

# 1<sup>st</sup> Annual Conference of HEPA Europe

European network for the promotion of health-enhancing physical activity



GLASGOW, SCOTLAND

UNITED KINGDOM

8-9 SEPTEMBER 2008

## Programme & Abstracts

<http://www.sparcoll.org.uk/CONFERENCE.aspx>



The 1<sup>st</sup> annual conference of HEPA Europe is hosted by SPARColl (Scottish Physical Activity Research Collaboration) in association with the University of Strathclyde and co-sponsored by WHO Regional Office for Europe and the Scottish Government.



The University of Strathclyde is a charitable body, registered in Scotland, number SC015263

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## Welcome

Dear colleagues,

Welcome to Scotland and to the HEPA Europe conference and annual meeting in Glasgow! The Scottish Physical Activity Research Collaboration (SPARColl) was delighted that HEPA Europe decided to come to Glasgow for the 1st annual conference and the 4<sup>th</sup> annual meeting. On behalf of SPARColl we hope that you will have an enjoyable stay and will find the programme for the next three days interesting. The plenary speakers are all connected to SPARColl as our international advisors and we are delighted that they have been able to commit to this conference given their busy schedules. We are also blessed with some excellent symposia and hope that you do not have too much difficulty in deciding what to attend. Many thanks to Sonja Kahlmeier and Brian Martin for their help in drafting and finalising the programme.

The programme is outlined in the next few pages and all abstracts are attached. Besides attending the plenary sessions and symposia we hope that you will take time over the first day to view the posters and then on the second day to ask questions of the poster presenters in the poster sessions from 11:00 – 12:00.

We also want to bring to your attention two opportunities to be both physically active and social. The first is the Active Arts trails (guided walking trails around Glasgow city centre to view the public art) on Tuesday 9 September at 17:30. The second is the **ceilidh** (a traditional Scottish evening of social dance) on Tuesday 9 September at 19:30. The dancing is fast and furious and the music will be great. We promise to offer instruction as well!

We would like to note our thanks to our colleagues at Strathclyde Professional Development Unit and Sales and Marketing for their help in staging the conference. Finally we would like to thank all of you for attending and all the session chairs for being willing to keep the programme to time.

With very best wishes for an excellent and productive stay in Scotland,

Professor Nanette Mutrie  
Director of SPARColl

Dr Claire Fitzsimons  
Co-ordinator of SPARColl

## General Information

We are pleased to provide you with the following information regarding the practical arrangements for the meeting that will be held in English only.

### 1. Site of the conference (No 16 on map, page 9)



Rottenrow East, John Anderson Building, John Anderson Campus, University of Strathclyde, 107 Rottenrow East, Glasgow, G4 0NG  
E-Mail: [claire.fitzsimons@strath.ac.uk](mailto:claire.fitzsimons@strath.ac.uk) - URL: [www.strath.ac.uk](http://www.strath.ac.uk)

Please access the John Anderson building (level 4) via the side entrance at top of Taylor Street (\*) where it joins Rottenrow East  
Further orientation maps can be found at  
<http://www.strath.ac.uk/maps/johnandersonbuilding>  
<http://www.strath.ac.uk/maps/johnandersoncampus>

### 2. Registration, opening session and closure (No 16 on map, page 9)

Registration will take place in foyer of the John Anderson building between 15:00 – 18:00 on Sunday 7 September and from 08:30 on Monday 8 September. The conference will begin with the opening session at 09.45 hours prompt.

### 3. Working hours and breaks

The conference will have 30-minute breaks for refreshments in the mornings and afternoons and a one hour lunch break. Packed lunches will be available on levels 3 and 4 in the John Anderson building. *Please note that no smoking is allowed within University of Strathclyde buildings or within 5 metres of any university building entrance.*

### 4. Documentation

Background documents will be included in your conference bag.

#### Plenary and symposia presenters

If you are giving a presentation, we would appreciate receiving your electronic slides no later than **Thursday 4th September 2008**. Please email your presentation to [LS-confsupport@strath.ac.uk](mailto:LS-confsupport@strath.ac.uk) labelled as follows:

- A. The room number you are presenting in
- B. The day, date & time of your presentation
- C. Presenter's surname

(Eg. **K325 Tues 5<sup>th</sup> Aug 13.00-13.30 Morrison.ppt**)

Please see the provisional programme for room numbers and day, date and time of your presentation.

#### Poster presenters

We would like to ask poster presenters to put their posters up between 08:30 and 09:45 on Monday 8 September and to leave them up until the end of the day on Tuesday 9 September. Poster presenters are asked to stand with their posters between 11:00 and 12:00 on Tuesday 9 September.

### 5. Accommodation (No 26 on attached map)

If you have not already reserved a room please visit our website at <http://www.sparcoll.org.uk/CONFERENCE/VenueAccommodationGlasgow.aspx>

Alternatively, select the University accommodation when registering for the conference. Check-in for

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University accommodation is at the Village Office, on the ground floor of the Lord Todd complex, which is located in the middle of the Campus Village (<http://www.rescat.strath.ac.uk/pdf/village.pdf>)

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#### 6. Visa

Please check with your travel agent if a visa is required for your travel to the conference. If so, kindly apply for one as soon as possible. If needed we can provide an official letter of invitation to participate in the meeting which should facilitate the issuance of your visa.

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#### 7. Banks/exchange rate facilities

Exchange desks as well as banks and their agencies are located within or near the airports and the city centre in Glasgow. The opening hours are generally 09:00 to 17:00, although this is subject to changes from bank to bank. There is an ATM near the venue; please ask the registration desk for directions. Major credit cards are accepted in the hotels but cash is advisable to pay for taxi or bus fares, snacks etc. £1 ≈ 1.25€ ≈ 2US\$

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#### 8. IT information (No 15 on attached map)

If you are bringing your laptop, please make sure that it is fully charged in advance. There is no possibility to plug in your laptop during the conference sessions.

The computer lab in room no. C309 in the Colville building is available to use at the following opening hours:

08:00 to 19:00 on Monday and Tuesday (8-9 September)

08:00 to 17:00 on Wednesday (10 September)

At registration you will be allocated a username and password at the IT desk. This will enable you to log on to a University computer.

#### STUDENT ACCOMMODATION – IT CONNECTIONS

Please note that there is NO internet access in any of the student rooms

Local internet cafes near to the conference venue:

**easyInternetCafe:** 57-61 St. Vincent Street, Glasgow, G2 5QX

**Hub Internet Café:** 8 Renfield Street, Glasgow, G2 5AL

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#### 9. Social Programme

##### **- Glasgow City Chambers drinks reception**

Delegates are invited to a Drinks reception in Glasgow City Chambers on Monday evening from 18:00 – 19:00. Glasgow City Chambers are located on George Square, five minutes walk from the conference venue.

##### **- Active Art Trails**

From 17:30 until 18:30 on Tuesday evening delegates are invited to tour the city of Glasgow on foot by taking part in a guided 'Active Art Trail'.

##### **- Conference dinner and ceilidh**

Delegates are invited to the conference dinner and ceilidh on Tuesday evening at 19:30 in the Barony (16 Rottenrow East, Glasgow). The Barony is a short walk from the conference venue.

**\* Please note the cost of the social events is included in the delegate registration fee and there will be no additional**

charge.

10. Library facilities (No 29 on map, page 9)

The university library will be open from 09:00 to 17:00. Please note that the library is closed on Sundays.

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11. HEPA Europe helpers



If you need any assistance please look out for the HEPA Europe Helpers – they will be wearing red t-shirts.

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12. Sports facilities (No 3 on map, page 9)

Our university fitness gym will be available (<http://www.strath.ac.uk/sport/>) free of charge. Delegates must wear their conference badge to be allowed access into these areas. Anyone wishing to use the facilities has to complete a Physical Activity Readiness Questionnaire (PARQ form) (in delegate pack) **and this should be handed in on your first visit.**

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13. Transportation information

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**GETTING TO GLASGOW**

Fly into Glasgow International Airport with a wide range of airlines, including British Airways and Scotland's own no-frills airline, [Flyglobespan](#), which has many flights between Glasgow International Airport and Europe. The low-cost airline [Ryanair](#) operates flights from Glasgow Prestwick Airport, which is around 30 miles from the city centre. Many airlines fly into Edinburgh Airport. For further travel information please see: <http://www.seeglasgow.com/convention-bureau/delegates/arrivalglasgow/arrivalair>

**HOW TO GET FROM THE AIRPORTS TO GLASGOW**

**1. Glasgow International Airport**

**Bus**

Take the 757 bus from stand 3, outside the terminal building. There is a bus every 15 minutes and takes approximately 25 minutes to travel into Glasgow. It travels via the SECC and makes its way along Argyle Street, Queen Street, George Square and up to the Buchanan Bus Station. Ask the bus driver to drop you off at North Hanover street for the University of Strathclyde. The journey will cost £2.90 for a single journey.

**Taxi**

From Glasgow International Airport, the taxi fare to Glasgow city centre is approximately £18.00 - £20.00 single depending on traffic volume.

**2. Glasgow Prestwick Airport**

Glasgow Prestwick Airport is around 30 miles from the city centre and has its own train station with trains running to Glasgow Central Station every half hour and taking approximately 45 minutes. Glasgow Central Station is approximately 15 minutes walk to the Conference venue.

**Train**

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#### From Airport to Glasgow

The service operates

- 0548 – 2308 Monday - Saturday (every 30 minutes)
- 0850 – 2307 Sunday
- Journey time 50 minutes

#### From Glasgow to Airport

The service operates

- 0600 – 0015 Monday – Friday
- 0600 – 2330 Saturday
- 0900 – 2300 Sunday
- Journey time is 50 minutes

#### **Bus**

Glasgow Prestwick Airport is served by Stagecoach Western X77 Express Service and operates to/from Glasgow Buchanan Street Station. This is a direct service which stops outside the airport on the A79.

#### X77 From Airport to Glasgow

The service operates

- 0639 - 2034 Monday – Saturday
- 0810 – 1810 Sunday
- Journey time is 50 minutes

#### X77 From Glasgow to Airport

The service operates

- 0735 – 2330 Monday – Saturday  
(via Kilmarnock from 1820 onwards)
- 0905 – 1905 Sunday
- Journey time is 50 minutes

#### **Taxi**

The fare from Glasgow Prestwick Airport to Glasgow city centre is approximately £55 single.

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### **LAST BUT NOT LEAST**

At this time of the year the climate should be warm (daytime temperature 9-16 degrees Celsius) but can be showery! It may be advisable to bring an umbrella with you!



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We hope we have covered all the administrative points you need to know in connection with the conference. Should you have any queries however, please let us know.

Claire Fitzsimons  
SPARColl Research Coordinator  
[Claire.fitzsimons@strath.ac.uk](mailto:Claire.fitzsimons@strath.ac.uk)

Alison McAllister  
Conference Secretary  
[Alison.mcallister@strath.ac.uk](mailto:Alison.mcallister@strath.ac.uk)

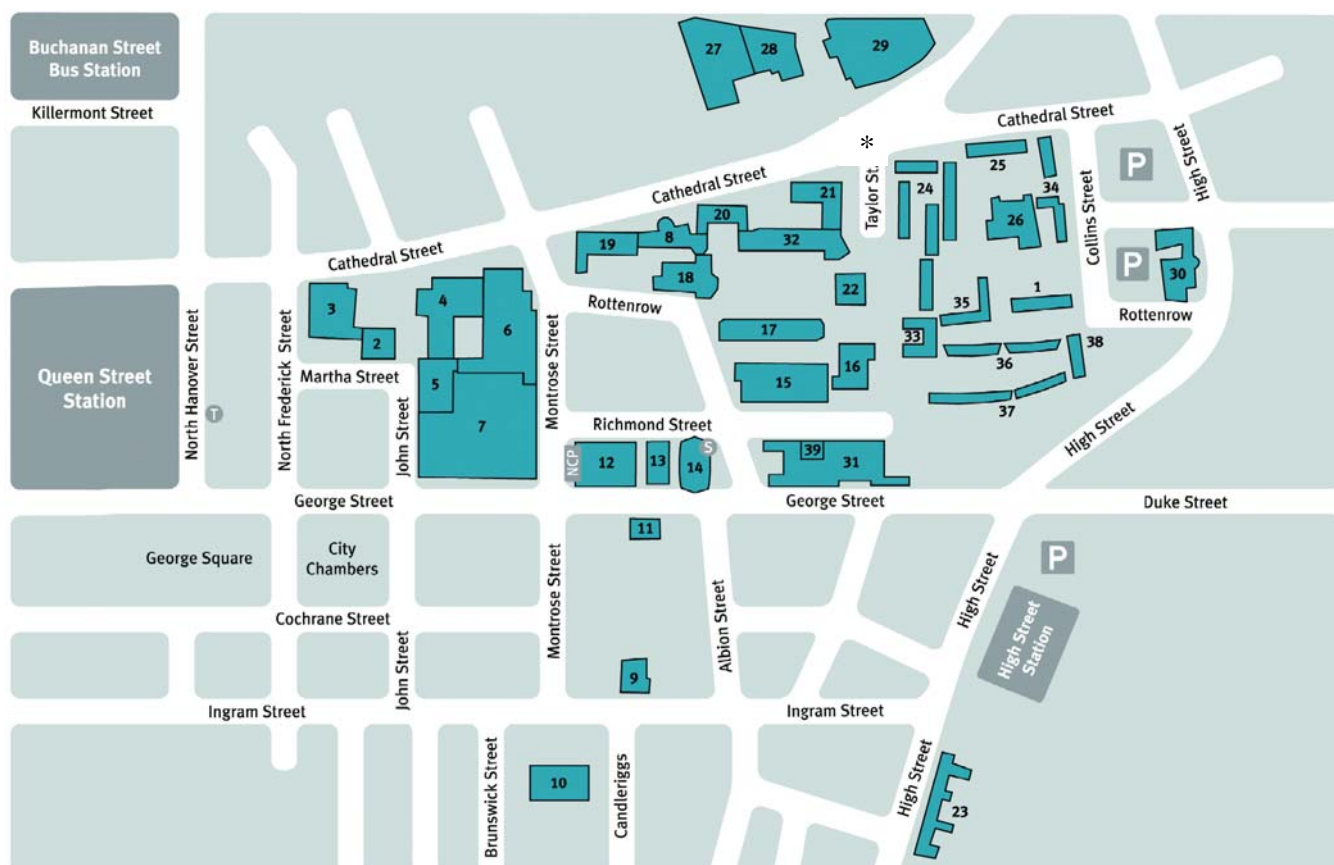




## John Anderson Campus

The John Anderson Campus is a few minutes' walk from the heart of the city centre. All the campus buildings are in easy walking distance of Queen Street Station and George Square. Approaching by motorway, take junction 15 off the M8 and approach the campus via Cathedral Street.

- |                                   |  |                                 |                          |
|-----------------------------------|--|---------------------------------|--------------------------|
| 1 James Gould Hall                | 12 McCance Building                      | 23 Andrew Ure Hall              | 34 Murray Hall           |
| 2 St Paul's Building              | 13 Collins Building                      | 24 Birkbeck Court               | 35 Forbes Hall           |
| 3 Centre for Sport and Recreation | 14 Livingstone Tower                     | 25 Garnett Hall                 | 36 Thomas Campbell Court |
| 4 Thomas Graham Building          | 15 Colville Building                     | 26 The Lord Todd/Village Office | 37 James Blyth Court     |
| 5 Students' Union                 | 16 John Anderson Building                | 27 181 St James Road            | 38 James Young Hall      |
| 6 James Weir Building             | 17 Architecture Building                 | 28 Lord Hope Building           | 39 Accommodation Office  |
| 7 Royal College Building          | 18 Sir William Duncan Building           | 29 Curran Building/Library      | s 24 Hour Security       |
| 8 Graduate School of Business     | 19 Henry Dyer Building                   | 30 Barony Hall                  | t Taxi                   |
| 9 Ramshorn Theatre                | 20 Stenhouse Building                    | 31 Graham Hills Building        | NCP National Car Park    |
| 10 Patrick Thomas Court           | 21 Todd Wing of John Arbuthnott Building | 32 John Arbuthnott Building     |                          |
| 11 Alexander Turnbull Building    | 22 Wolfson Centre                        | 33 Chancellors Hall             |                          |



## Map of the University of Strathclyde

### Key locations:

- 16 = **John Anderson Building (conference venue)** – please enter the John Anderson building (level 4) via the Taylor Street entrance
- 26 = Village Office (student accommodation)
- 15 = Colville Building
- 29 = Library
- 3 = University Sports Centre
- 30 = The Barony (location of conference dinner, Tuesday 9 September)

# Programme

## SUNDAY 7 SEPTEMBER

15:00 – 18:00     *Registration Desk*     Registration open

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## MONDAY 8 SEPTEMBER

08:30 – 18:00     *Registration Desk*     Registration open

09:45 - 10:00     *K3.25*     **OPENING**

*Chair: Professor Brian Martin (Chair of HEPA Europe)*

Speakers:

- Professor Nanette Mutrie  
*Director of SPARColl*
  - Professor Andrew Hamnett  
*Principal & Vice Chancellor  
University of Strathclyde*
- 

10:00 – 10:45

### **KEYNOTE LECTURE 1**

*Chair: Nanette Mutrie (University of Strathclyde)  
Abstract: K1 (page 19)*

*K3.25*

#### **Who you are or where you are? Social and spatial patterning of health**

Professor Sally MacIntyre (MRC Social and Public Health Sciences Unit, Glasgow, Scotland)

10:45 – 11:30

### **KEYNOTE LECTURE 2**

*Chair: Neville Owen (University of Queensland, Australia)  
Abstract: K2 (page 20)*

*K3.25*

#### **Built environments, physical activity, and health: using research to guide policy**

Professor James Sallis (San Diego State University, USA)

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11:30 – 12:00

*foyer  
K3.26  
K3.27  
K4.12*

*Morning coffee & posters*

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12:00 – 13:00

*K3.25*

### **KEYNOTE LECTURE 3**

*Chair: Brian Martin (HEPA Europe)  
Abstract: K3 (page 21)*

#### **The Scottish perspective**

- Dr Matthew Lowther (Scottish Government)
- Professor Nanette Mutrie (Director of SPARColl)
- Mr Kenny Steele (Paths for All Partnership)

13:00 – 14:00	foyer K3.26 K3.27 K4.12	Lunch & posters
14:00 – 15:30		<b>PARALLEL SESSION 1</b>
	K3.14	<b>Symposium 1: Promoting walking - the importance of inequalities</b>  <i>Chair: Sally MacIntyre (MRC Social and Public Health Sciences Unit, Glasgow, United Kingdom)</i> <i>Abstracts: S-01-S-04 (pages 28-32)</i>
14:00 – 14:15		<b>The effect of walking on health outcomes</b> Marie Murphy (University of Ulster, United Kingdom)
14:15 – 14:30		<b>Inequalities in walking prevalence in England</b> Melvyn Hillsdon (University of Bristol, United Kingdom)
14:30 – 14:45		<b>Walking and inequalities: evidence from a systematic review of literature</b> Charlie Foster (University of Oxford, United Kingdom)
14:45 – 15:00		<b>Promoting walking: what works?</b> Charlie Foster (University of Oxford, United Kingdom)
15:00 – 15:30		<b>Panel Discussion</b>
14:00 – 15:30	C4.29	<b>Symposium 2: From strategy to implementation!</b>  <i>Chair: Jo Inchley (University of Edinburgh, United Kingdom)</i> <i>Abstracts: S-05 – S-08 (pages 33-37)</i>
14:00 – 14:15		<b>Active Scotland – physical activity at your fingertips</b> Flora Jackson (NHS Health Scotland, Edinburgh, Scotland)
14:15 – 14:30		<b>Building capacity</b> David Elder (NHS Health Scotland, Edinburgh, Scotland)

14:30 – 14:45		<b>Building a physical activity evidence base</b> Graeme Scobie (NHS Health Scotland, Edinburgh, Scotland)
14:45 – 15:00		<b>Together we are making it happen! - The Physical Activity and Health Alliance</b> Flora Jackson, NHS Health Scotland, Edinburgh, Scotland)
15:00 – 15:30		<b>Panel Discussion</b>
<hr/>		
14:00 – 15:30	<i>C4.30</i>	<b>Symposium 3: European Healthy Stadia programme</b>  <i>Chair: Finn Berggren (University of Southern Denmark, Denmark)</i> <i>Abstracts: S-09 – S-12 (pages 38 – 39)</i>
14:00 – 14:15		<b>Introducing Healthy Stadia programme</b> (Wojciech Drygas, Poland)
14:15 – 14:30		<b>European audit of current practice</b> (Fiona Donovan, Galway Healthy Cities, Ireland)
14:30 – 14:45		<b>Development and piloting of European toolkit</b> (Fiona Donovan, Galway Healthy Cities, Ireland)
14:45 – 15:00		<b>Review of key achievements</b> (Wojciech Drygas, Poland)
15:00 – 15:30		<b>Panel Discussion</b>
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14:00 – 15:30	<i>K3.17</i>	<b>Symposium 4: Active Travel</b>  <i>Chairs: Roger Mackett (University College London) &amp; Andy Cope (Sustrans, United Kingdom)</i> <i>Abstracts: S-13 – S-16 (pages 40 – 44)</i>
14:00 – 14:15		<b>The contribution of active travel to everyday physical activity: methodological issues in transport analysis and evaluation</b> (Roger Mackett, University College London, United Kingdom)
14:15 – 14:30		<b>Active travel and physical activity: seeking the common ground</b> (David Ogilvie, MRC Epidemiology Unit, Cambridge, United Kingdom)
14:30 – 14:45		<b>Active Travel: where is the evidence?</b> (Nick Cavill, University of Oxford, United Kingdom)
14:45 – 15:00		<b>Walking and cycling: what's it worth?</b> (Harry Rutter, National Obesity Observatory, Oxford, United Kingdom)
15:00 – 15:30		<b>Panel Discussion</b>
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15:30 – 16:00	foyer K3.26 K3.27 K4.12	Afternoon tea & posters
<hr/>		
16:00 – 17:30		<b>PARALLEL SESSION 2</b>
	K3.14	<b>Symposium 5: Cycling and Health</b>  <i>Chair: Adrian Bauman (University of Sydney, Australia)</i> <i>Abstracts: S-17 – S-20 (pages 45 – 49)</i>
16:00 – 16:15		<b>Cycling prevalence in England</b> (Melvyn Hillsdon, University of Bristol, United Kingdom)
16:15 – 16:30		<b>Commuter cycling and health</b> (Lars Bo Andersen, University of Southern Denmark, Denmark)
16:30 – 16:45		<b>Interventions to increase cycling at the community level</b> (Nick Cavill, University of Oxford, United Kingdom)
16:45 – 17:00		<b>The costs and benefits of cycling</b> (Harry Rutter, National Obesity Observatory, Oxford, United Kingdom)
17:00 – 17:30		<b>Panel Discussion</b>
<hr/>		
16:00 – 17:30	C4.29	<b>Symposium 6: Promoting walking: One size fits all???</b>  <i>Chair: Tommi Vasankari (UKK Institute, Finland)</i> <i>Abstracts: S-21 – S24 (pages 50 – 54)</i>
16:00 – 16:15		<b>The Paths to Health approach to promoting walking</b> (Mr Kenny Steele, Paths to Health, Scotland)
16:15 – 16:30		<b>An evaluation of a pedometer pack used in the primary care setting with inactive Scottish adults</b> (Ruth Lowry, University of Strathclyde, Scotland)
16:30 – 16:45		<b>Walking during working hours. Do we need to do more?</b> (Samantha Fawcner, Heriot-Watt University, Scotland)
16:45 – 17:00		<b>The impact of Gameplay on walking activity and other health parameters</b> (Gianna Cassidy, Glasgow Caledonian University, Scotland)
17:00 – 17:30		<b>Panel Discussion</b>
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16:00 – 17:30	K3.17	<b>Symposium 7: Walking for Wellbeing in the West</b>

Chair: Charlie Foster (University of Oxford, United Kingdom)

Abstracts: S-25 – S-28 (pages 55 – 59)

16:00 – 16:15	<b>Walking for Wellbeing in the West: behavioural and psychological elements</b> (Nanette Mutrie, University of Strathclyde, Scotland)
16:15 – 16:30	<b>Walking for Wellbeing in the West: physiological Assessment</b> (Myra Nimmo, Loughborough University, United Kingdom)
16:30 – 16:45	<b>How did WWW participants view their physical environment? Overview of results and methodological issues</b> (Annemarie Wright, University of Strathclyde, Scotland)
16:45 – 17:00	<b>Walking for Wellbeing in the West: objective environmental assessment</b> (Catharine Ward Thompson, Edinburgh College of Art, Edinburgh, Scotland)
17:00 – 17:30	<b>Panel Discussion</b>

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16:00 – 17:30	<i>C4.30</i>	<b>Symposium 8: Monitoring and evaluation frameworks for interventions promoting active travel for transport and for physical activity</b>
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Chair: Sonja Kahlmeier (HEPA Europe)

Abstracts: S-29 – S-32 (pages 60 – 64)

16:00 – 16:15	<b>Active Travel and Better Use Measures</b> (Kate Viner, Department for Transport, London, United Kingdom)
16:15 – 16:30	<b>Evaluation of the Big Lottery Fund Well-being programme</b> (Stacy Sharman, Big Lottery Fund, London, United Kingdom)
16:30 – 16:45	<b>Introducing the monitoring and evaluation framework for Travel Actively</b> (Lisa Muller, Sustrans, Newcastle, United Kingdom)
16:45 – 17:00	<b>Appraisal of the Travel Actively evaluation framework</b> (Emma Adams, Loughborough University, United Kingdom)
17:00 – 17:30	<b>Panel Discussion</b>

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18:00 – 19:00	<i>Glasgow city chambers</i>	<b>Welcome reception</b>
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## TUESDAY 9 SEPTEMBER

9:00 – 9:45	K3.25	<b>KEYNOTE LECTURE 4</b> <i>Chair: Catharine Ward Thompson (OPENspace, Edinburgh College of Art, United Kingdom)</i> <i>Abstract: K4 (page 22)</i>  <b>Creating walkable environments: does one size fit all?</b> Billie Giles-Corti (University of Western Australia, Australia)
9:45 – 10:30	K3.25	<b>KEYNOTE LECTURE 5</b> <i>Chair: Neville Owen (University of Queensland, Australia)</i> <i>Abstract: K5 (page 23)</i>  <b>New physical activity recommendations and guidelines: messages to different stakeholders</b> Pekka Oja (UKK Instituutti, Finland & Karolinska Institute, Sweden)
10:30 – 11:00	foyer K3.26 K3.27 K4.12	<i>Morning coffee &amp; posters</i>
11:00 – 12:00	K3.26 K3.27 K4.12	<b>Poster session</b> <i>(poster presenters are asked to stand with their posters during this time)</i>
12:00 – 13:00	foyer K3.26 K3.27 K4.12	<i>Lunch &amp; posters</i>
13:00 – 13:45	K3.25	<b>KEYNOTE LECTURE 6</b> <i>Chair: Eddy Engelsman (Ministry of Health, Welfare and Sport, The Netherlands)</i> <i>Abstracts: K6-8 (pages 24-26)</i>  <b>International Activities:</b> <b>HEPA Europe</b> (Brian Martin, Chair of HEPA Europe) <b>WHO Regional Office for Europe</b> (Sonja Kahlmeier and Francesca Racioppi, WHO Regional Office for Europe) <b>European Commission</b> (Michal Krejza, Head of the Sport Unit, European Commission, Brussels) Discussion
13:00 – 13:10		
13:10 – 13:25		
13:25 – 13:40		
13:40 – 13:45		

