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Scottish Physical Activity Research Collaboration

physical activity
and health alliance



Bright SPARCS

Scottish Physical Activity Research Conference for PhD Students

Held in partnership with PAHA

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University of Strathclyde
Crawfurd Complex
Jordanhill Campus

Friday 23rd September 2011
9:00am – 3:30pm

Directions to the Bright SPARCS event

The conference will be held in the Crawford Theatre (#3 on the map) which is on the Jordanhill Campus of the University of Strathclyde.

By Road

From Edinburgh and the north of England take Exit 19 off the M8 motorway, via the Clydeside Expressway A814 to slip road for A739 "The North". This brings you on to Balshagray Avenue. At the 5th set of traffic lights turn left on to Southbrae Drive. Jordanhill Campus is approx. half a mile along, on your right hand side. Please note, there is limited car parking available on campus

By Rail

Glasgow has two main line railway stations - Central & Queen Street. Arrivals from the West and most intercity services arrive at Central Station. Arrivals from Edinburgh and the East come into Queen Street Station.

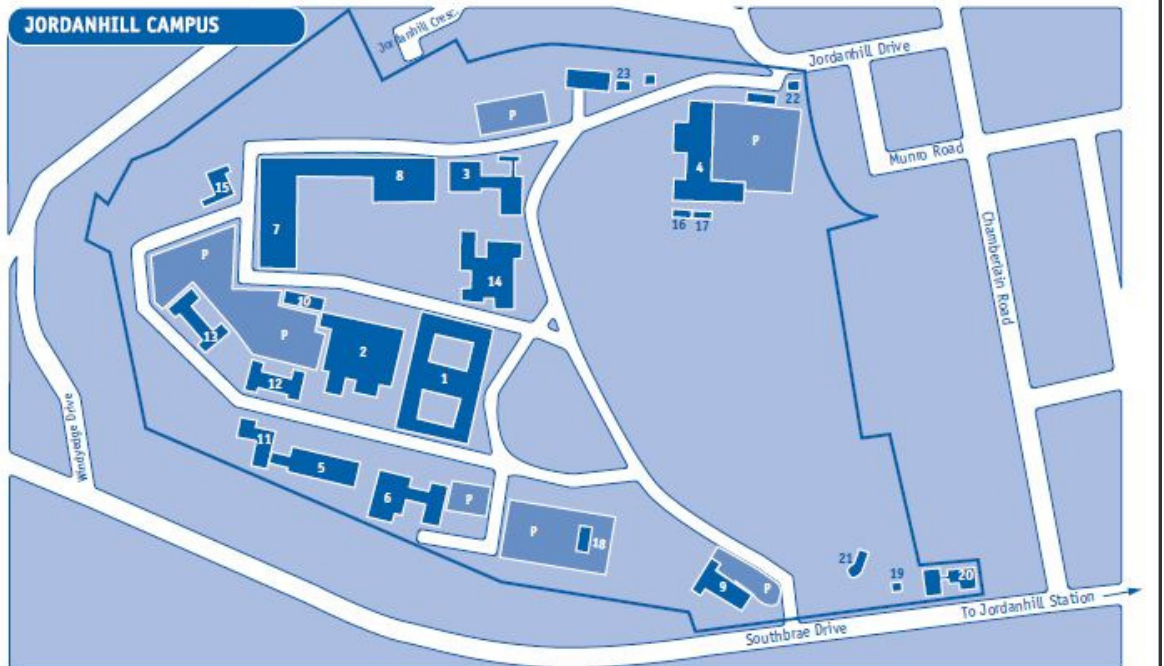
Taxis are available from either station and it will take approximately 20 minutes from the city-centre to Jordanhill Campus. Alternatively you can travel to Jordanhill by train from either station. Trains to Dalmuir or Helensburgh via Yoker stop at Jordanhill Station, trains to Dalmuir via Singer - change at Partick Station. Jordanhill Station is a 10-15 minute walk from the Campus.

By Bus

The number 44 & 44D buses (Strathclyde Buses) from Hope Street or Bath Street stop at the Campus gates.

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Bright SPARCS Timings for the Day

8:30am	Open for poster/ presentation set up	<i>(Lobby/Café Bar)</i>
9:00am	Registration & Refreshments	<i>(Lobby/Café Bar)</i>
9:25am	Welcome <i>Professor Nanette Mutrie</i>	<i>(Lecture Theatre)</i>
9:30am	Opening Address – Academic Writing <i>Dr Rowena Murray</i>	<i>(Lecture Theatre)</i>
10:15am	Oral Presentation Session 1	<i>(Lecture Theatre)</i>
11:00am	Refreshment Break	<i>(Café Bar)</i>
11:30am	Poster Viewing Session	<i>(Café Bar)</i>
12:45pm	Lunch Break	<i>(The Refectory)</i>
1:45pm	Oral Presentation Session 2	<i>(Lecture Theatre)</i>
2:30pm	Getting through your PhD – your questions answered! <i>Dr Rowena Murray & Professor Nanette Mutrie</i>	<i>(Lecture Theatre)</i>
3:15pm	Award Ceremony	<i>(Lecture Theatre)</i>
3:30pm	Close	

Bright SPARCS - Presentation Details

9:30am – Opening Address – Academic Writing

Dr Rowena Murray

Dr Rowena Murray is Reader in the School of Applied Social Sciences at Strathclyde University, Fellow of the Royal Society of Arts and the Higher Education Academy and Adjunct Professor at Swinburne University in Melbourne, Australia.

Rowena is an internationally acclaimed researcher and trainer on the topic of academic writing and the author of bestselling books - *How to Write a Thesis* (Open University Press, 2011), *How to Survive your Viva* (Open University Press, 2009) and *Writing for Academic Journals* (Open University Press, 2009).

