# Scottish Physical Activity Research Connections 2017

**23 November, South Hall, University of Edinburgh**

# Oral and Poster Abstracts



THE UNIVERSITY of EDINBURGH
Physical Activity for Health
Research Centre (PAHRC)

The Scottish Government
Riaghaltas na h-Alba

## Oral Abstracts

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1. **Stand Up for Health: the Barriers and Facilitators to Reducing Sedentary Behaviour in Call Centres**

Presenting Author: **Dr Ruth Jepson** (Scottish Collaboration for Public Health Research and Policy, University of Edinburgh)

Authors: Ruth Jepson, Laura Tirman, Graham Baker, Richard Parker, Christina Katan

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active

Stand Up for Health is a theory based intervention designed to reduce sedentary behaviour in call centres, thus enabling the inactive to be more active. One of the components of the intervention is working with call centres to develop a package of activities, which are acceptable and feasible for their context, and can lead to sustainable change.

Abstract:

Aim: Sedentary behaviour (SB) can lead to a range of short and long-term health issues, such as musculoskeletal discomfort, chronic disease, and poor mental wellbeing. Call centres in particular have been identified as workplaces that foster SB.

The aim of this research was to explore perceived barriers and facilitators to implementing a sedentary behaviour intervention (Stand Up for Health) in call centres.

Methods: Focus groups were conducted with 36 call centre staff to develop a theory-based context-specific intervention for a call centre in Leith, Edinburgh. The researchers also held a workshop that call centre staff could attend to further discuss and prioritise intervention activities. Thematic analysis was used to analyse the qualitative data. Using data from the focus groups, this paper reports on perceived barriers and facilitators to implementing Stand Up for Health in call centres.

Results: The focus groups revealed several perceived barriers and facilitators to implementing Stand Up for Health. These were grouped into 3 main themes: nature of the work, perception of health, and importance of relationships. The main barriers perceived to intervention feasibility were caused by the nature of call centre work and office ergonomics, while perceived facilitators to intervention feasibility were linked to more social aspects of the workplace such as having support from management and the desire to create/maintain positive relationships with other staff.

Conclusion: While the nature of call centre work may pose barriers to interventions aimed at reducing SB, there were also several key facilitators within the call centre that were identified from the focus groups. Overall, interventions aimed at reducing SB in call centres were perceived to be feasible and acceptable by participants if they are developed to fit in the specific context where they are being implemented.

2. **I'm not sitting staring into space, so I'm doing something, you know: A qualitative exploration of sedentary behaviour in older adults' daily lives**

Presenting Author: **Dr Cindy M Gray** (University of Glasgow, Institute of Health and Wellbeing)

Authors: Cindy M Gray, Victoria J Palmer, Claire Fitzsimons, Nanette Mutrie, Sally Wyke, Ian J Deary, Geoff Der, Sebastien FM Chastin, Dawn A Skelton, on behalf of the Seniors USP Team

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life

This study contributes to the Active Scotland Outcomes Framework as it increases understandings of the role and value of sedentary (and non-sedentary) behaviours in older people's lives to inform the development of future interventions to support older people to sit less and be more active.

Abstract:

Aim: Older adults are one of the most sedentary age groups in society, spending more than 65% of their waking day sitting. This places them at increased risk of all-cause mortality, metabolic syndrome, and obesity. Reducing or breaking up periods of prolonged sitting has potential to improve older adults' health. Evidence is currently lacking on how to intervene effectively to help older adults do this. We aimed to inform the development of sedentary behaviour interventions by exploring: i) the role and value of sedentary (and non-sedentary) activities in the daily lives of older men and women, and; ii) differences between those who sat more and less than average.

Methods: 44 semi-structured interviews were conducted with men and women of different ages (Mid-60s/Late-70s/Mid-80s), socioeconomic status (High/Low) and objectively-measured sedentary behaviour (Higher/Lower). Thematic analysis drew on the ecological model of sedentary behaviour and social practice theory.

Results: Regardless of level of sedentary behaviour, older adults engaged in a wide range of sitting activities across the ecological model domains. Home-based leisure sitting (e.g., TV, reading, puzzles) was most commonly-reported, but many non-sitting activities, including 'pottering about' doing household chores, also took place at home. Our social practice analysis revealed multiple, and often highly inter-related, influences on older adults' sedentary behaviour. Some material elements, other people and access to leisure facilities and resources were associated with lower levels of sedentary behaviour. The distinction between being busy/not busy was more salient to most older adults than sitting/not sitting, and informed symbolic meanings associated with high-value purposeful (social, cognitively active) or restorative sitting, and with low-value passive sitting. Socially-shaped routines and declining body function contributed to the formation of temporal patterns, often including

sitting for long periods in the afternoon and evening, which did not vary much from day-to-day.

Conclusions: Sitting is associated with cognitive, social or restorative benefits, is embedded within older adults' daily routines, and is therefore difficult to change. Useful strategies may include supporting older adults to engage more with other people and local facilities outside the home, and break up long periods of passive sitting at home.

3. **Gamification of physical activity as a method of addressing health and social inequalities – Findings from 18 UK interventions.**

Presenting Author: **Marc Harris** (Intelligent Health, Research and Evaluation)

Authors: Marc Harris, Matthew McKee

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active

The current abstract offers insight into a) how novel, community-wide approaches may offer a promising approach for tackling population levels of physical inactivity, and b) how large-scale interventions can be successfully implemented. In 2016, Beat the Street engaged over 300,000 people from Scotland, Wales, Northern Ireland and Mainland Europe providing insight into how such approaches can be implemented cross-culturally.

Abstract:

Aim: People who are physically active have a 20-30% reduced risk of premature death1, however a recent review concluded insufficient evidence for current population physical activity (PA) interventions, citing scalability as a major contributory factor2. Beat the Street aims to address this key implementation issue by turning a town/city into a game where players register their walking and cycling journeys by tapping a smartcard on RFID readers called 'Beat Boxes' placed on lampposts around the town or city. Players monitor their progress via a website where they can see their own and their team's progress, and the overall city/town target.

Methods: During registration, participants complete a questionnaire which includes a validated PA measure3. Follow up surveys take place at the end of the game and up to 8 months later. Pre-intervention/post-intervention comparisons are completed based on survey responses and in-depth analysis is completed based on data from each player's activity by tapping their smartcard on beat boxes.

Results: In 2016, 18 community-wide interventions were delivered throughout the UK. In total, 300,053 people played the game, 64,512 players registered online and 6,767 players completed a follow-up survey immediately following the game period. Pre-test/post-test analyses revealed a 9% increase in the proportion of people meeting the CMO PA guidelines and a 5% decrease in the proportion of people reporting being inactive ($p < .05$). In North Lanarkshire alone, 23,736 players travelled 78,354 miles over the 7-week game period. Over 16% of registered players had a long-term condition, and 62% were living in the four highest deciles of multiple deprivation. Findings from North Larkshire indicated a 9% decrease in levels of inactivity following the intervention stage ($p < .05$).

Conclusions: The findings from 18 Beat the Street interventions delivered across the UK in 2016 suggests that gamification is a promising approach to changing population levels of PA. Findings from Beat the Street in North Lanarkshire indicates that gamification may also be a successful approach to addressing health and social inequalities by over-representing residents living in areas of highest deprivation.

4. **Physical activity barriers and facilitators among mothers of autistic children - a qualitative study using the theoretical domains framework.**

Presenting Author: **Shubhanna Hussain-Ahmed** (University of Stirling)

Authors: Shubhanna Hussain-Ahmed, Dr Rachel Crockett and Dr Sinead Currie (University of Stirling)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active

Mothers of autistic children are less likely to engage in regular physical activity due to their caring role. The aim of this study was to understand the specific barriers that this population of carers experience to being active. This study, therefore, contributes to the Active Scotland outcome of encouraging and enabling an inactive population (carers) to be more active.

Abstract:

Aim: Mothers of autistic children can experience high levels of caregiver stress due to the demanding and often lifelong nature of their caring role. Consequently, they are less likely to engage in health protective behaviours, such as physical activity (PA). Currently, little is known about the determinants of PA in this population. In order to tailor future PA interventions for mothers of autistic children, it is important to understand what encourages or enables this population of carers to engage in regular PA. Therefore, the aim of this study was to use the Theoretical Domains Framework (TDF) to provide a theory based understanding of the specific barriers and facilitators to PA for mothers of autistic children.

Methods: Semi-structured interviews based on the TDF were conducted with 12 mothers of autistic children. Thematic analysis using a Framework Approach was used to identify key themes relating to barriers and facilitators to PA; the emerging themes were then coded to relevant theoretical domains.

Results: Ten out of the fourteen possible theoretical domains were found to influence the mothers' PA behaviour. These encompassed a range of psychological, social and physical factors including: capability (knowledge); opportunity (social influences, and environmental context and resources); and motivation (social role & identity, goals, emotion, reinforcement, behavioural regulation, and beliefs about capabilities and consequences). Within these domains, specific barriers to PA included: lack of awareness and knowledge of PA guidelines; structural barriers to respite/fitness opportunities; competing priorities of the mothers; and experiencing anxiety and low mood. Key facilitators to PA included: perceived positive outcome of PA; social influences; resilience; daily routines; and access to green spaces.

Conclusion: The theoretical domains framework identified several key determinants of physical activity behaviour for mothers of autistic children. For this population of carers to become more active, future interventions should target a broad range of capability,

opportunity and motivational factors. These findings also have implications for health and social care policy and practice; without access to suitable respite opportunities and regular breaks from the caring role, mothers of autistic children are unlikely to sustain their activity levels in the long term.

## 5. Move More Aberdeen - Integrating physical activity into the cancer care pathway

Presenting Author: **Josefine Björkqvist** (University of Aberdeen)

Authors: Josefine Björkqvist, Jenny McCann (Sport Aberdeen) and Joanne Adamson (Macmillan Cancer Support).

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life

Move More Aberdeen demonstrates evidence for encouraging and enabling the inactive to be more active and represents a feasible model for enabling the active to stay active throughout life. Move More Aberdeen also demonstrates a successful intervention targeting a specific group, namely people living with cancer, an area where little research has been done previously.

Abstract:

Background: Physical activity is safe and clinically effective for people living with cancer (PLWC), both during and after treatment. It has been shown to improve physical functioning and quality of life, decrease fatigue, enhance long-term survival and reduce recurrence rates. Despite this evidence physical activity is still not prescribed to PLWC as part of routine cancer care.

Aim: Macmillan Cancer Support and Sport Aberdeen entered a partnership to deliver the Move More Aberdeen (MMA) programme to support PLWC in Aberdeen into a lifestyle of long-term, independent physical activity for health and with a further aim to integrate this service into standard NHS Grampian cancer care.

Methods: A referral pathway for MMA was established in partnership with NHS Grampian. MMA delivery started in January 2015 with 12-week community-based physical activity groups of moderate-intensity (chair-based exercise, walking and gardening) and high-intensity (circuits), delivered using a person-centred motivational interviewing approach that meets the needs of PLWC. The cancer and physical activity standard evaluation framework (CaPASEF) was used to measure physical activity levels, self-assessment of health, fatigue, mobility and self-efficacy at baseline, 3, 6 and 12 months. PLWC who completed the MMA programme 12 months ago (n=62) were interviewed in January 2017 to assess adherence to physical activity.