13:45 - 14:30	K3.25	<b>KEYNOTE LECTURE 7</b> <i>Chair: Matthew Lowther (National Physical Activity Policy Co-ordinator, Scottish Government)</i> <i>Abstract: K9 (page 27)</i>  <b>Policy approaches to physical activity – the mysteries of politics or an advocacy opportunity</b> Adrian Bauman (University of Sydney, Australia)
14:30 – 15:00	foyer K3.26 K3.27 K4.12	<b>CONFERENCE PHOTOGRAPH</b> <i>Afternoon tea &amp; posters</i>
15:00 – 16:30		<b>PARALLEL SESSION 3</b>  <i>Chair: Nanette Mutrie (Director of SPARColl)</i> <i>Abstracts: S-33 – S-37 (pages 65 – 70)</i>  K3.14 <b>Symposium 9: The built environment and physical activity: closing the evidence gap</b>  15:00 – 15:15 <b>State of the evidence: overview of the NICE review on the built environment and physical activity</b> Fiona Bull, Loughborough University, United Kingdom 15:15 – 15:30 <b>Challenges of longitudinal study designs: overview and progress with RESIDE</b> Billie Giles-Corti, University of Western Australia, Australia 15:30 – 15:45 <b>The built environment and cycling. The new research agenda</b> Sylvia Titze, Institute of Sports Science, Graz, Austria 15:45 – 16:00 <b>Building the evidence base: where to from here in the US?</b> James Sallis, San Diego State University, USA 16:00 – 16:15 <b>Project ALPHA: developing a European measure of the built environment</b> Charlie Foster, University of Oxford, United Kingdom 16:15 – 16:30 <b>Panel Discussion</b>

15:00 – 16:30	K3.17	<p><b>Symposium 10: Adolescent girls: influences on physical activity participation and strategies for effective engagement</b></p> <p><i>Chairs: Samantha Fawcner &amp; Ailsa Niven (Heriot Watt University, Edinburgh, United Kingdom)</i>  <i>Abstracts: S-38 – S-41 (pages 71 – 75)</i></p>
15:00 – 15:15		<b>Countering declines in physical activity during early adolescence: what can we learn from active girls?</b> (Jo Inchley, University of Edinburgh, United Kingdom)
15:15 – 15:30		<b>Exploring the decrease in girls' physical activity from primary to secondary school: a narrative approach</b> (Ann-Marie Knowles, Heriot Watt University, Edinburgh, United Kingdom)
15:30 – 15:45		<b>Critical hours: physical activity and sedentary behaviour of adolescent girls after school</b> (Andy Atkin, Loughborough University, United Kingdom)
15:45 – 16:00		<b>Increasing physical activity in adolescent girls: a systematic review of non-curricular interventions</b> (Stuart Biddle, Loughborough University, United Kingdom)
16:00 – 16:30		<b>Panel Discussion</b>
<hr/>		
15:00 – 16:30	C4.29	<p><b>Symposium 11: Measurement: methods for analysing patterns of activity</b></p> <p><i>Chair: David Rowe (University of Strathclyde, Glasgow, United Kingdom)</i>  <i>Abstracts: S-42 – S-45 (pages 76 – 80)</i></p>
15:00 – 15:15		<b>Techniques for the analysis of long-term recordings of posture patterns</b> (Malcolm Granat, Glasgow Caledonian University, Glasgow, United Kingdom)
15:15 – 15:30		<b>The analysis of the physical activity of older adults in different care settings</b> (Margaret Grant, Glasgow Caledonian University, Glasgow, United Kingdom)
15:30 – 15:45		<b>Can we distinguish household activity from community activity?</b> (Gillian MacLellan, Glasgow Caledonian University, Glasgow, United Kingdom)
15:45 – 16:00		<b>The analysis of sedentary behaviour</b> (Sebastien Chastin, Glasgow Caledonian University, Glasgow, United Kingdom)
16:00 – 16:30		<b>Panel Discussion</b>

15:00 – 16:30	C4.30	<p><b>Symposium 12: Sport for health: it is time for the sport community to become a real player for HEPA</b></p> <p><i>Chair: Myra Nimmo (University of Loughborough, United Kingdom)</i>  <i>Abstracts: S-46 – S-49 (pages 81 – 85)</i></p>
15:00 – 15:15		<p><b>New physical activity recommendations invite sports to benefit public health</b>  (Pekka Oja, UKK Instituutti, Finland &amp; Karolinska Institute, Sweden)</p>
15:15 – 15:30		<p><b>EU physical activity guidelines: an instrument to promote HEPA</b> (Michal Krejza, European Commission, Brussels)</p>
15:30 – 15:45		<p><b>How can a sport club be health promoting?</b> (Sami Kokko, University of Jyväskylä, Jyväskylä, Finland)</p>
15:45 – 16:00		<p><b>Sports club for health: guidelines for health-promoting sport programmes</b>  (Jorma Savola, Finnish Sport for All Association, Helsinki, Finland)</p>
16:00 – 16:30		<p><b>Panel Discussion</b></p>
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16:30 – 17:15	K3.25	<p><b>FINAL ROUNDTABLE</b></p> <p><b>Walking, physical activity and health: challenges for the future</b></p> <p><i>Chair: Professor Fiona Bull (University of Loughborough, United Kingdom)</i></p> <p><b><u>Panel members:</u></b></p> <ul style="list-style-type: none"> <li>• Adrian Bauman (University of Sydney, Australia)</li> <li>• James Sallis (San Diego State University, USA)</li> <li>• Billie Giles Corti (University of Western Australia, Australia)</li> <li>• Sally MacIntyre (MRC Social and Public Health Sciences Unit, Glasgow, Scotland)</li> <li>• Pekka Oja (UKK Instituutti, Finland &amp; Karolinska Institute, Sweden)</li> <li>• Nanette Mutrie (University of Strathclyde, Glasgow, Scotland)</li> <li>• Mary Allison (NHS Health Scotland, Edinburgh, Scotland)</li> <li>• Matthew Lowther (National Physical Activity Policy Co-ordinator, Scottish Government, Scotland)</li> </ul>
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17:30 – 18:30		<p><b>Active Art Trails:</b> an opportunity to explore the city of Glasgow</p>
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19:30 – 00:00	Barony	<p><b>Conference dinner and Ceilidh</b></p>
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# Keynote abstracts

**K-1**

**Title      Who you are or where you are? Social and Spatial Patterning of Health**

**Author**   Sally MacIntyre  
               Director  
               MRC Social and Public Health Sciences Unit  
               Glasgow  
               Scotland, United Kingdom

**Abstract** In the nineteenth and early twentieth centuries public health activities were directed towards damaging aspects of the physical environment (polluted air and water, unsanitary housing etc). From the mid twentieth century, with the increasing importance of chronic diseases, more public health attention was given to individuals' behaviours and lifestyles, and more recently to aspects of the social environment such as social capital. This lecture will discuss how individual and environmental factors, and interactions between them, might influence patterns of population health.

Title **Built Environments, Physical Activity, and Health: Using Research to Guide Policy**

Author James Sallis  
Professor, Department of Psychology  
San Diego State University  
USA

Abstract There is substantial evidence that built environments play a role in shaping physical activity, obesity, and other health outcomes. Recent studies are examining how these factors may work differently in various population subgroups and identifying specific environmental attributes that may be most promising to target for change. For the research to lead to public health impact, policy changes will be required to alter built environments. Researchers around the world are gaining expertise about policy change, developing relationships with advocacy groups, and taking more active roles in using research to guide policy. This presentation will present examples of this work and make recommendations for improving our impact.



Title     **The Scottish Perspective**

Authors Matthew Lowther  
National Physical Activity Policy Co-ordinator  
Scottish Government  
Scotland, United Kingdom

Nanette Mutrie  
Director of SPARColl  
University of Strathclyde  
Scotland, United Kingdom

Kenny Steele  
Programme Manager of Paths to Health  
Paths for All Partnership  
Scotland, United Kingdom

Abstract Scotland is one of the few countries to have a government strategy concerned with the promotion of physical activity. The strategy became policy in 2003 and is entitled 'Let's make Scotland more active'. The strategy can be accessed electronically at:<http://www.scotland.gov.uk/Publications/2003/02/16324/17895>  
The strategy recommended that Scotland should have a national physical activity co-ordinator and the current post holder is Dr Mathew Lowther. Dr Lowther will open this session by providing an overview of the strategy and the current plan for promoting physical activity in Scotland. Professor Mutrie will follow with an overview of the Scottish Physical Activity Research Collaboration ([www.sparcoll.org.uk](http://www.sparcoll.org.uk)) which was funded, as a direct result of the strategy, to increase the evidence base in relation to the promotion of physical activity. The final section of this session will be presented by Mr Kenny Steele who manages the Paths to Health programme ([www.pathsforall.org.uk/pathstohealth](http://www.pathsforall.org.uk/pathstohealth)). This programme is seen as a key delivery mechanism of the Scottish strategy and aims to promote walking for health across Scotland.



Title **Creating walkable environments: Does one size fit all?**

Author Billie Giles-Corti

Professor, School of Population Health, University of Western Australia  
Director of the Centre for the Built Environment and Health  
Australia

**Abstract** In the last decade there has been growing recognition that the urban environment influences health. The design of neighbourhoods and public open space design as well as the provision of transit are associated with levels of walking, cycling and use of public transport. Conversely, low-density, automobile dependent suburbs discourage non-motorised forms of transport and the use and provision of public transport. Nevertheless, how to optimize urban environment from a health perspective and to meet the needs of different population groups (e.g., children and young people, older adults, those with disabilities, as well as the general public), has been largely unexplored. The evidence suggests that walkable neighbourhoods increases walking in able-bodied adults, but does this hold true for children and older adults? Moreover, what will be the impact of these environments on recreational walking? Will increased housing density produce other unintended negative consequences such as social or mental health problems? As the field advances and policy-makers and practitioners push towards policy, we need to be cognizant of the complexities and consider the pre-conditions for creating pedestrian (and cycling) friendly environments that cater for multiple users throughout the life course. As the evidence-base develops, this talk seeks to consider some of these complexities with the aim of helping to advance the research, policy and practice agendas.

Title **New physical activity recommendations and guidelines: messages to different stakeholders**

Author Pekka Oja  
retired  
UKK Institute  
Tampere, Finland

**Abstract** Systematic collection and analysis of the scientific evidence on the health effects of physical activity led to the landmark physical activity recommendation for public health by the U.S. Centre for Disease Control and Prevention and American College of Sports Medicine in 1995: "Every US adult should accumulate 30 minutes or more of moderate-intensity physical activity on most, preferably all, days of the week". This recommendation introduced the moderate-intensity physical activity concept leading to the inclusion of many lifestyle activities as health-enhancing physical activity. Subsequently this recommendation has been adopted widely throughout the world. In Europe, according to a recent WHO Regional Office inventory, 21 countries have issued basically similar recommendations. The most recent physical activity recommendations for adults and older adults were issued by the American College of Sport Medicine and the American Heart Association in 2007. They differ from the 1995 recommendation in that either moderate-intensity or vigorous-intensity aerobic physical activity or their combination is recommended. They also include specific recommendations for musculoskeletal health. The key message in these recommendations is that while moderate amounts of physical activity is good for many people's health more and more vigorous activity is even better. Based on the individually-oriented physical activity recommendations several policy guidelines how to promote physical activity for public health have recently been presented. The European Union's white papers on Diet and Physical Activity and on Sport provide guidance on how the Union and the member states should take action in promoting physical activity for public health. Most recently the Sport Unit of the European Commission is about to issue the EU Physical Activity Guidelines. These policy-oriented guidelines call for actions not only the physical activity and public health communities but also a wide range of other stakeholders in education, urban planning and architecture, transport, environment and sport. These multi- and cross-sectoral actions are expected to introduce new approaches for the promotion of health-enhancing physical activity.

Title **International Activities: HEPA Europe**

Author Brian W. Martin  
Swiss Federal Institute of Sport  
Magglingen  
Switzerland

**Abstract** Sports for all has a long history in Europe, but only few examples of long-term integrated physical activity promotion strategies existed until recently. From 1996 until 2001, the first European Network for the promotion of health-enhancing physical activity existed as a programme funded exclusively by the European Union and was instrumental in facilitating exchange and providing policy development support. The number of congresses and publications covering physical activity and health has continued to increase, but since 2001 there was no European forum anymore supporting the development of national strategies for physical activity promotion.

In this situation, the idea for a new network was developed and HEPA Europe, the new European Network for the Promotion of Health-Enhancing Physical Activity, was founded at the Gerlev Physical Education and Sports Academy in Denmark in 2005. Both financial support and in kind contributions are provided from the 52 (May 2007) network member institutions. HEPA Europe has had annual meetings in Tampere, Finland and in Graz, Austria; and the current meeting in Glasgow, Scotland. The network's activities include the development of advocacy booklets and of an international inventory of documents on physical activity promotion as well as the organisation of several working groups on specific issues such as sports and physical activity promotion in children and adolescents. Detailed activity reports and work programmes are available at [www.euro.who.int/hepa](http://www.euro.who.int/hepa).

Since the re-founding of HEPA Europe in 2005, its steering committee and its members have shown considerable initiative and the close collaboration with WHO has proven crucial. This has allowed the network to grow, to provide support for members and to make contributions to international developments and events like the 2006 WHO European Ministerial Conference on Counteracting Obesity.

Title **International Activities: Update on recent developments in physical activity promotion**

Authors Sonja Kahlmeier, Francesca Racioppi  
WHO Regional Office for Europe  
Rome, Italy

Abstract To implement WHO's Global Strategy on Diet, Physical Activity and Health (<http://www.who.int/dietphysicalactivity/en/>) and the commitments of the Ministerial Conference on Counteracting Obesity (<http://www.euro.who.int/obesity/conference2006>) held in 2006, the Regional Office for Europe is carrying out a number of activities to strengthen the field of physical activity promotion and to support Member States in addressing the challenges.

Related activities which will be presented include:

Follow-up activities of the Ministerial Conference, particularly:

- a survey on the development and implementation of activities and policies related to nutrition, physical activity and obesity in Member States
- update of the online inventory on physical activity promotion (<http://data.euro.who.int/PhysicalActivity/>) which now contains about 300 documents and links

a new joint WHO/DG Sanco project on "Monitoring progress on improving nutrition and physical activity and preventing obesity", that aims at building an information platform on diet, nutrition, physical activity and obesity, including 4 main parts:

- data on nutrition, diet and physical activity, overweight and obesity
- national nutrition policies and physical activity promotion policies and information on actions to implement them
- case studies and good practices.
- status of implementation of key commitments of the European Charter on Counteracting Obesity, the European Commission's White paper on "A Strategy for Europe on Nutrition, Overweight and Obesity related health issues" and the 2nd Action plan for food and nutrition policy

activities under the Transport, Health and Environment Pan-European Programme (THE PEP, [www.thepep.org](http://www.thepep.org)) some of which are carried out in close collaboration with HEPA Europe, particularly:

- guidance and tools for the quantification of health benefits from cycling and walking
- practical approaches to the economic valuation of transport-related health costs, including from lack of walking and cycling

THE PEP is currently also preparing its Third High-level Meeting on Transport, Environment and Health, to be held on 22-23 January 2009.

activities under the Healthy Cities and urban governance programme, which has healthy urban planning and physical activity/healthy living as core themes of its current implementation phase and will present numerous examples from the local level at its next International Healthy Cities conference in October 2008 (<http://www.euro.who.int/healthy-cities>)

Title **International Activities: EU Action to Promote HEPA**

Author Michal Krejza  
Head of the Sport Unit  
European Commission  
Brussels, Belgium

**Abstract** The European Commission's sport-related activities reflect the current legal and institutional framework, given the possibilities and limits of the Commission's role in the absence of a specific Treaty provision on sport. The significance of the White Paper on Sport (COM (2007) 391, 11.07.2007) lies in the fact that it is the European Commission's first comprehensive strategy in the field of sport. In the White Paper, HEPA is a central element in the very first section of the first thematic chapter, and the Commission proposes a vision for supporting the HEPA concept. HEPA may be furthered in various ways, possibly with a financial component, but HEPA should also be mainstreamed into the Commission's activities. This is already being done in connection with the draft EU Physical Activity Guidelines which will be dealt with in more detail in a presentation at symposium level.



**Title**     **Policy approaches to physical activity - the mysteries of politics or an advocacy opportunity**

**Author**    Adrian Bauman  
 Professor of Public Health  
 Sydney University  
 Australia

**Abstract** Policy approaches are important to promoting physical activity, and are considered an essential component of an integrated national or regional physical activity strategy. They provide resources that underpin the development of physical activity guidelines, a strategic framework being developed, programs delivered, and monitoring and surveillance systems established (1). Essentially, this is seen as a rational sequence of steps that can be mapped in program planning and through logic models. The policy advocacy tasks are getting the issue of inactivity on the decision-makers agenda, and identifying the health and other sector benefits, including economic, health cost savings, and social benefits, and then proposing a strategic plan comprised of evidence based interventions to increase physical activity. This sequence seldom operates in a linear manner, and the mechanisms through which governments and agencies support and invest in physical activity programs remains obscure. Political factors, media pressures, trends in community 'issues', and economic forces all influence the translation of evidence into policy.

Case studies from different countries are used to illustrate the variegated nature of physical activity policy, how it has been developed, and how it evolves, devolves and mutates over time. These case studies include the cyclical sport policy frameworks around Olympic Games and Mega-events; the "ParticipACTION legacy and future in Canada, and the sequence of interagency marriages and divorces that have characterized a decade of inter-sectoral policy in Australia [2]. In developing and transitional countries, physical activity policy has evolved in fragmented ways, seeking refuge within cardiovascular, diabetes or obesity prevention frameworks; it seldom develops as a stand-alone policy, and rarely co-exists in concert with Sport, Education, urban planning and transport sectors.

A re-consideration of physical activity policy suggests that it is a more random set of political processes, which may be influenced by targeted physical activity advocacy. These include within-sector advocacy, between-sector discussions, the use of 'media advocacy' and the use of opportunistic advocacy to influence decision makers. The 'Trojan horse' approach, that, for example, may utilize current obesity preoccupations of many governments, can be used to indirectly support physical activity program development. These more radical approaches may be necessary to position physical activity commensurate with its potential contributions to health, disease prevention, and social and community well-being.

[1] Public Health Rep. 2004;119(3):346-51.

[2] Aust NZ Journal of Health policy [in press]

# Symposia Abstracts

## PARALLEL SESSION 1

Monday 8 September, 14:00-15:30

### Symposium 1: Promoting Walking - the importance of inequalities

#### Room K3.14

**Organiser** Dr Charlie Foster  
Senior Researcher  
Dept. Public Health  
University of Oxford  
Headington, United Kingdom  
(Charlie.foster@dphpc.ox.ac.uk)

#### **Proposal** Rationale

There is now overwhelming evidence about the associations between regular physical activity and a reduction in risk of death, and risk of major diseases like CVD, stroke and diabetes. Physical activity contributes to well being and is essential for good health. Walking is one type of physical activity and so is included in many of the studies that have examined the relationship between physical activity and health. The considerable evidence base for the links between physical activity, walking and health have been reported in a number of international policy documents. Walking has become an important cornerstone in many physical activity promotion campaigns and in recent years has received considerable research attention. However patterns of walking vary with inequalities and as such may lead to differences in correlates and ability to respond to interventions to promote walking.

#### Purpose

The purpose of this symposium is to provide an up-to-date review of the epidemiological and empirical findings on the promotion of walking with particular consideration to this data and inequalities. The symposium will allow participants to update their understanding of the research evidence in the area of walking.

#### Speakers

Dr Marie Murphy will examine the evidence from epidemiological literature on the effect of walking on morbidity and mortality. Dr Melvyn Hillsdon will examine the epidemiological literature on the patterns of different walking behaviours across different social and income groups. Dr Steve Allender (presentation will be given by Dr Charlie Foster) will examine the correlates literature on what is known about walking and inequalities from both qualitative and quantitative studies. Finally Dr Charlie Foster will present the evidence on what works to promote walking from individual, environmental and community focused intervention studies with a particular focus on inequalities. All speakers will highlight the gaps in the literature and provide recommendations for future directions.

Participants	Name	Institution	Topic
1	Marie Murphy	University of Ulster	<b>The effect of walking on health outcomes</b>
2	Melvyn Hillsdon	University of Bristol	<b>Inequalities in walking prevalence in England</b>
3	Steve Allender	University of Oxford	<b>Walking and inequalities: evidence from a systematic review of literature</b>
4	Charlie Foster	University of Oxford	<b>Promoting walking: what works?</b>



**Author** Dr Marie Murphy  
Head of School  
School of Sports Studies  
University of Ulster  
Co Antrim, United Kingdom  
(mh.murphy@ulster.ac.uk)

**Co-  
Authors**

**Title** The effect of walking on health outcomes

**Abstract** Current physical activity guidelines recommend the accumulation of at least 30 minutes of moderate intensity physical activity on most days of the week (Haskell et al 2007). Walking is the most popular physical activity among the EU population and has become an important cornerstone in many physical activity promotion campaigns. Walking is the activity of choice for individuals trying to incorporate additional physical activity into daily life (Dunn et al 1998). One of its appeals lies in the fact that it is accessible to all, requires little skill and there is little risk of injury. Since walking requires no special facilities or equipment and is useful for personal transport it may be particularly suitable in economically disadvantaged communities. A recent meta-analysis suggests that walking is sufficient stimulus to increase cardiovascular fitness, reduce body weight and body fat, and decrease resting diastolic blood pressure in previously sedentary but otherwise healthy individuals but most trials. The predominance of female subjects in such walking studies may indicate the intuitive appeal that this form of activity has for women. Early epidemiological studies of physical activity reported associations between total volume of walking and coronary heart disease risk (Morris et al 1973, Paffenbarger et al 1978). More recent studies have attempted to consider the relationship between both walking volume and speed and other health outcomes including osteoporosis (Gregg et al 2003) and Type II diabetes (Jeon et al 2007). This presentation will examine the physiological demands and health benefits of both walking and review the epidemiological and empirical literature on the effect of walking on morbidity, mortality and disease risk.

**Author** Dr Melvyn Hillsdon  
Senior Lecturer  
Exercise Nutrition and Health Science  
University of Bristol  
Bristol, United Kingdom  
(m.hillsdon@bristol.ac.uk)

**Co-  
Authors**

**Title** Inequalities in walking prevalence in England

**Abstract Purpose:** To describe the prevalence of walking overall and by multiple indicators of socioeconomic position.

**Methods:** Cross sectional analysis of data extracted from the Sport England Active People survey. A telephone survey of 363,724 adults in England (aged 16 plus) covering all 354 Local Authorities, conducted between 15/10/05 and 16/10/06. The survey provides the largest sample size ever established for physical activity and allows levels of detailed analysis previously unavailable, identifying how participation varies from place to place and between different subgroups in the population. Further, analysis was conducted on residents' perceptions of ease of access to everyday destinations and main mode of transport from a cross-sectional study of 6,700 residents in a large metropolitan city in England.

**Results:** Overall 69% of English adult's report any 30 minute occasion of walking in the 4 weeks prior to interview. Walking rates vary according to age, ethnicity, educational attainment, housing tenure, car ownership, household income, employment status and health status as well as neighbourhood deprivation. Residents who report easy access to everyday destinations are significantly more likely to walk or cycle compared to people who report more difficult access. However, perceptions of access are socially patterned.

**Conclusion:** Increasing the prevalence of people who walk for transport could make a significant contribution to public health. However, interventions aimed at achieving modal shift need to better understand the causes of walking inequalities to avoid worsening them.



**Author** Dr Steven Allender (presentation will be given by Dr Charlie Foster)  
 Senior Researcher  
 Public Health  
 University of Oxford  
 Headington, United Kingdom  
 (steven.allender@dphpc.ox.ac.uk)

**Co-Authors** Foster C Cavill N

**Title** **Walking and inequalities: evidence from a systematic review of literature**

**Abstract** There is a clear socio-economic gradient in the prevalence and incidence of chronic diseases such as heart disease and some cancers. Intermediate risk factors such as dyslipidemia and obesity and modifiable risk factors such as nutrition and physical activity also show some relationship with measures of inequality. While there is some evidence about inequality gradients in broad risk categories such as physical activity, little is known about the component parts of physical activity (such as walking)

**Purpose:** In this presentation we report from systematic literature reviews of both qualitative and quantitative studies of physical activity and on what is known about walking and inequalities.

**Methods:** Studies were included in the review if they used evidence from developed countries, reported primary studies published from 1990 onwards in English language in peer reviewed journals.

**Results:** A number of neighbourhood variables were associated with walking including aesthetics; access to places to walk; convenience; the presence of destinations; pavements; easy access to a public transport system. Walking for transport was found to be related to access to public open space; safety; perceptions of traffic; presence of pavements; and, a walkable environment. Other variables include the convenience and comfort of car travel; land use planning policies; density of traffic; traffic speeds and social safety. Other socially patterned variables associated with walking identified in this review include education; social support from friends/peers; overweight/obesity and race/ethnicity.

**Conclusion:** Both the qualitative and quantitative literature identify a myriad of social factors that have some association with physical activity generally and with walking more specifically. There are few studies that examine the relationship between inequalities in these variables and walking behaviour.

**Author** Charlie Foster  
University of Oxford  
United Kingdom

**Co-  
Authors**

**Title** Promoting walking: what works?

**Abstract** There is clearly a strong body of evidence for the multiple health and social benefits of walking and yet few people walk sufficiently to benefit their health. While health and transport surveys seem to contradict each other, it does appear that levels of walking may have been increasing in recent years, among some social groups. If this is a true upward trend, then there is a need to build on this positive development, and to prioritise and target those social groups who are walking less. Examination of intervention studies that use face to face, environmental and community approaches to promoting walking show positive effects on behaviour among participants however there is a danger that these types of interventions may increase inequalities. A recent systematic review of the best available evidence on interventions to promote walking (Ogilvie et al, 2007), concluded that the most convincing evidence of effectiveness in increasing walking was for interventions delivered at the level of the individual or household or through group-based approaches. However evidence to support differential effects by inequalities was less clear as most studies (34/48 studies) did not report how the effect of interventions on walking varied between demographic or socioeconomic groups. Participants in these studies were generally white, well educated and middle aged and it is possible that the observed effects may be different in the wider population. In broader environmental and community approaches again the same lack of evidence can be found. Perhaps a failure of researchers to evaluate their recruitment methods for trials and community interventions adds to our lack of evidence in this field creating an "inverse evidence law". With this in mind interventions should offer a range of different approaches that reflect and react to an individual's characteristics and their local cultural environment.



