global Health scale), and secondary outcomes, perceived physical function (PF) and mental health (MH) (via PF and MH composite scores of the Medical Outcome Survey Short Form-12), self-esteem (via Rosenberg Self-Esteem Scale), PA (via International PA Questionnaire), and mass were assessed at baseline and at 12-weeks. Results are presented as Cohen's d effect sizes (interpreted as small=0.2, medium=0.5, and large=0.8).

Results: We found moderate pre to post-intervention improvements in HRQoL global health [mean difference (MD), 95% confidence intervals (CI) = 8.1; 95% CI 2.8 to 13.3; d=0.6]. There were moderate and large pre-post intervention effects on physical function and mental health, respectively (MD=4.2; 95% CI 0.2 to 8.2; d=0.4 and MD=6.5; 95% CI 3.0 to 9.9; d=0.7, respectively). Participants reported large pre-post intervention effects on self-esteem (MD=2.6; 95% CI 1.2 to 3.9; d=0.8). Moderate and large increases in self-reported leisure and total PA (MET-min/week) were observed from pre to post-intervention, respectively (MD=1038, 95% CI 294 to 1782; d=0.5 and MD=1915, 95% CI 1000 to 2831; d=0.8).

Discussion: Cancer patient's completing a 12-week PA intervention utilising an existing cardiac rehabilitation service

reported improvements in HRQoL, perceived PF, MH, self-esteem, and PA, and maintenance of body mass.

Implications: Utilisation of an existing cardiac rehabilitation service may be beneficial for cancer patients. Adopting the cardiac rehabilitation model may provide a means to bring oncology rehabilitation to greater numbers of cancer survivors.

59. Leading the Way with Active Travel: A workplace approach to active travel

Authors: Bloomfield C, McLernon C.

Background: Leading the Way seeks to enable staff at the Public Health Agency (PHA) and four other statutory bodies in Belfast to make more active and sustainable journeys to work and to meetings. In addition to demonstrating leadership in active travel, the programme provides strategic opportunities for the PHA to promote health and social wellbeing improvement in the following key areas: Physical Activity; Workplace Health; and Mental Health and Emotional Wellbeing.

Methods: Sustrans was commissioned to deliver a three-year programme which comprises a number of strands including: Cycle training; Cycle maintenance; Training and support of active travel champions; Series of lunchtime led walks and cycles; Promotional activities; Personalised travel planning; Support to access the Cycle to Work scheme; Month-long online Active Belfast Challenge; and Baseline and annual surveys.

Results: After 1 year, the programme demonstrated the following results: Travelling to work by car reduced from 52.6% to 49.1%; Cycling to work increased at four of the five workplaces; Walking to work increased from 7.5% to 8.5%; Average amount of sick leave reduced from 6.4 days to 4.9 days. In wellbeing scores, 69% fell into the moderate wellbeing category (a score of 23-32), whilst 24% had a score of less than 23 which put them in the low wellbeing category, compared to baseline results of 65.8% and 26.5% respectively. 850 people participated in the Active Belfast Challenge (open to all workplaces).

Discussion: The programme has highlighted PHA and constituent partners as exemplars in their approach to investment in staff wellbeing and the environment. Although early days, the programme has shown positive benefits in modal shift to active forms of travel. The annual surveys seek information on the barriers preventing people from travelling more actively and the programme seeks to find solutions. Support from senior management has been critical, both in active promotion of the scheme and in enabling staff to

participate in training and events during work hours.

Implications: Having an external organisation to support staff has been critical to the success of the programme. Whilst training of active travel champions will aid the long-term sustainability of the programme, there will inevitably be need for on-going support if momentum is to be maintained.

60. Regular yoga practice can restore optimal body flexibility in young healthy women: A pilot study

Authors: Petric M, Vauhnik R, Jakovljevic M.

Background: Physical inactivity and predominantly sedentary lifestyles are two of the leading reasons for the diminishment of body flexibility. The consequence of this is the decreased flexibility of soft tissues surrounding joints. Practicing yoga is a health-enhancing physical activity which produces multiple health benefits. Simple yoga techniques, including body postures and breathing techniques, can restore optimal body flexibility. The main purpose of this study was to examine the quantitative impact of regular yoga practice on body flexibility in young healthy females.