10:15am and 1:45pm – Oral Presentations

Final year PhD students will present their current work during these sessions. Each student will present for 10 minutes with 5 minutes available for the audience to ask questions.

11:30am - Poster Viewing Sessions

The poster viewing session will be 'chaired' to allow time for all delegates to see the posters and to have the opportunity to ask questions. Students will give a short summary of their poster (2minutes) and delegates will be allowed 3 minutes to ask questions. There will also be time to look at the posters during the breaks.

Students: Please make sure you're beside your poster for this session!

Lunch

Lunch will be served in a building adjacent to the Crawford Complex – The Refectory. There will be vegetarian options available.

2:30pm – Getting through your PhD – your questions answered!

During the conference, there will be a notice board available for you to place questions about the PhD process that you would like Dr Rowena Murray and/or Professor Nanette Mutrie to lead a discussion around. For instance, these questions could relate to the practice of writing, submitting publications, relationships with supervisors, dissemination of research, networking, how to stay motivated, preparing for the viva, how to enhance your career prospects or anything at all that might concern you!

With your help, we hope to finish with a 'Top Tips for PhD Success'.

3:15pm - Prize Giving

SPARColl and PAHA are delighted to be able to award 3 prizes for the **Brightest SPARCS** today. Prizes will be awarded to posters or oral presentations for:

- Best presentation of research - judged by Dr Rowena Murray, University of Strathclyde
- Most practitioner friendly research - judged by Sharon Allison, PAHA Coordinator
- Most likely to impact public health - judged by Professor John Reilly, University of Strathclyde

Bright SPARCS - Presentation Details

Oral Presentations

Session 1

10:15am – 11:00am

Applying the framework: Evaluating the feasibility of a novel and strategic recruitment framework for walking promotion in practice

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University of Strathclyde

Supervised by Professor Nanette Mutrie & Dr. Claire Fitzsimons Details

Background

Walking has been advocated as a 'near perfect form of exercise' and as the medium of choice to increase physical activity among the Scottish population. However, translating promotion into participation remains a challenge with a key focus being on recruitment; albeit in the absence of clarity about what recruitment actually involves. This study aimed to apply specific terms, approaches and outcome measures to the process of 'inviting, negotiating and facilitating participation in an organised activity' i.e. recruitment. The strategy was overseen by the primary researcher and implemented by the practice organisation.

Methods

This study was an evaluation of the recruitment of male residents (aged 24-59 years) of Glasgow Housing Authority (GHA) accommodation in the East-End of Glasgow to a tailored walking programme. The aim was to assess the feasibility of following a pre-planned strategy for recruitment based on evidence from three separate investigations of recruitment to walking programmes. The objectives were to monitor whether the target goals of the strategy could be achieved, identify the factors affecting strategy implementation and gather stakeholders' reactions and opinions. An action research approach was taken and is described as a process of planning, acting, observing what happens and observing consequences and planning further reaction. This allows for any required adjustments during the recruitment phase. A mixed method approach was applied to data gathering to collect a real-time monitoring of the primary metric (number of participants responding and starting) and a qualitative investigation of how and why the aims were achieved or not.

Results

This mixed methods study has investigated both quantitative and qualitative aspects of what amounts to a project management investigation. Although significant barriers came into play soon after the recruitment period began and the recruitment phase was extended, the walking programme did commence and did attract the target group intended. Our analysis is on-going and will present the framework, the outcomes of our actions, our results in absolute terms and over time. In addition, by applying a process evaluation framework to this study, we aim to answer some of the key questions about what happened and why.

Conclusions

A key theme of our work is that recruitment is an active process and is an action at the level of the recruiter. This study has allowed us to capture the outcomes of our approach to recruitment in a real-world setting, and in particular the feasibility of following a strategic multi-phasic, multi-methods design. Barriers encountered included difficulties in monitoring and executing the methods, but key and consistent factors such as trust, fidelity and programme content have shown that recruitment is an involved process which requires careful and actively monitored execution.

Evaluating the effectiveness of a Schools based resource at increasing active travel

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Supervised by Dr David Rowe, Dr Norah Nelson & Dr Mark Elliott

Background

Despite strong support for predictive validity of the theory of planned behavior (TPB) substantial variance in both intention and behavior is unaccounted for by the model's predictors. The present study tests the extent to which habit strength augments the predictive validity of the TPB in relation to a currently under researched behavior that has important health implications, namely children's active school travel.

Methods

Prospective design. Participants (N = 126 children aged 8-9 years old; 59% males) were sampled from five primary schools in the west of Scotland and completed questionnaire measures of all TPB constructs in relation to walking to school and both walking and car/bus use habit. Over the subsequent week, commuting steps on school journeys were measured objectively using an accelerometer. Hierarchical multiple regressions were used to test the predictive utility of the TPB and habit strength in relation to both intention and subsequent behavior.

Results

The TPB accounted for 41% and 10% of the variance in intention and objectively measured behavior, respectively. Walking habit and car/bus use habit significantly increased the proportion of explained variance in both intention and behavior by six percentage points. Perceived behavioral control and both walking and car/bus habit independently predicted intention. Intention and car/bus habit independently predicted behavior.

Conclusions

While the TPB provided a good account of children's active school travel, habit strength augmented the predictive validity of the model and the results indicated that school travel is controlled by both intentional and habitual processes. In practice, interventions could usefully decrease the habitual use of motorized transport for travel to school and increase children's intention to walk (via increases in perceived behavioral control and walking habit, and decreases in car/bus use habit). Further research is needed to identify effective strategies for changing these antecedents of children's active school travel.