Results: MMA has generated 320 referrals to date, 65% from NHS health professionals and 35% from self-referrals. Referrals are highest for prostate (25%), breast (23%), bowel (7%) and lung (5%) cancer. 63% of PLWC referred to MMA have attended one or more MMA activities. The service evaluation in January 2017 showed that 87% of participants (n=54) had increased or maintained their activity levels 12 months after completing MMA, demonstrating a long-term impact of the programme on physical activity for health. The

MMA referral pathway has been replicated across other physical activity programmes for PLWC in Scotland.

Conclusion: MMA offers a model of supported self-management for PLWC in line with the Scottish Government's 2020 Vision. The programme has improved access and adherence to physical activity for PLWC and demonstrates a feasible model for integrating physical activity into standard cancer care.

6. **The effect of resistance training interventions on weight status in youth: a meta-analysis.**

Presenting Author: **Helen Collins** (University of Edinburgh/University of Dundee)

Authors: Helen Collins, Dr Samantha Fawkner, Dr Josephine N Booth and Dr Audrey Duncan

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life
- We develop physical confidence and competence from the earliest age
- We support well-being and resilience in communities through physical activity and sport

With obesity levels rising, this meta-analysis explores resistance training as an intervention that may have a positive effect on weight status in youths. By encouraging youth to take part in such interventions, this has a direct impact on their physical activity levels and provides a landscape to develop physical confidence and competence to enforce positive physical activity behaviours into adulthood.

Abstract:

Aim: There has been a rise in research into obesity prevention and treatment programmes in youth, including the effectiveness of physical activity (PA) interventions (Benson et al., 2008). While the PA guidelines (WHO, 2011) include 'activity to strengthen muscle and bone', with a potential positive impact of resistance training on weight status, this has not been a focus of the PA intervention research to date. Therefore, the purpose of this meta-analysis was to examine the effect of resistance training interventions on weight status in youth.

Methods: Titles of potentially relevant articles were retrieved using a comprehensive search strategy, and then titles and abstracts were screened. Identified relevant studies from published literature were included where they met the inclusion criteria. Data was extracted and the quality and risk of bias of the included studies was assessed. Mean, SD and sample size data were extracted and random effects meta-analyses (Hedges' g with a 95% CI) were performed.

Results/Findings: For the meta-analysis there were 36 complete sets of data from 24 controlled trials (CTs) and 12 uncontrolled trials (UCTs), which explored 10 outcomes related to weight status. For the CTs, the effect sizes for each outcome ranged from 0.024 to 0.274, indicating a very small intervention effect. However, significant, small effect sizes were identified for body fat% (Hedges' g =0.215, 95% CI 0.059 to 0.371, P= 0.007) and skinfolds (Hedges' g = 0.274, 95% CI 0.066 to 0.483, P = 0.01). For the UCTs, effect sizes for each outcome ranged from -0.111 to 0.460, indicating a very small to medium but non-significant effect. The findings are similar to Schranz et al., (2014) who found very small to small improvements in body composition following resistance training (SMD range 0.05-0.36)

although their work included multi-component interventions and only overweight participants.

Conclusion: The results of this meta-analysis suggest that a resistance training intervention alone may have an effect on weight status in youth. Overall, more quality research should be undertaken to investigate the impact on resistance training in youth as it could have a role to play in the treatment and prevention of obesity.

# Poster Abstracts

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1. **Active journeys and supporting people to become more active and to thrive - learning and insight from the Legacy 2014 Physical Activity Fund**

Authors**: Alex Johnston** (presenting) (Spirit of 2012 Trust), Robert Rogerson, Sue Sadler, Marilyn Lennon, David Rowe, Alison Kirk, Sir Harry Burns, Mark Dunlop (University of Strathclyde), Martha Lester-Cribb (Evaluation Support Scotland)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life
- We support well-being and resilience in communities through physical activity and sport

The Legacy 2014 Physical Activity Fund was set up to address Active Scotland outcomes 1&2 and get people to become, and stay active and learn about what works, and doesn't work in doing so. We also recognised the potential to improve wellbeing as we better understood peoples motivations for becoming active.

Abstract:

The evaluation of the Legacy 2014 Physical Activity fund examines the evidence of the impact of the programme in meeting its aims: to increase levels of physical activity amongst inactive groups; to provide robust evidence to support the scaling up of project interventions; and to take forward learning within the projects to help shape future action and policy in this area.

The University of Strathclyde was appointed to conduct both process and formative evaluations of the Fund with the support of Evaluation Support Scotland to provide learning and support for local project process evaluations. The Fund evaluation goals focus on identifying what works and the elements that impact on success. The Fund evaluation used before and after surveys deployed by participating projects, supplemented by meetings at individual project sites and at the project teams together collectively. In addition, quarterly meetings, end of grant reports and individual project evaluation reports, inform the Fund evaluation.

The Fund supported over 8,000 people to become more active and increased the number of days active per person.

32% reached the recommend level of physical activity set by the Scottish Government by the end of the Fund with a further 56% undertaking some of moderate activity.

Of the 22% of Fund participants classified as inactive, 63% increased their level of activity during the life of the Fund with 17% moving above the recommended level of physical activity.

The evidence from the Fund suggests that within public policy a stronger focus needs to be given on the progression towards recommended levels, recognising the positive impact if

undertaking some activity and being active as a journey. Small steps are important and should be acknowledge as such, but are only significant is followed by another small step.

Through the Fund we have developed a toolkit for practitioners called Thrive. This is evidence based and promotes a person centred small steps approach so supporting people towards becoming active.

## 2. Health impacts of Pedal for Scotland, the mass participation cycling event

Authors: **Jennifer Fingland** (presenting), William Wright (Cycling Scotland)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the active to stay active throughout life
- We support well-being and resilience in communities through physical activity and sport
- We improve opportunities to participate, progress and achieve in sport

Clearly demonstrates the positive health impacts associated with participation in a sport event, both for the event, and longer-term after the event. Pedal for Scotland encourages physical activity in all age groups, and promotes wellbeing and participation throughout communities. The event provides an annual opportunity to participate and progress in sport, and develops confidence and competence among participants.

Abstract:

Aim: Pedal for Scotland is the largest mass participation cycling event and an annual series of bike rides across Scotland. This paper analyses the health impacts. Although essentially a one-off event, it is possible to measure the longer-term health impacts, through encouraging participants in the event to cycle more frequently, as a result of having a positive ride experience, and through the increase in cycling (frequency and/or duration) associated with preparing for the events. Physical inactivity is a major problem in Scotland. It is the cause of 2,500 deaths each year, at a cost of around £91 million to the NHS. Compared to other modes of physical activity, cycling has the significant advantage of being an activity that can be easily integrated into everyday life.

Methods: Using the WHO HEAT and Sport England's MOVES tools.

Findings: An evaluation of the event found a significant increase in cycling frequency, with participants reporting, on average, undertaking 11 more rides per year. If participants continued to ride for 30 minutes twice per week, this was associated with reduced risk of diabetes, coronary heart disease, and stroke, resulting in 276 additional Quality Adjusted Life Years (QALYS). At a cost of £30,000 per QALY, this leads to a return on investment of £12.97 for every £1 invested. If rides were for 60 minutes, this rises to £13.90. The HEAT Tool estimated the value of the health impact as £1m-£2m.

Conclusions: These findings are based on a number of assumptions notably that participants will continue to cycle at the same level as reported for training for the event. However, the figures may also be an underestimate as they do not account for the health benefits to any children taking part nor do they account for other benefits such as morbidity, mental wellbeing and quality of life.

3. **Is 20 plenty for health? Evaluation of the 20mph speed limit networks in Edinburgh and Belfast on a range of public health outcomes**

Authors: **Kieran Turner** (University of Edinburgh)(Presenting), Ruth Jepson (University of Edinburgh), Graham Baker (University of Edinburgh), Andy Cope (Sustrans), Neil Craig (NHS Health Scotland), Charlie Foster (University of Bristol), Ruth Hunter (Queens University Belfast), Frank Kee (Queens University Belfast), Michael P Kelly (University of Cambridge), Paul Kelly (University of Edinburgh), Karen Milton (University of East Anglia), Glenna Nightingale (University of Edinburgh), Andrew James Williams (University of Exeter), James Woodcock (University of Cambridge)

Active Scotland Outcomes which this abstract contributes to:

- We improve our active infrastructure – people and places

Transport infrastructure is an important aspect of the built environment. It can enhance and hinder opportunities for physical activity. Evaluating this citywide 20mph speed limit in Edinburgh will help in determining whether such schemes impact on levels of walking and cycling, and whether such a policy should be promoted as a means to increasing physical activity levels in Scotland.

Abstract:

Aim: Twenty mile per hour (20mph) speed restrictions are a policy option for local authorities wanting to reduce traffic speeds – an important determinant of health. These restrictions can be introduced using 20mph zones (utilising physical traffic calming measures) or 20mph speed limits (relying on signage and markings). Little research is available on the health impacts of 20mph speed limits. Edinburgh and Belfast are introducing 20mph speed limits. Edinburgh's scheme will cover 80% of streets when complete in January 2018. Belfast's scheme is limited to the city-centre and was completed in February 2016. The National Institute for Health Research is funding this evaluation of the public health impact of these two schemes between 2017-2020, led by the Scottish Collaboration for Public Health Research and Policy at The University of Edinburgh (Public Health Programme 15/82/12).

Methods: This evaluation will take a theory-driven approach, utilising realist principles, to assess the impact of the intervention, and the influence of context. The evaluation will take a quasi-experimental mixed methods design, comprising four work packages (WPs): WP1 aims to quantitatively assess the impact of 20mph speed limits on a range of health-related outcomes; traffic speeds and volumes, walking and cycling levels, casualty rates and severity, and public perceptions and behaviours. It will utilise routinely collected, and primary survey data. WP2 aims to first, provide a detailed understanding of the implementation of the 20mph schemes in Edinburgh and Belfast, and second, investigate public perceptions and behaviour change regarding the scheme. It will utilise semi-structured interviews and focus groups. WP3 aims to explore the policy factors that led to implementation, as well as the transferability of such schemes to other UK cities/areas. It will consist of a policy analysis, interviews and workshops. WP4 will seek to carry out an

economic evaluation of the two schemes, utilising outcome data collected by WP1, and obtained intervention costs.

Results/Findings: This evaluation will add to a knowledge base in its infancy, helping to determine the effectiveness of 20mph speed limits in improving health.

Conclusion: The evidence will be useful in guiding policymakers looking at introducing similar schemes in future.

**4. Supporting well-being and resilience through the creation of volunteer roles in multimorbidity rehabilitation in Ayrshire**

Authors: **Jane Holt** (Presenting), Debbie Provan, Jenny Hazley (NHS Ayrshire and Arran)

Active Scotland Outcomes which this abstract contributes to:

- We improve our active infrastructure – people and places
- We support well-being and resilience in communities through physical activity and sport

Twenty Activity Friends (a volunteer role) have been recruited and trained to support Ayrshire's Healthy and Active Rehabilitation Programme (HARP). The Activity Friends play a vital role in HARP, supporting the programme's participants to become more active, more often. The role also encourages the Friends to remain active after they themselves complete HARP and it promotes confidence.