Methods: Nine young healthy females (mean age 23.8 (2.9) years) voluntarily participated in the study. The training program was held in a yoga centre twice weekly (75-minute sessions), for five months. The program included therapeutic yoga exercises, which aimed to increase joint mobility, as well as stretching exercises for shortened skeletal muscles. Goniometric measurement procedures were used for measuring passive joint mobility; linear measurement procedures for measuring active mobility of the thoracolumbar part of the spine; and specific muscle length tests were used to evaluate skeletal muscle shortness of individual muscle/muscle group and overall body flexibility. Measurements of body flexibility were taken three times over the five month period; before, during and at the end of the training program.

Results: The results obtained by measuring joint mobility showed significant mobility increases (> 5°; p < 0.05) in: elevation through abduction; shoulder extension; hip flexion; internal and external hip rotation; dorsal flexion; and inversion of the ankle. Mobility of the thoracolumbar part of the spine was increased in all of the measured movements (p < 0.05). There was also a significant improvement in flexibility of the following muscles: soleus; gastrocnemius; rectus femoris; hamstrings; and pectoralis major muscle (> 5°; p < 0.01). Furthermore, a significant improvement in body flexibility was confirmed through the

'Back Scratch Test' and the 'Sit and Reach Test' (p < 0.01).

Discussion: The results of this study confirm that improved body flexibility is one of the most obvious, and quickly achieved effects of yoga in young healthy women, especially in increasing the flexibility of shortened skeletal muscles. Future research in this area using a larger sample of subjects and control group is needed.

Implications: According to WHO recommendations on physical activity for health, and study results, all individuals who have poor flexibility could perform yoga to improve flexibility and balance.

61. Classroom-based physical activity and sedentary behaviour interventions in secondary school pupils: A systematic review

Authors: Miss Lauren McMichan, Dr Ann-Marie Gibson, Dr David A. Rowe

Background: In Scotland, 18% of adolescents (11-15 years) are insufficiently active (Currie et al., 2015). Schools play a pivotal role in promoting physical activity (PA) and reducing sedentary behaviour (SB). The aim of this systematic review was to evaluate classroom-based PA and SB interventions in secondary school pupils.

Methods: A search strategy was developed using the PICOS framework. The following databases were screened: Web of Science; ERIC; PsycInfo; Sport Discus; Medline (Ovid); and Embase. Articles were screened using the following inclusion criteria: 1) randomised controlled trials (RCTs), controlled trials, quasi-experimental, or pre- and post- study designs, 2) target PA and/or SB, 3) classroom setting only, 4) healthy secondary school pupils between 11-15 years. Study quality was assessed using the EPHPP quality assessment tool (<http://www.ehphp.ca>). Outcome means and SD/SE pre- and post- intervention were extracted and effect sizes were estimated using Cohen's d.

Results: The strategy yielded 2350 potential articles. Nine studies were included for review based on the inclusion criteria. Seven studies were cluster RCTs and two were cohort (pre- and post-) study design. Sample size ranged from 85 to 1136 participants and mean age ranged from 12.0 to 15.3 years. The quality of the studies was assessed resulting in one article rated as strong, three as moderate and five as weak. All nine studies examined various PA outcome measures (e.g., MVPA, PA frequency, walking). Six studies examined various SB outcome measures (e.g., video games, TV viewing). Six studies provided group comparisons at pre- and post- intervention. One of the

six studies found significantly positive (medium-to-large) effects on PA (d = 0.42, 0.96; p < 0.01) and one found a significantly positive effect on SB yet this was small (d = 0.27; p < 0.05).

Discussion: Effectiveness of the classroom-based PA and SB interventions varied. This is likely due to the heterogeneity of the interventions (e.g., peer leaders, web-based), participants (e.g., sample size, ethnicity), and some studies lacked a control group or did not provide baseline data. The largest effect size for PA occurred in pupils who were least motivated to be active following a resource communication intervention yet when all pupils were analysed together, this effect decreased to small (d = 0.30), indicating that least active pupils might benefit more from classroom-based interventions.