Exploring the relationship between physical activity and the built environment in UK neighbourhoods

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Supervised by Dr Caroline Brown, Professor Glen Bramley & Dr. Margaret Douglas

Background

There is a large body of research showing that built environment variables (such as population density and land use mix) significantly predict the physical activity of residents. It is easy to see how neighbourhoods that are more conducive to walking and physical activity help people to live healthy, active lifestyles. However the relationship between the built environment (BE) and physical activity (PA) is complex, mediated by socio-demographic factors, which makes it difficult to provide definitive policy guidance. Although BE variables significantly predict PA levels, it is not clear whether this is because of the environment (neighbourhood effect) or people that tend to live in those areas (selection).

Aims/objectives

Funded by an ESRC CASE studentship in collaboration with NHS Lothian (2008 – 2012), this PhD project looks to disentangle the BE-PA association within a UK context, in order to better inform planning and public health policy. Three key research questions are:

1. How does neighbourhood environment determine physical activity relative to other (socio-demographic) factors?
2. What determines peoples' choices of where to move or settle (neighbourhood selection)?
3. Does physical activity behaviour change after moving into a new neighbourhood?

Methods

The project has three components: literature review, data analysis, and case studies. We know that an individuals' propensity to be active depends on accumulated experience over their life course. Childhood experience, in particular, is crucial in determining activity levels in adulthood. Because of the significance of the 'family home', this project focuses on a broad age group most likely to be moving and settling into a new neighbourhood to raise a family. The case studies are interviews and accelerometry with individuals aged 25-40 who had moved (< 3 yrs) into one of the three case study areas. Participants are asked to reflect on the neighbourhood, their daily activities, attitude towards physical activity and what they desire in (moving to) a neighbourhood. Some interviews are followed up by a small number of participants wearing an accelerometer over five days. In this presentation I discuss findings from the interview data.

Results

The semi-structured interviews captured narrative accounts of moving to a new area and changes in behaviour. Although subjective, these accounts provide a quasi-longitudinal data regarding physical activity change since moving into the case study areas. The findings suggest that there is a neighbourhood-effect, although certain people are more susceptible to environmental constraints.

Discussion

Different types of people can be identified: those that are incidentally-, purposefully-, and instinctively active. Within financial constraints, the decision to move home (selection) is influenced by notions of what a 'family neighbourhood' and 'family home' is. These conceptions underpin not only relative neighbourhood desirability, but what aspects of the neighbourhood are routinely utilised.

Green space and physical activity: relationships in Scotland

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Supervised by Professor Richard Mitchell & Professor Jamie Pearce

Background and Aims

Epidemiological studies suggest that levels of green space in a neighbourhood are negatively associated with residents' mortality and morbidity rates. One mechanism proposed for this association is that green space is a venue for, and therefore encourages, physical activity. Few studies, however, have examined whether neighbourhood levels of green space are associated with physical activity actually in green space. New data have become available in Scotland, which permit this analysis.

Methods

A cross sectional study of 4167 adults (16+) living in an urban setting in Scotland. Logistic regression analysis established the association between respondents' green space exposure and their use of green space for physical activity (hereafter green physical activity), controlling for relevant confounders, including age, sex, economic activity status and area level socio-economic deprivation. Green space was modeled as a categorical variable, with sensitivity analysis determining the impact of categorization.

Results

Respondents with high levels of green space in their area of residence were 2.39 (95% CL, 1.11-5.11) times more likely to participate in green physical activity than those with very low levels of green space in their area. However, there was no evidence of a dose response effect and results were highly sensitive to the definition of 'very low levels' of green space. Relatively high levels of green space in a neighbourhood held no real advantage over modest levels, for participation in green physical activity. The relationship between green space exposure and green physical activity did not differ by area level socio-economic deprivation.

Conclusion

Whilst green physical activity rates are very low among those who live in neighbourhoods where levels of green space are low, there is little difference in green physical activity rates between those residents' in areas with modest of high levels of green space.

Associations between active travel and time outside: Background and research questions

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Supervised Dr Tony Turner, Dr Dave Saunders & Dr Pete Allison

Background

Unstructured play is a domain of physical activity contributing up to 50% of children's total daily moderate-to-vigorous physical activity (MVPA), but is difficult to measure and under investigated using objective methodologies. Time spent outdoors is a subcategory of children's behaviour and a consistent correlate of MVPA. Encouraging time outside may therefore be a possible intervention strategy to help children meet current physical activity guidelines. Global positioning systems (GPS) in combination with accelerometers offer a methodology to study both the volume and location of physical activity, and can be used to measure time outside.

Children who travel actively record more total daily MVPA than those who are driven, however little additional MVPA is recorded during the journey to school. It has therefore been hypothesised that active travel acts as a catalyst for activity in other domains, for example, outdoor play. Independent mobility is associated with time outside, physical activity, outdoor play and active travel. Independent mobility may therefore play an important role in relationships between these constructs.

Investigation of associations between active travel and outdoor physical activity could aid our understanding of the potential for active travel to act as a gateway to activity in other domains. Therefore, the aim of this research is to explore associations between active travel, time outside and outdoor physical activity in Scottish primary school children. This research shall also aim to contribute to current understanding of methodological issues relating to the use of GPS to study physical activity.

Primary research questions:

Compared with being driven to school, is active travel independently associated with greater time spent outside and outdoor physical activity?

Do active travellers have greater independent mobility and is this independently associated with physical activity within and outwith their immediate neighbourhood?

Secondary research questions:

The GPS unit can continue to record a signal whilst indoors; however this signal suffers from 'jitter' and is unreliable. Consequently, one of the first steps in the processing of GPS data is to classify data as inside/outside. The ratio of satellites in view to those connected can be used as a cut-off point for determining time inside/outside.