Abstract:

Background: HARP is a new model of rehabilitation for people living with more than one condition (multimorbidity) in Ayrshire. HARP targets deprived and rural communities, providing rehabilitation to people with conditions that typically place high demands upon unscheduled care or have a strong evidence base for rehabilitation (cardiac or pulmonary disease, cancer, stroke, diabetes and falls).

Aim: Recognising the role of peer mentors in enhancing recovery, the HARP team set out to develop the Activity Friend role. The aim was to scope, develop and implement a volunteer role that would provide opportunities which were mutually beneficial for past participants of HARP (the Activity Friends) and new HARP participants.

Methods: A 7-step process was implemented:
1. Develop role descriptor in line with person-centred care principles
2. Benchmark against other local/national services utilising volunteers
3. Test 'Activity Friend' role in three HARP classes
4. Recruit volunteers
5. Deliver volunteer training
6. Complete full recruitment process
7. Introduce role/volunteers across HARP

Results: 20 Activity Friends are now in place, supporting multimorbidity rehabilitation across Ayrshire. Feedback is entirely positive from the volunteers and HARP participants:
"It gets me up, despite the weather"
"Being a volunteer has reinforced my efforts and thinking [regarding an active lifestyle]"
"My wife says I'm now less crabbit"
"From the first week there was a wee lady who came out and greeted me and took me in… she made an effort… 'cause she could see that I was a bit worried, and she was lovely"

Conclusion: Implementing Activity Friends has been mutually beneficial for volunteers and programme participants. For the volunteers the role has supported ongoing health and well-being by encouraging sustained activity beyond completion of HARP. Taking on a new role, positively impacting upon others and being part of a supportive team has also increased confidence. For those who are new to HARP the Activity Friends provide peer support and a degree of empathy not always achieved by health professionals thereby creating a positive and supportive environment. The volunteers also personify what can be achieved in terms of fitness and holistic rehabilitation which provides further motivation for participants.

5. **National Physical Activity Pathway Improvement Programme: A Quality Improvement Approach to Implementation within Healthcare Settings in Scotland**

Author: **Flora Jackson** (presenting) (NHS Health Scotland, Health Equity)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We improve our active infrastructure – people and places

Outcome 1 - The NPAP focusses on physical activity brief advice/interventions for those identified by health professionals as not meeting the CMO PA Guidelines.
Outcome 4 - Health professionals require PA and HBC knowledge, skills and competencies, therefore workforce development also features, including CPD opportunities for existing health and social care staff as well as influencing undergraduate curricula content.

Abstract:

Introduction: The publication of the Health and Social Care Delivery Plan (Scottish Government, 2016), provides a blueprint for NHS Scotland. The delivery plan details actions to enhance health and social care services, enabling people to live longer, healthier lives at home or in a homely setting. In this context, the delivery plan states “by 2019 the National Physical Activity Pathway (NPAP) will be embedded in all appropriate clinical settings across the health care system”.

Aims: Drawing on learning from the NHS Scotland Physical Activity Pathway Feasibility Study (NHS Health Scotland, 2014) and similar health behaviour change interventions, this programme draws on quality improvement methodologies to:
• Create national and local infrastructure that will enable delivery
• Enable health boards to test implementation within a range of settings
• Upscale implementation, spreading delivery across clinical settings

Methodology: National level support and governance: Reporting to a National Strategic Group chaired by the Minister for Public Health and Sport, the Health and Social Care Physical Activity Delivery Group provides a governance role to the NPAP Working Group convened to lead the development and delivery of the improvement programme.

Pathway infrastructure development: Adopting an assets based approach the NPAP Working Group, will inform the development of solutions, reflecting local needs and circumstances, maximising existing resources to create the following infrastructure:
• Support materials (practitioners)
• e-data systems (recording/referral)
• Workforce development

Results: These actions build on prior learning and are applied in practice via three delivery models including the use of NHS Activators as local clinical implementation leads, Allied Health Professionals (AHP) and condition specific approaches. Up scaling and spread can be

enhanced via learning exchange opportunities through which good practice can be shared and improvements to delivery spread across Scotland.

Conclusion: Quality improvement methodologies such as the improvement journey allow the NPAP to be implemented in the context of long term transformational change within the NHS. However the pace and scale at which this happens is reflective of current resources. Therefore, while progress can be made, it is unlikely that the NPAP will be implemented across all clinical settings by 2019.

6. **Care about Physical Activity (CAPA) supports social care professionals to use an improvement approach to promote movement with older people experiencing care**

Authors: **Louise Kelly** (presenting) (Care About Physical Activity, Care Inspectorate), Chelsea Bell, Paula Bisset, Laura Haggarty, Margaret Hughes, Lee Kelso, Bob Laventure, Edith Macintosh, Joanne McGlanaghy, Shona Omand-Smith, Sarah Wilkie, Sheena Williamson, UKActive

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life

The Framework states that it doesn't matter how we get active – it just matters that we do. CAPA contributes by harnessing the collective efforts of older people, care professionals, communities and many partners. Together they support older people (whatever their circumstances) to have more opportunities to move and move more often, maintaining independence and quality of life.

Abstract:

Aim: To demonstrate how providing care professionals with the knowledge/tools using an improvement approach impacts positively on their self-efficacy to promote movement, and subsequently increase the activity levels of older people in care.

Method: As part of a wider CAPA initiative, care professionals from across all sectors gathered at local Learning Events. Staff spent time learning together in a fun, interactive, strength based environment about
• the importance of activity and movement for older adults
• the Institute for Healthcare Improvement's Breakthrough Improvement approach.

Staff used the improvement approach to develop improvement plans. The supportive atmosphere at Learning Events helped staff identify where they currently immobilise people experiencing care through discouraging movement. Participants completed a pre- and post-Learning Event questionnaire to track changes in their self-efficacy to effect change and their understanding of the importance of moving more often for older adults. Further measurements and evaluation methods will be used to track the impact of the programme for older people (and staff) using qualitative and quantitative methods.

Results/findings: 297 care staff completed both pre and post event questionnaires at Learning Events in Aberdeenshire, East Ayrshire, East Renfrewshire, Glasgow, Inverclyde, North Lanarkshire, Perth and Kinross and Stirling and Clackmannanshire. Care physical activity perceptions and self-efficacy to deliver physical activity scores showed a significant difference before and after the events as can be seen below
''I feel qualified to promote movement to older people' 12.74% positive change
'I know enough about movement to encourage older people to move more' 15.79% positive change
(I have confidence in my ability to) 'Take action to address barriers that prevent older

people from moving or moving more frequently' 14.49% positive change
P value= 0.05

CAPA Advisers now work with individual services and care professional to support improvements using improvement methodology. Baseline and on-going measures will be used to evidence the impact of improvement plans.

Conclusion: Giving care professionals the tools and improvement knowledge has increased confidence and belief in effecting change. Care professionals are increasing the number of natural opportunities for movement in everyday lives of older people experiencing care.

## 7. Physical Activity in Medical Education: A Flipped Classroom Approach

Authors: **Alice Harper** (presenting) (University of Edinburgh), Louise Lynch, Nikola Wasag, Chaoyang Wang, Emma Sharland, Scott Mckinnon, Jeni Harden, Paul Kelly, Danijela Gasevic, Chris Oliver and Samantha Fawkner

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life
- We improve our active infrastructure – people and places
- We support well-being and resilience in communities through physical activity and sport

This abstract presents a project aimed at increasing tomorrow's doctors' knowledge of the potential for prescribing PA to their patients for both disease prevention and treatment. As such it speaks to a number of the Active Scotland Outcomes by contributing to a philosophy that physical activity is promoted to all throughout both primary and secondary care.

Abstract:

Background. Despite a growing appetite for providing medical professionals with physical activity (PA) education, there has to date been no dedicated curriculum time for medical students (MBChB) at the University of Edinburgh to be taught about the role of PA in preventing and treating ill health. Progress is hampered by space in the curriculum and available staff expertise in the medical faculty. Through a collaboration between staff and students, we secured internal funding to develop an opportunity for 1st year medical students to explore this topic, and proposed a flipped classroom approach as a single timetabled session within the Health, Ethics and Society module.

Aim. To trial a flipped classroom (January 2017) to introduce 1st year medical students to the importance of PA and encourage them to start thinking about the role of the doctor in promoting health enhancing PA behaviour.

Method. The pilot flipped classroom consisted of 1) an on-line learning component, which directed the students to pre-learning videos and tasks 2) a one hour faculty led interactive work shop/lecture and 3) going forward resources. Following the workshop, the students were sent a link to provide feedback on the approach and the content.

Results. 82 of 206 students enrolled on the module completed the feedback. Of those, 80 students watched the pre-learning videos, of whom 60 students rated the materials either excellent or very good. 97% of the open response comments (n=60) were positive. 71 of the students responded 'yes' or 'somewhat' to the question that asked if the style of learning encouraged them to reflect on knowledge gained more than a traditional lecture, and 73 responded 'yes' or 'somewhat' to the question that asked if the flipped classroom approach had been a positive learning experience. These responses were supported by further qualitative feedback.

Conclusions. This pilot has demonstrated that using a flipped classroom, which is a relatively novel approach to teaching large numbers of medical students, has the potential to be a well received and time efficient approach to introducing 1st year medical students to the importance of PA for health.

8. **Benefits of a student-led exercise class in maintaining and improving physical activity in community dwelling adults over 60's - a symbiotic model"**

Authors: **Anne Wallace** (presenting), **Paul Moran** (presenting) (School of Heath Sciences, Robert Gordon University), Jordie Currie and Morgan Kerr

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the active to stay active throughout life

A weekly exercise class run at the University every year between September and May for community dwelling adults over 60. Designed and led by student physiotherapists, under qualified staff supervision, the class enables this population to access a face to face indoor exercise opportunity across the winter months, which maintains and in some cases improves self-reported physical activity.

Abstract:

Aim -to investigate students and participants perceptions, and the effects on participants physical activity levels of a weekly exercise class for a community dwelling, active adults over 60s.

Method - Participants of a once weekly over 60s exercise class led by physiotherapy students were invited to undertake a "Personal Fitness MOT "physical activity questionnaire. This was repeated at 6 month intervals up to 18 months.
- 12 participants also undertook an individual semi structured interview to explore their perceptions of the exercise class and its influence on their physical activity levels.
- 40 3rd year physiotherapy students involved in leading the class were invited to take part in focus groups to explore their perceptions of the exercise class.

Results/Findings - based on 41 participants, self reported activity was found to have been maintained or improved at each of the 6 month intervals.
- results of the questionnaire were confirmed and further explored during semi structured interviews. Benefits of student interaction were also reported.
- students reported benefits to their learning from participating.

Conclusion - Exercise classes led by student physiotherapists can influence physical activity levels in community dwelling individuals aged over 60. Advantages of the classes are perceived by both participants and students. This provides a possible model for encouraging and enabling older adults to maintain exercise over the winter months whilst conferring benefits to the learning of the students involved and allowing the University to maintain a strong positive link with its local community.

9. **Evaluating the long-term effectiveness of ALBA intervention: A behaviour change intervention designed to increase adherence to physical activity, leading to improved mental and physical health**

Authors: **Nicola Peddie** (presenting) (Edinburgh Napier University), Tony Westbury, Austyn Snowdon, Rozita Kirilova and Nina Allinson.