Implications: Overall, there is insufficient research evidence to determine the most effective classroom-based interventions to increase PA and reduce SB in secondary school pupils.

62. Exercise for breast cancer survivors in Slovenia

Authors: Hadzic V, Gnezda K, Karpiljuk D, Humar M, But-Hadzic J.

Background: Studies have demonstrated many benefits of regular physical activity in primary and secondary prevention of cancer. As breast cancer treatment has significantly improved the survival rate of patients, subsequent studies have shown that regular exercise has an important role in improving the quality of life (QOL) and well-being of the patients with breast cancer. The main aim of our pilot study was to create and evaluate a structured exercise program that can help improve the QOL and physical ability of breast cancer survivors and can easily be delivered at the local community level.

Methods: Thirteen breast cancer survivors from Nova Gorica region volunteered to participate in the study that was supported by the regional unit of National institute of public health. Study end-points were shoulder range of motion in abduction and flexion, functional reach test, number of chair raises, push-ups and curl-ups and VO₂max values calculated from a 2 km walk test and quality of life (QoL) measured by standardized report form of the European Organization for Research and Treatment of Cancer (EORTC QLQ C30+BR23) before and after 12 weeks of exercise. Exercise intervention included 30 exercise units of which 17 (57%) were indoor and 13 (43%) were outdoor activities using local community outdoor facilities.

Results: The compliance of patients was 77% without any dropouts. All exercise

units were supervised by a kinesiologist. The results have shown that patients are presenting with the limited shoulder abduction that is strongly correlated with the QLQ-C30 and QLQ-BR29 subscales. There was a significant decrease in the body mass (-2.08%, $p=0.011$) and the body fat percentage (-6.55%, $p<0.001$) and a significant increase in the shoulder abduction (5.76%, $p=0.028$), number of chair raises (21.05%, $p<0.001$) and push-ups (48.32%, $p=0.011$) and VO2max values (17.67%, $p=0.002$).

Discussion: The results have shown that well structured exercise program delivered at the local community level under supervision has a strong positive impact on the QOL and physical performance of the breast cancer survivors. The improvements of important health parameters (body mass, percentage body fat and VO2max) are likely to be correlated with better overall survival of breast cancer survivors.

Implications: Currently we are trying to implement this exercise program in other regions of Slovenia (Ljubljana and Maribor) in co-operation with regional public health units and Europa Donna organization in order to provide breast cancer survivors free of charge but supervised exercise program from which they may benefit in terms of well-being and overall survival.

63. School environment vs home environment: Comparison of selected parameters of children physical activity

Authors: Herbert, J.

Background: Children and teenagers take many different forms of physical activity, for example participation in games and plays or practice sports. However, their daily habits have changed due to new models of leisure (television, internet, computer games) this change coincided with an increasing number of overweight and obesity among children. The aim of the study was to compare physical activity during day in a group of preschool children (5–6 years old) and pupils from first grade (7–8 years) and to determine their relationships in school environment and home using accelerometer WGT3X-BT.

Results: Days of the week were divided into time spent at school and at home. The study took place in May and June 2016. Preliminary results show large number of steps made by children in kindergarten (10000 – average active) and much less in school (average of 7800 – average active).

Discussion and implications: All kinds of movement forms made in schools and kindergartens increase effectively the level of physical activity in the group of pupils and improve their physical

fitness, but more active children are from preschool.

64. A qualitative exploration of physical activity and sedentary time barriers and opportunities among older adults

Authors: Sanders GJ, Owen MB, Kaehne A, Roe BH, Fairclough SJ.

Background: The physical and psychological health benefits of physical activity (PA) are widely acknowledged. Despite the recognized evidence base for the benefits of regular PA, the rate of PA participation among older adults is among the lowest of all age groups. This study explored older adults' (over 65) current knowledge, attitudes and beliefs towards PA, and the perceived benefits and provision of, and barriers to PA services across Sefton Borough.