A) When determining time outside, what ratio of satellites in view/connected results in the least misclassification of time inside/outside. Does this ratio change dependent on environment?

Data from GPS receivers and accelerometers can be combined to provide both the location and intensity of physical activity. It is unclear which GPS epoch length is most appropriate for determining time inside/outside.

B) What is the most appropriate and feasible combination of GPS and accelerometer epoch length to provide an accurate measure of 1)-time outside/inside and 2)-indoor and outdoor MVPA?

Due to complications regarding GPS signals recorded indoors, under tree canopies, in dense urban environments and during motorised transport, the combination of GPS and accelerometer may cause some activity to be misclassified.

C) How accurately does the combination of GPS and accelerometer measure indoor and outdoor - sedentary time, -light, -moderate and -vigorous activity.

Physical activity a 'National Priority Performance Measure' without measurement.

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Supervised by Dr John Sproule & Dr Charles Anderson

The promotion of physical activity (PA) in Scotland is based on multiple streams of policy tied to an overarching strategy outlined in 'Let's make Scotland more active'. National Priorities (NPs) in Scotland have been established with a concordant agreement between the Scottish Government and Local Authorities (LAs) for their development and delivery. The monitoring of progress towards NPs is via Single Outcome Agreements, at present the key measure is the reduction of children's BMI (Scottish Government, 2011). This has not always been the case and tracing the development and demise of 'National Priority Performance Measure 5.1E' (NPPM 5.1E) provides insights into the policy process related to PA promotion. Since the 1999 'White paper on Health' there has been a concerted effort to increase the reported incidence of participation in PA as measured in National Health surveys (Scottish Executive, 1999; Scottish Government, 2011). The recent update of the 'Let's make Scotland more active' strategy makes a veiled reference to the performance management and accountability of LAs as the key stakeholder in the enactment of the strategy (NHS Scotland, 2009).

This paper conducts a critical analysis of NPPM 5.1E to uncover what Marshall (1997) described as 'policy slippage'. Analysing the trajectory of policies and associated measures in state maintained education provides a rich seam of information, providing evidence of 'policy slippage'. The report of the review group on physical education (PE) made specific reference to NPPM 5.1E and the role that schools could play in developing local policy and practice to address the target of 1hr of daily PA (Scottish Executive, 2004). This was in addition to the 2hrs of curriculum time allocated to PE. Schools were being presented as key stakeholders in the promotion and establishment of life-long PA. NPPM 5.1E had the potential to influence the engagement of pupils in daily PA in primary and secondary schools. Scotland's focus on the promotion of PA stems from the well documented health benefits associated with regular exercise (NHS Scotland, 2009). As noted in a recent review of policy there is no clear blueprint for PA promotion across the stakeholders in Scotland (NHS Scotland, 2009). The mechanisms for reporting and promoting PA would appear to be less than effective in providing a focus for those working with children in Schools. It is significant that in the period between 2004 where NPPM 5.1E was part of the reporting requirements that no data was collected (HMIE, 2005). Scott (2000) drawing on the work of Ball (1994) highlights the complexity of policy making and the impact that developments in one sector of government have on others.

It would appear that in the promotion and provision of PA, the absence of a school focused policy with measures of accountability could have a significant impact on the experiences of pupils. The reliance on the data from the National Health surveys with their relatively small sample sizes (2000 Children), however representative, may well mask the work that is taking place across the primary and secondary sector.

Physical activity for health in children and adolescents with Type 1 diabetes

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Supervised by Dr Alison Kirk & Professor Nanette Mutrie

Background

Type 1 Diabetes (T1D) prevalence is rising in Scotland [1]. Children and adolescents with T1D can have poorer health and well-being compared to their non-diabetic peers. Regular physical activity can substantially benefit health in those with T1D. However some studies have found that children/adolescents with T1D are not regularly active. Nearly all of these studies used subjective measures of physical activity which can be subject to recall bias. Little research has examined what children/adolescents and influential figures around them think about physical activity and T1D.

Aims

The aims of this PhD are to: 1) review the literature on physical activity interventions in children and adolescents with T1D; 2) objectively measure physical activity using to determine participation in a Scottish sample of children and adolescents with T1D; 3) examine the views, experiences and knowledge of physical activity in children/adolescents with T1D and influential figures around them; and 4) develop and test an intervention to promote physical activity in children/adolescents with T1D.

Method

A systematic review of the literature on the efficacy of physical activity interventions for health will be undertaken. This research will also involve measuring physical activity objectively using accelerometers (in samples of children aged 7-9 years and adolescents aged 12-14 years); and conducting interviews with the children/adolescents and their carers as well as focus groups with diabetes health care staff and teachers to gain an insight into their views, experiences and knowledge of physical activity in children with T1D. The findings of the initial studies will guide the development of an intervention to promote physical activity participation in children/adolescents with T1D. It is hoped that a pilot study will then be conducted to test the efficacy of the intervention on health outcomes.

Discussion

Physical activity levels in Scottish children/adolescents with T1D will be determined. An intervention will be developed which could be implemented into current pediatric diabetes care to aid physical activity participation and improve health.

References

[1] McKnight, J. A., et al. (2008). Implementing a national quality assurance system for diabetes care: The Scottish Diabetes Survey 2001–2006. *Diabetic Medicine*, 25(6), 743-746..

Levels and Patterns of Physical Activity in Children with Cerebral Palsy

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Supervised by Dr Ben Stansfield, Dr Margaret Grant & Professor Malcolm Granat

Background

It is widely accepted that physical activity (PA) is important for health in adults. Sedentary behaviour also leads to increased risks of developing serious health conditions, such as coronary heart disease and type II diabetes. The relationship between PA and health in young people is less established, however, there is evidence that PA levels in adolescence continue on into adulthood. Hence it is not surprising that experts support the view that PA during childhood and adolescence is beneficial to health.