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We support well-being and resilience in communities through physical activity and sport

This research contributes to the Active Scotland Outcomes Framework as it focuses on the evaluation of a behaviour change intervention which aims to encourage inactive participants with mental or physical health conditions to become more active. The secondary aim of the intervention is to improve mental wellbeing and self-esteem through the increase in physical activity.

Abstract:

Aim: The Scottish Association for Mental Health (SAMH) have developed a behaviour change intervention, 'Active Living Becomes Achievable' (ALBA), which links in with the existing exercise referral pathways. The intervention has been designed to increase motivation to exercise and encourage adherence to physical activity in people who have been referred to exercise due to a physical or mental health condition. The aim of the research is to evaluate the effectiveness of this intervention at increasing long-term adherence to physical activity. The evaluation will also look at the impact of the intervention on participants' self-esteem, mental wellbeing, motivation and self-efficacy to exercise.

Method: The ALBA intervention is being rolled out across Fife, West Lothian and North Ayrshire. Participants will be referred to the intervention through the existing referral pathways. Consenting participants will complete baseline measures and will be set up with an activity tracker which they will be asked to use for the duration of the 16-week intervention. Measures include the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS), Rosenberg Self-Esteem Scale (RSES), Scottish Physical Activity Questionnaire (SPAQ), Self-Efficacy for Exercise Scale (SEE), and the Patient Activation Measure (PAM). The ALBA intervention involves participants engaging in 1:1 cognitive behavioural sessions with their local behaviour change practitioners, prior to and throughout the intervention period. At the end of the 16 weeks, participants completed the post-intervention measures and were offered the opportunity to opt into the long-term study, where the measures were repeated at 6, 12 and 18 months post-intervention.

Results: Data collection is currently in progress, and the results from the first cohort of participants will be presented. It is hypothesised that the intervention will increase adherence to physical activity in both long and short term study. It is also hypothesised that

results will show an increase in self-esteem, a positive improvement in mental wellbeing, and increased self-efficacy, and motivation to exercise.

**10. ‘Stable and Able’ a community based exercise pathway for falls prevention - Partnership working between Sport Aberdeen and Aberdeen Health and Social Care Partnership (AHSCP) (2013 – Present)**

Authors: **Jennifer McCann** (presenting) (Sport Aberdeen), Rosie Cooper (Aberdeen City Health and Social Care Partnership)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We support well-being and resilience in communities through physical activity and sport

Evidence recognises how falls trigger a downward spiral of fear, deconditioning, inactivity social isolation and increasing dependence. The stable & able pathway address all of these by supporting & enabling participants to become more resilient, physically active & socially engaged thus improving their health & wellbeing.

Abstract:

Aim: To enable participants to reduce their falls risks while improving and maintaining their health, wellbeing and social participation through the Stable and Able pathway.

Context: A third of people aged 65+ fall every year. The consequences range from pain, fear of further falls, social isolation, increasing dependence, hospital admissions and even death. Evidence strongly promotes the use of strength and balance exercise as a key intervention in reducing the risk of falls and improving confidence. With a growing 65+ population (estimated to rise by >55% in Aberdeen over the next 25 years) an opportunity to work collaboratively with the AHSCP presented to manage growing need and demand by:

- Creating opportunities for patients to transition from physiotherapy led strength and balance groups to community based resources which support and enable progression of exercise, self-management of falls risks and improved resilience.
- Providing community based resources which facilitate upstream prevention of falls and (re)introduction to physical activity

Methods: Collaborative discussion between AHSCP Physiotherapy and Sport Aberdeen. Agreed to adopt the Falls Management through Exercise (FaME) [Skelton&Dinah] model. Funding sourced for Fitness Instructors to train and qualify as Postural Stability and OTAGO Instructors ensuring consistency and quality of class content, with appropriate progression for the class participants. Simple referral process created. Person centred goal setting of AHSCP groups introduced to improve Stable & Able signposting. Inclusion of strength and balance activities as a wet weather alternative for Sport Aberdeen’s Health Walks.

Results: Continued growth to 7 Stable and Able and 4 AHSCP classes in Aberdeen.
10 instructors have completed their Postural Stability training and 5 the Otago training.
65% of community participants are onward referrals from AHSCP classes, 35% are self-management/self-referrals

47% of AHSCP participants progress onto Stable & Able classes
11% of AHSCP participants progress onto Sport Aberdeen's Active Ageing Programme
Classes at capacity with waiting list
Powerful, positive participant stories

Conclusions: Strong, effective partnership relationship. Increased activity, improved wellbeing and resilience.

Next Steps: Evolving generic, inclusive tired program which remains person centred. Developing a model for instructors to identify changes and deteriorations with appropriate, early onward referral for intervention.

11. **"I can't wait to see what the future holds": A co-produced, six-month pilot physical and psychological intervention to improve outcomes for low-activity people living with Type 2 Diabetes**

Author: **Niall Anderson** (presenting) (NHS Borders)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We improve our active infrastructure – people and places
- We support well-being and resilience in communities through physical activity and sport

The small-scale pilot programme improved the infrastructure and multi-disciplinary nature of diabetes care and physical activity provision within the Scottish Borders. Type 2 Diabetic patients were enabled to become more active, with 82% (9/11) completing the six-month programme and finishers attending 91% (422/464) of exercise sessions. Patients formed a resilient support group and overall wellbeing improved by 3%.

Abstract:

Aims: Primarily, to improve the physical and psychological outcomes of low-activity people living with Type 2 Diabetes. Secondarily, to develop an integrated health behaviour change approach through combining NHS Borders Public Health and Diabetes Services with the LIVE Borders Fitness & Health Service.

Methods: A six-month co-produced programme was conducted, comprising structured physical activity circuit training sessions twice-per-week and tailored health psychology intervention sessions once-per-month. Additionally, patients were offered the opportunity to voluntarily self-refer to a six-week nutrition programme if deemed beneficial during psychological sessions. Objective physical and subjective psychological assessments were conducted at baseline (0 months), mid- (3 months) and post-intervention (6 months), with the percentage change from baseline being used to assess outcomes.

Results/Findings: 82% (9/11) of those enrolled completed the six-month programme, with all 9 finishers voluntarily choosing to continue the twice-per-week physical activity programme beyond the six-month intervention. Of those that completed the programme 91% of (422/464) physical activity and 94% (50/53) health psychology sessions were attended, with the latter receiving 96% satisfaction and 93% empathy ratings. Physiological improvements at six-months were seen across a range of objective measures including weight (2%), waist (10%), hips (9%), waist-hip ratio (2%), and patient-selected physical activity test (35%). Self-reported psychological improvements were also present for mental wellbeing (3%), diabetes-specific self-efficacy (14%) and diabetes-specific distress (45%).

Conclusions: The integrated health behaviour change approach combining highly specialized diabetes, physical activity and psychological services was effective at achieving low attrition and high attendance for physical activity sessions, and improvements both mid- and post-

intervention for a range of physical and psychological outcomes. Through combining structured physical activity sessions and tailored health psychology support, the majority of patients successfully changed their sedentary lifestyle to not only regularly attend physical activity sessions but also voluntarily choose to continue the programme beyond the initial intervention. Therefore, a combined physical activity and psychological intervention is an effective and feasible approach for increasing physical activity levels in the short- to medium-term for sedentary people living with Type 2 Diabetes, and also has a range of physical, psychological and social benefits.

## 12. Analysis of factors predicting uptake and adherence in a Stirling based Exercise Referral Scheme

Authors: **Laura Stewart** (presenting), Paul Swinton (Robert Gordon University)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active

This research is part of a larger PhD project to identify the role of Exercise Referral Schemes in tackling the key health concerns within Scotland, through physical activity and exercise. This specific abstract seeks to identify whether demographic, health profile and exercise referrer factors are associated with uptake and adherence of inactive individuals, in order to work towards optimising adherence.

Abstract:

Aim: To identify whether demographic, health profile and exercise referrer factors were associated with uptake and adherence to an Exercise Referral Scheme (ERS).

Methods: An ERS was set up, with individuals referred from various healthcare professionals to a private leisure facility, between April 2013 and April 2016 in Stirling. Records were maintained identifying uptake and adherence to the programme. Information collected through initial referral forms included demographic information comprising gender, age and locality. Health profile was established by the number of health conditions listed and the primary reason specified for referral which were used to allocate participants to one of eight condition classifications. Statistical analysis included logistic regression to model uptake and multinomial regression to model adherence.

Results: Descriptive statistics identified that out of 969 referrals, more were female (55%) than male (42%) with a small number not reporting gender (3%). The mean age was 51.8 years (range 16 – 90) with the majority of participants (82.4%) aged over thirty years. The most common classification of referral condition was musculoskeletal related problems (32%),which included lower back pain, osteoarthritis and joint replacement, with weight management and endocrine condition classification group the second most common (22%). Initial statistical analysis indicated that uptake was not significantly associated with any of the factors assessed, whereas significant associations were obtained for adherence. Gender was associated with the stage at which participants dropped out but not overall completion. Results also identified associations of age and health profile with adherence, with an increase in age positively associated with adherence, whereas multiple conditions was negatively associated.

Conclusion: The results obtained indicate that adherence rates for ERS are influenced by a range of factors that could assist with targeting individuals that are more likely to require additional support either throughout the referral process and/or the delivery of service. Further research is required to explore causal reasons explaining the associations identified.

## 13. Active Minds - A study to measure the effectiveness of exercise referral on those referred with a mental health condition not exclusive of other medical conditions

Authors: **Fiona Rankin** (presenting), Scott Burton (Falkirk Community Trust)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We improve our active infrastructure – people and places

The programme provides additional support for those who would otherwise choose not to access activity in a community setting, or who could not due to residential care or limiting health factors. As such, this meets Outcome 1. The intervention with the Adult Mental Health Unit and the additional training for staff fulfils the criteria for Outcome 4.

Abstract:

Aim: Measure the effectiveness of exercise referral on those referred with a mental health condition not exclusive of other medical conditions, and identify opportunities for those with severe/enduring mental health to access community run activity.

Method: Active Forth is Falkirk Community Trust's exercise referral programme. Patients are referred by a health professional to attend a 24 week subsidised exercise programme. Recent funding has enabled mental health training for staff for better provision of exercise programming for those referred with a mental health condition. The project also included a pilot with NHS Forth Valley Adult Mental Health Services providing a class at a community gym, led by an exercise referral instructor with physiotherapy support. The class aims to normalise activity and support young women to access activity in a community facility rather than within a clinical setting. Their mental wellbeing has been measured through observation and is not included in the findings below. Psychological well-being is measured using observation of change and psychological wellbeing measured using the Warwick – Edinburgh Mental Wellbeing Scale (WEMWBS). (Time frame Baseline, 12 weeks, 24 weeks). Numbers of responses returned will affect T-Test used by WEMWBS as require 100 or more. Follow up health checks are conducted on week 12 with a discussion on how the scheme benefited them and their overall experience.

Results/Finding:
Baseline = 332; 12 Weeks = 72; Change = 68
Baseline 12 Weeks Change
% Low Wellbeing 27% 17% -11%
% Moderate Wellbeing 53% 57% 4%
% High Wellbeing 20% 26% 6%
Results show a positive change but not significant at p=0.05. Positive observation noted in increased mood, increased motivation and improved health benefits at 12 week follow up review.