## Symposium 2: From Strategy to Implementation!

### Room C4.29

<b>Organiser</b>	Mrs Maureen Kidd NHS Health Scotland Edinburgh, United Kingdom (maureen.kidd@health.scot.nhs.uk)		
<b>Proposal</b>	<p>Scotland has had in place a national physical activity strategy, <i>Let's Make Scotland More Active</i> since 2003. This strategy takes a long-term approach to increasing physical activity levels and has been commended by the WHO as '<i>an excellent example of how policymakers can adopt an integrated and multi-sectoral approach to improve public health and reduce chronic disease</i>'.</p> <p>As the national health improvement agency for Scotland, NHS Health Scotland has a leadership role in supporting implementation of the national physical activity strategy. Within the organisation, there is a dedicated 'team' of individuals, working on physical activity, across a range of specialist areas, including public health sciences, learning and development, and programme design and delivery. This symposium considers the key milestones from the last five years of the national strategy, together with any learning to date, and looks forward to the next implementation phase.</p> <p><b>Goal:</b></p> <p>The symposium will provide an overview of the NHS Health Scotland programme, with a particular focus on creating the notion of a physical activity 'workforce'. Given the broad range of ways in which we can be active and the social, cultural and environmental influences on physical activity levels, the workforce potentially involved in promoting physical activity is considerable both in terms of size, diversity and complexity.</p> <p>The presentations will consider the following aspects:</p> <ul style="list-style-type: none"> <li>• Creating a platform for sharing learning and experience</li> <li>• Building capacity within a diverse workforce</li> <li>• Translating evidence into action</li> <li>• Raising awareness of local opportunities for physical activity</li> </ul> <p><b>Speakers:</b></p> <p>Flora Jackson has been the Physical Activity Alliance Co-ordinator since its launch in 2006 and is the Project Lead for 'Active Scotland';</p> <p>David Elder is a Learning and Development Advisor at NHS Health Scotland and is also responsible for developing a workforce strategy for Healthy Weight;</p> <p>Graeme Scobie is the Public Health Advisor with a specialist remit for Physical Activity.</p>		
<b>Participants</b>	<b>Name</b>	<b>Institution</b>	<b>Topic</b>
1	Flora Jackson & Katie Cooke	NHS Health Scotland	<b>Active Scotland – Physical Activity at Your Fingertips</b>
2	David Elder	NHS Health Scotland	<b>Building capacity</b>
3	Graeme Scobie	NHS Health Scotland	<b>Building a physical activity evidence base</b>
4	Flora Jackson	NHS Health Scotland	<b>Together We Are Making It Happen! - The Physical Activity and Health Alliance</b>

**Author** Flora Jackson, Physical Activity Alliance Co-ordinator &  
Katie Cooke, e-Services Advisor  
NHS Health Scotland  
Edinburgh, Scotland

**Co-  
Authors**

**Title** **Active Scotland – Physical Activity at Your Fingertips**

**Abstract** The development and maintenance of a physical activity website, including a database of local opportunities and contacts is cited in the Scottish physical activity strategy 'Lets' Make Scotland More Active', (2003, Scottish Executive) as a means of increasing awareness of the benefits of physical activity as well as providing access to information.

The need for such a resource has since been reinforced through research (NHS Health Scotland 2004, 2005) and anecdotal evidence gathered from members of the Physical Activity and Health Alliance, particularly primary care teams and allied health professionals who report that they do not know where to signpost their patients/clients in order to be more active.

The Active Scotland web site aims to support practitioners working with patients to answer the question "where do I go to be active?" creating a dataset of national and local physical activity infrastructure, including opportunities and mechanisms of support from the public, private, and voluntary sectors (recognising the importance of all types of physical activity opportunities from specialist facilities in leisure centres to the value of local community centres and village halls), and making this information easy to use and accessible to help the people of Scotland become more active.

This will be achieved by:

- Collecting information across all 32 Local Authority areas in Scotland
- Identifying national agencies and organisations that provide mechanisms of support nationally at a local level.
- Developing a framework for recording layers of physical activity information 'Points of Interest' i.e. opportunities, services, places, spaces and contacts, to provide a comprehensive physical activity dataset for Scotland.

As the national health improvement agency for Scotland, NHS Health Scotland is best placed to provide national leadership and co-ordination with partners in the development of the website.

In short, the Active Scotland website fulfils an unmet need, pooling information from a substantial number of local and national sources. In the absence of the Active Scotland website the user journey to access the simplest of information can take considerable time.

It is anticipated that the Active Scotland website [www.activescotland.org.uk](http://www.activescotland.org.uk) will be rolled out across Scotland in Autumn 2008.

**Author** David Elder  
Learning and Development Advisor  
NHS Health Scotland

**Co-  
Authors**

**Title** **Building Capacity**

**Abstract Purpose:** To demonstrate how a holistic approach to workforce development, taking account of policy, evidence and practice and involving all stakeholders; including national and local government, national bodies, NHS organisations and voluntary and community organisations can result in real collaboration and successful workforce development towards delivering physical activity promotion.

**Methods:** Over the last 3 years a number of strategic and operational workforce development interventions have been delivered in order to increase capacity and expertise across the workforce. This has included the development and implementation of a comprehensive, policy and evidence based Workforce Development Plan for Physical Activity. This was not only for physical activity professionals but also a much wider workforce for whom physical activity promotion opportunities were more opportunistic but equally important. A range of supporting training interventions, networking opportunities and supporting resources have also been developed.

**Results:** A number of interventions have been completed very successfully and many more are continuing, and will continue to make a difference. Evaluation of these workforce development initiatives is at various stages. Successful interventions to increase capacity and awareness have included:

- A range of training courses including Physical Activity Consultation
- Training for Trainers courses in, for example, Health Behaviour Change and Participatory Appraisal
- Networking opportunities (including the Physical Activity and Health Alliance)
- Physical Activity Master-classes
- Leadership development linking members of the workforce from all sectors
- Policy and evidence briefings
- E-Learning packages to raise awareness of physical activity recommendations, policy and practice
- A range of Training Needs Analyses conducted
- Development of Physical Activity Occupational Standards

**Conclusion:** For 5 years now Scotland has had policy drivers in the shape of “Let’s Make Scotland More Active” and for 3 years we have had a comprehensive Workforce Development plan. The Scottish Government and NHS Health Scotland have an ongoing commitment to keep up the momentum built up over the 3 years. This will ensure quality workforce development for physical activity and that our workforce remains ready and capable of delivering for a more active Scotland.



**Author** Graeme Scobie  
Public Health Adviser for Physical Activity  
NHS Health Scotland  
Edinburgh, Scotland

**Co-  
Authors**

**Title** Building a physical activity evidence base

**Abstract** **Purpose:** EfA (Evidence for Action) is a Division within the Public Health Science Directorate of Health Scotland (HS). We help HS and its partners to develop and deliver policies and activities that are effective in improving population health and reducing health inequalities.

**Methods:**

- Gather and synthesise evidence relating to the effectiveness of promoting physical activity to the Scottish population, and communicate that evidence in ways that help policy-makers, organisations and practitioners to develop and deliver effective action
- To promote and contribute to the further development of approaches to obtaining effectiveness evidence for physical activity through research and evaluation and using it to guide policies and other action that will improve health and reduce health inequalities.

**Results:**

- Generation of evidence briefings and evidence maps on promoting physical activity to improve health and reduce health inequalities
- Translation of academic research into evidence into action for front line staff working in physical activity
- Commissioning and managing new areas of research and evaluation in collaboration with the Scottish Government and HS Programmes Directorate
- Production and dissemination of commentaries on Public Health Guidance published by the National Institute of Health and Clinical Excellence (NICE) in England, so that organisations, professionals and others can make use of it in a Scottish context
- Work with other evidence agencies to develop more fully fit-for-purpose approaches to capturing, assessing and communicating evidence on how physical activity can improve health and tackle health inequalities.

**Conclusions:** Tackling physical inactivity at a population wide level is complex and requires an approach based on what works best to promote and sustain physical activity at all levels of the population. Within the Evidence for Action division progress is being made to deliver the evidence in a usable format which front line staff can use in their roles in promoting physical activity.

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**Author** Flora Jackson  
Physical Activity Alliance Co-ordinator  
NHS Health Scotland  
Edinburgh, Scotland

**Co-  
Authors**

**Title** Together We Are Making It Happen! - The Physical Activity and Health Alliance

**Abstract Purpose:** The Physical Activity and Health Alliance is a joint collaboration facilitated by NHS Health Scotland on behalf of the Scottish Government in order to support the Physical Activity & Health Practitioners of Scotland in the implementation of the Scottish Physical Activity Strategy 'Let's Make Scotland More Active' (Scottish Executive, 2003).

**Methods:** Taking the form of a virtual e-network ([www.paha.org.uk](http://www.paha.org.uk)) the Alliance provides practitioners in the field of physical activity & health in Scotland with an interactive vehicle for two-way communication through which existing evidence, policy and practice is disseminated and its members encouraged to share knowledge and learning.

**Results:** The Alliance has and continues to evolve, with and for its members. With a growing membership in excess of 2000 members from across Scotland *and beyond*, from a range of professional and volunteer backgrounds, including local government, NHS Health Boards and Community Healthcare Partnerships, Community Planning, voluntary and community organisations.

**Conclusion:** The work of the Alliance is integral to the development, delivery and dissemination of the wider NHS Health Scotland and Scottish Government physical activity programmes. By facilitating the engagement of practitioners and national organisations in the exchange of information from national to local and local to national level the Alliance provides crucial links bridging the gaps between policy and practice across the physical activity workforce.

## Symposium 3: European Healthy Stadia Programme

### Room C4.30

<b>Organiser</b>	Mr Aodhan O'Donnell European Healthy Stadia Programme Heart of Mersey Liverpool, United Kingdom (aodhanodonnell@googlemail.com)
<b>Proposal</b>	<p><i>'Healthy Stadia are .....those which promote the health of visitors, fans, players, employees and the surrounding community... places where people can go to have a positive healthy experience playing or watching sport'</i></p> <p><b>Context</b> Sport plays an important part within communities. Millions of people across Europe attend a sports stadium each week, to watch their team, to work or to use the stadium's facilities. Stadia offer important opportunities for reaching large numbers of people, improving public health and reducing inequalities.</p> <p><b>Rationale</b> Sports stadia are in an excellent position to develop community health initiatives and can support communities to become more physically active. Facilitating supporters to walk or cycle to events, 'opening' up facilities for the use of local communities and delivering community programmes focused on healthy lifestyles are all important contributions to increase physical activity levels.</p> <p>Stadia are iconic within communities, are often located in less affluent areas and attended by hard to reach groups. Stadia therefore have the potential to develop as a setting to address public health issues and offer an ideal location to reach large numbers of people, to improve public health and to reduce health inequalities.</p> <p><b>Description</b> The Healthy Stadia programme, which is part-funded by the European Union through the Public Health Executive Agency aims to support sports stadia promote public health.</p> <p>The programme emphasises that sports stadia are in a powerful position to develop health initiatives. General objectives of the programme include:</p> <p>Demonstrating the impact sports stadia have on local communities and to harness that potential Support stadia promote healthier practices and increase their recognition of corporate social responsibilities towards staff, customers and local communities Support stadia to adopt a healthy settings approach, as previously adopted in schools, hospitals, workplaces, cities etc. Provide an innovative, multi stakeholder settings approach to addressing social determinants at a European level. Develop a European Healthy Stadia network to bring together a wide range of sports clubs and stadia to share experiences and to learn from each other's experiences in promoting healthy lifestyles. Use the high profile nature of sports clubs and stadia brands to reach large European audiences and promote global health messages.</p> <p><b>The foundation of the programme is based on strong 'joined up' European working both in the management and development of the work but also in terms of delivery.</b> Programme Management is led by a steering group comprising eight countries (England, Poland, Italy, Finland, Spain, Ireland, Latvia and Greece)</p> <p>A broader collaborative partnership representing approximately 20 countries across Europe links to the ongoing programme developments and ensures activities, such as the audit and evaluation questionnaire, are widely disseminated and engaged with.</p>

### **Symposium Overview**

The symposium will focus upon the learning from the partnership approach across Europe, processes and approaches adopted as well as the key deliverables.

### **Overview of Presentations relating to European Healthy Stadia Programme (Symposium Proposal)**

#### **Introducing Healthy Stadia Programme**

**S-09**

##### **Wojciech Drygas**

A background to the development of the Healthy Stadia programme. Highlighting the rationale behind the programme including the findings from the initial pilot work undertaken in Merseyside

An overview of the European programme detailing the main aims and objectives including the key deliverables and partners involved.

#### **European audit of current practice**

**S-10**

##### **Fiona Donovan**

A presentation which sets out the main findings from the European Audit of Current Practice completed in May 2008. Information will be provided on the extend to which stadia are currently involved in activities which support health improvement (e.g. physical activity, green transport, community engagement etc)

#### **Development and Piloting of European toolkit**

**S-11**

##### **Fiona Donovan**

A toolkit to support stadia develop as settings which support health is currently being piloted in North, South, East and Western Europe. This presentation will set out the process involved in developing and testing the toolkit and progress made by the pilot sites in implementing action plans (with a focus on initiatives relating to physical activity)

#### **Review of Key Achievements**

**S-12**

##### **Wojciech Drygas**

An overall review of the main programme developments to date. It will also focus on upcoming priorities for the programme as it continues to develop over the next year. It will also highlight the opportunities which exist for stakeholders to become involved in the programme, for example, through the European Healthy Stadia Network.

<b>Participants</b>	<b>Name</b>	<b>Institution</b>	<b>Topic</b>
<b>1</b>	Wojciech Drygas	Medical University, Lodz	<b>Introduction to Healthy Stadia programme (key action and deliverables)</b>
<b>2</b>	Fiona Donovan	Galway Healthy Cities	<b>European audit of current practice</b>
<b>3</b>	Fiona Donovan	Galway Healthy Cities	<b>Development and piloting of European toolkit</b>
<b>4</b>	Wojciech Drygas	Medical University Lodz	<b>Review of key achievements</b>

## Symposium 4: Active Travel

Room: K3.17

<b>Organiser</b>	Prof Roger Mackett Professor of Transport Studies Centre for Transport Studies University College London London, United Kingdom (rlm@transport.ucl.ac.uk)		
<b>Proposal</b>	<p>Purpose: The purpose of this symposium is to explore methodological and empirical issues involved in understanding the contribution of active travel to physical activity and how it can be increased.</p> <p>Roger Mackett will give the introductory presentation. He will speak about the contribution of active travel to everyday physical activity, particularly the methodological issues in transport analysis and evaluation. Two key issues will be explored: firstly how planning and other policies have encouraged the development of car-oriented lifestyles which make it difficult for many households to adopt more active travel; and secondly, how the methodology used for the planning and evaluation of transport schemes is inconsistent with the promotion of active travel.</p> <p>David Ogilvie will highlight mismatches between current evaluative paradigms and methods in transport research and public health research and discuss the potential for developing common methodological ground in two new studies: the Connect2 study, which will examine the effects of new walking and cycling infrastructure on travel behaviour, physical activity and carbon emissions, and a proposed study of the transport and health impacts of new town development in the Cambridge region.</p> <p>Nick Cavill will draw on the evidence from two recent reviews: a study of transport interventions that led to NICE guidance on physical activity and the environment, and a review of economic appraisals of walking and cycling conducted for WHO. These will show the promising approaches being taken at the health/transport interface but will also highlight the deficiencies in the evidence base.</p> <p>Harry Rutter will outline the approach taken to producing evidence-based guidance for transport professionals on the economic appraisal of the health components of walking and cycling schemes. This WHO guidance, and the associated Health Economic Assessment Tool (HEAT) for cycling, demonstrates one method of forging stronger links between health and transport professionals and exploring common methodological approaches.</p>		
<b>Participants</b>	<b>Name</b>	<b>Institution</b>	<b>Topic</b>
1	Roger Mackett	Centre for Transport Studies, University College London	<b>The contribution of active travel to everyday physical activity: methodological issues in transport analysis and evaluation</b>
2	David Ogilvie	MRC Epidemiology Unit, Cambridge	<b>Active travel and physical activity: seeking the common ground</b>
3	Nick Cavill	Cavill Associates	<b>Active travel: where is the evidence?</b>
4	Harry Rutter	South East Public Health Observatory, Oxford	<b>Walking and cycling: what's it worth?</b>

**Author** Prof Roger Mackett  
Professor of Transport Studies  
Centre for Transport Studies  
University College London  
London, United Kingdom  
(rlm@transport.ucl.ac.uk)

**Co-  
Authors**

**Title** **The contribution of active travel to everyday physical activity: methodological issues in transport analysis and evaluation.**

**Abstract Purpose:** Walking and cycling ('active travel') offer opportunities for increasing physical activity as part of everyday life. Whilst this is simple conceptually, in practice it is not, because many households have adopted car-orientated lifestyles which make it difficult for them to travel by means other than car. This has been exacerbated by policies across many fields, which have encouraged decentralisation of urban activities such as shopping and leisure, and encouraged the concept of consumer choice in publicly provided goods such as schools and medical facilities. It may be possible, as recommended in the guidance on the promotion and creation of physical environments that support increased levels of physical activity published by NICE in January 2008, to make changes to the environment that encourage more active travel. However, any such schemes would be developed by transport planners who use methodologies for forecasting and evaluating transport schemes that are not consistent with the objective of increasing walking and cycling. More specifically, the modelling techniques are derived from random utility theory in which it assumed that travel offers a negative utility and so a rational person will minimise the time and other resources spent on a trip. Similarly, the evaluation methodology puts a positive monetary value on a reduction in travel time. This means that schemes are designed to reduce travel time. However, in general, the longer a walk or cycle ride, the greater the health benefits. Hence there is a fundamental inconsistency between the methodology used to evaluate transport schemes and the desire to use such schemes to increase physical activity. This dilemma can be addressed by putting a positive monetary value on the benefits from improved health. This is a non-trivial issue. The purpose of this paper is to explore these issues in a manner that can be understood by an audience with no knowledge of the technical issues in this field.

**Author** Dr David Ogilvie  
Clinical investigator scientist  
MRC Epidemiology Unit  
Cambridge, United Kingdom  
(dbo23@medschl.cam.ac.uk)

**Co-  
Authors**

**Title** **Active travel and physical activity: seeking the common ground**

**Abstract Purpose:** Increasing the use of sustainable transport can contribute to achieving numerous public health goals including promoting physical activity, reducing injuries and pollution, and curbing the climate-changing effects of burning fossil fuels. Making a credible case for interventions in this field may therefore increasingly depend on evidence which can be produced, understood and applied across different sectors such as public health, transport, energy and planning. The purpose of this paper is to review selected transport intervention studies, critique their utility from the perspective of population physical activity promotion, and discuss how the limitations identified might be addressed in new studies which transgress traditional disciplinary boundaries.

**Methods:** The methods and findings of studies of three well-known interventions in the transport sector will be outlined and critiqued: the TravelSmart programme, the London congestion charging scheme, and the national cycle city programme in Odense.

**Results:** The three examples illustrate several important clashes between the typical evaluative paradigms and methods of transport research and public health research. These include the use of randomisation, the use of control groups, the use of vehicle-based versus person-based outcome measures, the selection and sensitivity to change of outcome metrics, the testing and reporting of statistical significance and the importance of publication in peer-reviewed journals. All three studies appear to have identified substantial increases in active travel attributable to these interventions, but translating their findings into clear evidence of an increase in physical activity or health gain in the population at large involves several leaps of faith.

**Conclusions:** In retrospect, these examples illustrate lost opportunities for studies which could have been designed to address an intersectoral set of research questions. The paper will conclude with a discussion of the potential for developing common methodological ground in two new studies: the iConnect study, an interdisciplinary collaboration which will examine the effects of new walking and cycling infrastructure on travel behaviour, physical activity and carbon emissions, and a proposed study of the transport and health impacts of new town development in the Cambridge region.

**Author** Mr Nick Cavill  
Research Associate  
Public Health  
University of Oxford  
Stockport , United Kingdom  
(nick@cavill.net)

**Co-Authors** Harry Rutter, National Obesity Observatory Sonja Kahlmeier, World Health Organization  
Pekka Oja, Karolinska Institute Francesca Racioppi, World Health Organization Adrian Davis,  
Adrian Davis Associates Charlie Foster, University of Oxford

**Title** **Active travel: where is the evidence?**

**Abstract** **Background.** Increasing the proportion of people who regularly walk or cycle for transport will require significant shifts in public policy. Many of these policy changes may be perceived to be unpopular in a car-dominated society, so will need to be thoroughly justified before implementation. Alongside this, policymakers are being encouraged to demand evidence of effectiveness before they launch new initiatives. This places great demands on researchers who need to produce evidence that can directly inform policy. This challenge is increased due to the cross-disciplinary nature of the topic. This paper will draw on two recent reviews to explore the nature of the evidence at interface of health and transport.

**Methods.** The first study reviewed transport interventions that led to NICE guidance on physical activity and the environment. Studies were included in the review if they assessed the effect of an intervention related to modifying the transport environment, with an outcome measure of physical activity behaviour (including walking/cycling/modal shift). The second study was conducted for WHO and reviewed published economic valuations of transport projects that presented the findings of an economic valuation of an aspect of transport infrastructure or policy, and included data on walking and/or cycling and health effects in the valuation.

**Results** The NICE study included 26 studies, comprising 20 before and after measures studies (of which 3 used a comparison or control area) and 6 studies presenting only data from after the intervention. Topics covered included traffic calming; multi use trails; closing or restricting use of roads; road user charging; cycle infrastructure; safe routes to school. The WHO study included sixteen papers from 9 countries. The majority of studies were cost-benefit analyses. Five studies covered both walking and cycling, and ten cycling only.

**Conclusion** The reviews demonstrated the wide variation in the approaches taken to evaluating the impact of transport interventions, and to including the health effects of physical activity in economic analyses of transport projects. This is not helped by a lack of transparency of methods in many studies. Influencing policy on active travel will be enhanced through greater consistency in approaches between health and transport researchers.



**Author** Dr Harry Rutter  
 Director  
 National Obesity Observatory  
 Oxford , United Kingdom  
 (harry.rutter@gmail.com)

**Co-Authors** Nick Cavill, Cavill Associates Sonja Kahlmeier, World Health Organization Pekka Oja,  
 Karolinska Institute Francesca Racioppi, World Health Organization

**Title** Walking and cycling: what's it worth?

**Abstract** **Background:** The calculation of cost-benefit ratios is an established practice in transport planning, and often includes consideration of health costs such as injuries. However, the health benefits of transport interventions are rarely taken into account in such analyses. This project reviewed recent approaches to cost-benefit analysis of transport-related physical activity, and developed guidance on approaches to the inclusion of health effects of transport-related physical activity in economic analyses of transport infrastructure and policies.

**Methods:** Building on the results of a systematic review (outlined in the previous paper in this symposium), an expert group was convened to reach consensus on a methodology for economic appraisal of walking and cycling interventions. Draft methodological guidance and spreadsheet-based tool were developed based on the expert group's recommendations. This draft tool was tested and piloted by the members of the group.

**Results:** The guidance addressed a number of key issues identified in the review including: the use of disease-specific or all-cause mortality; the assumption of a dose-response relationship between physical activity and health outcomes; activity substitution (in which people may take up one activity such as cycling but stop doing another); economic value of life; and discounting. The Health Economic Assessment Tool for Cycling (HEAT for Cycling) was developed to illustrate the agreed principles. It is a simplified model intended for use by transport professionals, requiring only readily available input data. It is currently only applicable to cycling, but it is intended that a HEAT for walking model will be developed at a later stage.

**Conclusion:** The project has produced guidance intended to improve the standard of economic appraisal of health effects related to walking and cycling. Use of the guidance and the HEAT for cycling supports transport planners who wish to include health benefits of active travel in economic assessments of transport interventions. It is hoped that this tool and guidance will be a small but important step towards common methodological approaches between public health and transport professionals.

## PARALLEL SESSION 2

Monday 8 September, 16:00-17:30

### Symposium 5: Cycling and Health

Room K3.14

**Organiser** Adrian Bauman  
University of Sydney  
Australia

**Proposal** This symposium is concerned with cycling and health, and uses a public health framework for defining the magnitude of the problem (Bauman and Hillsdon), identifying the epidemiological benefits of cycling (Andersen), identifying solutions at the community level (Cavill) and the economic argument for cycling (Rutter). This symposium provides a comprehensive overview of cycling prevalence, benefits and the status of 'solutions' to increase population levels of cycling.

Bicycle ownership is prevalent in developed countries, but regular cycling is very low in frequency among adults and children; data from Australia and England are used to illustrate this, with the challenges outlined for [exposure] measurement in epidemiological studies of cycling and health outcomes. The health benefits of cycling are derived mostly from large scale observational studies, rather than from population-level controlled trials, but are identifying health benefits attributable to cycling, independent of walking and other physical activities. Public health solutions to low cycling rates involve partnerships outside the health sector, especially in the development of cycling infrastructure in the urban environment. The risks and benefits of cycling need to be weighed up, and economic appraisals are being developed to consider these.

In conclusion, research into population-level cycling is at an early stage compared to walking or leisure time physical activity, but cycling holds promise for health promotion as it is potentially a leading and modifiable contributor to daily energy expenditure.

Participants	Name	Institution	Topic
1	Melvyn Hillsdon	University of Bristol	<b>Cycling prevalence in England</b>
2	Lars Bo Andersen	University of Southern Denmark	<b>Commuter cycling and health</b>
3	Nick Cavill	Cavill Associates	<b>Interventions to increase cycling at the community level</b>
4	Harry Rutter	National Obesity Observatory, Oxford	<b>The costs and benefits of cycling</b>

**Author** Melvyn Hillsdon  
University of Bristol  
United Kingdom

**Co-  
Authors**

**Title** Cycling prevalence in England

**Abstract** **Purpose:** To describe the national prevalence of cycling overall and by population subgroup.  
**Methods:** Cross sectional analysis of data extracted from the Sport England Active People survey. A telephone survey of 363,724 adults in England (aged 16 plus) covering all 354 Local Authorities, conducted between 15/10/05 and 16/10/06. The survey provides the largest sample size ever established for physical activity and allows levels of detailed analysis previously unavailable, identifying how participation varies from place to place and between different subgroups in the population.  
**Results:** Overall just 10.7% of English adult's report any 30 minute occasion of cycling in the 4 weeks prior to interview. Cycling rates follow similar patterns to overall physical activity rates. Rates are higher in men and decline with age. Rates are higher also higher in respondent's with cars, higher socioeconomic groups and less deprived neighbourhoods and vary according to ethnic group.  
**Conclusion:** Cycling prevalence in England is low and there are significant variations by population subgroup. At present cycling is predominantly an activity of younger white men. Considerable effort will be required to increase cycling rates to a level that will make a significant contribution to public health and reduce physical activity inequalities.

**Author** Lars Bo Andersen  
Institute of Sport Sciences and Clinical Biomechanics  
University of Southern Denmark

**Co-  
Authors**

**Title** Commuter cycling and health

**Abstract** Commuter bicycling may potentially improve health in the population both because it provides physical activity and decrease pollution and CO<sub>2</sub> emission. Commuter bicyclists have lower mortality rate (1), and studies in children suggest that bicyclists are more fit (2). Most studies about bicycling and health are observational studies, and little has been published where the effects of interventions have been tested. No large scale randomized trials exist, but longitudinal observational studies are available.

An important reason for the lack of RCTs is that interventions often include changes in built environment such as new bike lanes, changes in traffic lights, garages where the bikes can be parked safe and dry, and other environmental changes. This type of intervention is difficult to control and rigid designs are rare. It is therefore difficult to find reports in the scientific literature even if some large scale studies have been performed

(<http://www.cykelby.dk/eng/index.asp>). It would only be possible to conduct RCTs with increased commuter bicycling few places in the world. It would be possible in Denmark and Holland where routes are safe. Non-cycling school pupils could be randomized to cycling and control, and health benefits monitored. However, we can only present cross sectional associations between cycling and health parameters, and the effects of changes in cycling habits from observational studies.