Current United Kingdom (UK) guidelines recommend a minimum of 60 accumulated minutes of moderate or vigorous intensity activity (MVPA) for children every day, in addition to minimising time spent in sedentary activities. While the percentage of unimpaired children in Scotland failing to meet the recommended levels is substantial, the proportion of disabled children is believed to be even higher.

Cerebral Palsy (CP) is an umbrella term for a set of non-progressive conditions affecting the neurological development of a child before, during or soon after birth. Symptoms can vary widely between individuals depending on the area of the brain affected and the severity of the lesion. All, however, involve some level of impairment to motor function. To date, the majority of the research involving this population has used subjective measures of PA. Motion sensors have been proposed as the most suitable means of measuring ambulation due to the recall bias associated with self-report measures; however few studies have used objective measures of PA in children with CP, and none from the UK.

Aims

This programme of research will describe the free-living PA in ambulatory children with CP aged 9-14 years over 2 separate 7-day periods in November and May.

Method

40 children with CP living in the West of Scotland will be recruited from Ashcraig and Kelbourne Park special schools in Glasgow and the NHS Ayrshire & Arran Paediatric Physiotherapy service. An activPAL3 activity monitor will be used to record PA. The monitor's position on the front of the thigh allows recognition of the wearer's posture in addition to recording steps taken. Outcome measures will include: Daily MVPA, upright time, walking time, sedentary time and sedentary time in bouts lasting longer than 30 minutes. Prior to taking part informed consent/assent will be obtained from parents and children respectively. Ethics approval will be obtained from the university, the NHS and the relevant local education authority, depending on recruitment source.

Analysis

The small sample (due to the low population ~2/1000 live births) and heterogeneous nature of CP present challenges for data analysis. Each participant's PA levels and patterns will be compared against (1) UK guidelines and (2) a normative data set recorded over the same time periods for unimpaired children of the same age living in the West of Scotland.

Conclusion

The data collected by this study will help inform future interventions aimed at increasing physical activity levels and reducing sedentary behaviour in children with CP living in Scotland

The Impact of Free-living Walking on Quality of Life in Patients with Intermittent Claudication

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Background

Intermittent claudication (IC) is a chronic vascular condition that causes patients to develop cramp-like pain in their legs when walking due to inadequate blood flow to muscle; symptoms are worse during increased muscle activity. As a result, patients have to break up their walking with rest stops until the pain resolves.

The impact that intermittent claudication has on patients and their walking parameters has typically been shown through the established 'gold standard' of walking on a treadmill in a laboratory setting to measure distance to onset of pain and maximal walking distance. However, this often fails to consider how these parameters transfer into the everyday challenges that patients face when walking, for example in hilly terrain. Additionally, it does not accurately represent the true physical activity levels or patterns of claudicants' walking in their local environment, or the adaptive techniques – such as reducing their walking pace - that many patients have described using to prevent stopping in inappropriate places. Furthermore, no research has yet been conducted on the impact of gradient in a free-living situation in this population.

Aims/Objectives

This research aims to investigate physical activity characteristics of claudicants and the impact of local landscape on patients' overall wellbeing and quality of life compared to healthy individuals of a similar age and locality. This will be achieved using an activPal™ activity monitor to measure physical activity - including the time spent walking and the number of steps taken - and a GPS device which will record the locations at which this activity occurs, and allow an assessment of walking speed. Mapping software will allow calculation of the gradients that participants have encountered on their daily routes.

Methods

60 claudicants and 60 matched controls within similar geographical areas in Lanarkshire will be recruited. Participants will complete Quality of Life questionnaires and will wear an activPal™ and carry a GPS device for 7 complete days. They will be asked to press a 'Mark' button on the GPS device during claudication pain-induced rest stops. This will allow for distinction between claudication-induced pain rests and other stops, such as talking to a friend, or window shopping. Participants will complete an Out of House Travel Record each time they leave the house, in order to corroborate the GPS device's data.

However, before the main case control study, a series of preliminary investigations will be carried out to establish that it is possible and effective to combine the outcomes from the activPal™, GPS and mapping software. This will involve collection of pilot data in healthy adults [n=6]; pilot data collection in people with intermittent claudication [n=12]; calibration of mapping software; and the selection of relevant outcome measures from the pilot studies.

Investigating Memory and Attention in Stroke Survivors Living Within the Community: A Series of Single-Case Research Studies

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Supervised by Professor Madeleine Grealy & Professor Nanette Mutrie

Introduction

In the UK, stroke is the third major cause of death and the most common cause of adult disability. Approximately, one third of those who suffer a stroke event will have residual impairments that affect physical, emotional and cognitive abilities. Research studies have shown that impairments in cognitive functioning can limit recovery and impede independent living. However, our understanding of the nature and extent of cognitive deficits in the chronic phase of stroke recovery is limited due to (1) a lack of research focusing on cognition post-stroke, and (2) the use of group-based studies that reveal little due to the variability that exists.

Aim

The primary aim of this project is to investigate memory and attention in individuals with long-term stroke (> 6 months) and explore factors that may affect cognition such as physical activity, mood, anxiety and sleep. The study will also determine the feasibility of using the single-case research methodology with a stroke population.