Conclusion: The Active Forth programme appears to show a shift towards positive well-being after the initial 12 weeks although not at significant levels. The change in the

WEMWBS scores coupled with the positive observation suggests that the exercise referral scheme is heading in the right way towards improved mental wellbeing but that continued research is required. Observations of improvement haven't followed a structured format which limits consistency of measurement.

## 14. "Get Lighter in Lothian": Effectiveness of a physical activity intervention for obese adults in the Tier 3 Weight Management programme

Authors: **Victoria Coates** (presenting), Susan Loh (NHS Lothian)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We improve our active infrastructure – people and places

Inactivity plays a major role in obesity. In Scotland, the less socioeconomically advantaged adults, especially women, are at an increased risk of being obese due to a higher level of inactivity. Providing a safe environment for them to exercise and teaching them to exercise safely and effectively may improve their weight, activity level, physical and emotional health.

Abstract:

Introduction: In Scotland, 29% adults are obese (body mass index (BMI) ≥ 30 kg/m2) and 65% are overweight (BMI ≥ 25 kg/m2). Obesity is a major economic burden to the National Health Service (NHS). Evidence supports the inclusion of physical activity as part of weight management (WM) programme to achieve optimum outcome.

Aim: The aim of our study is to evaluate the effectiveness of a 12-week physical activity intervention on weight loss, level of activity, functional capacity, anxiety and depression.

Methods: This is a retrospective observational study of patients who completed 12 sessions of endurance, strength and balance exercise intervention as part of the NHS Lothian Tier 3 "Get Lighter" WM programme in 2015 and 2016. Medically complex obese patients (BMI ≥ 35 kg/m2) who were referred to the Tier 3 programme were offered a 12-week group exercise intervention which they can opt into. The weekly 60-minute class consisted of group warm-up and cool-down, and two circuits involving walking, standing and seated exercises with weights. Participants were screened by the team exercise specialist or specialist physiotherapist to ensure they were safe to exercise. Pre- and post-intervention outcome measures used were weight, International Physical Activity Questionnaire (IPAQ), 6-Minute Walk Test (6MWT), 30 Second Chair Stand test (30CST) and Hospital Anxiety and Depression Scale (HADS).

Results/ findings: 70 participants [22 men; 20 with diabetes mellitus (19 Type 2); mean(standard deviation (SD)) age 51 (13)] completed the 12-week intervention. Compared to pre-intervention, improvements were observed in post-intervention measures in mean(SD) weight (kg) [128(22.5) vs. 124.5(26.5)]; median(interquartile range (IQR)) IPAQ score [927(198–2493) vs. 2364 (990–5783)]; mean(SD) 6MWT (m) [309(272.3) vs. 402(113.5)]; mean(SD)30CST [9(3) vs. 12(3)]; mean(SD) HADS-Anxiety score [8(5) vs. 6(5)]; HADS-Depression score [8(5) vs. 5(4)]. Participants expressed enjoyment of the classes and felt positive with improved confidence in being active.

Conclusion: This study demonstrated that a 12-week physical activity intervention may be effective in weight loss, improving level of activity and functional capacity, and reducing anxiety and depression in obese individuals.

15. **The effectiveness and acceptability of interventions to improve physical activity levels, reduce sedentary time and improve diet in older adults living with and beyond cancer: An integrative review**

Authors: **Lynsey Brown** (presenting) (Edinburgh Napier University), Jenny Young, Karen Campbell, Austyn Snowden and Richard Kyle

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life

The review will improve our understanding of physical activity interventions for older adults living with and beyond cancer, as well as the barriers/facilitators and behaviour change techniques used. Findings will be used to inform a future intervention that will encourage inactive participants to be active as well as enable those who were/are active to remain active after their cancer.

Abstract:

Aim: To assess the effectiveness and acceptability of health behaviour change interventions designed to improve diet, increase activity time and reduce sedentary time in older adults living with and beyond cancer.

Methods: Integrative review. The online databases: CINAHL, PsychInfo, Medline, Embase and Cochrane Library were searched using a combination of subject headings and key words to ensure specificity and scope. Inclusion criteria: study population 65 years+ living with and beyond cancer, interventions designed to address only the behaviours; physical activity, diet and sedentary time and studies intended to assess the feasibility and acceptability of such interventions. Exclusion criteria: articles not in English, opinion pieces/unpublished/organisational work. Two independent reviewers conducted the selection process and the quality assessment using tools appropriate to the studies included.

Results: The studies included pointed towards the necessity and potential positive effect of behaviour change interventions tailored for older adults living with and beyond cancer. Yet, for the most part results suggest a lack of evidence regarding the acceptability of interventions to change diet, physical activity and sedentary behaviours in older adults living with and beyond cancer. Few studies addressed the needs of the participants and many indicated attrition was due to lack of interest, yet no understanding of this lack of interest was developed or explored.

Conclusion: Future research is required to determine appropriate and effective means of intervention to improve diet, increase activity time and reduce sedentary time in older adults living with and beyond cancer. To ensure acceptability and effectiveness, we suggest co-designing an intervention with this population. Co-design will ensure the emphasis of the intervention is suited to the aims of the researcher but also to the participants' needs and will improve our current understanding of behaviour change techniques for this population.

## 16. The Aberdeen Youth Games: Creating Opportunities for FE & HE Students to Promote Physical Activity, Health & Wellbeing in the Community

Author: **Bryan McCann** (presenting) (Robert Gordon University)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life
- We develop physical confidence and competence from the earliest age
- We improve our active infrastructure – people and places
- We support well-being and resilience in communities through physical activity and sport
- We improve opportunities to participate, progress and achieve in sport

The Aberdeen Youth Games is an innovative project which promotes physical activity, health and wellbeing in all primary schools in Aberdeen whilst creating an infrastructure of qualified coaches and other professionals who understand and value their own role in creating an Active Scotland.

Abstract:

The Aberdeen Youth Games (AYG) is a successful, innovative and award winning community project delivered in partnership between Robert Gordon University (RGU), Sport Aberdeen, and North East of Scotland College (NESCol). The project aims to provide students with opportunities to act as community assets who promote physical activity, health and wellbeing amongst Aberdeen City primary school pupils through work-related experiences. By embedding AYG activities and projects into student coursework, the AYG has developed a sustainable model that has been delivered over a 4 year period, providing over 5000 pupils annually with additional sessions on sport, physical activity and health. The AYG culminates in a high-profile citywide festival of sport attended by 1500 pupils representing every primary school in the city. Through the project areas can be strategically targeted and students trained to fulfil local needs. For example, 2nd year BSc (Hons) Applied Sport and Exercise science students gain a UKCC Level 1 coaching qualification and on successful completion of their placement module they are eligible to gain a coaching contract from Sport Aberdeen. This model provides students with industry- and course-relevant employment following the placement, and Sport Aberdeen with the trained workforce they require. Approximately 100 students from a range of subject areas (e.g., sport and exercise science, sport coaching, public relations, and media) from RGU, NEScol and the University of Aberdeen deliver aspects of the project and gain valuable work-related experiences as a result.

The AYG is a cost-effective model for promoting physical activity, health and wellbeing, with a modest £13k annual budget allowing activities for over 5000 primary school and

secondary school pupils. Key to its success is the embedding of activities within student learning, unlocking an estimated £80k in additional human resource annually.

The aim of this abstract is to share good practice learned from the AYG programme and encourage other organisations to consider ways in which they can engage with FE and HE organisations to realise the potential of students acting as community assets who promote physical activity, health and wellbeing.

## 17. An investigation of the influence of gender, socioeconomic status, and motivation on young people's sport participation within a Scottish context

Authors: **Steven Young** (presenting) (Edinburgh Napier University), Russell Martindale (Edinburgh Napier University), Graham Baker (University of Edinburgh)

Active Scotland Outcomes which this abstract contributes to:

- We improve opportunities to participate, progress and achieve in sport

This abstract contributes to the Active Scotland Outcomes because, while only a small sample, it highlighted some important factors that influence young people's participation in structured club activities. Specifically, SES and motivation were found to be key towards participation, which, may have implications on young people's 'opportunities to participate, progress and achieve in sports' regardless of gender.

Abstract:

Aims: Given the importance of promoting equal opportunities for young people to participate in sport, this study examined the differences in sport participation between gender and different socioeconomic groups within a Scottish context. Furthermore, the study investigated the importance of different predictors of sport participation including intrinsic motivation (IM), perceived competence (PC), self-determination (SD) as well as gender and socioeconomic status (SES).

Method: One hundred and thirty-three young people (high and low SES) within Midlothian volunteered to take part. Club participation was measured through frequency of weekly club activity sessions (Young People's Questionnaire 2). IM was measured using the self-motivation inventory modified for children, PC was measured using the physical competence scale of the self-description questionnaire, and SD was measured using the locus of causality for exercise scale. ANOVA was performed to examine the differences between gender and SES. Multiple regression analyses were carried out to determine which of the five characteristics (gender, SES, IM, PC, SD) were important predictors of the frequency of weekly club activity sessions.

Results: SES was found to be the strongest predictor of young people's participation in overall club activities, school club activities, and out-of-school club activities. In line with previous research, young people from high SES backgrounds participated in more weekly club activity sessions than those from low SES backgrounds. For motivation, PC and IM were also significant predictors for out-of-school club activities. This finding may suggest that as well as the influence of SES status, young people participate in out-of-school activity only when they think they are good enough and have a sense of enjoyment. For gender, the results show no differences between the frequency of boys and girls school club activities and out-of-school club activities. This finding contradicts much of the research suggesting boys are more active in organised club based activities than girls. These results suggest that it is important to address the practical challenges associated with low SES, as well as intervene to positively influence perceptions of competence and intrinsic motivation in order to help improve participation uptake in young people.

## 18. Differences in child physical activity data analysis between Scotland and England

Authors: **Chloe Williamson** (presenting), Paul Kelly, Tessa Strain (University of Edinburgh)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We develop physical confidence and competence from the earliest age
- We improve opportunities to participate, progress and achieve in sport

Percentage of active children is an indicator for the overall vision. The percentage of inactive children is imperative in "encouraging inactive to be more active". Percentage of children engaging in active play aids encouragement of "confidence and competence from the earliest age". Percentage of children participating in sport is key to "improve opportunities to participate, progress and achieve in sport".

Abstract:

Background: Estimates of population physical activity (PA) levels are fundamental for informing policy and practice. Discrepancies in child PA prevalence figures produced by the Health Survey for England (HSE) and the Scottish Health Survey (SHeS) cause confusion in the scientific community. The SHeS categorises a child as meeting the guidelines if they obtain a daily average of 60 minutes (average method). Whereas the HSE categorises children as meeting guidelines only if they accumulate 60 minutes on each day (daily method). Thus, it is possible that discrepancies in prevalence figures are due to differences in analysis methods.

Aim: To investigate if discrepancies in child PA prevalence figures produced by the 2012 HSE and SHeS are due to differences in data analysis.

Methods: HSE 2012 data from 1274 children (aged 5-15) were analysed using a daily method and an average method. Findings were split by sex and by 2-year age groups. Prevalence figures produced by average and daily methods for HSE data were compared with each other, as well as SHeS figures produced using the average method for the same year.