Methods: Participants were 26 older adults (6 male), aged 65–90 (M=76.38, SD=8.06), from three geographical areas of Sefton Borough, North West England. The PRECEDE component of the PRECEDE-PROCEED model was used to inform semi-structured focus groups. A total of five focus groups were arranged, audio recorded and data transcribed. Data were thematically analysed and represented through pen profiles. Participants' postcodes were used to generate Index of Multiple Deprivation (IMD) scores as a measure of socioeconomic status (SES). Median IMD deciles were 2 (high), 4.5 (average) and 9 (low) for the three geographical areas.

Results: Resultant themes varied between the three areas. According to the PRECEDE component of the PRECEDE-PROCEED model the themes reflected predisposing factors (motivation for PA (high $n=28$, average $n=20$, low $n=32$), healthy lifestyle (high $n=8$, average $n=5$, low $n=21$), age (high $n=0$, average $n=7$, low $n=21$), and opportunities and awareness (high $n=9$, average $n=5$, low $n=9$)); enabling factors (transport (high $n=0$, average $n=17$, low $n=23$), cost (high $n=3$, average $n=14$, low $n=9$), time of day (high $n=2$, average $n=15$, low $n=8$), location (high $n=0$, average $n=16$, low $n=8$), session components (high $n=1$, average $n=8$, low $n=3$) and facilities (high $n=1$, average $n=0$, low $n=4$)); and reinforcing factors (influences of peers (high $n=7$, average $n=8$, low $n=10$) and family (high $n=0$, average $n=0$, low $n=5$) to PA engagement).

Discussion: This study finds that barriers plus enablers to PA vary dependent upon SES. Results also showed that older adults enjoy engaging in PA sessions which are varied, structured, allow for progression of skills and promote independence.

Implications: This study illustrates that SES affects the barriers plus

enablers of older adults with regard to PA engagement. Such findings can provide researchers, psychologists and health care professionals with a resource to assist in implementing successful intervention strategies. Such data can provide a formative first step to developing and implementing successful PA interventions within this population.

65. Resolve to Walk: A study of New Year's resolutions to walk more

Authors: Kennedy KL.

Background: The New Year is when many people reflect on their health and resolve to improve it, however there is little focus on New Year's resolutions in health behaviour change research. 51% of resolutions are exercise-related: an important opportunity for exploring self-initiated physical activity behaviour change. With huge numbers making resolutions to become more physically active each January, more research is needed to understand these attempts.

Methods: I recruited 55 people from mid-December 2015–end of January 2016, mostly from local workplaces. Participants were recruited if they wished to make a New Year's resolution to walk more in 2016. Participants were visited for baseline measures (e.g. physical measures, physical activity levels), asked for their New Year's resolution and downloaded a walking app on their mobile phones to record their walking. Participants expressed their resolutions in a specific, measurable format eg. 'I resolve to walk 15 minutes each weekday lunchtime' or 'I resolve to walk for a total of 2 hours each week'. 6 months later, 46 participants completed a questionnaire including current physical activity levels and self-rated resolution success. Participants who wished to meet gave follow-up physical measures and were interviewed about their experiences of setting and following resolutions.

Results: At 6 months, 7% of participants who started said they 'totally failed' in their resolution, 15% 'mostly failed', 46% 'mostly succeeded' and 9% 'totally succeeded'. Therefore, 54% felt they had succeeded in their resolution after 6 months, compared to similar research on all types of New Year's resolutions which found 40–46% of resolvers succeeded over 6 months. However, only 9% of people correctly or partly correctly (22%) remembered what their resolution had originally been, suggesting a hazy (possibly over-optimistic) concept of 'success'.

Discussion: Despite people's relative success and other studies showing that resolutions can be surprisingly effective in self-initiated behaviour change, qualitative interviews with participants revealed considerable ambivalence

towards the whole concept of New Year's resolutions, even when the participant had considered themselves successful in their resolution. This perhaps reflects wider cultural attitudes of resolutions being flippantly made and easily discarded.

Implications: Maybe it is time for society (and researchers) to recognise that people are more likely to take action to change their behaviour at certain times of year, and to treat New Year's resolutions more seriously. By ignoring that people's self-initiated behaviour change occurs at certain times, we miss opportunities to support such change.