This talk will highlight some of the key results from the observational studies. Observations have consistently shown higher general physical activity levels in active commuters including walkers and bicyclists. However, physical fitness levels are only higher in bicyclists compared to passive travellers where walkers have similar fitness levels as passive travellers.

Longitudinal studies have also shown that passive travellers who changed to cycling commuting increased fitness level compared to those who stayed passive. These results are supported by the fact that mortality rates are lower in bicycle commuters (1,3) and subjects who change travelling mode from passive to bicycling experience lower mortality risk than subjects who stayed passive. Changes in built environment have successfully increased number of bicycle trips in an area where bicycle habits were already highly developed, which illustrate a great potential for improved public health.

In conclusion, it is possible to improve bicycle habits and observational studies suggest that this could translate into improved public health. However, we lack RCTs which aim to increase bicycling and where health outcome is improved.

1. Andersen LB, Schnohr P, Schroll M et al. All-cause mortality associated with physical activity during leisure time, work, sports, and cycling to work. Arch Intern Med 2000;160:1621-8.

2. Cooper AR, Wedderkopp N, Wang H et al. Active travel to school and cardiovascular fitness in Danish children and adolescents. Med Sci Sports Exerc 2006;38:1724-31.

3. Matthews CE, Jurj AL, Shu XO et al. Influence of exercise, walking, cycling, and overall nonexercise physical activity on mortality in Chinese women. Am J Epidemiol 2007;165:1343-50.

**Author** Nick Cavill  
Cavill Associates

**Co-  
Authors**

**Title** Interventions to increase cycling at the community level

**Abstract** **Background:** There is enormous variation across Europe in approaches to encouraging cycling as a mode of transport. Some cities such as Copenhagen and Amsterdam have achieved almost legendary status among cycling promoters as cities that have achieved impressive increases in cycling, through sustained development of pro-cycling policies and infrastructure. This compares with countries such as the UK which have seen steep declines in cycling in recent years, leaving it seen increasingly as only an option for leisure or sport. **Methods:** This paper will draw on the learning from selected European cities that have demonstrated successful approaches to increasing cycling, in order to consider lessons for cycle promotion in the UK. **Results & conclusion:** European cities that have successfully increased the modal share for cycling appear to have done so primarily through significant investment in infrastructure for cycling and reallocation of road space away from the private car. This has been achieved only with clear commitment from policymakers to prioritise cycling as a serious mode of transport. The UK is far behind, with many transport planners still appearing to view cycling as an irritation. Encouraging developments in London (following the congestion charge and significant investment in infrastructure) and in the first wave of Cycling Demonstration Towns provide hope that the UK is catching up and may be about to enter a new phase of treating cycling seriously.



**Author** Dr Harry Rutter  
 Director  
 National Obesity Observatory  
 Oxford , United Kingdom  
 (harry.rutter@gmail.com)

**Co-  
 Authors**

**Title** The costs and benefits of cycling

**Abstract** **Background:** Cycling is a healthy and environmentally benign mode of transport, with great potential to benefit health through regular physical activity. However, the perceived level of danger is often quoted as a barrier to increasing cycling by potential cyclists, parents and policymakers alike. An objective assessment of the balance of risks and benefits of cycling is important to support any efforts designed to increase cycling.

**Methods:** This paper draws on two projects (for WHO and Transport for London) in which new methods were developed to assess the mortality impacts of regular cycling (based on Andersen et al's work in Copenhagen) and balance those against the danger of cyclists being killed on the road. This includes the phenomenon of 'safety in numbers' which describes the relationship between levels of cycling and levels of danger.

**Results:** The evidence for the human and economic value of investment in cycling is compelling, with health gains greatly outweighing health and other costs. When health impacts are appropriately assessed, the vast majority of cycling interventions produce positive benefit cost ratios, which compare very favourably with other transport interventions.

**Conclusion:** Economic appraisal of cycling benefits from an accurate assessment of both the mortality benefits of regular cycling, and an objective assessment of danger. Some of these approaches have been incorporated into new WHO guidance on the economic appraisal of cycling and walking interventions.

## Symposium 6: Promoting walking: One size fits all???

**Room: C4.29**

<b>Organiser</b>	Ms Gemma Ryde Paths to Health Development Officer Paths to Health Alloa, United Kingdom (gemma.ryde@pathstohealth.org.uk)		
<b>Proposal</b>	<p><b>Rationale and goal</b></p> <p>The relationship between physical activity and good health is well established. However, the prevalence of physical inactivity is high, especially in Scotland, with 59% of men and 72% of women putting their health at risk due to an inactive lifestyle (Scottish Executive, 2003). This problem spans the life course with 27% of boys and 40% of girls not reaching the physical activity guidelines (Scottish Executive, 2003). In the Scottish population, physical inactivity is now a more common risk factor than smoking or obesity for the development of coronary heart disease and other chronic diseases (Scottish Executive, 2003).</p> <p>Walking has been recommended as the most likely mode of activity to increase physical activity levels among those who are inactive. Walking has also been described as a near perfect mode of physical activity, given it is accessible to almost all individuals, is relatively free of injury risk and requires no specialist equipment (Morris &amp; Hardman, 1997).</p> <p>With a good understanding of the issues of physical inactivity and a recommended form of activity for inactive populations, is it a case of one size fits all? This symposium will discuss 4 different environments to promote and encourage walking, each with a different target audience; workplace, community, healthcare and young people. It will draw on innovative research in promoting walking along with ground level experience of delivering walking from the Scottish Government funded Paths to Health project.</p> <p><b>Presenters</b></p> <p>Community - Kenny Steele          Kenny will be presenting on the Scottish Government funded Paths to Health model and how this can encourage walking in the community</p> <p>Healthcare – Ruth Lowry          Ruth will be presenting research on a Primary Care Pedometer Pack used to help health professionals promote walking in the Primary Care setting.</p> <p>Workplace - Sam Fawkner          Sam will be presenting her pilot work investigating the need for walking initiatives in the workplace</p> <p>Young people - Gianna Cassidy          Gianna will be presenting her research on an innovative pedometer that interacts with computer games.</p>		
<b>Participants</b>	<b>Name</b>	<b>Institution</b>	<b>Topic</b>
1	Kenny Steele	Paths to Health	The Paths to Health approach to promoting walking
2	Ruth Lowry	University of Strathclyde	An evaluation of a pedometer pack used in the primary care setting with inactive Scottish adults
3	Sam Fawkner	Heriot Watt University	Walking during working hours. Do we need to do more?
4	Gianna Cassidy	Glasgow Caledonian University	The impact of Gameplay on walking activity and other health parameters

**Author** Mr Kenny Steele  
Paths to Health Programme Manager  
Paths to Health  
Inverness, United Kingdom  
(kenny.steele@pathstohealth.org.uk)

**Co-  
Authors**

**Title** The Paths to Health approach to promoting walking

**Abstract** Paths to Health was established in 2001 to contribute to health improvement in Scotland through promotion of walking for health. The aim of Paths to Health is to increase the health and well-being of inactive people by promoting regular walking within local communities. Paths to Health provide national coordination of health walking in Scotland and deliver under 4 main themes: community, health care, workplace, young people. The work of Paths to Health has now been identified as forming a key delivery mechanism for Scotland's Physical Activity Strategy and Paths to Health is now core funded by the Scottish Government Health and Well-Being Directorate.

Health walks create a supportive environment for people to start to enjoy the many physical, mental and social benefits of being physically active. Paths to Health deliver health walking through provision of grants, training, resources and support.





**Author** Dr Ruth Lowry  
Lecturer  
Sport, Culture and the Arts  
University of Strathclyde  
Glasgow, United Kingdom  
(ruth.lowry@strath.ac.uk)

**Co-Authors** McKay, J., Glasgow Caledonian University, Scotland Wright, A., University of Strathclyde, Scotland Steele, K., Paths to Health, Scotland Ryde, G., Paths to Health, Scotland Mutrie, N., University of Strathclyde, Scotland

**Title** **An evaluation of a pedometer pack used in the primary care setting with inactive Scottish adults**

**Abstract Purpose:** A recent systematic review concluded that tailored interventions, targeted at individuals most motivated to change, those that involve strategies such as brief advice and those that have supported use of pedometers are the most effective walking interventions (Ogilvie et al. 2007). A multi-method approach was employed to assess the effectiveness of a pedometer based intervention delivered by health professionals for increasing walking with inactive adults in Scotland.

**Methods:** Pedometer packs which contained a 12-week walking programme were given to 374 primary care patients. Complete step count information was collected and analysed at baseline (n=123), three months (n=107) and six months (n=112). In addition, qualitative data were collected at three and six months to identify patients' experiences using the pedometer through a survey and focus groups. The views of health professionals were also gained through interviews.

**Results:** After three months patients had increased their step-counts by on average, 4532 steps per day ( $p<.001$ ) and at six months were achieving 2977 more steps per day from baseline measurement. Over half the patients reported achieving this target on at least 5 days/week, and the gains are equivalent to around 30 minutes of activity per day. Qualitative data indicated that patients who were ready to change activity patterns perceived the pedometer pack to be most effective and when ongoing support from health professionals was provided.

**Conclusion:** These findings support the use of pedometer-based interventions in primary care and suggest that the pedometer pack could lead to sustainable changes in walking. The success of such packs will also be mitigated by the patient's readiness to change and through the provision of follow-up support from health professionals.

Ogilvie D, Foster CE, Rothnie H, Cavill N, Hamilton V, Fitzsimons C, Mutrie N. Interventions to promote walking: systematic review. *BMJ* 2007; 334:1204-1207.

**Author** Dr Samantha Fawcner  
Lecturer  
Sport and Exercise Science  
Heriot-Watt University  
Edinburgh, United Kingdom  
(s.g.fawcner@hw.ac.uk)

**Co-Authors** Niven, A. Heriot-Watt University, Edinburgh, UK MacDonald, M. Heriot-Watt University, Edinburgh, UK Finch, E. Heriot-Watt University, Edinburgh, UK

**Title** Walking during working hours. Do we need to do more?

**Abstract** **Introduction.** Compared with physical activity, the impact on health of sedentary behaviour is poorly understood or considered. This is despite the concept that the physiological effects of long periods of inactivity are separate and not necessarily offset by the health benefits gained from being physically active. This project therefore aimed to describe the level of inactivity in University based workers, and explore barriers and facilitators to being more active through walking at work

**Methods.** Forty-nine office based workers were asked to wear a pedometer from the time they arrived at the office until the time they left at the end of the day on four working days to record daily workplace steps. Participants also submitted a simple on-line diary at the end of each day to quantify the time spent at work, and time spent walking and standing. Time spent sitting was quantified as time spent walking and standing subtracted from total time at work. Participants were also invited to attend a focus group to discuss barriers and facilitators to walking during work.

**Results.** The mean ( $\pm$  SD) daily step count was  $4080 \pm 1930$  steps. The mean ( $\pm$  SD) of time spent at work each day was  $481 \pm 53$  mins, of which time  $377 \pm 6$  mins was spent sitting, equivalent to  $78 \pm 9$  % of the time. Key barriers to walking included environmental constraints (such as doors and busy passage ways) and time constraints due to work load and key facilitators included location of other colleagues, facilities and walking groups.

**Conclusion.** In this sample of office based workers the daily step count is well below the number recommended for health. As well, a large percentage of time was spent in sedentary sitting behaviour. Interventions that encourage walking at work are needed to reduce the time spent being sedentary in the work place.

**Author** Ms Gianna Cassidy  
Glasgow Caledonian University  
Glasgow, United Kingdom  
(Gianna.Cassidy@gcal.ac.uk)

**Co-  
Authors**

**Title** The Impact of Gameplay on Walking Activity and other Health Parameters

**Abstract** Videogames present a new form of active 'edutainment', promoting activity and wellbeing through motivating, rewarding and immersive play. Gameplay provides a unique platform for physical, psychological and social activity presenting exercise to achieve 'fun' goals out with the traditional conceptions of routine or contextual isolation. We in Britain spend 12.5 hours per week on average playing innately sessile computer games. The study aimed to investigate the impact of both regular gameplay and the use of a novel controller which promotes walking, to help achieve the recommended 30 minutes of moderate activity per day. It was hypothesised that the novel controller would promote greater activity levels and enjoyment, resulting in more active play, and aiding the acquisition of the recommended 30 minutes of moderate activity per day. Employing a repeated-measures design, 59 participants aged 18-56 years of age, approximately 39 males and 20 females, completed Wii Star War: the complete saga in three conditions: (1) via the regular sessile game pad (2) via the novel interactive controller and; (3) via the novel interactive controller with music, in a counterbalanced order. Two physiological measures (heart-rate and calorific expenditure), three behavioural (pedometer rate, completion time, and performance), and three experience measures (enjoyment and mood state), were obtained in each condition. The results highlight the powerful potential of the novel controller to benefit activity, health parameters, and enjoyment. Use of the novel controller resulted in significantly higher step rate, heart rate, calorific expenditure and enjoyment in comparison to play with the regular controller. The addition of music to play with the novel controller resulted in significantly greater enjoyment. The results will be discussed in relation to theories of; attention-distraction; arousal and affect modification; and our subjective relationship with activity stimuli. In addition, implication will be discussed for health practitioners and educationalists, among others.

## Symposium 7: Walking for Wellbeing in the West

Room: K3.17

<b>Organiser</b>	Dr Claire Fitzsimons University of Strathclyde Glasgow, United Kingdom ( <a href="mailto:claire.fitzsimons@strath.ac.uk">claire.fitzsimons@strath.ac.uk</a> )		
<b>Proposal</b>	<p><b>Background</b></p> <p>Walking for Well-being in the West (WWW) is a RCT of an inter-disciplinary community-based walking intervention for adults in Scotland (<a href="http://www.sparcoll.org.uk">www.sparcoll.org.uk</a>). It is designed to investigate the behavioural, psychological and physiological consequences of the intervention, in conjunction with an assessment of how an individual's local environment influences their walking. In addition a qualitative evaluation is exploring participants' experiences of the intervention and an economic evaluation will assess cost-effectiveness. The study will determine if promoting the public health message of achieving 30 minutes of walking at least 5 days of the week could be accomplished in a real world sample from a local community.</p> <p><b>Outline of symposium:</b></p> <p>Nanette Mutrie will give an overview of the behavioural and psychological elements of study. Physical activity was measured using pedometer step counts (7 day) and the International Physical Activity Questionnaire (IPAQ-long). Psychological processes were measured using questionnaires relating to the Transtheoretical Model of Behaviour Change, mood (PANAS) and quality of life (EQ-5D).</p> <p>Myra Nimmo will present the physiological aspects of the study. The intervention was assessed anthropometrically and metabolically to determine if a walking intervention results in improved health status in inactive men and women.</p> <p>Annemarie Wright will present the relationships between the participants' physical activity levels, in particular walking, and perceived (subjective) environmental barriers or facilitators to activity, and also any changes in physical activity levels and environmental perceptions over the course of the study. The Neighbourhood Quality of Life Study (1<sup>st</sup> Survey) (NQLS) was used to subjectively assess the participants' perceptions of their local environment in relation to physical activity.</p> <p>Catharine Ward Thompson will present an introduction to the environmental audit tool designed as a component of WWW to assess the walkability of the study area (Scottish Walkability Assessment Tool (SWAT)). Residential density, land use mix and street connectivity have been calculated using GIS to complement the findings of the environmental audit.</p>		
<b>Participants</b>	<b>Name</b>	<b>Institution</b>	<b>Topic</b>
1	Nanette Mutrie	University of Strathclyde	<b>Behavioural and Psychological Assessment</b>
2	Myra Nimmo	Loughborough University	<b>Physiological Assessment</b>
3	Annemarie Wright	University of Strathclyde	<b>Subjective Environmental Assessment</b>
4	Catharine Ward Thompson	Edinburgh College of Art	<b>Objective Environmental Assessment</b>

**Author** Professor Nanette Mutrie  
University of Strathclyde  
Glasgow, United Kingdom  
(Nanette.mutrie@strath.ac.uk)

**Co-Authors** Baker, G.<sup>1</sup>, Gray, S.<sup>2</sup>, Wright, A.<sup>1</sup>, Fitzsimons, C.<sup>1</sup>, Nimmo, M.<sup>2</sup>, Lowry, R.<sup>1</sup>  
<sup>1</sup>Sport, Culture and Arts, University of Strathclyde, Glasgow, Scotland, UK  
<sup>2</sup>School of Sport and Exercise Sciences, Loughborough University, UK

**Title** Walking for Wellbeing in the West: behavioural and psychological elements

**Abstract Purpose**

Despite the appeal of walking as a mode of physical activity, large knowledge gaps exist on the optimum methods to promote and sustain walking behaviour. There is limited evidence on the ability of pedometers to sustain an increase in walking behaviour over the longer term. WWW was designed to assess whether a pedometer-based walking programme, in combination with physical activity consultation, would increase and sustain independent walking over 12 months in adults who are not meeting the current physical activity recommendation.

**Methods**

Participants were randomised into two groups (Group 1: Intervention (pedometer based walking programme combined with a series of PA consultations); Group 2: Waiting list control followed by minimal intervention of pedometer and walking programme (no consultation)). Assessments were carried out at baseline and 12 weeks (follow-up measurements were at 6, 9, 12 and 15 months). Physical activity was measured using pedometer step counts (7 day) and the International Physical Activity Questionnaire (IPAQ-long). Psychological processes were measured using questionnaires relating to the Transtheoretical Model of Behaviour Change, mood (PANAS) and quality of life (EQ-5D).

**Results**

12 week results from 79 men and women 16 males, 63 females, *M* age = 49.2±8.8 years) revealed a significant interaction effect between group and time for step-counts ( $F_{(1, 77)}=25.183$ ,  $p<0.001$ ). Follow-up paired t-tests found a significant increase in steps/day in the intervention group (+3,175;  $t(38)=-6.062$ ,  $p<0.001$ ) with no significant change in the control group (+154;  $t(39)=-0.503$ ,  $p=0.618$ ). Preliminary results suggest the increase in steps/day was maintained over 12 months. There was a significant interaction for positive affect at 12 weeks ( $F(1, 77)=4.26$ ,  $p=.042$ , partial  $\eta^2$  0.05) with the intervention group showing a significant increase ( $p=.027$ ,  $d=.33$ ,  $CI .27 - 4.39$ ).

**Conclusion**

Walking for Wellbeing in the West successfully changed and maintained walking behaviour in inactive Scottish men and women with resultant improvements in positive mood.

**Author** Myra Nimmo  
Loughborough University  
Leicestershire, United Kingdom  
[M.A.Nimmo@lboro.ac.uk](mailto:M.A.Nimmo@lboro.ac.uk)

**Co-Authors** Gray, S.<sup>1</sup>, Baker, G.<sup>2</sup>, Wright, A.<sup>2</sup>, Fitzsimons, C.<sup>2</sup>, Mutrie, N.<sup>2</sup>  
<sup>1</sup>School of Sport and Exercise Sciences, Loughborough University, UK  
<sup>2</sup>Sport, Culture and Arts, University of Strathclyde, Glasgow, Scotland, UK

**Title** Walking for Wellbeing in the West: physiological assessment

**Abstract Purpose:** Across Europe, in 2005, 4.35 million deaths can be attributed to cardiovascular disease (CVD) accounting for approximately half of all deaths, with this figure rising each year (European Cardiovascular Disease Statistics 2005). Walking interventions can be effective in reducing body weight, body mass index (BMI), waist and hip circumference, body fat, blood pressure and the cholesterol:high-density lipoprotein (HDL) ratio (eg Murphy *et al.*, 2007). Conversely, some studies have demonstrated that a walking intervention is not sufficient to affect any of these health-related outcomes and few where walking is the sole intervention in non-clinical samples in countries outside the USA (eg Gilson *et al.*, 2007). There is a need for a sufficiently powered randomized controlled trial to further examine the effectiveness of a walking intervention on improving physiological health outcomes in an adult population currently not achieving the minimum recommended levels of PA.

**Methods:** At baseline 12 and 24 weeks body mass, waist:hip ratio, percentage body fat, blood pressure and resting heart rate were measured in 51 volunteers. At baseline and 12 weeks a fasting blood sample was also collected from 48 volunteers. These were analysed for glucose, insulin, total cholesterol and HDL-cholesterol. The Homeostasis model assessment for insulin resistance was calculated as fasting plasma insulin (mU.l<sup>-1</sup>)\*fasting plasma glucose (mmol.l<sup>-1</sup>)/22.5. Blood samples were also analysed for high sensitivity C-reactive protein (hsCRP) via an automated analyser and for interleukin-6 (IL-6), soluble IL-6 receptor (sIL-6R) and tumor necrosis factor-alpha (TNF-α) by enzyme linked immunosorbent assay (ELISA). Analysis was performed, using 2(group) by 2(time) mixed factorial repeated measures ANOVAs. Data are presented as means (S.D.).

**Results:** In spite of an increase in walking there were no significant reductions in any of the health outcomes or the inflammatory markers measured (P>0.05).

**Conclusion:** It is likely, therefore, that a higher duration or intensity of exercise may be required to reduce the CVD and metabolic risk associated with the measurements taken in the current study.

#### References

1. Murphy MH, Nevill AM, Murtagh EM, Holder RL: **The effect of walking on fitness, fatness and resting blood pressure: a meta-analysis of randomised, controlled trials.** *Preventive Medicine* 2007, **44**:377-385.
2. Gilson N, McKenna J, Cooke C, Brown W: **Walking towards health in a university community: a feasibility study.** *Preventive Medicine* 2007, **44**:167-169

**Author** Annemarie Wright  
University of Strathclyde  
Glasgow, United Kingdom  
(Annemarie.wright@strath.ac.uk)

**Co-Authors** Lowry, R., Baker, G., Fitzsimons, C., Mutrie, N.  
Sport, Culture and Arts, University of Strathclyde, Glasgow, UK

**Title** How did WWW participants view their physical environment? Overview of results and methodological issues

**Abstract Purpose:** To understand physical activity behaviour it is important to consider the context in which different activities take place. Further, the relationship between the objectively measured physical environment and how different individuals perceive these attributes is also crucial. This presentation will explore how WWW participants perceived their neighbourhood environment before and during the walking intervention and how perceptions were related to activity levels over time. Measurement issues and recommendations for future studies will also be briefly considered.

**Methods:** Seventy-nine participants (16 males, 63 females, M age = 49±9 years) completed a modified version of the Neighbourhood Environment Walkability Scale (NEWS), the International Physical Activity Questionnaire (IPAQ) and provided 7 days of pedometer step-counts at baseline. All measures were also taken at 12 weeks (intervention group  $n = 32$ ), 24 weeks ( $n = 31$ ) and 48 weeks ( $n = 24$ ). A sub-sample of participants ( $n = 14$ ) also completed semi-structured interviews at 48 weeks.

**Results:** At baseline participants perceived that their neighbourhoods were reasonably well provided for in terms of facilities and access, places for walking, and aesthetic features. Participants also felt generally safe from crime and traffic. Few gender differences were apparent but analyses of single NEWS items revealed important variation according to neighbourhood deprivation. Participants who had the largest increases in activity initially felt most at risk from crime and traffic and perceived that their neighbourhoods were not very pleasant. Fear of crime increased over the short-term, but over the longer-term aesthetic variables were more important for walking for leisure (for females) and more walkable neighbourhoods supported walking for transport. Social community aspects were also consistently related to more successful long-term behaviour change.

**Conclusion:** The WWW study area was perceived to be generally walkable. Few perceptions of the physical environment changed as a result of the increased physical activity over the course of the intervention but several environmental features were identified that may influence the success of similar behaviour change programmes in Scotland. There were few relationships with walking for leisure and tools should be modified to recognise the additional environmental attributes that are important for this behaviour. Future multimethod studies should investigate not just how an individual perceives their environment but also how they interact with their neighbourhood for specific behaviours and whether specific aspects are perceived to be barriers or facilitators of activity.

**Authors** Catharine Ward Thompson & Catherine Millington  
OPENspace, Edinburgh College of Art  
Edinburgh, United Kingdom

**Co-Authors** Rowe, D.<sup>1</sup>, Aspinall, P.<sup>2</sup>, Fitzsimons, C.<sup>1</sup>, Nelson, N.<sup>1</sup>, Mutrie, N.<sup>1</sup>  
<sup>1</sup> Sport, Culture and Arts, University of Strathclyde, Glasgow, UK  
<sup>2</sup> OPENspace, Edinburgh College of Art, Edinburgh, UK

**Title** Walking for Wellbeing in the West: Objective Environmental Assessment

**Abstract Purpose:** There is growing recognition of the important role of the physical environment in influencing physical activity and consequently public health and wellbeing. The aim of this part of the WWW project was to objectively record aspects of the physical environment believed to be related to walking in urban Scotland. This is, in part, to allow a comparison between objective and subjective measures of the environment relevant to the WWW project, and in part to enable an assessment of any correlation between the physical environment and walking behaviours observed in the project. The objective measures combined a field audit tool - The Scottish Walkability Audit Tool (SWAT) – and GIS-derived measures. This presentation focuses on development of the audit tool.

**Methods:** SWAT was developed to measure objectively the street-scale or fine grain attributes of the physical environment that may be related to physical activity. SWAT was applied by three pairs of trained raters to an area around each participant's home that was likely to include what could be accessed within approximately 30 minutes' total walk time (defined as a radius of 1.6 km). Testing of the audit for inter- and intra-rater reliability was undertaken during the summer of 2007. 30 segments from across the study area were chosen to represent a wide variety of characteristics reflecting, *inter alia*, different levels of deprivation, and were audited by each of the three pairs of raters, and on two occasions that were at least 7 days apart. Inter and intra-rater reliability was calculated using both the percentage of segments with 100% agreement between the three pairs and Fleiss' kappa ( $\kappa$ )

**Results:** Eighteen items were reliably audited and displayed adequate environmental variability, 25 items proved unreliable, and 69 items lacked adequate environmental variability. The large number of items that lacked environmental variability indicates a relatively uniform environment for the WWW study in terms of characteristics which the literature indicates might be used to differentiate walkability. However, some of these items might prove useful in auditing other environments where greater variability is encountered. The 18 reliable items in this study that show adequate variability cover aspects relating to Destination, Safety and Aesthetic themes, but not Functional themes. They can potentially be used to differentiate walkability.

**Conclusion:** Analysis of relationships between measures of the physical environment and other measures in the WWW project has yet to be completed, so conclusions cannot be drawn as to environmental correlates of walking activity. However, the Scottish Walkability Assessment Tool (SWAT), developed for Scotland, UK, may have applicability more widely across northern Europe, assisting the recording of aspects of the environment likely to be relevant to walking in other urban European settings. Depending on the findings of the full WWW analysis, SWAT may contribute to identifying aspects of the environment that could be modified to improve walkability.