Results: Significantly more children in England met the PA guidelines in 2012 according to the average method (47.3%) compared with daily method (18.1%) (McNemar's $p<0.0001$). These findings remained significant when split by sex and by 2-year age group. HSE prevalence figures produced using the average method (47.3%) appeared more similar to SHeS figures using the same method (58.9%) than to HSE figures produced using the daily method (18.1%). Percentage point difference between prevalence figures produced by average and daily methods were not significantly different across sexes or age groups, implying no group was more affected by the change in analysis method than the others.

Conclusions: Discrepancies in prevalence figures are at least partially due to differences in data analysis. Small changes in data analysis may result in amplified effects on resulting prevalence figures. Standardised methods of child PA measurement and analysis are necessary for between population comparisons.

**19. Teachers' and young adolescents' qualitative opinions of an eight-week, feasibility/pilot, sit-stand desk intervention**

Authors: **Amanda Pitkethly** (presenting) (Edinburgh Napier University), Anna Campbell (Edinburgh Napier University), John Sproule, Josie Booth, Sam Fawkner (University of Edinburgh), Danielle Hutson (Edinburgh Napier University)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life
- We develop physical confidence and competence from the earliest age
- We improve our active infrastructure – people and places

This abstract is part of a feasibility/pilot study exploring the use of standing desks in mainstream classrooms to determine any impact on time spent being sedentary and learning outcomes. This study builds an evidence base to encourage the use of standing desks in schools, to encourage young people to learn in a less sedentary environment.

Abstract:

Aim: Nine sit-stand desks were installed in an Edinburgh Primary 7 class to determine the feasibility of their use and the effects on sedentary, activity, learning outcome variables. This abstract details the qualitative aspect of this study to discover how the sit-stand desks were tolerated.

Methods: After the feasibility/pilot study, individual interviews were held with the class and student teacher, and the classroom assistant (n = 3). Eight out of twenty pupils (all provided parental consent), participated in two focus groups (pupils selected by the teacher), one high-use group (n = 4), and one low-use group (n = 4).

Results: Overall, the staff were very supportive of the desks reporting that they contributed positively allowing pupils to be physical without being disruptive. Over the eight weeks, less disruption, more confidence and autonomy, as well as positive pupil behaviours were apparent. For example, confidence to move from their seated desks to sit-stand desks, improved cooperation with classmates, use of the sit-stand desks when low in energy, and improved engagement with class work, were all observed whilst pupils used the sit-stand desks. The desks also provided teachers with the opportunity to reorganise the learning space to support pupils with needs. Nothing negative was reported, although staff felt that prior to using the desks children should be encouraged to develop a rationale for doing so. All pupils reported being able to concentrate more when they used the sit-stand desks, with one pupil reporting 'being able to ignore the laziness'. All pupils enjoyed being allowed to move more, as well as having more personal space, the changeable desk height, and more leg freedom. The high-use group reported better sleep, higher energy levels, improved daily mile achievement as well as improvements in extra-curricular activities. One pupil reported

less need for her asthma inhaler, and another pupil with fallen arches reported that using the sit-stand desks helped her feel less pain.

Conclusions: The eight-week intervention was well tolerated by all teachers and pupils with positive suggestions for improved use in future interventions.

**20. Changes in sedentary behaviour and on-off-task following the introduction of sit-to-stand desks in a primary school; a pilot study**

Authors: **Danielle Hutson** (presenting), Amanda Pitkethly (Edinburgh Napier University), Josie Booth, John Sproule and Samantha Fawkner (University of Edinburgh)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We develop physical confidence and competence from the earliest age

This study builds towards an evidence base to encourage the expanded use of standing desks in Schools, to enable the sedentary to be less sedentary, and encourage young people to learn in an environment in which being sedentary is not promoted, I.e. to develop physical confidence to stand rather than sit.

Background. There is emerging evidence that providing pupils with standing desks in the classroom and allowing pupils to stand rather than sit, reduces time spent sedentary during the school day. To date though, the impact of adapting the classroom setting to provide pupils autonomy over using sit-stand desks on their sedentary behaviour and on school attainment is not known.

Aim. The aim of this pilot study was to examine changes in sedentary and on- off-task behaviour following the introduction of sit-to- stand desks in a primary school in Edinburgh.

Methods. One year 7 classroom was provided with nine sit-stand desks for 8 weeks of a single school term, with pupils given autonomy over when they chose to use the desks. Observations of on- and off-task behavior and time spent sitting and standing and number of sit-to-stand transitions (following a weeks continuous wear of the ActivPAL) were assessed at baseline and at the end of the intervention in 10 boys and 11 girls (141 ± 4 months).

Results. Compared with baseline (n=9), after the intervention the percentage of classroom time spent sitting was marginally less (3.6 ± 13.5%, g=0.34), standing time marginally more (4.2 ± 11.5%, g=0.45) and number of sit-to-stand transitions/hour significantly more (3±2, g=2.03, P=0.03). Pupils (n=20) tended to spend more time on task and less time off task during the class observations after the intervention (e.g. passive on task P=0.055, g = 0.62) but only small to moderate effect sizes were apparent.

Conclusions. Providing upper-primary agesd children the opportunity to use sit-to-stand desks may present an opportunity for pupils to break up their sedentary behavior more frequently and may encourage better on- and off-task behavior. Larger randomized controlled studies are required to explore this further.

## 21. Effectiveness of a physical activity pilot intervention in youth with Type 1 Diabetes: The ActivPals study

Authors: **Fiona Mitchell** (presenting)(Physical Activity for Health, University of Strathclyde), Alison Kirk (Physical Activity for Health, University of Strathclyde), Louise Wilkie (Sport and Exercise Science and Medicine, University of Glasgow), Kenneth Robertson (Yorkhill Children's Hospital, NHS Greater Glasgow and Clyde), John J Reilly )(Physical Activity for Health, University of Strathclyde)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life
- We develop physical confidence and competence from the earliest age

The health of youth with Type 1 diabetes is often poorer compared to people without diabetes, making them an important target group for health improvement interventions. This abstract presents results of an intervention which aimed to encourage, enable and support youth with Type 1 diabetes to initiate and maintain a physically active lifestyle.

Abstract:

Aim: Type 1 Diabetes (T1D) is rising globally. Youth with T1D continue to suffer from poorer health and lower levels of physical activity (PA) than those without diabetes. The ActivPals study aimed to support young people with T1D to increase PA levels.

Methods: 20 youth (aged 7-16) with T1D were randomised to a pilot PA intervention (n=10) or control group. The Actigraph GT3X+ monitor measured PA at baseline and one-month follow-up to test the effectiveness of the intervention. PedsQol scales (generic and diabetes module) were used to measure Quality of Life (QoL) in participants and parents at baseline and follow- up.

Results: Changes in PA in QoL were analysed using a two- way mixed ANOVA. The results showed a significant increase in Moderate to Vigorous PA (MVPA) in both intervention and control group from baseline to follow up ($p= 0.03$), however there were no significant between group differences. Both groups reported significantly less overall diabetes 'problems' ($p=0.012$) and significantly less lifestyle 'problems' ($p= 0.015$) at follow up. However, intervention and control participants also reported significant increases over time in 'problems' with daily diabetes routine ($p= 0.022$). Parents reported increased worry about their child's diabetes at follow up, significant across both groups ($p= 0.046$). There was no significant increase in reported hypoglycaemic occurrences despite increased MVPA.

Conclusion: A larger scale trial, with longer intervention period could significantly increase the MVPA levels and QoL in youth with T1D without significantly increasing hypoglycaemic episodes.

## 22. Sedentary time and sedentary bout duration and glucose in adults with Type 2 diabetes

Authors: **Kathryn McMillan** (presenting) (School of Psychological Sciences & Health, University of Strathclyde), A Kirk (School of Psychological Sciences & Health, University of Strathclyde), A Hewitt (School of Psychological Sciences & Health, University of Strathclyde), A C Paing (School of Health and Life Sciences, Glasgow Caledonian University), S F M Chastin (School of Health and Life Sciences, Glasgow Caledonian University), S MacRury (Highland Diabetes Institute, University of Highlands and Islands), A Collier (School of Health and Life Sciences, Glasgow Caledonian University)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life

This abstract examines how mobile-based technologies can be used to encourage people with Type 2 diabetes, who are inactive, to become more active as a means of managing their condition.

Abstract:

Aims: To explore the relationship between proportion of time spent sedentary and sedentary bout duration and mean glucose and glucose variability in people with T2D using objective continuous measurement.

Methods: 38 participants with T2D managed with diet, Metformin or DPP4 inhibitors were recruited (mean age 62.38±10.38 yrs & BMI 29.85±6.64 kg/m2). Participants completed a demographic questionnaire and wore an activPAL accelerometer and FreeStyle Libre continuous glucose monitor for 3-14 days whilst documenting sleep, food and medication. Average proportion of time spent sitting/lying, during the waking day were calculated. Bouts of wake time sedentary behaviour were identified and categorised by duration of continuous, uninterrupted sitting/lying during the waking day. Correlation analysis was conducted to investigate the relationships between sedentary proportion and sedentary bout duration and mean glucose and glucose variability measures. Regression analysis was used to investigate these relationships on an individual basis.

Results: On average, participants spent 64.32% of their day sitting/lying, 44.80% of sedentary bouts were 30-60minutes in duration and 23.64% of bouts were >60minutes long. Mean glucose was negatively ($r = -0.15$, $p < 0.05$) associated with sedentary time but not sedentary bout duration. Glucose range ($r = 0.43$, $p < 0.05$) and glucose coefficient of variation ($r = 0.22$, $p < 0.05$) both positively correlated with sedentary bout duration. However, sedentary time was negatively ($r = -0.24$, $p < 0.05$) associated with glucose CONGA. Individual regression analysis showed increased sitting time is associated with increased mean glucose in 30 of the participants, with a negative association being shown in 8 of the participants.

Conclusions: In analysis of the whole group, increased sedentary time is associated with decreased mean glucose and increased glucose variability. However individual regression

analysis identified a different relationship pattern with the majority of participants (n=30/38) showing increased sitting time to be associated with increased mean glucose. This finding highlights the importance of conducting individual analysis when exploring the relationship between behaviour and health outcomes using continuous objective methods of measurement. Future analysis should explore the impact of food intake and medication as confounding variables within this analysis.

**23. Designing a physical activity intervention among severely obese pregnant women to reduce sedentary behaviour by promoting active sitting: Involving patients in the study design**

Authors: **Caterina Fazzi** (presenting) (MRC Centre for Reproductive Health, University of Edinburgh), David H. Saunders (Physical Activity for Health Research Centre, University of Edinburgh), Jane E. Norman(MRC Centre for Reproductive Health, University of Edinburgh), Rebecca M. Reynolds (Centre for Cardiovascular Science, University of Edinburgh)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We support well-being and resilience in communities through physical activity and sport

Obesity and sedentarism are associated with harmful effects in pregnancy yet most strategies based on increasing physical activity levels in obese inactive pregnant women have failed. In our study we included severely obese pregnant women's opinions and feedback in order to design an effective intervention to increase physical activity levels and reduce time spent sedentary.

Abstract:

Aim: To design an intervention for severely obese pregnant women to reduce time in sedentary behaviour and to increase energy expenditure whilst sitting.