66. Exercise day of your dreams

Authors: Livson M, Seppänen E, Paataja T & Nikulainen P.

Background: In Finland, there is a growing interest for rapid experiments and people's own initiatives supported by cross-sectoral collaboration. Restaurant Day, when people open their own restaurants, is a good example of that and has given a lot of inspiration for another recent innovation called 'Exercise Day of Your Dreams'. It took place May 10, 2016 representing also a new way of organizing the WHO 'Move for Health Day' as a nationwide event.

Methods: The Day was a pop-up day when everyone was welcome to organise their own exercise events: from open trainings to tournaments, from gym open days to dodgeball, culture walks and bike rides. Web pages including a map application were established (www.unelmienliikuntapaiva.fi) for informing about the Day, registering both public and closed events and finding events to participate. One Life projects and the Exerciser's path network coordinated by Valo were behind the event, and dozens of health and sport organizations as well as municipalities spread the word using their networks. Social media played an important role before and during the Day, and the subject got a lot of attention in print, television and radio.

Results: 2000 events were registered, and presumably activities took place without registering too. The size of the events varied from a few to hundreds of participants. In addition to individual people e.g. schools, kindergartens, workplaces, gyms, sport and other clubs and associations were active. The preliminary feedback from the event organizers suggest that about 60 % of the events were new actions and there were activities for all age groups.

Discussion: The first Exercise Day Of Your Dreams proved the power of networks and shared ownership as well as people's own initiatives. It also strengthened the view that physical activity, health and wellbeing related messages are well received by individuals and the media if they

are communicated through joy, good feelings and inclusion.

Implications: The Day was the start of a bigger dream. It continues in September as Exercise Month of Your Dreams and culminates in Exercise Year of Your Dreams in 2017 when Finland celebrates 100 years of independence through the theme of 'Together'. It is all about getting people involved locally, moving fast from ideas into action, and disseminating invented approaches. In this, municipalities and third sector organizations are important enablers for creating the context and collaborative networks.

67. Comparison of self-report and objectively measured sedentary behaviour in university students

Authors: Flynn J, Murphy MH

Background: In view of the independent, negative health outcomes associated with sedentary behaviour (SB) and particular concerns regarding the high levels of sedentary time in third level students, the accurate measurement of SB using valid and reliable measurement tools is important in progressing understanding of SB in such high-risk groups. However, the validation of self-report measures of SB in the university student population is limited. The purpose of this study was to assess the validity of two self-report measures of SB among university students, using activPAL as the reference method.

Methods: University students ($n = 56$, age = 20–48 years; 24.6 \pm 5.9 years, 52% female) recruited from Ulster University wore an activPAL device and recorded their waking hours and monitor removal times in an activity log over a 7-day period between May and July 2016 before completing (1) the three sitting items from the last 7d International Physical Activity Questionnaire (IPAQ) long-form self-administered questionnaire, and (2) the domain specific Sedentary Behaviour Questionnaire (SBQ) consisting of time spent in 9 sitting behaviours. Intraclass correlation coefficients and Bland Altman plots were used to confirm the correlation and agreement of the two self-report instruments with activPAL sedentary time.

Results: Participants were sedentary (activPAL-determined) for 9.4 hours (SD: 1.7) on average per day. The correlation between SBQ and activPAL total sedentary time (hours/week) was low (ICC=0.22, 95% CI -0.03, 0.45); and similarly low between IPAQ and activPAL total sedentary time (hours/week) (ICC=0.34, 95% CI -0.01, 0.60). Bland-Altman analysis indicated mean biases of 14.1 hours/week (95% LoA: -25.0 to 53.2 h) and 14.4 hours/week (95% LoA: -19.0 to 47.8 h) for the SBQ and IPAQ respectively.

Discussion: Both self-report questionnaires provided poor and inaccurate estimates of SB in third level students, underestimating sedentary time in this population by large amounts and demonstrating limited criterion validity.

Implications: Neither questionnaire should be used as an individual sedentary time measure in university students, rather the use of device-based objective measures of SB are needed in future studies.

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