## Symposium 8: Monitoring and evaluation frameworks for interventions promoting active travel for transport and for physical activity

**Room: C4.30**

<b>Organiser</b>	Dr Andy Cope Director Research and Monitoring Unit Sustrans Newcastle, United Kingdom (andy.cope@sustrans.org.uk)		
<b>Proposal</b>	<p>1.1. The challenges of monitoring and evaluating interventions to promote physical activity through active travel (cycling and walking) and wellbeing are considerable. This symposium will consider three examples of monitoring and evaluation frameworks, one strategic and two delivery level. The aim will be to explore how adequate evidence for transport-derived physical activity intervention effectiveness (among other impacts) can be gathered.</p> <p>1.2. Sustrans leads a consortium of eleven organisations with a strong interest in active travel (£20 million Big Lottery Fund award). The Travel Actively portfolio includes 50 individual projects in nine clusters of project types. Sustrans is charged with project impact monitoring and has devised a framework which seeks to meet the needs of each of the partners and projects, as well as the funders. Exploration of the framework will be followed by a description of an appraisal of the evaluation framework, conducted by the BHF National Centre for Physical Activity and Health (BHFNC) at Loughborough University.</p> <p>1.3. The Travelling Actively consortium is funded by the Big Lottery Fund through the Wellbeing Programme. Another evaluation framework is under development to address the needs of the Wellbeing Programme, the interests of which cover physical, mental and nutritional wellbeing. The challenges of devising a framework and associated tools will be explored.</p> <p>1.4. A third evaluation framework is being developed by the UK Department for Transport. The DfT framework is more strategic, and aims to direct impact evaluations of 'Better Use' transport interventions. These include both behavioural change and infrastructure interventions which aim to make better use of the existing transport network. The evaluation framework will be used primarily to provide evidence to the DfT about how such schemes contribute to the social, economic and environmental goals of the department.</p> <p>1.5. The symposium speakers will describe work to date, consider the objectives and outcomes of the three frameworks. Delegates will be invited to contribute their own experiences. We will seek to identify how best to share such knowledge of evaluation framework generation, and how to share the frameworks themselves.</p>		
<b>Participants</b>	<b>Name</b>	<b>Institution</b>	<b>Topic</b>
1	Kate Viner	Department for Transport	Active travel and better use measures
2	Stacy Sharman	Big Lottery Fund	Evaluation of the Big Lottery Fund Wellbeing programme
3	Lisa Muller	Sustrans	Introducing the monitoring and evaluation framework for Travel Actively
4	Emma Adams	BHFNC	Appraisal of the Travel Actively evaluation framework

**Author** Ms Kate Viner  
Senior Research Officer  
Social Research and Evaluation  
Department for Transport  
London, United Kingdom  
(kate.viner@dft.gsi.gov.uk)

**Co-  
Authors**

**Title** **Active Travel and Better Use Measures**

**Abstract** The Department for Transport speaker will introduce their perspective on active travel interventions, and how they fit in with other measures implemented or promoted by the DfT to make better use of the existing transport network. This background will refer to the Eddington Transport Study, which highlighted the potential importance of such Better Use measures, and need for evidence about their impacts. The need for and expected use of an evaluation framework will be discussed, and the development process outlined.

The speaker will discuss research which has been undertaken to develop an evaluation framework (conducted jointly by researchers Faber Maunsell and the Tavistock Institute). The research aims, objectives and outcomes will be presented. The scope of schemes the framework will be used to evaluate, and development of a typology for the interventions addressed will also be outlined.

Findings from a review of the existing evaluation evidence related to Better Use schemes will also be mentioned. The speaker will highlight what is known about the impacts of these schemes, and important knowledge gaps identified by the review.

The intended use of the Better Use evaluation framework will be outlined, with particular reference to the scope, objectives, and intended outcomes. This is principally to inform and improve the evidence base about the effectiveness and wider impacts of these types of transport interventions

**Author** Ms Stacy Sharman  
Evaluation & Research Analyst  
Policy and Partnerships Division  
Big Lottery Fund  
London, United Kingdom  
(stacy.sharman@biglotteryfund.org.uk)

**Co-  
Authors**

**Title** Evaluation of the Big Lottery Fund Well-being programme

**Abstract** 1.1. The speaker from the Big Lottery Fund will describe the nature of the Wellbeing Programme, and outline the range of interests represented by the consortia funded through the Programme. These include physical wellbeing, mental wellbeing, and nutritional wellbeing. The strategic aims and objectives of the Programme will be introduced, and the expected outcomes will be detailed. Project objectives and outcomes are linked to milestone monitoring and numbers of beneficiaries. Although delivery monitoring will be mentioned, the focus will be on the project impact monitoring and evaluation.

1.2. The Big Lottery Fund commissioned a consultant group to deliver a tool for evaluation, and subsequently commissioned a longitudinal evaluation, the major part of which is focused on the collation and analysis of data collected by the tool. The speaker will present the rationale for such an approach, introduce the tool that has been generated, present the aims of the evaluation, outline the approaches to using the tool, describe the intended data outputs from the use of the tool, and discuss the challenges presented by generating a single tool for such a broad portfolio of consortia delivering a diverse set of projects.

1.3. In particular, the speaker will consider what data the tool is expected to generate. The implications of the data outputs for Programme evaluation, and for the generation of future funding programmes, will be considered.

**Author** Dr Lisa Muller  
Senior Project Officer  
Research and Monitoring Unit  
Sustrans  
Newcastle, United Kingdom  
(lisa.muller@sustrans.org.uk)

**Co-  
Authors**

**Title** Introducing the monitoring and evaluation framework for Travel Actively

**Abstract** The Sustrans speaker will focus on the activities of the Travel Actively project portfolio, and the design and implementation of a framework for project impact monitoring. The partners in the consortium are Sustrans, Cyclists Touring Club, Living Streets, London Cycling Campaign, Ramblers Association, Walk 21, National Obesity Forum, National Heart Forum, Cycling England, Campaign for Better Transport and British Cycling. The projects include motivational interventions at individual and community level, national level information provision, and small-scale environmental interventions. The speaker will describe the objectives of the consortium and of the individual projects, and introduce the outcomes against which progress is to be monitored. The framework for monitoring and evaluation will be introduced, with reference to the perspectives of partners and funders, aims and objectives, tools, delivery mechanisms, data outputs, analytical frameworks, and potential for reporting. In particular the presentation will focus on the practical issues of delivery, and the process of constructing an appropriate evaluation framework.

**Author** Ms Emma Adams  
Research Associate  
School of Sport and Exercise Sciences  
Loughborough University  
Leicestershire, United Kingdom  
(E.J.Adams@lboro.ac.uk))

**Co-Authors** Bull, FC, Loughborough University, Loughborough, UK

**Title** **Appraisal of the Travel Actively evaluation framework**

**Abstract** The Travel Actively consortium involves eleven organisations who are delivering 50 individual projects in 9 project clusters around active travel (cycling and walking) in the UK. The consortium is led by Sustrans who have developed a monitoring and evaluation framework to meet the needs of the projects, partners and funders. The purpose of this project is to conduct an independent appraisal of the Travel Actively monitoring and evaluation framework and data collection tools.

A critical appraisal of the monitoring and evaluation framework will be conducted reviewing the following components: 1) aims and objectives; 2) data requirements for achieving the stated aims and objectives; and 3) proposed measurement tools with regard to their capacity to generate the required data.

The appraisal of the study aims and objectives and the proposed monitoring and evaluation framework and data collection tools will be reported. Recommendations will be made for amendments to the framework and the tools and to how the data should be used with reference to determining the success of interventions at the individual, community and population level from the perspective of individual schemes, scheme clusters and across the whole portfolio. Associated opportunities for primary and secondary research will be considered, along with the capacity of the findings to influence UK and international policy.

## PARALLEL SESSION 3

Tuesday 9 September, 15:00 – 16:30

### Symposium 9: The Built Environment and Physical Activity: Closing the evidence gap

#### Room: K3.14

<b>Organiser</b>	Professor Billie Giles Corti University of Western Australia Australia <a href="mailto:Billie-Giles-Corti@uwa.edu.au">Billie-Giles-Corti@uwa.edu.au</a>		
<b>Proposal</b>	Understanding the impact of the built environment on physical activity is a relatively new agenda. Yet, in the last decade, enormous progress has been made in advancing the field and the evidence-base in growing exponentially. The aim of this symposium is to review where the field is to date and to consider future challenges that need to be addressed. It begins with an overview of the evidence based on a recent review for the National Institute for Clinical Evidence (NICE). It then goes on to consider some of the challenges and opportunities in planning and conducting longitudinal studies designed to readdress study design weaknesses. While most of the focus of research to date has been on walking, the third speaker will challenge us to extend our focus in this field, to consider studying cycling as an important (and often forgotten) form of active transport. The fourth speaker will provide an overview of Active Living Research in the US to date and consider future opportunities and challenges for advancing the field globally. Our final speaker will provide an overview of Project ALPHA and the need to develop a European measure of the built environment.		
<b>Participants</b>	<b>Name</b>	<b>Institution</b>	<b>Topic</b>
1	Fiona Bull	Loughborough university	<b>State of the evidence: Overview of the NICE review on the built environment and physical activity</b>
2	Billie Giles-Corti	University of Western Australia	<b>Challenges of longitudinal study designs: Overview and progress with RESIDE</b>
3	Sylvia Titze	Institute of Sport Science Graz	<b>The built environment and cycling: The new research agenda</b>
4	Jim Sallis	San Diego State University	<b>Building the evidence base: Where to from here in the US?</b>
5	Charlie Foster	University of Oxford	<b>Project ALPHA: developing a European measure of the built environment</b>

**Author** Dr Fiona Bull  
Professor Physical Activity & Health  
School of Sport and Exercise Science  
Loughborough University  
Loughborough, United Kingdom  
(f.c.l.bull@lboro.ac.uk)

**Co-Authors** Cavill, Nick. Oxford University, Oxford, UK. Foster, Charlie. Oxford University, Oxford, UK.

**Title** **State of the evidence: Overview of the NICE review on the built environment and physical activity**

**Abstract** In England the mandate for guidance on public health intervention rests with the National Institute for Health and Clinical Excellence (NICE). The British Heart Foundation National Centre on Physical Activity and Health (BHFNC) in partnership with Oxford University was commissioned by NICE to examine the effectiveness of interventions promoting physical activity. Reviews undertaken in 2006-07 addressed environmental interventions across five key areas: transport, urban planning and design, natural environment (urban and rural), building design and policy. The Guidance development and review protocols include field testing and consultation phases and the scope of the literature extended beyond traditional experimental designs and included reviews of qualitative research and case study findings. This presentation will present an overview of the findings. The impact of NICE guidance on the physical activity agenda in the UK is yet to be fully realised but the large gaps in intervention research were striking. There is a clear need for more intervention research to build a coherent evidence base around environmental changes to support physical activity.



**Author** Prof Billie Giles-Corti  
 Director  
 Centre for the Built Environment and Health  
 The University of Western Australia  
 CRAWLEY, Australia  
 (Billie.Giles-Corti@uwa.edu.au)

**Co-Authors** Giles-Corti, B (1) Knuiman, M (1) Bull, F (2) Pikora, T (3) Timperio, A (4) Bulsara, M (3) (1) Centre of Built Environment and Health, The School of Population Health, The University of Western Australia, Australia (2) Adjunct Centre for the Built Environment and Health, School of Population Health, UWA, now from Loughborough University, UK. (3) School of Population Health, The University of Western Australia, Australia (4) Centre for Physical Activity and Nutrition, Deakin University

**Title** **Challenges of longitudinal study designs: Overview and progress with RESIDE**

**Abstract** Over the last decade, there has been enormous progress in studies examining the impact of the built environment and physical activity in terms of understanding the need for behaviour-specific measures of environments and context-specific measures of behaviour. However, there is still a dearth of longitudinal studies, particularly experimental studies. These studies are required to overcome criticisms of self-selection i.e., that people choose environments in accordance with a predisposition to be active or their behavioural preferences, rather than the environment changing their behaviour. The lack of longitudinal and experimental evidence is not surprising given that changes to the environment are difficult to manipulate, and generally it is not feasible to randomise study participants to (say) new neighbourhoods. Thus, designing studies around natural experiments offers unique opportunities to study the impact of changes to the environment or new policies on those exposed. In this paper, the challenges of undertaking longitudinal studies will be discussed using the RESIDential Environmental project (RESIDE) as a case study. RESIDE is a longitudinal study designed to evaluate the impact of a state government policy on the behaviour of local residents who move into different types of housing developments, some of which were designed according to the Liveable Neighborhood Guidelines. The paper will discuss some of the methodological design issues that had to be overcome and will present some of the preliminary findings showing changes in self-reported behaviour and perceptions of the built environment from baseline (T1) to first follow-up following relocation to a new housing development (T2).



**Author** Ms Sylvia Titze  
Associate professor  
Institute of Sport Science  
Graz, Austria  
(Sylvia.titze@uni-graz.at)

**Co-Authors** Pekka, O. , UKK-Institute, Tampere, Finland

**Title** The built environment and cycling. The new research agenda

**Abstract** Cycling for transport is a mobility mode which can help to achieve the physical activity recommendation for health among adolescents, adults and older adults. Leisure cycling is also health-enhancing and suitable for all generations, The prevalence of bicycle trips substantially varies across European countries. The bicycle share of trips in the Netherlands is 27% compared to countries at the lower end of the range such as Italy with 3%. Thus, there appears to be substantial potential to increase the population prevalence of cycling.

In cycling research the following considerations are important. When defining comparison groups the weekly frequency of cycling is a useful measure to categorize people into groups, e.g. non-cyclists, irregular cyclists and regular cyclists. Furthermore, it is important to know what kind of built environment supports cycling and whether the built environmental features are differently important for transport and leisure cycling. Finally, we need to consider the pros and cons of the perceived and the objective measures of environment for a given research project. However, as the research on cycling and health is currently at an early stage of development, it is necessary to consider all possible levels of determinants, i.e. individual, social and environmental, in order to provide useful evidence to support effective strategies for cycling promotion.

**Author** Dr James Sallis  
Professor  
Psychology  
San Diego State University  
San Diego, CA, United States  
(sallis@mail.sdsu.edu)

**Co-Authors** Bull, FC, Loughborough University, Loughborough, UK

**Title** **Building the evidence base: Where to from here in the US?**

**Abstract** Since its inception in 2001, Active Living Research has funded 121 grants to study environmental and policy aspects of physical activity. The emphasis has been on research that will have direct relation to policy, so evaluations of environmental changes, case studies, policy evaluations, and qualitative investigations have been supported, in addition to more typical cross-sectional designs and measurement development. For the next five years, the emphasis will be on research that will inform strategies to reduce childhood obesity, especially among population groups at high risk. There will be more quasi-experimental evaluations of policy and environmental changes to identify promising interventions. A few additional cross-sectional studies will identify environmental correlates of physical activity that are particularly relevant for youth in high risk groups. Studies intended to inform policy will be prioritized, such as economic studies, examinations of the policy change process, and development of Health Impact Assessment methodology. We hope that collaborations with other funders will lead to support for prospective studies. Despite the recent progress in physical activity environmental research, there are many unanswered questions and data needed to inform and guide policy changes.



**Author** Dr Charlie Foster  
Senior Researcher  
Dept. Public Health  
University of Oxford  
Headington, United Kingdom  
(charlie.foster@dphpc.ox.ac.uk)

**Co-Authors** De Bourdeaudhuij I, Department of Movement and Sports Sciences, University of Ghent, Belgium Spittaels H, Department of Movement and Sports Sciences, University of Ghent, Belgium Oppert JM, Institut National de la Santé et de la Recherche Médicale, France Rutter H, South East Public Health Observatory, UK Oja P, Karolinska Institute, Sweden Gidlow C, University of Staffordshire, UK

**Title** **Project ALPHA – Developing a European Measure of the Built Environment**

**Abstract** The urban environment may be a strong encouraging or discouraging factor for being physically active. To assist city planning, information on physical activity encouraging features of the urban environment is needed. Studies of the environment and physical activity have typically adopted two types of exposure measures, (i) measures of perceptions of the environment using a questionnaire, and (ii) objective measures of the environment derived from observations of the environment (audits, ground truthing) or GIS data. Project ALPHA's objective is to develop and test a comprehensive set of assessment methodology for physical activity levels at the population level. The project focuses on a number of key factors that relate to the achievement and enablement of physical activity levels, such as the urban environment, transport related physical activity, work related physical activity and health related fitness. The project is funded by PHEA/DG SANCO. Presently, European Member States assess urban environment characteristics by self-report questionnaires. It is essential to develop and test a harmonized questionnaire to assess perceived urban environment characteristics. As part of this work we conducted a systematic review of environmental exposure measures for physical activity studies. We also surveyed members of the HEPA Europe Network and identified key expert authors within Europe for details of published or current studies using measures of the environment in relation to physical activity. Following an expert consensus meeting the Project ALPHA measure of environmental perceptions is now undergoing field testing to determine the feasibility, test-retest reliability, face validity/interpretability, to compare with objective measures of environmental exposures and to explore the relationship with self-reported and objectively measured physical activity.

## Symposium 10: Adolescent girls: influences on physical activity participation and strategies for effective engagement

Room: K3.17

<b>Organiser</b>	Dr Jo Inchley Assistant Director Child and Adolescent Health Research Unit University of Edinburgh Edinburgh, United Kingdom (Jo.Inchley@ed.ac.uk)
<b>Proposal</b>	<p><b>Purpose:</b> The purpose of the symposium is to explore influences on behaviour and opportunities for promoting physical activity among adolescent girls. The session will include two papers on determinants of physical activity behaviour from current research among adolescents in Scotland, one paper investigating girls' participation in physical activity and sedentary behaviour in the hours immediately after school ('critical hours'), and a paper presenting findings from a recent review of physical activity interventions in adolescent girls. All four papers will highlight implications for interventions.</p> <p><b>Rationale:</b> Research has shown that girls are consistently less active than boys and these gender differences become more marked during the adolescent years. Thus, there is a need for interventions to promote physical activity among adolescent girls. Indeed, adolescent girls have been identified by the Scottish Government as a key priority group for physical activity promotion. In order to develop effective interventions, there is a need to identify the determinants of behaviour and develop strategies for engaging adolescent girls in physical activity more effectively. Programmes are needed which are sensitive to girls' needs and interests and take account of the complex interaction between personal and socio-environmental influences on behaviour.</p> <p><b>Papers &amp; authors (speakers underlined)</b>  <u>Inchley, J.</u>, Kirby, J. &amp; Currie, C. University of Edinburgh            Countering declines in physical activity during early adolescence: what can we learn from active girls?</p> <p><u>Knowles, A. M.</u>, Fawcner, S. G., &amp; Niven, A. Heriot Watt University            Exploring the decrease in girls' physical activity from primary to secondary school: A narrative approach.</p> <p><u>Atkin, A. J.</u>, Pearson, N., Edwardson, C., Biddle, S. J. H., &amp; Gorely, T. Loughborough University            Critical hours: Physical activity and sedentary behaviour of adolescent girls after school.</p> <p><u>Biddle, S. J. H.</u>, Atkin, A. J., Cavill, N., Foster, C., &amp; Gorely, T. Physical Activity Collaborating Centre (Loughborough University, UK; University of Oxford, UK).            Increasing physical activity in adolescent girls: A systematic review of non-curricular interventions.</p>

Participants	Name	Institution	Topic
1	Jo Inchley	University of Edinburgh	Countering declines in physical activity: what can we learn from active girls
2	Anne Marie Knowles	Heriot Watt University	Exploring decreases in girls' physical activity: a narrative approach
3	Andy Atkin	Loughborough University	Critical hours: Physical activity and sedentary behaviour of adolescent girls after school.
4	Stuart Biddle	Loughborough University	Increasing physical activity in adolescent girls: systematic review of non-curricular interventions

**Author** Dr Jo Inchley  
Assistant Director  
Child and Adolescent Health Research Unit  
University of Edinburgh  
Edinburgh, United Kingdom  
(Jo.Inchley@ed.ac.uk)

**Co-Authors** Kirby, J. Child and Adolescent Health Research Unit, University of Edinburgh, Edinburgh, UK  
Currie, C. Child and Adolescent Health Research Unit, University of Edinburgh, Edinburgh, UK

**Title** **Countering declines in physical activity during early adolescence: what can we learn from active girls?**

**Abstract Purpose:** The Physical Activity in Scottish Schoolchildren (PASS) project is a prospective cohort study tracking children from age 11 to 15 years. It aims to investigate changes in physical activity participation during the primary-secondary school transition and secondary school years and identify key determinants of physical activity behaviour.

**Methods:** 1632 schoolchildren were recruited to the study in 2002 from four regions across Scotland. Five waves of data collection have now been completed with students aged 11 (wave 1) to 15 years (wave 5). Data was collected annually by self-report questionnaire. Physical activity was assessed using a short form of the Physical Activity Questionnaire for Older Children (PAQ-C). Drawing on a socio-ecological approach, a range of potential determinants were assessed including psychological, social and environmental factors.

**Results:** Findings show that high active girls report higher levels of perceived benefits, exercise self-efficacy, perceived competence and physical self worth, and lower perceived barriers to physical activity, than low active girls. Furthermore, as girls get older, those reporting high levels of peer support for physical activity are more likely to be active suggesting that having active friends is particularly important for adolescent girls. This paper will focus specifically on the primary-secondary school transition which is a time during which many girls become less active. Psychosocial characteristics of girls who drop out of physical activity will be compared with those who remain active in order to identify factors which may promote sustained participation during this important transitional period.

**Conclusions:** Predictors of physical activity behaviour vary by age and gender and therefore it is important to identify specific factors which influence behaviour among adolescent girls, a key priority group in Scotland. It is not enough to provide more opportunities for girls to be active as this may serve to increase inequalities. School programmes and community interventions must be informed by an understanding of the determinants of behaviour and be targeted appropriately in order to reach those girls who are at risk of becoming inactive as they move from childhood into adolescence.

**Author** Ms Ann-Marie Knowles  
 PhD Student  
 School of Life Sciences  
 Heriot-Watt University  
 Edinburgh, United Kingdom  
 (A.Knowles@hw.ac.uk)

**Co-  
 Authors**

**Title** Exploring the decrease in girls' physical activity from primary to secondary school: A narrative approach

**Abstract** **Purpose of the study:** Physical activity in adolescent girls drops considerably from age 10-15 years, particularly as girls make the transition from primary school into secondary school (Biddle et al., 2004; Boreham and Riddoch, 2001). Adopting a narrative approach of enquiry may prove fruitful in exploring this transition because this approach is considered to be particularly useful in exploring people's experiences of a turning point in their lives (Gibbs, 2007). It is anticipated that through narrative a unique insight into each individual girl's 'transition story' in relation to their physical activity behaviour will be gained.

**Methods:** A purposive sampling technique was used to recruit 14 girls (mean age =  $13.64 \pm 0.34$  years) and one-to-one narrative interviews were conducted with the girls. Interpretative phenomenological analysis (Smith, 2003) was used to identify the 'whats' (i.e., content) of the girls' physical activity stories, and subsequently a more holistic form of narrative analysis (Lieblich et al., 1998) was undertaken with a selection of the transcripts in order to focus on 'how' the girls told their physical activity stories.

**Results:** Despite all the girls sharing a common experience of a decrease in their physical activity levels from primary school to secondary school, how the girls narrated their experiences to the researcher differed considerably in certain aspects of their stories in relation to type, tone, character and cultural context. The findings revealed a master narrative for these girls, where the majority of girls told stories loosely based on this narrative type. The master narrative comprised of an overall lack of enthusiasm to be active and a sense of uncertainty for their lack of physical activity.

**Conclusion:** Using a narrative approach has enriched the understanding of the decrease in physical activity in this group of girls. Narrative is a relatively new and innovative approach and has a potential role in increasing our understanding of physical activity behaviour.

**Author** Mr Andy Atkin  
PhD Student  
School of Sport and Exercise Sciences  
Loughborough University  
Leicestershire, United Kingdom  
(A.Atkin@lboro.ac.uk)

**Co-Authors** Pearson, N., Edwardson, C., Biddle, S.J.H., Gorely, T. School of Sport and Exercise Sciences, Loughborough University, Loughborough, UK

**Title** **Critical hours: Physical activity and sedentary behaviour of adolescent girls after school**

**Abstract Purpose:** Physical activity and sedentary behaviours may compete for time during specific times of day. The purpose of the present study was to describe the physical activity and sedentary behaviour of adolescent girls after school. Social context and relationships between behaviours are also explored.

**Methods:** The sample was 70 adolescent girls (mean age 14.7 years). Data were collected using a minute-by-minute time use diary targeting the after school hours (15.30h – 18.30h). Participants reported behaviour, location and social context. Behaviours analysed were physical activity, technology-based sedentary behaviours, social sedentary behaviours, motorised transport and homework. Relationships between physical activity and sedentary behaviours were examined using Pearson correlations.

**Results:** Participants reported 25 minutes of physical activity, 41 minutes of technology-based sedentary behaviours and 27 minutes of social-sedentary behaviours between 15.30h – 18.30h. Time spent in motorised transport and homework during this time was 12 minutes and 17 minutes respectively. Girls spent the majority of their time either alone (62 minutes) or with friends (54 minutes) during these hours. Associations between technology-based sedentary behaviours and physical activity ( $r=-.26$ ,  $P=.03$ ) and homework and physical activity ( $r=-.27$ ,  $P=.02$ ) were negative and small. Use of motorised transport ( $r=-.004$ ) and social sedentary behaviours ( $r=-.08$ ) were not associated with physical activity.

**Conclusion:** Adolescent girls spend considerable time in sedentary behaviours in the after school period. Technology-based sedentary behaviours, such as TV viewing and using a computer, may displace physical activity during this time. Interventions to increase physical activity after school should provide opportunities for socialising and completing homework and target reductions in technology-based sedentary behaviour.

- Author** Prof Stuart Biddle  
Professor of Exercise & Sport Psychology  
School of Sport & Exercise Sciences  
Loughborough University  
Loughborough, United Kingdom  
(s.j.h.biddle@lboro.ac.uk)
- Co-Authors** Biddle SJH Atkin AJ Cavill N Foster C Gorely T Physical Activity Collaborating Centre  
(Loughborough University, UK; University of Oxford, UK)
- Title** **Increasing physical activity in adolescent girls: a systematic review of non-curricular interventions**
- Abstract** **Purpose:** To review intervention effectiveness for increasing physical activity in adolescent girls. The review was commissioned as one of a series to inform NICE guidance development.  
**Methods:** Literature searches were conducted from 1990-2007. Inclusion criteria were: intervention study, girls aged 11-18 years, an outcome reported on physical activity. Studies were excluded if they had a main focus on treating obesity, were from less economically developed countries or studied ethnic groups that do not have large populations in England, the intervention involved primarily school physical education lessons, the study involved a change to the built or natural environment (and thus had been covered in other NICE guidance) or was clearly more appropriate for one of the other reviews in this series (active travel; family). All intervention designs were eligible. Twelve studies met inclusion criteria.  
**Results:** Studies were classified into intervention locations and types, with some studies appearing in more than one category: school-based (single-behaviour) interventions (n=5); school-based (multiple behaviour) interventions (n=5); primary health care intervention (n=1); mediated interventions (n=6); counselling interventions (n=3); educational interventions (n=5). Three school-based interventions, outside of physical education lessons, targeting physical activity only, showed moderate-to-large increases in physical activity for up to 6 months. Three of the successful trials targeted girls only. Four school-based interventions, outside of physical education lessons, targeting multiple health behaviours, including physical activity, did not lead to increases in physical activity. These interventions targeted younger boys and girls (<14 y), and those with a range of activity levels. Five interventions delivered via mediated approaches (e.g., computer) did not lead to increases in physical activity. Two counselling interventions with younger girls (<15y) do not show changes in physical activity. Three educational interventions increased levels of physical activity for up to 6 months but characteristics were non-consistent across interventions.  
**Conclusion:** Successful behaviour change for physical activity in adolescent girls appears more likely if targeting is aimed at girls alone and at older adolescent girls, using an intervention focussed on physical activity rather than additional health behaviours.