Methods: Participants were severely obese pregnant women (body mass index >40kg/m2) attending the Tommy's Antenatal Metabolic Clinic, Edinburgh Royal Infirmary. Firstly we designed and administered a survey to find out if women had heard about sedentary behaviours, and were interested in exercising during pregnancy. Secondly we designed a series of 6 low intensity exercises aiming to target different muscle groups, which could be done whilst sitting. We proposed a range of repetitions, time and sets. We invited women to carry out the exercises and sought their feedback in modifying these. Through personalised interviews women learned how to do and tested each exercise, reporting their feelings regarding intensity (using the Borg Rating of Perceived Exertion Scale), comfort, perception of repetitions, time holding the exercise, and sets. Women were also asked if they had any comments or suggestions to improve the intervention. All answers were collected in a specially designed Feedback Form.

Results: 43 women answered the survey. 32 (74%) had not heard about sedentary behaviours. Most (97.7%; 42) were interested in doing at least one of the proposed exercises whilst sitting. 22 women took part in the design of the intervention. Of the 6 proposed exercises 5 were modified following the women's observations. Most exercises were perceived as too easy: one women declared "the intervention is not interesting if there is no challenge". Following feedback we added some difficulty to the exercises, e.g. adding props, including additional leg exercises or asking women to do the exercises with

the arms in extension rather than bent. Altogether 6 exercises were included, to be done in 2 sets of 10 repetitions each.

Conclusion: Severely obese pregnant women are interested in exercising whilst sitting. Involving women in the design process of the intervention is essential, as they contribute by their own experience. With women's feedback we have designed a challenging, interesting, feasible, and safe method for severely obese pregnant women to exercise. We now plan to test the feasibility of this intervention.

## 24. "I ken I've been sitting too long. I get up, walk about and do something" What stroke survivors do when sitting and strategies used to break prolonged sitting

Authors: **Sarah Nicholson** (presenting) (Physical Activity for Health Research Centre, University of Edinburgh), Ailsa Niven (Physical Activity for Health Research Centre, University of Edinburgh, Jacqui Morris (NMAHP Research Unit, Glasgow Caledonian University), Seb Chastin (School of Health and Life Sciences, Glasgow Caledonian University), Gillian Mead (Geriatric Medicine, The University of Edinburgh), Claire Fitzsimons (Physical Activity for Health Research Centre, University of Edinburgh)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active

Stroke is the fourth most common cause of death within the UK and the most common cause of disability. This study examined why stroke survivors typically spend 81% of their day sedentary. Qualitative interviews explored stroke survivors' sedentary behaviours, their capability and motivation to reduce the pattern of accumulation of their sedentary time, and identified opportunities for behaviour change.

Abstract:

Introduction: Sedentary behaviour (SB) is any waking behaviour where sitting or lying is the dominant posture and energy expenditure is low. Guidelines encourage reducing prolonged SB after stroke, but how to do this is unclear. A qualitative study was undertaken to elicit the views of stroke survivors on SB. We present the sitting activities stroke survivors reported and the strategies they used to break prolonged sitting.

Method: Independently mobile Scottish stroke survivors were interviewed in their own homes at three months post stroke. Interviews were audio-recorded, transcribed verbatim and are being analysed using the Framework Method.

Results: Thirty one participants were interviewed (mean age=66.8; SD=14.6 years; 17 male). Twenty one interviews have been analysed to date. Participants described sitting activities across three domains: leisure-time, transport and occupation. Frequently reported sitting activities were watching television, socialising with friends/family, reading and resting. Strategies for breaking sitting were employed by many participants, mainly as part of their daily routine. Strategies clustered into themes relating to walking (round the room when reading papers; around the house; outside; parking car further away), preparing food from scratch to spend more time standing, visiting friends, spreading tasks throughout the day and standing when on the phone. Some participants were conscious of breaking sitting. Reasons for doing so related to relieving boredom or discomfort, rather than reducing sitting time.

Conclusion: Stroke survivors engage in a wide range of sitting activities. Understanding strategies employed by stroke survivors to break sitting is essential to allow development of successful interventions.

## 25. ‘Sit Less, Move More, Feel Good!’: Developing an evidence-based intervention leaflet to support older adults to reduce sedentary behaviour

Authors: **Victoria J Palmer** (University of Glasgow), Cindy M Gray (University of Glasgow), Frances Bain (Paths for All), Nanette Mutrie (University of Edinburgh), Sally Wyke (University of Glasgow), Claire Fitzsimons (University of Edinburgh)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life

This abstract contributes to the Active Scotland Outcomes Framework as it is: developing an evidence-based intervention to support older people to reduce sedentary behaviour; and working with national walking charity Paths for All to develop the intervention leaflet and materials, to support long-term roll-out and dissemination of the leaflet.

Abstract:

Aim: High levels of sedentary behaviour have been linked to an increased risk of ill health in older people. Currently, there is little guidance to support older people to reduce sedentary behaviour. This project aimed to use the findings from a previous qualitative study (Seniors USP) to develop a leaflet-based intervention for delivery through walking groups to encourage older people to sit less in their daily lives.

Methods: A 2-stage qualitative study in collaboration with the national walking charity, Paths for All (PfA):
Stage 1 Co-development: one workshop with PfA walking group attendees and an expert consultation (academics, policymakers and older people’s organisations) informed development of the pilot Sit Less, Move More, Feel Good! leaflet and walk-leader training materials.

Stage 2 Intervention piloting with PfA walking groups: Leaflets were given to trained walk leaders, and follow-up interviews (N=3) and one focus group with walking group participants conducted. Older people’s organisations were also consulted.

Results: Stage 1: Older people expressed a preference for information about the benefits of sitting less and provided suggestions for reducing sedentary behaviour. Experts suggested the leaflet should be simple in appearance, use non-academic language and reach a broad audience.

The pilot leaflet included: a poster side with key messages about the benefits of sitting less; interactive activities encouraging older people to think about when they could sit less; ideas for sitting less in their daily lives; and a reward-based (stars) goal-setting tool.

Stage 2: The pilot leaflet was well-received by walk leaders, and walking group participants liked the ideas for sitting less. Suggestions from the older people’s organisations were used to inform the final redesign of the leaflet: key messages were framed more positively;

images were changed to reflect diversity in age, gender and physical capability; and the goal-setting tool was redesigned (the stars were not popular).

Conclusion: In partnership with PfA, experts, older peoples' organisations and older people themselves, we created a simple evidence-based intervention (Sit Less, Move More, Feel Good!) to support older people to reduce sedentary behaviour. The leaflet will be widely disseminated for use in PfA walking groups and elsewhere.

## 26. "When you come to our group, you end up belonging to one another": A Qualitative Evaluation of Paths for All's Dementia Friendly Walking Groups

Authors: **Carl Greenwood** (presenting) (Paths for All, Walking for Health), Grant Gibson, Jane Robertson, Catherine Pemble, Rog Harrison, Kim Strachan, Sheila Thorburn

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life
- We support well-being and resilience in communities through physical activity and sport

The abstract outlines the personal impact of a project supporting people living with dementia to become and remain physically active by attending health walk groups. Through the development of dementia friendly health walk groups a community of support that is inclusive, responsive and sustainable has also been established.

Abstract:

Aims: The University of Stirling's School of Social Science was commissioned by Paths for All to evaluate the progress of the Dementia Friendly Walking project. The project supports walking for health groups to become more accessible to people living dementia.

Methods: The research methodology in this study used three research methods; visual methods, walking interviews with people affected by dementia (people with dementia and their carers) and a focus group with walking groups. The evaluation involved three older people acting as 'community researchers'. After receiving data collection and analysis training from university staff, community researchers accompanied academic researchers in fieldwork. Five walking groups took part in the project.

Findings: Five themes emerged from the findings:
1. Being with other people. Walking groups give people with dementia opportunities to socialise with other people, in a safe and comfortable environment. Dementia friendly walks gave people with dementia reassurance and support which enabled them to get out walking.
2. Being outdoors. Walking groups give people the opportunity to access the outdoors and a safe and secure environment.
3. Ethos and atmosphere. Central to the walking groups were the ethos and atmosphere. Attending walking groups enabled people with dementia to demonstrate what they could still do, rather than the problems they faced due to their condition.
4. Feeling secure. People with dementia felt safe, secure and supported. Walks were also important in improving people's confidence, as they were able to participate, but also knew that help would be available if required.
5. Leadership and organisation. The role of walk leaders was essential to the running of groups, organising and facilitating walks and supporting walkers.

Conclusion: Walking groups play an important part in enabling people living with dementia to access the outdoors, engage in physical activity, and engage with other people within a largely safe and secure outdoor environment. Formal support in the form of walk leaders and co-ordinators, alongside volunteers within groups were crucial to walks fulfilling the above role. Walk leaders were identified as needing formal support in fulfilling their roles, and were seen as vital to the continued running of walking groups.

## 27. Optimising recruitment of older adults to walking studies: reflections from the WE:ROAM study

Authors: **Nicky Laing** (Presenting), Ailsa Niven, Sam Fawkner (Physical Activity for Health Research Centre, University of Edinburgh)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life

This study focuses on older adults who are one of the least active age groups in Scotland (outcomes 1 & 2). Working in collaboration with Paths for All (PfA), WE:ROAM (Walking Experiences: Researching Older Adult Motivations) aims to understand factors influencing participation in walking groups and to facilitate continued physical activity in this age group.

Abstract:

In order to carry out quality physical activity research with older adults, it is important to recruit sufficient participants. However, limited research has considered effective recruitment strategies with this age group. This abstract/poster/presentation will report on the recruitment strategies and methods adopted for the study, with the aim of optimising participant uptake and continued participation in this longitudinal study.

Method: A recruitment strategy with four key activities was devised by reviewing the recruitment literature and discussion with stakeholders. Firstly, the network of PfA walking coordinators/ leaders was utilised because they are familiar with, and have first contact with new walkers. Secondly, a publicity programme was devised to promote the study widely. This included networking events with PfA recruiters and a WE:ROAM video was created and shared through social media. Thirdly, a brand for the study was created to make it recognisable and memorable including the WE:ROAM name, logo, plus colourful and age appropriate resource materials. Finally, a pilot recruitment process was undertaken to test two recruitment and data collection options.

Results and discussion: the study is meeting recruitment targets with 55 participants successfully recruited by mid August 2017 from most regions within Scotland. Six month data collection is about to start. Progress on the four aspects of the strategy is as follows: 1) the network of PfA walk coordinators has helped to recruit from most regions throughout Scotland. 2) networking events have been successful in promoting the study in regions where take-up was initially slow and the video promoting the study has received 75 views. 3) the brand for WE:ROAM has given the study an identity and is well known. 4) the pilot identified the telephone process as the most successful and preferable for this age group and it is operating well in the main study.

Conclusion: strategic planning, collaborative working, resources, and testing recruitment processes can facilitate recruitment in hard to reach groups. Collaborative working with PfA networks has proved vital in maintaining the recruitment drive.

**28. 'Dancing in Time': Using contemporary dance to improving health and well being in older community dwelling adults**

Authors: **Sarah Astill** (presenting) (University of Leeds), Christine Addington, Laura Britten

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life
- We support well-being and resilience in communities through physical activity and sport

This work outlines a project which involves a multiagency collaboration (The University of Leeds, Leeds Public Health, Yorkshire Dance and the Neighbourhood networks of Leeds). The project aimed to increase physical activity levels through contemporary dance, in older adults (65+yrs) who while were community dwelling did not regularly engage in physical activity.