Method

Single-case research studies are being carried out. At baseline and at the 12-week follow-up, participants will complete a battery of memory and attention tests (RBMT-3 and TEA, respectively), and will complete questionnaires measuring subjective memory (EMQ-R), depression and anxiety (HADS), and sleep quality (PSQI). Levels of physical activity will be assessed using the activPALTM which measures time spent seated/lying, standing and walking. The monitor will be worn for seven consecutive days at three time-points. Participants will also complete a daily diary reporting on the constructs under investigation. Finally, a semi-structured interview will be conducted for participants to give feedback on the practicality of taking repeated measurements over time.

Results

Data collection is ongoing. Quantitative data will be analysed using time-series analysis and qualitative data will be analysed using thematic analysis.

Conclusion

Having a better understanding of memory and attention in long-term stroke and determining the suitability of using this methodology will be useful in the development of future studies particularly those involving interventions to improve cognitive functioning post-stroke. Indeed, the findings from this study will inform a subsequent physical activity and cognitive training intervention to improve memory and attention in stroke survivors.

It takes two? : A physical activity intervention study with colorectal cancer survivors and their partners.

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University of Stirling

Supervised by Dr Gill Hubbard and Dr Adrienne Hughes

Background

Colorectal cancer survivors (CRC-Ss) can suffer from ongoing mental and physical health difficulties such as anxiety and depression, low quality of life (QOL) and poor body composition. Previous research has shown that increased physical activity (PA) can help to reduce these symptoms. Evidence also suggests that increased PA helps to reduce the risk of CRC recurrence as well as CRC-specific and all-cause mortality. A recent report by MacmillanCancer Support (2011) emphasises the importance of PA in cancer recurrence and survivorship.

Partners are likely to play a role in supporting the PA behaviour change of CRC-Ss. Also, increased PA can impact positively on the physical and mental health outcomes of the partners of CRC-Ss.

Aims

(1) To evaluate the feasibility of a randomised controlled trial of joint PA consultations with CRC-Cs and their partners; (2) to evaluate the effects of PA consultations on the PA levels, mental well-being, QOL and body composition of CRC-Ss and their partners.

Methods

CRC-Ss who have completed surgery and treatment for CRC in the previous 32 months, and who have a partner, are being recruited from an NHS hospital in Glasgow. Couples are randomised to receive either PA consultations or usual care. Follow-up is at 3 and 6 months. The primary outcome measure is feasibility of the RCT (recruitment rate, completion rate, adherence rate and acceptability of RCT methods and the intervention). The secondary outcomes are: changes in PA levels (measured objectively via accelerometry); mental health (measured using the Hospital Anxiety and Depression Scale); QOL (measured using the FACT-G and FACT-C for CRC-Ss, and WHO-Bref for partners), and body composition (measured objectively using a body composition monitor).

The intervention

The intervention is PA consultations based on the Transtheoretical Model of Behaviour Change. Consultations involve face-to-face discussions with the researcher and the couple and include, for example, assessment of current levels of PA, discussions of pros and cons of being active, exploration of PA options and the setting of realistic and achievable PA goals. The aim of the consultation is to develop an activity plan that is tailored to the lifestyle, motivation and health status of the couple. The activity plan is developed for the couple, although activities may vary and couples may decide to be active independently of one another.

Results

The study will provide evidence of the feasibility and effectiveness of joint PA consultations with CRC-S and their partners and provide a platform for a future, larger-scale RCT.

Conclusion

PA consultations may help to increase the PA levels and improve the health outcomes of CRC-S and their partners.

The negotiation of physical activity in 3 generational families

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The importance of physical activity and maintaining a physically active lifestyle is well known. However, there are still a vast number of people who are not active. The aim of my PhD is to combine evidence from sports and exercise science and sociology to gain an insight into the reasons why people are active or not. In Scotland and other Western societies there is a high prevalence of inactivity, which does not appear to be diminishing despite various interventions and government initiatives. In addition, while many physical activity interventions are successful, adherence is often short lived. Therefore, understanding physical activity as a social construct provides a different perspective on why people may or may not be active, compared with psychological and behavioural approaches often used. Viewing physical activity in such a way highlights a variety of issues, 3 of which include class, gender and ageing, which I will address throughout my work. In order to achieve this I will focus on the family and particularly how meanings of physical activity, as well as beliefs about physical activity are formed and transferred through generations. The family is a unique and complex area, and previous work on physical activity within the family has provided mixed results. However, by using sociological theory to establish how the family locates physical activity within their lives and how this relates to how they present themselves to society should provide further insight into the role physical activity plays in our society.

Trends in Physical Activity Across the Life Course and their Relationship to Mental Health in the West of Scotland.

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Background

It has been well documented that physical activity is beneficial for a wide range of health outcomes and the 2011 UK guidelines have indicated that to obtain these health benefits, adults should aim to achieve 150 minutes of moderate intensity activity or 75 minutes of vigorous intensity activity. Despite these guidelines, the majority of the Scottish adult population is not achieving these recommendations, and thus may not be physically active enough to obtain health benefits. However, this evidence is typically generated through repeated cross sectional data, which cannot provide accurate information about how physical activity levels change within individuals, or as individual's age. Therefore one of the first aims of this project is describe how physical activity levels change over the life course.

Methods

Using a longitudinal dataset known as the West of Scotland: Twenty-07 study, physical activity trends have been explored descriptively in three age cohorts.

Results

Initial descriptive data reveals that as may be expected, physical activity levels appear to decline with age and males appear to be consistently more active than females, although there is an apparent increase in physical activity levels among younger women.

Future Research

This has been a basic descriptive analysis of the data and this research aim will be built upon by exploring physical activity trajectories using a growth curve modeling technique, before examining the relationship between physical activity and mental health.