## Symposium 11: Measurement: Methods for analysing patterns of activity

Room: C4.29

<b>Organiser</b>	<p>Prof Malcolm Granat          Senior Research Professor          School of Health and Social Care          Glasgow Caledonian University          Glasgow, United Kingdom          (malcolm.granat@gcal.ac.uk)</p>
<b>Proposal</b>	<p>It is accepted that physical activity is the main modifiable risk factor in all major diseases, however little is known of the levels and patterns of habitual physical activity of target populations. Recent advances in technology have provided a range of techniques by which free-living physical activity can be monitored. These techniques produce large volumes of information rich data, however this is typically reduced to basic outcome measures such as a simple total for each parameter. That kind of simplification ignores the richness of this information which can be context (e.g. disease state or paradigm) specific. Steps, or volume of activity, are not enough to fully quantify differences in physical activity between groups, and gross measures of energy expenditure are difficult to interpret in the context of interventions aimed at modifying behaviour.</p> <p>This symposium will focus on methods for analysing patterns of activity and also outline some of the principles and techniques that can be used for extracting clinically relevant outcomes from these rich data sets. The symposium will draw on long-term (seven-day periods) free-living physical activity data, collected from a range of populations in hundreds of individuals. Free-living activity will be defined as a continuous, second by second, record of the primary postures of sitting/lying, standing and waking. Individual walking periods are further defined by step number and cadence. The patterns of these primary postures are analysed in terms of sedentary behaviour, cadence variability and walking patterns. From this information it will be shown how clinically relevant outcomes measures can be defined and analysed.</p> <p>The aim of this symposium is to promote lively debate around these issues and we will aim to elicit more questions than answers. Steps may not be enough, but what is enough?</p> <p>The symposium will consist of four the following four talks:</p> <p><b>Professor Malcolm Granat</b>          Techniques for the analysis of long-term recordings of posture patterns.</p> <p><b>Margaret Grant</b>          The analysis of the physical activity of older adults in different care settings.</p> <p><b>Gillian MacLellan</b>          Can we distinguish household activity from community activity?</p> <p><b>Dr Sebastien Chastin</b>          The analysis of sedentary behaviour.</p>

Participants	Name	Institution	Topic
1	Malcolm Granat	Glasgow Caledonian University	Techniques for the analysis of long-term recordings of posture patterns.
2	Margaret Grant	Glasgow Caledonian University	The analysis of the physical activity of older adults in different care settings.
3	Gillian MacLellan	Glasgow Caledonian University	Can we distinguish household activity from community activity?
4	Sebastien Chastin	Glasgow Caledonian University	The analysis of sedentary behaviour.

**Author** Prof Malcolm Granat  
Senior Research Professor  
School of Health and Social Care  
Glasgow Caledonian University  
Glasgow, United Kingdom  
(malcolm.granat@gcal.ac.uk)

**Co-  
Authors**

**Title** Techniques for the analysis of long-term recordings of posture patterns

**Abstract Purpose:** A range of body-worn devices are now being used to monitor free-living habitual activity. These devices provide large volumes of data which are information rich but this is often reduced to simple totals of time spent in different activities, numbers of steps or a gross measure of energy expenditure. This can ignore the richness in this information. It is now being recognised that in order to provide a meaningful insight into the complexity of free-living activity information new methods for analysing this data need to be employed. The aim of this paper is to examine techniques for exploring the richness of detailed postural information collected over many days and to examine how outcome measures can be developed to address specific research and clinical problems.

**Methods:** Free-living habitual physical activity was measured using an activity monitor, the *activPAL*<sup>TM</sup>. The monitor, attached to the anterior aspect of the thigh, records on a second-by-second basis the postures of sitting/lying, standing and walking and records steps and stepping rate. Data from hundreds of individuals across a range of populations were collected over a seven-day period. A number of analysis techniques were employed to explore patterns within this data and to develop clinical outcome measures to determine the effectiveness of an intervention.

**Results:** Patterns of sedentary and upright behaviour can be used to distinguish between populations and individuals within a population. Specific outcome measures were developed that could be applied to monitor a change in an individual, or in a population, as a result of an intervention.

**Conclusion:** Free-living activity data is information rich and simple outcomes such as total times and numbers of steps are not enough to characterise the activity of a population or monitor important changes over time.

**Author** Margaret Grant  
Glasgow Caledonian University  
Glasgow, United Kingdom

**Co-  
Authors**

**Title** The analysis of the physical activity of older adults in different care settings

**Abstract Purpose:** The level of habitual physical activity amongst the elderly is generally considered to be low, however, it has not been extensively analysed and described. The aim of this study was to quantify and compare, over an extended time period, the physical activity of three groups of older adults ( $\geq 65$  years); two patient groups who were receiving physiotherapy treatment and one group of healthy older adults.

**Methods:** Patients were recruited from a West Glasgow Hospital. Group 1 were community-dwellers who attended a day hospital once a week ( $n=20$ ; 9 male; age  $74.7 \pm 7.9$  years [all values mean  $\pm 1SD$ ]) and group 2 were in-patients from a rehabilitation unit ( $n=20$ ; 4 male; age  $81.8 \pm 6.7$  years). Group 3 was a comparison group of community-dwelling older adults ( $n=20$ ; 10 male; age  $73.7 \pm 5.5$  years).

Habitual physical activity was assessed over a week using the *activPAL*<sup>TM</sup> activity monitor (Pal Technologies, Glasgow). The monitor, attached to the anterior aspect of the participants' thigh, recorded continuously the postures of sitting/lying, standing and walking.

**Results:** Significant differences between groups were found for mean daily upright time (standing and walking): Group 1,  $224 \pm 96$  minutes; Group 2,  $72 \pm 49$  minutes; Group 3,  $369 \pm 100$  minutes. Compared to the community-dwelling groups, the ward-based patients also undertook significantly fewer sit-to-stand transitions throughout the day: Group 1,  $58 \pm 21$  transitions; Group 2,  $39 \pm 15$  transitions; Group 3,  $65 \pm 22$  transitions. In addition to global markers, patterns of activity characterised by length of sedentary and upright events throughout the day revealed considerable disparities between the groups.

**Conclusion:** This study quantified objectively the levels of habitual physical activity and the patterns of activity and inactivity in older adults. Differences were observed in two patient groups and a healthy comparison group. As health is influenced by both physical activity and sedentary behaviour, this data may be clinically relevant and may inform the design and delivery of rehabilitation programmes aimed at maximising and maintaining independence in the elderly population.

**Author** Gillian MacLellan  
Glasgow Caledonian University  
Glasgow, United Kingdom

**Co-  
Authors**

**Title** Can we distinguish household activity from community activity?

**Abstract Purpose:** The local environment can have either an encouraging or a discouraging influence on the participation of an individual in physical activity and independent community mobility. Consequently, location context can be a valuable additional source of information when analysing activity levels and patterns; particularly as the promotion of walking is often a significant element in attempts to increase activity levels of the general population. Separate classification of household and community based activity can be used to identify changes in the proportion and nature of non-household activity, the scope for increased community based activity (e.g. additional walking for travel or leisure) and potential barriers which could inhibit physical activity.

**Methods:** Concurrent activity monitor and location (GPS) data was collected for one week periods and subsequently time matched to produce daily combined data sets. This data was used to classify periods of household and community based activity and to analyse activity within these periods.

**Results:** The generated data enabled the composition of the day to be described in terms of the proportion of time spent away from home, the number and duration of community based periods and their distribution throughout the day. Separate analysis of activity information for each period produced measures such as upright and sedentary time, total steps and cadence. For the community based periods the combination of location and activity information was also used to classify travelling and stationary periods and describe travel in terms of type, duration, distance and speed. Finally, a comparison of activity data for different types of community and household periods was performed to identify differences in activity patterns.

**Conclusion:** The analysis demonstrated the feasibility of collecting and combining activity and location data and using the resultant combined data set to identify and analyse household and community based periods. In addition to the physical activity related outcome measures produced, differences in activity patterns and values of the different types of period could provide the means to derive location context categories for some activity data segments (e.g. walking indoors or household/indoor ambulation) in the absence of measured location data.

**Author** Sebastien Chastin  
 School of Health and Social Care  
 Glasgow Caledonian University  
 Glasgow, United Kingdom

**Co-  
 Authors**

**Title** The Analysis of sedentary behaviour: patterns of inactivity

**Abstract Purpose:** It is well accepted that physical activity is a major modifiable health risk factor, however there is also limited evidence that sedentary behaviour is an independent risk factor. This study aimed to characterise the detailed pattern of inactivity in a working population, separated by employment type into active and sedentary groups. This exploratory analysis aimed to understand the organisation of sedentary behaviour and to develop methods of quantifying such behaviour.

**Methods:** Seven days of physical activity data were recorded using the activPAL™ monitor, in a population (aged 20 to 65) comprising 54 workers with an office based sedentary occupation and 53 workers involved in an outdoor active occupation. The distribution of bouts of sedentary behaviour (sitting or lying) was then calculated with respect to the length of the bout. The probability density was normalised to the maximum possible occurrences of a bout in the recording period.

**Results:** The distribution of sedentary bouts followed two distinct power law trends, corresponding to diurnal and to nocturnal activity. The power law exponent was negative during the day-time, but positive during the night. Whilst the overall volume of sedentary time was similar for both sedentary and active workers, the distribution of the diurnal exponent was significantly different. This hints at a different behaviour and organisation of inactive time between the two groups.

**Conclusion:** The results suggest that inactivity is not random, but rather has a complex rhythm of a fractal nature, similar to that found in other physiological signals such as ECG. The temporal organisation of sedentary behaviour contains valuable information that enables the characterisation of sedentary behaviour. This could be used to assist the development and monitoring of physical inactivity in health promotion and rehabilitation.

## Symposium 12: Sport for health: it is time for the sport community to become a real player for HEPA

Room: C4.30

<b>Organiser</b>	Dr Pekka Oja retired UKK Institute Tampere, Finland (pekka.oja@uta.fi)		
<b>Proposal</b>	<p>Background</p> <p>The first physical activity recommendation for public health by CDC and ACSM in 1995 “Every US adult should accumulate 30 minutes or more of moderate-intensity physical activity on most, preferably all, days of the week” laid the foundation for the promotion of life-style physical activities for health. Evidence thereafter largely supports the moderate-intensity concept, but also introduces new aspects to the understanding of health-enhancing physical activity (HEPA). The latest recommendation by American College of Sports Medicine and American Heart Association in 2007 recommends not only moderate-intensity but equally importantly vigorous-intensity physical activity for health benefits. This invites more intense exercise and sport activities to contribute to public health. The proposed symposium will summarise this development and present how the sport community can response to this new health challenge.</p> <p>Outline:</p> <p><b>New physical activity recommendations invite sport to benefit public health.</b> Speaker: Pekka Oja (retired), UKK Institute for Health Promotion Research, Tampere, Finland. This presentation is a short overview of the past and recent physical activity recommendations and what they may imply to exercise and sportive activities from the health perspective.</p> <p><b>European Union’s actions to promote sport for health</b> Speaker: Michal Krejza, European Commission, Brussels This presentation focuses on the European Union’s physical activity guidelines as an instrument to promote HEPA.</p> <p><b>How can a sport club be health promoting?</b> Speaker: Sami Kokko, Department of Health Sciences, Faculty of Sport and Health Sciences, University of Jyväskylä, Jyväskylä, Finland This presentation reports a recent study on the health promoting standards for sport clubs.</p> <p><b>Sport Club for Health: guidelines for health promoting sport programmes</b> Speaker: Jorma Savola, Finnish Sport for All Association, Helsinki, Finland This presentation is a report of the guidelines presented by the TAFISA-ESFAN workshop held on 3-4 February 2008 in Helsinki.</p> <p>Timeline: Each presentation lasts for 10 minutes and is followed by 5 minute section for immediate questions and comments. The symposium ends with 30-minute general discussion.</p>		
<b>Participants</b>	<b>Name</b>	<b>Institution</b>	<b>Topic</b>
1	Pekka Oja	Retired	<b>New physical activity recommendations invite sport to benefit public health</b>
2	Michal Krejza	European Commission	<b>European Union's actions to promote sport for health</b>
3	Sami Kokko	University of Jyväskylä	<b>How can a sport club be health promoting?</b>
4	Jorma Savola	Finnish Sport for All Association	<b>Sport Club for Health: guidelines for health promoting sport programmes</b>

**Author** Dr Pekka Oja  
retired  
UKK Institute  
Tampere, Finland  
(pekka.oja@uta.fi)

**Co-  
Authors**

**Title** New physical activity recommendations invite sports to benefit public health

**Abstract** Systematic collection and analysis of the scientific evidence on the health effects of physical activity led to the landmark physical activity recommendation by U.S. Centre for Disease Control and Prevention and American College of Sports Medicine in 1995 (Pratt et al 1995): "Every US adult should accumulate 30 minutes or more of moderate-intensity physical activity on most, preferably all, days of the week". This laid the basis for the promotion of lifestyle physical activities, such as walking and cycling for different purposes, for health. Since then large amount of new evidence has further supported this moderate-intensity physical activity concept.

More recent research evidence on the dose-response of physical activity and health provides new understanding on what types of physical activities are beneficial for health and function. The most recent assessment of the accumulated evidence on the dose-response of physical activity and health was done by the American College of Sports Medicine and the American Heart Association leading to updated recommendations for adults (Haskell et al. 2007). "To promote and maintain health, all healthy adults aged 18-65 yr need moderate-intensity aerobic physical activity for a minimum of 30 min on five days each week or vigorous-intensity aerobic activity for a minimum of 20 min on three days each week." In addition muscle strengthening activity on two days each week is recommended.

As the new recommendation emphasises the additional benefits of vigorous physical activity beyond those of moderate-intensity physical activity it constitutes a sound basis for exercise and sport activities to become important elements of health-enhancing physical activity. This new knowledge-base presents a challenging opportunity for the sport community to contribute to the promotion of public health.

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**Author** Michal Krejza  
Head of the Sport Unit  
European Commission, Brussels

**Co-  
Authors**

**Title** EU Physical Activity Guidelines: an instrument to promote HEPA

**Abstract** Among the European Commission's current HEPA-related activities, the preparation of EU Physical Activity Guidelines is a top priority. This work responds to an invitation from Member States' Sport Ministers, meeting under Finnish Presidency (Brussels, November 2006), and it allows the Commission to deliver on a major promise made in the White Paper on Sport (COM (2007) 391, 11.07.2007). The idea is, jointly with Member States, to define policy change – as seen in a cross-sectoral perspective – which is apt to allow people in Europe to move more, preferably on a daily basis. The EU Physical Activity Guidelines are currently being prepared by an Expert Group nominated by the EU Working Group Sport & Health. The adoption of these Guidelines will open up new perspectives in the field and will underline the centrality of the HEPA concept. But the Commission will not limit its efforts in support of HEPA to its own actions. It is also the Commission's intention to spread the word about the usefulness of the concept, including via its political cooperation with Member States and its structured dialogue with sport organisations.



**Author** Mr Sami Kokko  
researcher  
Department of Health Sciences  
University of Jyväskylä  
Jyväskylä, Finland  
(sami.p.kokko@sport.jyu.fi)

**Co-  
Authors**

**Title** How can a sport club be health promoting?

**Abstract** Albeit, there are several health problems in which physical activity have been proved to have positive influence, sports clubs are somewhat unexplored setting for health promotion. Health-enhancing physical activity (HEPA) has physical but also mental and social benefits. These benefits are usually seen to derive through physical activity. Sports club activities, as other organised sports like Nordic-walking groups for elderly by the municipalities, can also be seen as social communities. In which case, also other elements (social and mental) that effect health can be found. It can be argued that from the health promotions perspective sports clubs contribution to health has been seen quite narrowly. In health promotion the Ottawa Charter, has had a strong influence internationally. It emphasized comprehensive perspective and determined five key strategic areas of health promotion; 1) building healthy public policy, 2) creating supportive environments, 3) strengthening community activities, 4) developing personal skills, 5) reorienting health services. On the basis of this allocation the health promoting sports club (HPSC) concept was started to construct some years ago. HPSC concept has been developed from the point of view of youth sports. To date, standards for the concept have been created and health promotion profiles of Finnish youth sports clubs described. Standards for the HPSC were determined by the help of experts from health promotion and sports club activities. Preliminary typology of standards consists of five main and 22 sub-standards. Description of health promotion profiles of the clubs was done by defining to what extent youth sports clubs fulfil these 22 sub-standards. A survey was conducted, in which 97 clubs with 273 club officials and 240 coaches participated. Finnish youth sports clubs were noticed to be fairly health promoting, when they fulfilled on an average of twelve standards out of twenty-two. Variation was wide. Every fourth club reached on highly health promoting status whereas every third could be named as lowly health promoting. Thus, it can be argued that for the most of the clubs there are many areas in health promotion to be developed, if the clubs desire a health promoting status.

**Author** Mr Jorma Savola  
Secretary General  
Finnish Sport for All Association  
Helsinki, Finland  
(jorma.savola@kunto.fi)

**Co-  
Authors**

**Title** **Sports Club for Health: guidelines for health-promoting sport programmes**

**Abstract** Sports clubs have the potential to organize health-related sports activities and they may take an important role in the promotion of health-enhancing physical activity (HEPA). For the realization of this potential a sound theoretical framework specific for the sport club setting is needed. In the basis of Heinilä's model of the social organization (1989) is developed the applied framework. It consists of five elements: (1) the promotional approach (physical activity promotion, HEPA promotion or health promotion) is chosen, (2) the nature of sports clubs as civic organization is defined, (3) the concept of health profile for different kind of sports is developed, (4) the social capital generated by sports clubs is recognized and (5) the criteria for health-promoting sport clubs are identified. These five elements form the theoretical framework for Sports Clubs for Health (SCforH) programmes.

In order to support health-promoting programme development in the sport club setting theory-based guidelines are needed. Basic material for such guidelines were produced in a workshop attended by experts from 10 member organizations of the European Sport for All Network (ESFAN). The structure of the guidelines was adapted from previously published Guidelines for Health-Enhancing Physical Activity Promotion Programmes issued by the EU HEPA Network (Foster 2001).

The new guidelines consist of five stages of programme development: preparation, development, design, implementation and evaluation. All five stages include 3-7 subtitles aiming to provide advanced outline for a stepwise process.

There has been an urgent need for theory-based guidelines for the development of health-promoting programmes in the sport club setting. The new guidelines provide advanced structure to help sport clubs to generate such programmes.

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## Poster Abstracts

### National or community approaches to physical activity promotion

P-01

- Title** “Action for a healthy life” an Italian Ministry of Health - Emilia-Romagna Region Project for increasing Physical Activity in the Italian population
- Author** Dr Alberto Arlotti  
Project Manager  
Public Health  
Emilia-Romagna Region  
Bologna, Italy  
(alarlotti@regione.emilia-romagna.it)
- Co-Authors** Poggiopollini G., Regional Health Service/Emilia-Romagna Region, Bologna, Italy  
Macini P., Regional Health Service/Emilia-Romagna Region, Bologna, Italy
- Abstract** **Purpose:** In 2007 the Italian Government passed a decree called the “Gaining Health Planning Document” as an implementary tool of the National Health Plan. The Decree closely follows the contents of the WHO Strategy “Gaining Health” and specifies strategies and lines of action in Italy to counter the four main risk factors. A particular strategy denotes that the Ministry of Health entrusts a particular Italian Region with a specific task (Italian Regions have autonomy in choosing the ways they achieve the national health aims). The Ministry of Health entrusted the Emilia-Romagna Region (ERR) with the “Action for a healthy life” project which aims to improve the National Health Service’s ability to make use of Physical Activity (PA) in promoting people’s health.
- Methods:** The Project, which started in June 2007, provides for the setting up of a steering committee (SC) by the ERR made up of Public Health managers from other Italian Regions, health-enhancing PA specialists and project managers from two other “Gaining Health” projects connected to the ERR one. This SC coordinates the activities with the aim of producing: 1) a national and local network of subject managers; 2) a national network of subject experts; 3) a national inventory of community interventions; 4) guidelines on creating environments to encourage PA; 5) a collection of models promising (if possible) best practices. The involvement of the national and local networks in finding successful policies for Italy and preparing the required above-mentioned tools is the method used by the Project to improve the National Health Service’s ability to make use of PA
- Results:** The SC has been created; it is made up of managers from five Italian Regions (Piemonte, Veneto, Toscana, Marche, Puglia), experts from the WHO and the “Camina Association” and project managers from two other “Gaining Health” projects. The national network of subject managers has been set up and local networks have already been established in three Regions. The first version of a form to collect community interventions is already available on the Internet and the SC is promoting action to support the national inventory. A special form to find good practice is also under consideration. The Project is now running.
- Conclusion:** Involvement of the national network and local networks in preparing special tools seems an interesting way to facilitate and assess the implementation of promoting PA strategies.

Title **Developing the operational culture in schools for more physical activity.**

Author Dr Riitta Asanti  
Executive Director  
Baltic Region Healthy Cities Association  
Turku, Finland  
(riiasa@utu.fi)

Co-  
Authors

Abstract **Purpose:** The study draws on a community based intervention, 'Schools on the move', which aimed to create a new operational culture in schools in order to encourage school children to become more active, especially inactive ones. The objective is to describe the changes in operational culture in physical activities developed at schools and in the types of action adopted by teachers.

**Methods:** The study is a qualitative process evaluation with an action research approach. The research methods include interviews of the teachers and school principals from 18 primary schools and four secondary schools. Three year follow up data and observation protocols from teachers' developmental meetings were collected.

**Results:** The results describe four developmental areas in the operational culture as follows: All the new ideas produced by participating schools were pooled and included in an operational map for sharing. The majority of ideas concerned promoting PA during breaks and on the way to school. In secondary schools, informal activity groups proved successful. A second result was a student initiated action in which older students functioned as peer activators during breaks. Pupils' active participation was vital in planning attractive and activating playgrounds. Teachers' teamwork activated the whole school community into action. A third result was a conceptual change from a traditional competition oriented understanding of the concept of sports to a wider concept of PA in schools. Finally, special attention was paid to reach physically inactive pupils. Pupils selected by school nurses were sent invitation letters to join PA clubs with special targeted and pupil initiated activities.

**Conclusion:** The primary schools were faster to create new activities than the secondary schools. Teachers' teamwork and support from the school principal is needed. To maintain the motivation all the schools and teachers need continual support. Taking small steps and putting ideas into concrete action will ensure reaching the big target, a change of the operational culture.

- Title**      **National Initiative “Slovenia on the move with healthy nutrition days” 2003-2006”**
- Author**     Mrs Andrea Backovic Jurican (colleague Janet Klara Djomba will present poster)  
Health Education Organiser  
Prevention Unit CINDI Slovenia  
Community health centre Ljubljana  
Ljubljana, Slovenia  
(andrea.backovic-jurican@zd-lj.si)
- Co-Authors**   Mitja Lainščak, PhD, MD, Jožica Maučec Zakotnik, MD, Miljana Vegnuti, B.Soc.Sc. Address:  
Community Health Center of Ljubljana- Prevention Unit CINDI Slovenija, Ulica Stare pravde 2,  
Ljubljana, Slovenia; Website: [www.cindi-slovenija.net](http://www.cindi-slovenija.net); E-mail: [cindi@zd-lj.si](mailto:cindi@zd-lj.si)
- Abstract**    **Purpose:** ‘Slovenia on the Move with Health Nutrition Days’ is a national programme which ran from 2003 until 2006 and aimed to encourage Slovenian citizens to participate in at least 30 minutes of physical activity everyday and to eat healthily. The programme celebrated the ‘Move for Health Day’ and worked with numerous cooperating partners.  
**Methods:** The national actions were coordinated by CINDI Slovenia and implemented through the network of regional/local promotion and prevention groups. Each year, after individual national action was finished, the local organizers filled in a standard evaluation questionnaire about the local healthy event. Data for each of the participants in local events were gathered with a help of prize questionnaire from year 2004 onwards. The healthy events usually enabled participants of all ages to be engaged in some kind of recreational sports and to get counselling on healthy living.  
**Results:**  
a. Results of standard evaluation questionnaire by year (2003, 2004, 2005 and 2006)  
Number of events: 84 in 2003; 116 in 2004; 120 in 2005; and 408 in 2006.  
Number of local organisations: 91 in 2003; 49 in 2004; 78 in 2005; and 126 in 2006.  
Number of towns that events took place: 41 in 2003; 62 in 2004; 62 in 2005; and 82 in 2006.  
Number of participants in events: 12046 in 2003; 11354 in 2004; 12522 in 2005; and 22162 in 2006.  
b. Results of three year prize questionnaire together (2004, 2005 and 2006)  
3116 individuals (both genders age 48±15; 68% women, body mass index 25.8±4.9; 32% men, body mass index 26.5±4.4) returned a completed questionnaire. 58% (1741 individuals) reported high blood pressure, obesity (624 people) and high blood fat levels (660 people) as most frequent risk factors for CHD. 33% were physically active once a week. Mostly they participated in walking (84%), cycling (42%) and hiking (29%).  
**Conclusion:**  
Based on the results it was established that the national initiative became more popular from year to year. Information about participants will allow more targeted action planning in the future.

- Title**      **Participation in physical activity in Georgia: a population survey**
- Author**    Levan Baramidze  
Deputy Director General of National Center for Disease Control and Public Health of Georgia  
Georgia
- Co-Authors**    Sturua L, Metreveli L
- Abstract**    NCD (non communicable diseases) Risk Factors Survey was conducted as the part of Priority 4 of Biennial Collaborative Agreement (BCA) between the Public Health Department and the Regional Office for Europe of the WHO: Reducing Burden of Preventable NCD.  
**Purpose:** The goals of the survey were to provide epidemiological information on NCDs and the prevalence of their risk factors for planning future interventions for integrated NCD prevention and control.  
**Methods:** The cross-sectional study area was one of the districts of Tbilisi. A total of 2472 persons of the age 25-65 years participated (72% response rate).  
**Results:** 93.9% of survey participants hadn't practiced physical activities during the last 7 days. 55.1 % of respondents hadn't done any moderate physical activities. 8.5% of surveyed hadn't practiced any moderate physical activities. 43.5% of respondents spent more than 6 hours daily seated. 85.6% of those surveyed do any leisure time physical. Only 34.0% of surveyed persons had normal weight. 34.9% of respondents were overweight. Nearly one third of the respondents were obese, 2.6% were categorized as obese grade 3.  
**Conclusions:** Besides the Government initiatives and Public Health Department's activities the situation is quite dramatic. The main problem is cultural patterns of the Georgian adult population as physical activity of humans is a highly complex behaviour. Sufficient levels of physical activity provide a health benefit and it is important to understand who is undertaking activity so that appropriate interventions can be developed. Taking this into the consideration in order to address the problem of physical inactivity, overweight and obesity PHD is planning under the BCA 2008-09 conducting the Healthy Diet and Physical Activity Program for insuring a healthy environment for children and adolescents. Today, it is important to understand that physical inactivity is a public health issue. Encouraging more Georgians to become physically active will require a shift in policies and practices that reflect this broader health determinants thinking. More research is needed to fully understand the causes of the rise in overweight and obesity. This research will help refine policies, programs and practices. However, there is enough information available now to allow us to act.