Abstract:

Aim: In the past 10 years dance- based studies involving older adults have increased in number, supporting the benefits of dance in improving a range of physical functions, including increasing physical activity patterns across a range of group. In conjunction with Yorkshire Dance, Leeds Public Health and One Dance UK my recent work aims to establish a more rigorous evidence base for the benefits of contemporary dance to overall health and wellbeing. The first of these collaborative projects was 'Dancing in Time' and this project aimed to examine the feasibility of using contemporary dance to modify risk factors of falls in older adults, with a focus on increasing levels of physical activity.

Methods: Three (N=38) groups of older (M=77.3yrs) adults were recruited from local community groups to participate in a 3 separate, 8 week dance programmes. Each programme comprised two, 90 minute dance classes per week. Quantitative measures of physical activity, sedentary behaviour, depression, mobility and fear of falling were measured at baseline (T1) and after 8 weeks of dance (T2). Post-study qualitative work was conducted with participants in 3 separate focus groups.

Results: Mean adherence was 84.3% (±17), and significant increases in moderate and vigorous physical activity were noted, with a significant decrease in sitting time over the weekdays ($p<0.05$). Statistically significant decreases in the mean Geriatric Depression Scale ($p<0.05$) and fear of falling ($p<0.005$) score were noted, and the time taken to complete the TUG test decreased significantly from 10.1s to 7.7s ($p<0.005$). Themes from the focus groups included the dance as a means of being active, health benefits, and dance-related barriers and facilitators.

Conclusion: The recruitment of older adults and good adherence across all three sites indicate that a dance programme can improve psychological health and has the potential to increase physical activity levels in older women. We are now extending our work across

Yorkshire, both replicating and extending the ‘Dancing in Time’ project building a replicable, scalable dance programme which offers inactive older adults an alternative way to engage in light physical activity.

## 29. ‘See dancing’s taking over my life. Parkinson’s isn’t the problem. It’s the dancing!’: Evaluating Dance for Parkinson’s Scotland (DfPS) programme

Author: **Bethany Whiteside** (presenting) (Royal Conservatoire of Scotland)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life

This abstract focuses on how DfPS, an artistically physical activity that is accessible, inclusive, and tailored, encourages participants with Parkinson's to remain, or become, active through positively impacting upon life outside of the studio.

Abstract:

Aim: The pilot of the Dance for Parkinson’s Scotland (DfPS) programme, ran in partnership by Scottish Ballet and Dance Base, launched in April 2016 inspired by a shared ethos to facilitate and nurture accessible, inclusive, and high quality dance experiences. Commissioned in the spring of 2017, this mixed methods evaluation focuses on the perceived cultural, social and physical benefits of DfPS primarily for, and from the perspectives of, the participants with Parkinson’s involved.

Although a concrete body of work considering the impact of DfP is in existence, research has largely focused on what takes place within the studio and is dominated by a concern with the potential physical benefits, investigated through quantitative means. This poster presentation focuses on one key aspect of the evaluation that considers how DfPS is positively impacting on participants’ quality of life outside of the studio.

Methods: Triangulation of methods included semi-structured interviews with participants with Parkinson’s, partners and spouses, volunteers and teachers, participant observations though dancing in the classes, and use of a questionnaire (first designed by Professor Cynthia McRae at the University of Denver and David Leventhal, Dance for PD).

Findings and Discussion: Participants are drawing on the experiences of DfPS outside of the studio through forming their own social networks of support, drawing on the voices of the practitioners when moving, and embedding elements of exercises, tasks, and experiences within daily life: when undertaking housework, journeying outside of the house, and within other exercise-based domains. An increase in physical confidence, linked to enhanced flexibility, coordination, posture and balance, was discernibly related to an increase in social confidence.

The impact of DfPS on life outside of the studio is closely linked to participant notions of what makes DfPS ‘different’ in comparison to other exercise-based activities, and the interwoven elements of physicality, sociability and cultural experience that define participation.

Conclusion: DfPS signifies the commitment made by both organisations to facilitate high quality dance experiences with an inclusive ethos and makes a demonstrable difference to the quality of life for people with Parkinson's, their partners, and spouses.

## 30. Examining Perceptions of Yoga among Older Adults: A Qualitative Study

Authors: **Divya Sivaramakrishnan** (presenting), Claire Fitzsimons, Nanette Mutrie, Graham Baker (Physical Activity for Health Research Centre, University of Edinburgh)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life

Results from this qualitative study include strategies to overcome barriers, and promote the participation of adults over 65 years in yoga programmes. Given that this population have very low physical activity levels, this abstract links directly to the Active Scotland Outcomes Framework aims of encouraging the inactive to be more active, as well as promoting physical activity throughout life.

Abstract:

Aim: A very low percentage of older adults in Scotland meet the muscle strengthening, balance and co-ordination guidelines. Practicing yoga has benefits for older adults including improved strength, flexibility, mobility and balance. To develop an appropriate yoga programme for older adults, it is important to get an in-depth understanding of their perceptions of yoga. Hence, the aims of this study are to:
1. explore the perceptions of yoga in adults over 65 years
2. understand why yoga is a female dominated activity
3. provide guidance for yoga instructors, and strategies for promoting yoga in the older adult population

Methods: We conducted focus group discussions and interviews with a total of 19 male and female older adult participants, both with and without prior yoga experience. The study inclusion criteria were that the participants should be 65 years and above, and should be able to speak and understand English. Participants were recruited through convenience sampling from a university fitness facility, and local leisure centres in Edinburgh.

Results: The study found that yoga was viewed as a slow, gentle activity, which is suitable for older adults. Yoga participants had a positive view of yoga and appreciated its non-competitive aspect. However, some participants with no yoga experience anticipated that they may find it too demanding. Some suggested reasons for low male participation rates were that men considered yoga a feminine activity, did not like joining group activities, and did not pay attention to long-term health issues. Guidelines for instructors while working with older adults include being audible, giving clear instructions and demonstrating in class. Strategies such as providing more information on yoga and its benefits, and organising taster sessions or introductory classes were suggested to promote yoga in this population.

Conclusion: The study offers insights into how older adults perceive yoga including knowledge of yoga, thoughts on the features and perceived intensity of yoga practice, the gendered nature of participation, benefits, and apprehensions. These findings would be

useful to persons interested in yoga for an older population, and should be considered while developing a yoga programme.

## 31. "Movement Meditation" – A Study of Flow Experiences in Hot Yoga Practitioners

Authors: **Niamh Hart** (presenting) (University of Edinburgh), Ailsa Niven (Physical Activity for Health Research Centre, University of Edinburgh)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the active to stay active throughout life

This research will encourage physical activity maintenance through understanding psychological experiences, specifically the flow state, during an activity (hot yoga), examining the influences of flow and the extent to which experiencing positive states during physical activity can increase intrinsic motivation and adherence.

Abstract:

Background: Hot yoga (HY) is an increasingly popular form of PA. Yoga is a physical activity that combines muscle strengthening, balance and co-ordination along with increasing flexibility. Through these elements yoga has been associated with many physical health benefits such as posture correction, increased range of movement, regulation in blood glucose levels and decreased inflammation. Furthermore, yoga has been reported to address many mental health ailments such as depression, isolation and anxiety, possibly with the use of the breath control and meditative characteristics. HY places enough stress on the cardiovascular system to be considered high intensity PA compared to more relaxed forms of yoga such as Hatha. Experiences during HY may provide an insight into continued motivation by encouraging positive outcomes and intrinsic motivation for maintenance of HY. From a perspective of yoga, flow may have significant characteristics that resonate strongly to the practice including mindfulness, setting goals, and elevated states of consciousness. Therefore, this study investigates the flow state, the influences of flow and flow as motivation for adherence to participation in HY.

Method: 4 male and 6 female regular HY practitioners (mean age=33.2 years) participated in audio-recorded, semi-structured interviews. Audio recordings were manually transcribed and analysed using Braun & Clarke's (2014) 6 stage process in thematic analysis.

Results: Participants reported experiences of flow with focus, mind and body connection, and challenge vs. skill balance as main themes. Participants described heat, teachers, intentions and breath control as the most prevalent themes for influences. Practitioners identified flow as a significant motivator for long-term practice of HY with after-effects, rewards, peak performance and to experience flow as the most prominent themes.

Conclusion HY allows practitioners to reach flow state. Flow may be established through manipulation and use of the influences found such as teaching, heat, goal setting and breathing techniques. Flow experiences create positive outcomes and intrinsic motivation for maintenance of hot yoga. Consequently, this provides invaluable information for health professionals, yoga teachers and studios allowing them to manipulate the yoga environment for their students to create a positive setting to encourage flow, which subsequently should promote maintenance of HY.

## 32. Individual differences in affective responses to and intention to repeat low volume high intensity interval exercise

Authors: **Ailsa Niven** (presenting) (Physical Activity for Health Research Centre, University of Edinburgh), Claire Bradley, Shaun Phillips (University of Edinburgh)

Active Scotland Outcomes which this abstract contributes to:

- We encourage and enable the inactive to be more active
- We encourage and enable the active to stay active throughout life

Although the health benefits of high intensity interval exercise (HIIE) in clinical, sedentary, and already active groups are evident, the public health potential of HIIE is open to debate. How participants feel during HIIE will have implications for future behaviour, and we need to understand more about factors that influence responses to HIIE in order to determine its appropriateness.

Abstract:

Aim: There has been a growth in research examining affective responses to High Intensity Interval Exercise (HIIE) because these responses can provide insight into the acceptability of HIIE. This study examined the influence of the trait of exercise tolerance on affective responses to, and intention to repeat low volume HIIE.

Method: Following ethical approval, healthy participants (n=114) completed the Preference for and Tolerance of Exercise Intensity Questionnaire. From this sample, high tolerance (HT; n=19; male =7; mean age = 20.37 ± 1.46) and low tolerance (LT; n=17; male =5; mean age = 21.8 ± 2.0) groups were identified. Both groups completed 10 x 6 sec cycle sprints on a mechanically braked ergometer against a resistance of 7.5% (males) or 6.5% (females) body mass, interspersed with 60 sec passive recovery. Affective valence and perceived activation were recorded before exercise, immediately after sprints 2, 4, 6, 8, and 10, and 20 min post-exercise. Participants' intentions to repeat HIIE 1 and 3 times per week were assessed 20 min and 24 hours post-HIIE.

Findings: Affective valence significantly decreased across the sprints in both groups ($P = 0.019$, ES= 0.103) and was significantly different between groups ($P = 0.018$, ES= 0.154). Affective valence was significantly lower in LT at sprint 2 ($P = 0.022$, $d = 0.94$) and moderate to large effect sizes ($d = 0.66 – 0.94$) were found at each time point. Perceived activation significantly increased across sprints in both groups ($P < 0.001$, ES = 0.497), with no significant between-groups differences ($P = 0.174$, ES = 0.054). At 20 min and 24 h post-exercise, respectively, the HT group had significantly greater intentions to repeat HIIE once per week ($P = 0.002$, $d = 1.20$; $P = 0.003$, $d = 1.18$) and three times per week ($P < 0.001$, $d = 1.32$; $P = 0.002$, $d = 1.03$).

Conclusion: Affective responses to HIIE are influenced by trait exercise tolerance, with LT participants experiencing more negative affect and lower intentions to repeat HIIE. These findings suggest that HIIE is unlikely to be experienced positively by everyone, supporting the personalisation of exercise prescription.