Comparing Cadence-determined MVPA to Actigraph-determined MVPA in Older Adults

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Introduction

Common physical activity guidelines for adults recommend 30 minutes of daily physical activity at a moderate-to-vigorous intensity (MVPA; ≥ 3 METs). Tudor-Locke et al. [1] found 3 METs corresponded to walking at approximately 100 steps·min⁻¹; subsequently Rowe et al. [2] developed 3-MET cadence guidelines that were adjusted for height/stride length. The purpose of this study was to compare cadence-determined MVPA to accelerometer-determined MVPA from a norm- and criterion-referenced perspective in older adults (OAs).

Methods

Physical activity was measured over 7 days in 70 adults aged over 60 yr, using Actigraph 7164 accelerometers. Daily minutes of MVPA were calculated using the Freedson 1952 cts·min⁻¹ cutpoint[3] (Freedson-MVPA), Tudor-Locke 100 steps·min⁻¹ cutpoint (100steps-MVPA) and Rowe height-related cadence cutpoints (Ht-MVPA). Means were compared using a dependent 1-way ANOVA, associations were estimated using intraclass correlation coefficients (*ICC*; 2-way ANOVA model), and criterion-referenced agreement was evaluated using modified kappa, sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV), with days classified as either “meeting” (≥ 30 mins) or “not meeting” (< 30 mins) the recommended daily amount of MVPA.

Results

Mean \pm SD daily MVPA minutes were 14.63 \pm 21.04 (Freedson-MVPA), 8.49 \pm 15.66 (100steps-MVPA) and 6.63 \pm 13.85 (Ht-MVPA). Mean Freedson-MVPA minutes were significantly ($p < .05$) and meaningfully (Cohen’s $d = 0.33$ and 0.46) higher than both cadence-determined estimates of MVPA minutes. 100steps-MVPA minutes were also significantly ($p < .05$) but trivially (Cohen’s $d = 0.13$) higher than Ht-MVPA minutes. *ICC* was high between Freedson-MVPA minutes and both 100steps-MVPA minutes (*ICC* = .83) and Ht-MVPA minutes (*ICC* = .80). For identifying days that met/did not meet recommended daily MVPA time, cadence-determined MVPA and Freedson-MVPA showed generally high agreement (modified kappa = .81 and .78) with high positive and negative predictive results (PPV = .88 and .90, NPV = .89 and .91). Specificity was high (.98 and .99), but sensitivity was very low (.43 and .53).

Discussion and Conclusion

In OAs, there is a strong relationship between cadence-determined MVPA and Freedson-MVPA time, although estimates of mean MVPA time were lower when determined by cadence than by the Actigraph/Freedson method. Most criterion-referenced measures of agreement were high, except that sensitivity was very low. This could be due to systematic bias for OAs of either recently-developed cadence guidelines, or of the Freedson cutpoints, or both. Further research is needed into the use of the Freedson Actigraph equations and cadence equations for estimating METs in OAs.

References

- [1] Tudor-Locke C, Sisson SB, Collova T, Lee SM, Swan PD. Pedometer-determined step count guidelines for classifying walking intensity in a young ostensibly healthy population. *Can J Appl Physiol*, 2005; 30: 666-676.
- [2] Rowe DA, Welk GJ, Heil DP, Mahar MT, Kemble CD, Calabro MA, Camenisch K. Stride rate recommendations for moderate intensity walking. *Med Sci Sports Exerc*, 2010; Publish Ahead of Print: DOI 10.1249/MSS.0b013e3181e9d99a.
- [3] Freedson PS, Melanson E, Sirard J. Calibration of the Computer Science and Applications, Inc. accelerometer. *Med Sci Sports Exerc*, 1998; 30: 777-781.

Characterisation of Physical Activity Behaviour in Patients with Intermittent Claudication over a 7-day Period.

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Background

Peripheral arterial disease (PAD) is a leading cause of morbidity and mortality for people in many Western countries. It is estimated that most adults have some degree of atherosclerosis (i.e. lipid deposits that restrict arterial blood flow) by the time they reach middle age. Intermittent claudication (IC) is the most common symptom of ischaemia in the lower limbs. This term describes a pain or tightness of the calf, or the thigh, aggravated by physical exertion and relieved by rest. As a result, IC leads to ambulatory dysfunction and an overall decline in daily physical activity. Although IC has been extensively studied in PAD patients; it is surprising to find that few studies have objectively quantified physical activity in this population. One could argue that free-living physical activity data is an important outcome measure to obtain in PAD; as it may help to accurately quantify certain functional limitations imposed by IC in the community setting. Accurate measurement of daily PA is necessary before interventions can be designed to increase activity to a specific target level. Conventional methods of assessing activity levels in patients with IC have usually involved studying patients over a relatively short period of time within a clinical setting. These methods can be criticised because they fail to evaluate patients over longer periods of time within their normal environment.

Aim

This study aimed to characterise physical activity behaviour in patients with intermittent claudication using continuous 7 day monitoring.

Methods

Thirty patients (mean age 67 ± 9 years) with varying degrees of intermittent claudication and 30 age and sex matched controls had continuous 7-day activity monitoring using an ActivPal™ accelerometer activity monitor. This monitor is attached to a patient's thigh and allows differentiation of sedentary, standing and ambulatory activity.

Results

The majority of daily activity in both claudicants and controls involves relatively short periods of ambulation. Patients with intermittent claudication, however, demonstrated a higher mean number of both standing (3299 ± 1801 vs 2586 ± 955 , $p=0.015$) and walking events (2984 ± 1617 vs 2210 ± 852 , $p=0.013$ Mann-Whitney U test) over the 7-day period. The claudicant group also had more walking events per upright event than the controls (7.71 ± 3.07 vs 5.76 ± 2.00 , $p=0.008$ Mann-Whitney U test). The mean number of walking events per upright events over 5 minute's duration was also significantly higher in patients with intermittent claudication (7.88 ± 4.7 vs 5.27 ± 3.3 , $p=0.000$ Mann-Whitney U test). Overall, claudicants spent more hours standing (33.74 ± 19.32 vs 25.79 ± 8.49 , $p=0.033$ Mann-Whitney U test); and less hours walking (9.5 ± 5.87 vs 12.97 ± 6.27 , $p=0.003$ Mann-Whitney U test) than the controls.