Title **Are our children becoming a “Backseat generation”? - A national initiative promoting walking and cycling to and from school**

Author Ms Camilla Bergholm  
Communications officer  
The Swedish National Centre for Child Health Promotion  
The Swedish National Centre for Child Health Promotion  
Örebro, Sweden  
(Camilla.bergholm@adm.oru.se)

Co- Charlie Eriksson, Director at NCFF and Professor in Public Health Science  
Authors Johan Tranquist, Administrative Director at NCFF

**Abstract Purpose:** In Sweden there is an increasing trend of parents driving their children to and from school and other activities. This leads to an increased risk for children to develop a lifestyle linked with negative effects on physical activity, health, atmospheric pollution, traffic safety and quality of life. In order to change this The Swedish National Centre for Child Health Promotion, NCFF, during autumn 2006 and 2007 organized national “Walk and cycle to school” challenges. The aim of this national initiative is to promote changes in habits and attitudes among school personnel, children and parents for increased physical activity, better child health and a more safe traffic environment outside the schools.

**Methods:** An invitation was sent to all the schools in Sweden, where NCFF invited them to participate in the challenge. In addition the schools were provided with supporting tools such as a Walk-Bus DVD, a guideline for teachers and a teacher’s handout for parents. The schools registered the participation of school children and the students’ walking and cycling results. The most successful schools were rewarded with a prize from NCFF. Moreover, a follow-up of the participating schools has been implemented.

**Results:** In 2006, 86 schools participated in the “Walk and Cycle to School” challenge. In 2007 the participation had increased to 122 schools. In addition, 8 Swedish municipalities took an active part in the challenge by promoting and sponsoring their local schools with different awards. Parental awareness of the problems caused by car driving to and from school has increased and many parents have considered new means of travel. The challenge has received attention in both local and national media. A more extensive collaboration between national governments and organisations has also been established as a result of this national initiative. This broader alliance will now implement the 2008 “Walk and Cycle to School” challenge.

**Conclusion:** Healthy habits develop at an early age and if these habits are firmly established they are more likely to be tracked into adulthood. The national challenge “Walk and Cycle to School” has been successfully implemented in many schools in Sweden. Those that have been supported by their municipalities have been more likely to continue working with methods like Walk-buses and Traffic and health weeks.

- Title**      **Active Travel to School / Primary-Secondary Transition**
- Author**    Ms Philippa Cochrane  
Project Manager  
School Travel  
Sustrans  
Edinburgh, United Kingdom  
(philippa.cochrane@sustrans.org.uk)
- Co-Authors** Child and Adolescent Health Research Unit (CAHRU), University of Edinburgh Scottish Health Promoting Schools Unit
- Abstract** **Purpose:** A joint initiative between Sustrans and the Scottish Health Promoting Schools Unit (SHPSU) designed to help pupils plan ahead on travelling to their secondary school, incorporating active modes of travel where possible. Established transition programmes were developed to help pupils prepare for the transfer from primary to secondary school overlook the journey to school. Findings from the Physical Activity in Scottish Schoolchildren (PASS) study show that for many young people, particularly girls, participation in physical activity decreases during the transition from primary to secondary school. One area which shows significant decreases is the proportion of pupils walking or cycling to school (Inchley & Currie, 2005).  
**Methods:** Three projects were developed in partnership with School Travel Coordinators from July 2006 to January 2007 involving three local authorities: Argyll & Bute, Moray, and the Scottish Borders. Evaluation assessed the impact of the pilot projects on (a) attitudes towards active travel and (b) travel patterns to and from school. The evaluation addressed issues of implementation, delivery, participation and sustainability.  
**Results:** The projects had been a positive experience and raised awareness of the benefits of active travel to school and opportunities for walking and cycling within the local area. In Moray, pupils from the pilot primary school were more likely to report that they had discussed school travel and been given travel information in P7 than pupils at any of the other associated primary schools. Levels of cycling were also high relative to other schools. There was no significant difference between pupils who had taken part in the project and older pupils in the same school. However this was as expected given the scope and timescale of the projects.  
**Conclusion:** Examples of good practice were drawn from the three projects and have been written up in a document which has been made available to schools across the United Kingdom. Each year more schools are starting to address active travel to school in their transition projects while schools that have started to include it continue to do so once they've seen the benefits.



- Title** **Predicting quitters' use of physical activity as a smoking cessation aid within the national Walk-2-Quit project: Support for the Transtheoretical Model**
- Author** Dr Emma Everson  
Research Fellow  
School of Sport and Health Sciences  
University of Exeter  
Exeter, United Kingdom  
(e.s.everson@exeter.ac.uk)
- Co-Authors** Everson, E.S.,<sup>1</sup> Taylor, A.H.,<sup>1</sup> Ussher, M.<sup>2</sup>  
<sup>1</sup> School of Sport and Health Sciences, University of Exeter, Heavitree Road, Exeter, EX1 2LU, UK <sup>2</sup> Division of Community Health Sciences, St. George's University of London, Cranmer Terrace, London, SW17 0RE, UK
- Abstract** **Purpose:** Experimental research has demonstrated that brief bouts of lifestyle physical activity (PA), such as brisk walking, can reduce cravings and withdrawal symptoms (Taylor, Ussher & Faulkner, 2007), and as such may be a useful smoking cessation aid. Lifestyle PA could, therefore, be a useful cessation aid, but little is known about how those attempting to quit view the promotion of PA in Stop Smoking Clinics. We explored the social-cognitive determinants of stage of readiness (SoR) to use lifestyle PA as a cessation aid among quitters accessing the NHS Stop Smoking Services (SSSs).  
**Methods:** Surveys were developed to assess SoR to use PA as a way of controlling smoking, beliefs about PA as an aid within the Transtheoretical Model framework (self-efficacy, outcome expectancy, pros and cons beliefs), and background (age, gender, general PA levels using the 7-day PA recall), and administered to 181 quitters attending NHS SSSs in various Primary Care Trusts throughout the UK.  
**Results:** Clients reported doing a mean of 191.8 (SD=417.3) minutes of moderate activity and 53.3 (SD=169.2) minutes of vigorous activity over the preceding week. 22% of quitters reported using PA to aid cessation, with 29%, 38%, 11%, 15% and 7% in precontemplation, contemplation, preparation, action and maintenance stages of change for using PA as a cessation aid, respectively. Bivariate and multiple regression analyses revealed that those in a higher SoR had more favourable self-efficacy and outcome expectancy. Confidence to do more PA and overcome PA barriers together predicted 34% of (adjusted) variance in SoR. Physically active quitters had more favourable outcome expectancy, self-efficacy to be active in general, and self-efficacy for PA as a cessation aid, than those less active.  
**Conclusion:** Quitters should be supported by NHS SSSs with strategies to build confidence to do more lifestyle PA, such as brisk walking, and also receive further information on how it may be beneficial in aiding cessation. This is a unique opportunity to promote PA, as a positive health behaviour, concurrently with smoking cessation, among typically less active populations.  
We acknowledge support from the National Prevention Research Initiative funders (MRC: G0501296).

- Title**      **From Design to Interpretation: Lessons Learnt from a Visual Public Health Campaign in Liverpool, UK.**
- Author**    Ms Denise Goodwin  
LAC Researcher & PhD Student  
Sport and Exercise Sciences  
Liverpool John Moores University  
Liverpool, United Kingdom  
(D.M.Goodwin@ljmu.ac.uk)
- Co-Authors**    Peerbhoy, D. Research Institute for Sport and Exercise Sciences, Liverpool John Moores University, Liverpool, UK Stratton, G. Research Institute for Sport and Exercise Sciences, Liverpool John Moores University, Liverpool, UK
- Abstract**    **Purpose:** Media based interventions represent a means by which a large proportion of the population can be targeted for physical activity promotion. However, little is known about the effectiveness of such interventions. This paper reports upon both the process and findings of an evaluation of a media based intervention to promote physical activity behavioural and attitude change, and raise general awareness of health in the city of Liverpool. The campaign was one component of a broader “active city” strategy to promote and provide opportunities for physical activity. The aim of this evaluation was two fold. Firstly, to review the effectiveness of a local physical activity poster campaign and secondly, following an action research framework and formative evaluation approach, to provide evidence of campaign impact to key stakeholders in order to influence future working practices.  
**Methods:** The evaluation was implemented using an action research approach applied at a number of stages to be reactive, illuminative and finally formative for future campaign design. Firstly departmental feedback about poster design was obtained from Sport and Exercise professionals; secondly using opportunistic sampling methods, semi-structured interviews (n=100) were conducted in the format of an on-street survey; thirdly key stakeholders were asked for their opinions regarding the raw comments from survey respondents.  
**Results:** Responses ranged from positive commentary, to those indicating comprehension issues (mode response), to rejection of the poster through facetious comments about its layout and text. Results indicate a low level of recall amongst respondents which may suggest a poor choice of location, lack of dynamism of the poster or both.  
**Conclusion:** The findings have implications for key stakeholders in view of appropriate consultation, design and release of public health campaigns which seek to influence lifestyle. This process and summative evaluation has resulted in a more informed understanding of the concept of social marketing from a planning, operational and implementation perspective as documented by lessons learnt for key stakeholders.

- Title**      **Specific-tailored community and primary care service for counteracting child obesity: move with us in the Exercise Looks After You**
- Author**     Dr Narcis Gusi  
Professor  
University of Extremadura  
Cáceres, Spain  
(ngusi@unex.es)
- Co-Authors**   Gusi N, Faculty of Sport Sciences, University of Extremadura, Cáceres, Spain. Parraca JA, Faculty of Sport Sciences, University of Extremadura, Cáceres, Spain. Quesada F, Ministry of Youngs & Sports, Junta de Extremadura, Mérida, Spain. Campon JA, Ministry of Health & Dependence, Junta de Extremadura, Mérida, Spain. Cebrian C Ministry of Health & Dependence, Junta de Extremadura, Mérida, Spain. Herrera E, Ministry of Health & Dependence, Junta de Extremadura, Mérida, Spain.
- Abstract**   **Purpose.** In the framework of the *Exercise Looks After You* programme, the purpose is to describe the management and preliminary results of the new public health service *Move with us* for promoting physically active lifestyles in children with obesity.  
**Methods.** Pediatric teams of primary care recruited and referred 80 children with obesity (age adjusted BMI > 95%) ranging from 6 to 12 years old to the new communitarian sport-health service labeled *Move with us*. Each child was randomly distributed to a control group (n=40) or to an specific socio-sanitary and physical education programme 2 days per week focused on developing psycho-social and motor skills for promoting physically active lifestyles. The main outcomes were: a) health-related quality of life measured with the pediatric-specific questionnaires EQ-5D-Y and PedsQL administered to children and to parents by proxy; b) health-related fitness tests (fat percentage measured by bio-impedance, body mass index, hip-waist ratio, flexibility, muscular strength, agility and balance); nutritional and physical activity lifestyles. All test were performed at baseline and three months later. We also describe the management and health policies to start the programme.  
**Results.** The new service was a feasible addition to the National Health Service because the health policies we used (protocol consensus with pediatric teams and stakeholders, support and time-saving to pediatric teams, age of recruitment coinciding with the obligatory child check, etc.) run. The perceived impact of obesity on health-related quality of life of parents differed from this of children. Children usually reported higher problems that the programme attenuate. Motor fitness improved but body composition probably requires longer programmes and more sessions per week. However, the main goal was to promote more physically active lifestyles. Criteria to improve the service were detected.  
**Conclusion.** The Move with Us Service was feasible and useful to improve health-related quality of life, motor fitness and to promote more physically active lifestyles. Nevertheless, longer monitoring is necessary to know the maintenance of these improvements.

Title **HEPA and health personnel education**

Author Prof Stjepan Heimer  
Professor  
Sports medicine  
Faculty of Kinesiology University of Zagreb  
Zagreb, Croatia  
(stjepan.heimer@zg.htnet.hr)

Co-Authors Rakovac, M., Faculty of Kinesiology, University of Zagreb, Zagreb, Croatia

**Abstract Purpose:** One of the goals of regular physical activity is health protection and promotion. Who can be a greater authority for physical activity recommendation than a physician, a medical doctor, regardless of whether he/she is advising a healthy or a sick person? Most primary care physicians as well as physician specialists working in hospitals and clinics, have only general and vague information about the values of physical activity in health protection and promotion and prevention of certain chronic diseases. As a rule, most physicians' knowledge of this is almost the same as in general population. Therefore, it is necessary to think about the health-kinesiological education of physicians and other health personnel and about realising the corresponding programs of their education.

Nowadays, we are quite sure that only our united forces can bring us to our goal achievements: to gain crucial partners in physical recreation, recreational sport and health care and promotion - policy makers, printed and electronic media and sponsors. We are also aware that eventual success depends on many controllable and uncontrollable, objective and subjective factors.

We here today represent a part of the significant subjective factors. It is just on us, on our knowledge, our persuasiveness, our efficiency and population support that will define how successfully we shall change the objective factors and how many time we shall need to catch up with countries that we consider examples in applying HEPA in health protection and promotion and in prevention of diseases dominating as the public-health problem.

Results will quite surely reflect on the citizens' life quality promotion, on saving resources for health protection, not to mention increase the productivity and economical prosperity of the country.

**Key words:** HEPA, health personnel, education

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- Title** **Let's Get Moving: An Evaluation of the Feasibility of a 'Physical Activity Care Pathway' in Primary Care Settings.**
- Author** Ms Charlotte Hilton  
Research Associate  
BHF National Centre for Physical Activity and Health  
Loughborough University  
Leicestershire, United Kingdom  
(c.hilton@lboro.ac.uk)
- Co-Authors** Bull, F.C. British Heart Foundation, National Centre for Physical Activity and Health (Loughborough University), Leicestershire, U.K Milton, K. British Heart Foundation, National Centre for Physical Activity and Health (Loughborough University), Leicestershire, U.K
- Abstract** **Purpose:** The purpose of this study was to evaluate the feasibility of the new physical activity care pathway (PACP) developed by the Department of Health (DH).  
**Methods:** A convenient sample of 15 practices from across 11 London PCT's were used to conduct the pilot, commencing in two waves during 2007/08. The PACP protocols involved screening patients using GPPAQ and those identified as 'insufficiently active' were invited to receive a brief intervention (BI) based on Motivational Interviewing (MI) methods. Patients were recruited by the practice either 'opportunistically' during routine consultations or targeted via disease registers. Patients enrolled in the PACP received a 'Let's Get Moving' Pack and were signposted to local opportunities for physical activity. Both process and impact evaluation were conducted utilising a mixed methodology design (quantitative and qualitative methods). Data entered into electronic audit systems within practices (EMIS) by the health professionals provided details on implementation and focus group discussions explored feasibility and barriers to implementation.  
**Results:** EMIS data from Wave One practices show that GPPAQ was completed with 590 (83%) eligible patients, of which 164 (28%) received the BI consultation. Most patients were signposted to local authority leisure services (28%) or to pedometer programmes (27%). Follow-up consultations were completed with 61 (37%) patients. Data collection from Wave Two practices is currently underway.  
Focus group discussions revealed a favourable response towards implementation of PACP. Practitioners felt the PACP provided a valuable audit mechanism and helped review patient PA behaviour and monitor patient outcomes. The use of MI methods was reported to "empower patients" and one practitioner stated that MI has "made me a better clinician."  
**Conclusion:** Evaluation of Wave 1 indicated that PACP was feasible to implement, was helpful to practitioners, appeared to increase the number of patients approached regarding PA and promoted a 'person-centred' styles that facilitated patient choice and self-efficacy. The final evaluation report is due in October 2008, which will inform further development of the PACP and assist DH with plans for wider dissemination.

- Title**      **A French departmental platform to improve diet, physical activity and health: an action for women with low socio-economic status**
- Author**     Dr Brigitte Honoré  
Adviser of the President  
Conseil Général de Moselle  
METZ, France  
(brigitte.honore@cg57.fr)
- Co-Authors**   Bataillon-dal-Zuffo (Françoise), FB, directrice des sports Conseil Général Moselle, France  
Honoré (Brigitte), BH, chef de projet Conseil Général Moselle, France Vuillemin (Anne), AV, Nancy Université, France
- Abstract**   **Purpose:** To promote and increase physical activity, particularly walking, in women with low socio-economic status.  
**Methods:** Disadvantaged women aged 20-70 years were involved in physical activity sessions for one year (10-30 physical activity sessions, duration one hour, once a week). A survey was conducted about their diet and physical activity habits. Strategies to encourage the women to take part in sports by public and associated private actors through resource mobilization activities have been identified.  
**Results:**
- 12 groups have been formed: 20 women each group; 240 women a year
  - a few women with low socio economic status do not take part in a sporting activity because of lack of money but also lack of body respect. It is very difficult for these women to access sports and physical exercise
  - favourable physical environments have been developed with main events: walking days; local sport events, actors meeting
  - a financial convention is signed between the president and the sport associations to subsidise subscription fees
- Conclusion:** In the framework of the French national nutrition health program and the European platform for action on diet and physical activities, a nutrition program (2006/2009) has been developed across the Moselle department (1.023.427 inhabitants). This is an innovative, global, and transversal approach to address the issues of poor diet and lack of physical exercise. This program involves several partners working together on the basis of French health minister's recommendations and teaching aids. The action plan is aimed at many populations groups: mothers and children, schoolboys and girls, elderly, disabled and disadvantaged populations. The departmental policies include actions aimed at reducing obesity and promoting quality of life. The action presented is only one of many within the framework.

## Lithuanian strategy for the promotion of physical activity 2008-2020

Title

Author Dr Rasa Jankauskiene  
Lecturer  
Physical Activity and Health  
Lithuanian Academy of Physical Education  
Kaunas, Lithuania  
([r.jankauskiene@lkka.lt](mailto:r.jankauskiene@lkka.lt))

Co-Authors Alvydas Kalvenas, A.K., Lithuanian Academy of Physical Education, Kaunas, Lithuania  
Tomas Kukenys, T.K., Lithuanian Academy of Physical Education, Kaunas, Lithuania

**Abstract Purpose:** The purpose of this abstract is to present information about national efforts to promote physical activity. During the Soviet period, sports policy was oriented toward competitive sport. After the restoration of Lithuanian Independence, the Sport for All movement started to be widely promoted, but this movement in Lithuania did not succeed to solve the problem of physical inactivity. If compared with other EU Member States, the development of sports facilities in Lithuania differs from 2 to over 150 times. Until now, only sport facilities are counted ignoring the infrastructure related to non-organized physical activity in leisure time. The main efforts for health-related physical activity promotion come from private sector. The efforts of the State still remain insufficient, because only the movement of Sport for All is promoted with the aim to increase participation in organized sports. There is neither a responsible body for physical activity promotion and monitoring nor a physical activity monitoring system. Insufficient physical activity was observed in 50.4% of Lithuanian boys and in 64.4% of girls (data taken from *HBSC*, 2001-2002). According to the research data on Lithuanian youth population lifestyle 1994–2006, only 37% of 15-24 aged population did exercise twice per week.

The Strategy for the promotion of physical activity in Lithuanian population 2008-2020 was developed with the aim to enhance people's health and improve quality of life through the increase of physical activity. The objectives of the Strategy are:

1. To optimize a population-wide physical activity management system (through horizontal and vertical interaction between the State and non-governmental institutions);
2. To optimize an environment for physical activity (the emphasis lies on the leisure time physical activity promotion);
3. To promote a physically active population and to encourage physical activity to become the part of the national culture (health education programmes, physical activity programmes, physical activity promotion in general practice);
4. To improve the quality of physical education in educational settings (the control of the educational physical activity environment and physical education quality);
5. To monitor the prevalence and dynamics of physical activity and fitness, and their relationship with population health (the establishment of the centre for physical activity epidemiology);
6. To develop human resources related to physical activity education, programming and implementing.

- Title**      **Efforts for The adventures of Joe Finn truck tour campaign**
- Author**    Ms Liisamaria Kinnunen  
Development Manager  
Fit for Life Program  
LIKES Research Center for Sports and Health Sciences  
Jyväskylä, Finland  
(liisamaria.kinnunen@likes.fi)
- Co-Authors**   Väisänen, K., Fit for Life Program, LIKES Research Center for Sport and Health Sciences, Jyväskylä, Finland  
Saarentola, K., Fit for Life Program, LIKES Research Center for Sport and Health Sciences, Jyväskylä, Finland  
Komulainen, J., Fit for Life Program, LIKES Research Center for Sport and Health Sciences, Jyväskylä, Finland
- Abstract**   **Purpose:** The Fit for Life Program (FFL) inspires adults over 40 years of age to include physical activity in their daily routine. FFL took hold in the challenge to plan and organize a campaign to encourage sedentary middle-aged Finnish men to a healthy life-style. Among this group there is a lack of physical activity, overweight, obesity, and also a high risk to CVDs and type 2 diabetes. The campaign was called 'The adventures of Joe Finn'.  
**Methods:** The adventures of Joe Finn campaign included a total of 18 events around Finland executed in September 2007 and May 2008, a condition guidebook, internet pages, physical activity courses, and combined courses on cooking and experimentation of different sports. To organize two truck tours, it was essential to find a suitable partner. FFL together with a great help of Etera Mutual Pension Insurance Company had a shared understanding for the purpose of the tour. A magnificent amount of men attended tests, from companies to the building trades, where employees were insured by Etera. These males were working class individuals (mean age 45 years) with a lack of leisure time or commuting physical activity. The adventures of Joe Finn truck tour included nine events in May 2008. Each event was organized with local, regional, and national health and other organizations from both non-profit and business fields. All events offered a lot of information for men. However, fun and adventure aspects were emphasized rather than health aspects. FFL ran a test lab at the motor home truck. Men were given the option to test their heart rate and heart rate variability by the Polar OwnIndex fitness test, handgrip force, and body composition by Inbody 720 analyzer. After the measurements men received test feedback from experts, as well as an option for personal feedback. All tests were free of charge for men. In addition to test labs, there were several organizations offering information, material, advice, and tests such as cholesterol, blood pressure, and microspirometry. To draw the target group to each event several communicational efforts were done, such as communications, advertising in regional and local newspapers and tabloids in cooperation with local organizations, who had an important role to inform the local population about the event. At each event there was a reception for invited guests including political decision makers, local officials, as well as media.  
**Results:** In total ~3,500 men, mean age 51 years, were tested in May 2008. Results showed that these men had very good handgrip force, the fitness test results were average, mean body fat was 22 per cent, BMI 26.4, and visceral fat mean was 117 cm<sup>2</sup> (recommended to be under 100 cm<sup>2</sup>).  
**Conclusion:** The adventures of Joe Finn recruited the targeted population.



- Title** **Promoting physical activity in Type 2 Diabetes: Time2ACT. Six-month changes in physical activity.**
- Author** Dr Alison Kirk  
Lecturer  
Institute of Sport and Exercise  
University of Dundee  
Dundee, United Kingdom  
(a.kirk@dundee.ac.uk)
- Co-Authors** Barnett J. Institute of Sport and Exercise, University of Dundee, Dundee, Scotland Mutrie N. Sport, Culture and the Arts, University of Strathclyde, Glasgow, Scotland Leese G. Diabetes Centre, Ninewells Hospital and Medicine School, Dundee, Scotland
- Abstract** **Purpose:** Regular physical activity (PA) is an important, but often underutilised component of Type 2 diabetes management. Interventions using PA consultations in people with Type 2 diabetes have been successful in increasing PA and improving many components of the metabolic syndrome.  
**Methods:** Time2ACT is a randomised control trial studying the effectiveness of two methods of physical activity promotion to increase physical activity in people with Type 2 diabetes. With ethical approval, 134 inactive people with Type 2 diabetes participated (65M, 69F, mean age 61.3±10.3 yrs). Using random allocation, 47 received a 30-minute person delivered PA consultation, 52 received a self-instructional booklet, and 35 received standard PA information at baseline. Support calls were given at 1 and 3 months to all participants. Physical activity was measured for 7 days at baseline and 6 months using the Actigraph GT1M accelerometer (outcomes: accelerometer count, step count, minutes spent in moderate intensity or above physical activity) and a 7 day recall questionnaire (outcome: time spent in moderate intensity or above physical activity). Intention to treat analysis was used with the last observation carried forward. A 2x3 (time x condition) repeated measures ANOVA was used for all analyses with adjustments made for multiple comparisons.  
**Results:** There was no interaction between time and group ( $p=0.678$ ) or a main effect of time ( $p=0.588$ ) in accelerometer counts. There was a main effect of group ( $p=0.039$ ) where participants in the person delivered intervention had higher accelerometer counts than participants in the written delivered group at both baseline ( $p=0.038$ ) and six months ( $p=0.011$ ). There was no interaction between time and group or a main effect of time or group ( $p>0.05$ ) in step count or minutes of moderate intensity activity or above per week measured by either the Actigraph or 7 day recall questionnaire.  
**Conclusion:** Neither the person delivered consultation nor the self-instructional booklet were effective in increasing physical activity levels compared to the control group over 6 months. Analysis of additional study variables and complete 12-month data could create a clearer picture of the overall effectiveness of both interventions.

- Title** Promoting physical activity in Type 2 diabetes: Time2ACT study. Six-month changes in the transtheoretical model
- Author** Dr Alison Kirk  
Lecturer  
Institute of Sport and Exercise  
University of Dundee  
Dundee, United Kingdom  
(a.kirk@dundee.ac.uk)
- Co-Authors** Barnett J, Institute of Sport and Exercise, University of Dundee, Dundee, Scotland Mutrie N, Sport, Culture and the Arts, University of Strathclyde, Glasgow, Scotland Leese G, Diabetes Centre, Ninewells Hospital and Medicine School, Dundee, Scotland
- Abstract** **Purpose:** The Time2ACT study is investigating the effectiveness of two physical activity interventions (person delivered physical activity consultation [G1], self instructional booklet [G2]) compared to standard care (G3). The theoretical basis of each intervention is the Transtheoretical model (TTM) of exercise behaviour change. The purpose of this research was to investigate changes from baseline to 6 months in components of the TTM (stage, self efficacy, decisional balance, processes of change).  
**Methods:** With ethical approval 134 people with Type 2 diabetes (69F, 65M, mean age 61.3  $\pm$ 10.3yrs, BMI 33.4  $\pm$ 6.9kg/m<sup>2</sup>) were randomised to G1 (n=47), G2 (n=52) or G3 (n=35). All participants were in a contemplation or preparation stage of change at baseline. Each component of the TTM was measured at baseline and 6 months follow up using validated questionnaires. Stage of change data were analysed using chi square analysis. Repeated measures (time x condition) ANOVA was used for all other analysis with adjustments made for multiple comparisons.  
**Results:** A substantial proportion of all group participants (G1 49% (23/47), G2 27% (14/52), G3 34% (12/35) had progressed to an active (action, maintenance) stage of change at 6-month follow-up, however no significant difference was found between the groups ( $p=0.07$ ). No significant effect of time or the interaction of group and time were found for decisional balance scores ( $p>0.05$ ). A borderline interaction effect was identified in self efficacy score ( $p=0.06$ ) with pairwise comparisons indicating that G1 recorded a significant ( $p=0.048$ ) increase from baseline to six months. Significant effects of time ( $p<0.05$ ) were recorded for processes stimulus control (SC), counter conditioning (CC), reinforcement management (RM), consciousness raising (CR), self liberation (SL) and helping relationships (HR) and the interaction of time and condition for processes SC and SL. Pairwise comparisons identified a significant increase ( $p<0.05$ ) in process score in G1 for processes SC, CC, RM, HR, SL, CR and in G2 for processes RM and CC.  
**Conclusion:** The person delivered physical activity consultation appears to have had the greatest positive effect on components of the Transtheoretical model of behaviour change.