Conclusion

Seven-day continuous ambulatory monitoring in intermittent claudication is able to objectively quantify activity and reveal subtle changes in activity behaviour of the patients in their normal environment. This method of measurement allows a simple method of potentially analysing the effects of management interventions.

Real world, real people; Can we assess walking on a treadmill to establish step count recommendations in an adolescent population

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Background

It is currently not known how much walking should be advocated for good health in an adolescent population and how to assess walking in light of physical activity recommendations. Current step count recommendations for minimum time in moderate intensity activity in adults have been translated predominately from treadmill walking. There are clear and practical advantages to utilizing a treadmill to assess walking and its characteristics. However step count recommendations will be adopted by real people in the real world undertaking overground walking. It is therefore important to establish that treadmill walking accurately estimates the energy cost and step rate required to promote health enhancing (at least moderate intensity) physical activity.

Purpose

The purpose of this study was to compare the energy cost of walking on a treadmill and overground walking in adolescent girls.

Methods

Fifty six adolescent girls aged between 12-15years (mean age 13.4 ± 0.8 yrs; height 160.1 ± 6.6 cm; weight 52.2 ± 9.9 kg) took part in the study which was given ethical approval by the institution's research ethics committee. The following data were collected: a) anthropometric and resting metabolic rate measurements; b) three 6 minute treadmill walking trials (2, 3 and 4 mph at 1% (n=30) and 0% incline (n=26)); c) three overground walking trials lasting a minimum of 4 minutes. Step rate overground was matched to treadmill step rate via a metronome. Oxygen uptake ($\dot{V}O_2$) was assessed using a portable gas analyser, and subsequently converted into METs.

Results

Where step rate overground did not match the prescribed step rate, the girls were excluded from statistical analysis. Treadmill walking (1% incline, n=17) required greater energy cost of walking when compared to overground walking at moderate (3 mph, $p < 0.005$) and moderate to vigorous walking speeds (4mph, $p < 0.001$). At 0% incline (n=21) the energy cost of treadmill walking was greater at moderate to vigorous walking speeds (4mph, $P < 0.001$).

Discussion

At higher walking speeds that most likely reflect health enhancing physical activity, walking overground costs less energy than walking on a treadmill, for the same step rate. Step count recommendations translated from treadmill walking may therefore underestimate the step rate required to promote health enhancing physical activity.

Conclusion

The results suggest that there is a difference in energy cost of walking on a treadmill and overground at the same step rate. This should be considered when utilizing the treadmill in energy expenditure studies. Studies that aim to provide step rate recommendations should focus on overground walking where most walking activity is adopted.

Exploring experiences and engagement of adolescent girls in Physical Education classes, during a physical activity intervention.

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Background

It is now well established that girls engage in less physical activity (PA) than boys throughout the teenage years. As a result, the Fit for Girls (FfG) three year school based programme was jointly developed between **sportscotland** and the Youth Sport Trust. This aims to increase PA levels among girls aged 11-16 in PE classes and extracurricular activities.

Aims

My PhD thesis aimed to explore the barriers to girls' disengagement in the PE environment across four case study schools. It also investigates *if* and *how* disengaged girls' experiences and engagement are affected by a physical activity intervention (FfG) program in their school.

Methods

A questionnaire was designed to identify a cohort of disengaged girls for baseline focus groups. Twelve focus groups (n=41) were carried out during 2008/09 (three in each case study school) to capture girls' opinions, perceptions and experiences of PE classes. Fifteen girls were then selected for three phases of longitudinal in-depth interviews, over a one year period. These were to track changes in girls' engagement and experiences in the PE environment.

Theoretical framework

My theoretical framework is based on Welks (1999) Youth Physical Activity Promotion model (YPAP), a socio-ecological approach which divides the influential correlates of physical activity into 1) individual-level *predisposing factors*, 2) *enabling factors*, including personal attributes and environmental variables and 3) *reinforcing (social) factors*.

Results

The baseline focus groups and Interview phase 1 data, which reflect the individual (predisposing) and social (reinforcing) factors indicated:

- Many girls felt they did not have the skills to perform in PE classes and would compare their ability to peers.
- PE was often seen as not 'worth the hassle' due to the unsupportive nature of the PE environment.
- Girls find it difficult to remain sporty and feminine and so many opt for the later. Also many girls believed they did not fit in with fixed identities that are evident in the PE environment, such as dancers and sporty girls.
- Friends are an important influence on girls' engagement in PE classes, but the relationships girls have with each other can be complex.
- Boys can dominate the PE class and the presence of boys can cause identity conflicts for girls that want to appear feminine, yet still want to engage.
- The teacher relationship is important for girls' engagement. If girls don't feel valued, acknowledged or encouraged this can lead to further disengagement.

The data from interviews 2 and 3 (at which point the Fit for Girls project was underway) show how adapting the PE environment (enabling factors) can affect girls' experiences and engagement in PE:

- Offering a choice of activity is important, but girl's choices are often influenced by other factors such as peers and teachers.
- Consultation and giving girls a voice is central to changing attitudes and behaviour
- A supportive PE environment, including good relationships with PE teachers, is critical for engaging adolescent girls in PE classes.

For more information about SPARColl, please visit
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