- Title** **SwitzerlandMobility, the national network for non-motorized traffic: A model project of intersectoral collaboration**
- Author** Mrs Eva Martin-Diener  
MPH  
Swiss Federal Institute of Sport  
Federal Office of Sport  
Magglingen, Switzerland  
(eva.martin@baspo.admin.ch)
- Co-Authors** Anrig P, Foundation SwitzerlandMobility, Bern, Switzerland Caporine M, Foundation SwitzerlandMobility, Bern, Switzerland Martin BW, Swiss Federal Institute of Sport, Magglingen, Switzerland
- Abstract** **Purpose:** *SwitzerlandMobility* ([www.switzerlandmobility.ch](http://www.switzerlandmobility.ch)) offers and coordinates a national network for non-motorized traffic and its communication. It serves primarily leisure time activities and tourism. The process started in 2002 and the full network was launched in April 2008. The project and the role of the partners involved in its development and implementation will be described.
- Methods:** Protocols and project documentations were analysed. The project organisation used an evaluation of the network *Cycling in Switzerland* to estimate the utilisation of *SwitzerlandMobility*. Additional information was gathered from key players and institutions.
- Results:** The network consists of nearly 20,000 km of signalised routes for hiking, cycling, mountain biking, skating and canoeing. It is coordinated with the public transport system and linked to a wide range of services. All offers are communicated via Internet and 57 route guides. Partners involved in the development were: 8 institutions of the federal administration, 1 of the Principality of Lichtenstein, all 26 Cantons and 18 private partners from the tourist, transport, sports, hotel and gastronomy areas. Direct Project costs were 7.5 Mio Euro, 44% covered by the Confederation, 48% by the Cantons, 1% by the Principality of Liechtenstein, 7% by private partners. Additionally, cantons and municipalities invested about 7.5 Mio in infrastructure. It is estimated, that 10 Mio day-visitors and about 400,000 guests staying two or more days will be counted on the network annually, spending 250 Mio Euro. The most important pillars of the project were the *Swiss Hiking Trails*, established since 1934 and then integrated into a Federal Law on Footpaths and Hiking Trails (1985), and the network *Cycling in Switzerland*, developed in 1995 by a foundation supported by the federal administration, the Cantons and private partners. Regarding implementation, a foundation including 15 national public and private organisations is responsible; a health insurance company, a Sunday newspaper and an internet portal are official sponsors.
- Conclusion:** The extent and degree of cooperation between partners is remarkable. This first overview reveals that long term investments and cooperation prior to the project were fundamental for success. It would be worth analysing roles of partners and strategies for success more systematically.

Title **PAFES: Plan for Physical Activity, Sport and Health**

Author Dr Eulàlia Roure  
Responsible for primary prevention of Health  
Generalitat de Catalunya  
Barcelona, Spain  
(eulalia.roure@gencat.cat)

Co-Authors Castell C, Cabezas C, González A Departament de Salut Barcelona, Spain

**Abstract Purpose:** Around 40% of the Catalan adult population has a low level of physical activity (Catalan Health Survey, 2006). To improve health and reduce morbidity the Catalan government launched, in 2004, the PAAS (Catalan integral plan for health promotion through physical activity and healthy diet) that includes integrated approaches in different settings. The PAFES (Plan for Physical Activity, Sport and Health) is a joint initiative between the Health and Sport's Departments of Catalonia (Spain) included in the PAAS with the aim to promote physical activity in adults under the rationale that empowerment of health and sports professionals and facilitation for patients will improve physical activity rates.

**Purposes**

- To introduce the prescription/advice of physical activity at primary health care (PHC) level
- Empower health professionals
- Coordinate resources
  - Optimize the use of the existing community facilities
  - Establish referral circuits between PHC settings and community equipments

**Methods:** A preliminary step to success is to obtain the support and commitment of different institutions (at local and governmental level) and scientific societies and PHC teams (physicians and nurses), sports medicine physicians and exercise professionals at the community settings. Patients receive either general advice, specific advice or are referred to a supervised exercise program after a health assessment evaluation. The council would facilitate a sports facility for the program, and a qualified exercise professional will do a supervised exercise program. The target population is sedentary people with diabetes, high blood pressure, high cholesterol and obesity, recruited at the PHC centre. The first phase is a pilot in 21 PHC centres (2006) and the program will be extended to the rest of the territory in consecutive phases (7 million people in 2010).

The evaluation includes:

- Change in the level of physical activity of patients included in the program
- Health status of patients (pre- and post-intervention) plus a compliance and adherence evaluation
- Existence of a referral circuit for supervised exercise
- For health professionals a survey evaluating their learning process, prescription/advice of exercise and their perception of the program
- Efficiency of the program

- Title** Classroom Physical Activity Breaks for Additional Special Needs Settings
- Author** David Rowe  
Senior Lecturer in Exercise Science  
Sport, Culture & the Arts  
University of Strathclyde  
Glasgow, United Kingdom  
(david.rowe@strath.ac.uk)
- Co-Authors** Vicki Trim, Ruth Lowry, Liz Mitchell, Ann Grieve, Raymond Taylor, Theresa Campbell
- Abstract** Classroom-based physical activity breaks (CPAB) offer a unique means by which to engage children in physical activity during the school day. Mahar et al. (2006) demonstrated that a 10-minute CPAB resulted in increased on-task behaviour among primary aged school children, especially among children who were previously the most off-task (whose time spent in on-task behaviour increased by 43%).  
**Purpose:** The current study was designed to identify CPAB activities from three established programmes (*The Class Moves*, *Energizers*, and *Active Every Day*) that would be suitable for use in additional special needs classrooms. This was the pilot stage for a study that will subsequently adapt and trial the selected activities in a school setting.  
**Methods:** Materials for the three established CPAB programmes were sent to a panel of (a) teachers from schools for children with social, emotional and behavioural difficulties (SEBD;  $N = 4$ ); and (b) experts from the fields of physical activity promotion, exercise psychology, creative movement, child behaviour, and child welfare ( $N = 7$ ). Instructions were provided to rate activities for practicality within an SEBD classroom setting and for selection of at least moderate intensity activities. Subsequently, an all-day workshop was conducted in which panel members worked in focus groups to (a) discuss benefits and barriers of CPAB in an SEBD school setting, (b) discuss ratings of each activity, and (c) select a "Top 10" set of activities for the lower and upper primary age ranges.  
**Results:** Several barriers (including health and safety concerns, social skills, and self-esteem) and benefits (including increased physical activity, improved self-esteem and improved social skills) were identified for conducting activity breaks in a SEBD school setting. 10 lower school and 13 upper school activities were selected as most appropriate in terms of the selection criteria (i.e., practicality and intensity level). The majority were from the *Energizers* programme.  
**Conclusion:** The use of CPAB in additional special needs settings requires consideration of the unique characteristics of such settings. Existing programmes contain appropriate activities, although some require modification. In the next stage of this study, these modified activities will be pilot-tested in SEBD schools.

- Title**      **Children's health protection in the Kyrgyz Republic.**
- Author**    A. Sharshenova  
Scientific and Production Centre for Preventive Medicine  
Bishkek, Kyrgyz Republic
- Co-Authors**    O.Kasymov, N.Vashneva, E.Ten
- Abstract**   Children's health maintenance and promotion, provision of favorable and safe conditions for upbringing, education and recreation is a very important task to be carried out on a State level. In the Kyrgyz Republic national and State programs are in operation, namely "Jashtyk", "New Generation", "Health promotion of the people of the Kyrgyz Republic", National health reform of the Kyrgyz Republic "Manas taalimi", where much attention is given to the issues of children's health protection.
- To implement the European strategy for children's environmental health, the State Children's Environment and Health Action Plan of the Kyrgyz Republic has been developed. Currently the first version of the State Plan is in the process of reviewing by different ministries and authorities.
- The State Plan includes 4 regional priority goals, of which the second goal is focused on prevention of children's injuries, micronutrient deficiencies and physical activity promotion. The State Plan also includes involvement of local communities in children's environment and health improvement.
- Results of medical examinations showed that the percentage of delay in the physical development increased from 0.7% of all school-children examined (1038424) in 2004 to 0.9% (943471) in 2007. The number of schoolchildren with spinal curvature or scoliosis increased from 1.12% in 2004 to 1.78% in 2007. It should be noted that in 2007, of all the schoolchildren examined 89.3% attended the main physical training group, 7.7% the preparatory group and 2.3% the therapeutic group.
- Despite the increase of the number of schools from 2025 in 2005 to 2077 in 2007, only 52.4% and 48.4% of schools respectively had sport-halls and 96.1% and 98.7% had sports grounds. Physical training classes are a mandatory curriculum, classes for such kinds of sports as basketball, volleyball, football, etc. are optional.
- The important prerequisite for implementing the State Plan is increasing of inter-sectoral collaboration and relationships, community participation, improving of legislation in the field of children's environment and health as well as adequate funding and technical assistance.

- Title**      **Built environment and physical activity – supportive environments for physical activity in everyday life**
- Author**     Mrs Anna Stamblewski (colleague Henrik Beyer will present poster)  
Public Health Planning Officer  
Department of Health Behaviours  
The Swedish National Institute of Public Health  
Östersund, Sweden  
(anna.stamblewski@fhi.se)
- Co-Authors**   Beyer, H, The Swedish National Institute of Public Health, Östersund, Sweden  
Jansson, A, The Swedish National Institute of Public Health, Östersund, Sweden
- Abstract**   **Purpose:** The Swedish National Institute of Public Health (SNIPH) was commissioned by the Swedish Government to initiate an intersectional and long term development work about the importance of the built environment for physical activity. The work started in January 2006 and will be completed in December 2008. The built environment includes public indoor and outdoor environments in the neighbourhood, such as school- and pre-school yards, the traffic environment, and areas for recreation and sports. The government assignment also includes investigating components in the neighbourhood that promotes physical activity in children, adults and elderly people. Identification of effective interventions and research needs, as well as establishing an expert group for consultation, is also included.  
**Methods:** The target group consists of society workers, public health workers, decision-makers and researchers. One part of the assignment is to publish reports, with the aim to compile research findings, as well as practical guidance. The planned reports are a pamphlet with information about the government assignment; a scientific report of evidence based research; four guidance reports for local use. The guidance reports discusses community planning, active transportation, and how the environment supports physical activity in children and elderly people. Furthermore, a number of popular scientific articles are planned, some already published. Another part is to organise seminars and workshops. One seminar and three workshops have been carried through so far and a final conference concerning the topics mentioned takes place in November 2008. Finally, a summary report is to be completed and submitted to the Government in December 2008.  
**Results:** So far the results have been to disseminate knowledge about the research of today and effective methods through reports, seminars and workshops. The mass media have been used to raise interest and discussion regarding supportive environments for physical activity in the community. Moreover, the workshops have been a forum for consultation and networking between, and in between, national authorities, municipalities, country councils, organizations, and associations. Many good ideas, experiences and knowledge have been presented, for example how we can achieve an extensive commitment in the society for these areas.  
**Conclusion:** The community planning of today is starting to include public health aspects and supportive built environments and infrastructure promoting physical activity in everyday life. The picture is far from satisfying, and additionally there is a need for more research.

- Title**      **Walking the Way to health: a model for community outdoor based physical activity interventions?**
- Author**     Mr Dave Stone  
Principal Specialist Environment & Health  
Evidence  
Natural England  
Peterborough, United Kingdom  
(dave.stone@naturalengland.org.uk)
- Co-Authors**   Stone, D, Natural England, Peterborough, UK Halstead, M, Natural England, Cheltenham, UK  
Bird, W, Walk England, Oxford, UK
- Abstract**   **Purpose:** Over the last eight years, the 'Walking the way to Health Initiative' (WHI) has been developed across England. WHI was kick started through the provision of grants to establish local walking schemes. Grants finished in 2005 but the number of schemes continues to grow. WHI now has over 500 different local schemes and over 30,000 trained walk leaders. Here we examine if the dispersed voluntary model with support nodes that is promulgated through WHI is an effective approach to engaging communities in neighbourhood based physical activity.  
**Methods:** A set of criteria that characterized viable community based outdoor physical activity were developed. Over the eight year period of WHI there have been a variety of longitudinal studies and case studies examining differing aspects of the initiative, for example Dawson et al, 2006. This data has been collated and re-examined to extract information specific to the engagement of communities. The extracted data was then tested against the predetermined criteria.  
**Results:** The WHI model effectively empowers communities to deliver neighbourhood based walking interventions. As a mechanism for encouraging physical activity it appears to reach a range of demographic groups including some traditionally considered as hard to reach. The central provision of core services including training people to be Volunteer walk leaders, evaluation, insurance and advice appear to be key to the sustainability of the initiative.  
**Conclusion:** The WHI model has shown that a community based outdoor physical activity intervention can engage large numbers of people. The sustainability of such interventions is also important in bringing about behavioural change. The WHI model has shown that interventions can be sustainable in terms of longevity of individual walking schemes, fidelity of participants, and costs. This intervention model could be applied to other forms of neighbourhood physical activity.  
References, Dawson J., Boller I, Foster C & Hillsdon M (2006) *Evaluation of changes to physical activity amongst people who attended the walking the way to health initiative (WHI)*. Countryside Agency, Cheltenham.



Title **Communities on the move, a promising approach for an active lifestyle**

Author Mrs Anita Vlasveld  
consultant physical activity promotion  
health and active lifestyle  
NISB  
Bennekom, Netherlands  
(anita.vlasveld@nisb.nl)

Co-Authors Ter Haar, M., NISB, The Netherlands Hiermstra, A., NISB, The Netherlands

Abstract **Purpose:** In 2003 the Netherlands Institute for Sports and Physical Activity (NISB) started a long term project called 'Communities on the move' (CoM). The project's aim was to develop a community approach that focuses on stimulating an active lifestyle among specific groups in a low socio-economic position.

**Methods:** Important working principles of CoM are:

1) the focus on a 'community'. A community is a homogeneous group of people who live in a certain area and have a particular relationship, such as the same cultural or ethnic background or a shared health problem.

2) active participation. The target group plays a leading role in the organisation, execution and the atmosphere of the activity.

3) fun in physical activity: this increases the chance that their behaviour change is sustainable.

Also conditional aspects play a role:

- Physical and social environment

- Intersectoral collaboration between the areas health, sports and welfare:

The scheme comprised 20 pilot projects, executed by local welfare, sports and health organisations. The target-groups consisted of immigrant women, overweight children and their parents, refugee children, people with a mental handicap and elderly people. The NISB supported the local professionals by means of guidance and study meetings. The focus of the pilot projects was on how to apply the working principles of CoM. The effects and processes were monitored and evaluated by using several methods.

**Results:** Target groups were highly receptive to physical activity: they began to take more exercise, became more aware of the aspects of an active lifestyle and developed new activities. This stimulated a process of empowerment. The participating local organisations gained knowledge required for joint implementation of CoM. Training courses and communication tools have been developed and advisors are trained. Finally, more was learned about the preconditions required for the dissemination of CoM at the local level.

**Conclusion:** The CoM approach leads to an increased physical activity level of inactive people. To further disseminate the CoM approach requires inclusion of the CoM approach in local policy, capacity building of professionals and financial means.

Title **Get 30 campaign in the Netherlands**

Author Mrs Anita Vlasveld  
consultant physical activity promotion  
health and active lifestyle  
NISB  
Bennekom, Netherlands  
(anita.vlasveld@nisb.nl)

Co-Authors Kroes, G., NISB, The Netherlands De Graaf, J., NISB, The Netherlands

**Abstract** **Purpose:** The overall aim of the Dutch public health policy (2002) is to create social conditions that will ensure good health for the entire population. For that reason the Netherlands Institute for Sports and Physical Activity launched two campaigns by order of the government. The FLASH! campaign ran from 2003 – 2006 and as a follow-up NISB started a new campaign, called “30minutenbewegen”, for the period 2007-2010. In addition to sports and group-exercise, it will stimulate everyday exercise such as cycling, walking to work and gardening for at least 30 minutes a day. (Dutch Standard for Healthy Physical Activity)  
**Methods:** NISB is responsible for the design and planning of the campaign but leaves much space for “couleur locale”. Nationwide mass media creates interest for local activities through networks of organisations. This approach has a step-by-step working strategy: providing information, provoking via mass media, local actions with healthy life style examples and embedding in local structures. The campaign team works together with professionals in schools, care-centres, sports, civil servants etc. Special target groups in the campaign are: youth (14-18 y), seniors, the chronically ill, and sedentary employees.  
**Results:** Quantity targets have been formulated for the campaign. The percentage of Dutch people not performing any physical activity must be reduced from 8.2 % in 2004 to 7% in 2010, and 65% of the Dutch population has to move enough according to the ‘Dutch Standard for Healthy Physical Activity in the year 2010. In 2006 62.6% were already achieving this target. Flash! performed in a lot of settings and in hundreds of cities with concrete actions. It has also led to hundreds of local plans for improving health through physical activity.  
**Conclusion:** In the year 2003 47.4% of the Dutch population reached the “Dutch Standard”. In 2006 62% reached the standard. Campaigning by means of promotion on a national level combined with action on local level is a useful instrument for motivating people, for stimulating sport/exercise providers and also for local authorities which have to create preconditions for a healthy society. A long term strategy is necessary for success, that’s why the campaign will continue until 2010.

- Title**      **Effects of daily walking through workplace intervention on blood pressure and lipid level**
- Author**    Ms Birgit Wallmann  
sports scientist  
Centre of Health  
German Sports University Cologne  
Cologne, Germany  
(wallmann@dshs-koeln.de)
- Co-Authors**   Arera, R. <sup>(2)</sup>; Predel, H.-G. <sup>(3)</sup>; Froboese, I. <sup>(1)</sup> <sup>1</sup> Centre of Health, German Sports University Cologne <sup>2</sup> DKV German health assurances AG <sup>3</sup> Institute of Cardiology and Sports Medicine, German Sports University Cologne
- Abstract**   **Purpose:** The aim of this intervention study was to determine the effects on blood pressure and blood lipid levels of a German nationwide health campaign which aims to increase activity by an additional 3000 steps/day in the workplace. The purpose was to find out how individuals with different risk factors, status of blood pressure and blood lipid level react to an increase in moderate and low-intensity activity respectively.  
**Methods:** To identify the baseline activity level, all participants (n=83; *M* age: 40.8 ± 7.6; 20 males / 63 females) wore a sealed pedometer (Omron HJ-113-E) for seven consecutive days. On the basis of the individual activity level the participants were urged to accumulate an additional 3000 steps/day for 15 weeks. The pre- and post-tests included measurements of blood pressure (BP), total cholesterol (TC), LDL, HDL and triglyceride (Tri).  
**Results:** At baseline the mean activity level was 6668.8 ± 2437 steps/day (min 1533; max 14506) and increased during the 15-week intervention to a step count of 10516 ± 2583 steps/day (min 5349; max 18916). BP systolic changed significantly from 129.3 ± 17.2 to 123.9 ± 20.4 (*p*<0.05) and diastolic BP altered from 84.0 ± 11.0 to 82.0 ± 13.2 (n.s.). LDL changed significantly from 124.6 ± 35.3 to 115.5 ± 31.8 (*p*<0.01). Levels of TC (211.2 ± 38.0 to 208.4 ± 37.6), of Tri (119.1 ± 77.3 to 121.4 ± 78.5) and of HDL (63.9 ± 19.0 to 63.2 ± 18.4) remained unaltered.  
Samples were separated into baseline low risk factor group concerning blood lipids (TC <200mg/dl, Tri <150mg/dl, LDL <100mg/dl, HDL > 45mg/dl) and high risk factor group (TC >200mg/dl, Tri >150mg/dl, LDL >100mg/dl, HDL < 45mg/dl). Statistical analysis showed an interaction between time factor and risk groups by LDL (*p*<0.01) and TC (*p*<0.05) with a greater effect for the high risk group.  
**Conclusion:** Increasing steps per day, even through low-intensity activity at work and in leisure time, showed improvements in blood pressure and LDL. Individuals with blood lipids in a high risk category showed particular improvements through activity with increases in LDL and total cholesterol level.

## Promoting walking/practitioner experiences promoting walking in Europe

P-26

**Title** Predicting the promotion of physical activity by NHS Stop Smoking Service advisors in the national Walk-2-Quit project: Support for the Transtheoretical Model

**Author** Dr Emma Everson  
Research Fellow  
School of Sport and Health Sciences  
University of Exeter  
Exeter, United Kingdom  
(e.s.everson@exeter.ac.uk)

**Co-Authors** Everson, E.S., 1 Taylor, A.H., 1 Ussher, M. 2 1 School of Sport and Health Sciences, University of Exeter, Heavitree Road, Exeter, EX1 2LU, UK 2 Division of Community Health Sciences, St. George's University of London, Cranmer Terrace, London, SW17 0RE, UK

**Abstract** **Purpose:** Brief bouts of lifestyle physical activity (PA), such as brisk walking, have reduced cravings and withdrawal symptoms among abstinent smokers in experimental research (Taylor, Ussher & Faulkner, 2007). Lifestyle PA could, therefore, be a useful cessation aid for smoking cessation advisors (SCAs) to promote, but little is known about how SCAs prioritise and view the promotion of PA in Stop Smoking Clinics. We explored the social-cognitive determinants of SCAs' readiness to promote PA among quitters.

**Methods:** Surveys were developed to assess stage of readiness (SoR) to promote PA (for weight & craving management), beliefs about PA as an aid (self-efficacy, outcome expectancy, pros and cons beliefs about promoting PA), and background (age, gender, personal PA), and administered to 170 SCAs throughout the UK.

**Results:** 55% of SCAs reported promoting PA in their clinics. 6%, 14%, 28%, 17% and 35% were in the precontemplation, contemplation, preparation, action and maintenance stage of change for promoting PA for craving management, respectively. Bivariate and multiple regression analyses revealed that those in a higher stage of readiness to promote PA were more physically active themselves, and had more favourable self-efficacy, outcome expectancy, and pros and cons beliefs about promoting PA. These variables together predicted 22% of (adjusted) variance in SoR. Outcome expectancy and cons (negative beliefs about multiple behaviour change) were the strongest predictors of SoR.

**Conclusion:** Current 'gold standard training' of SCAs in the UK avoids the opportunity to prepare advisors to promote PA, due to concerns about multiple behaviour change being counter-productive. Many SCAs believe that it is useful and possible to promote PA in this context. Training should focus on changing beliefs about the role of lifestyle PA, such as brisk walking, with a focus on PA as an aid to quitting, rather than as an additional behaviour change. Becoming more physically active and quitting smoking is possible and is very desirable for reducing risk of heart disease and cancer.

- Title**      **Exercise looks after you (ELAY): Research and health policies for elderly.**
- Author**    Dr Narcis Gusi  
Professor  
University of Extremadura  
Cáceres, Spain  
(ngusi@unex.es)
- Co-Authors**    Gusi N, Faculty of Sport Sciences, University of Extremadura, Cáceres, Spain Herrera E, Ministry of Health & Dependence, Junta de Extremadura, Mérida, Spain. Quesada E, Ministry of Youngs & Sports, Junta de Extremadura, Mérida, Spain. Cebrian C Ministry of Health & Dependence, Junta de Extremadura, Mérida, Spain. Campon JC Ministry of Health & Dependence, Junta de Extremadura, Mérida, Spain.
- Abstract**    **Purpose:** To present the health policies management and one-year results of the evidence-based *Exercise Looks After You (ELAY)* programme, an innovative and cost-effective socio-sanitary strategy developed in Extremadura (Spain).  
**Methods:** The programme is a community-based, walk-based action addressed to elderly people. Basically, general practitioners refer elderly individuals with metabolic syndrome risk (overweight, diabetes type II and hypertensive) or those who are moderately depressed to an exercise professional in primary care centres who periodically assesses participants' (fitness, psychosocial and biological tests) and delivers a structured walk-based programme in groups including talks and some exercises 4 days a week. Each elderly participant is evaluated at baseline, 3 months and every 6 months. The main outcomes are socio-demographic issues, referral process, health status (morbidity, Geriatric Depression Scale, cholesterol, triglycerides, blood pressures, etc.), mini nutritional assessment, health-related quality of life (EQ-5D), use of health system and fitness.  
**Results:** After the first year, twenty-two exercise professionals weekly attended more than 4000 elderly living in 67 municipalities who changed some medication and provided sessions for walks and chatting. Elderly individuals significantly improved fitness (flexibility, 6-minute walking distance, agility and balance reducing the fall risk, etc.) and 30% in depression. The primary care consultations were reduced by 29%, mainly nurse consultations in urban areas and general practitioners consultations in rural area. The program obtained high social visibility: thousands of elderly exercising outdoors, more than 120 mass media impact, cooperation in more than 30 local health events, etc. Regional political parties included the further development of ELAY in their programmes for elderly and obese children. The current public health programme was cost-effective in biomedical and political perspectives.  
**Conclusion:** The walk-based *Exercise Looks After You (ELAY)* programme is a useful and cost-effective addition to National Health Service.

Title **Promoting the outdoor mobility of older adults**

Author Mrs Elina Karvinen  
Sector Manager  
Health, physical activity and functional capacity of older adults  
Age Institute  
Helsinki, Finland  
(elina.karvinen@ikainst.fi)

Co-Authors Karvinen, E, Simonen M. Age Institute, Helsinki, Finland

**Abstract Purpose:** Outdoor walking is the most favourite pastime among the Finnish older adults, and the majority of them exercise this habit several times a week up to very old age. The most important motives for outdoor mobility include the performance of daily chores and the experience of nature. Outdoor mobility, especially in women, decreases after the age of 75. Reasons for this include general health problems, trouble with mobility, fear of falling, slippery winter conditions, and the lack of social support. Decreasing outdoor mobility is a threat to autonomy, functional capacity and quality of life. The aim is to present solutions and good practices developed at the Age Institute for supporting those older adults who want to continue outdoor activities.

**Methods:** Methods of improving the outdoor mobility in older adults include action research projects, cooperation between various actors, communication, the evaluation of outdoor experiments and distribution of good practices.

**Results:**

1. Recommendations: "Outdoor exercise and activities of daily living as part of the everyday life of older adults". The recommendations were published in 2006 concerning cooperation, rehabilitative method in home care, the development of walking environment, guided outdoor exercise groups, and the involvement of older adults in developing outdoor activities.
2. Instructor training for Outdoor Exercise Friends: With the help of volunteers, exercise friends are trained for older adults to encourage more outdoor mobility.
3. Outdoor day for older adults: A second National 'Keep Walking' Day for infirm elderly will be organized together with the Fit for Life Programme.
4. Best Practices: Guided Nature Walk in Group, Outdoor Mobility in Home Care, Culture Walk, Bench Walk, Outdoor Exercise Friend, Winter Walk. All these models provide environmental solutions and social support.

**Conclusion:** The promotion of outdoor activity in older adults has gained wide appreciation. Especially the launched best practices and 'Keep Walking' Day with voluntary walking friends have encouraged actors to develop and instil outdoor services for infirm older adults. The promotion of outdoor mobility for older adults will be a significant part of the new government strategy on developing health promotion.

Title **Travelling Green: using a curricular-based classroom project to promote walking on the school journey**

Author Mrs Linda McBrearty  
Road Safety Officer  
Housing, Environmental & Economic Development  
West Dunbartonshire Council  
Dumbarton, United Kingdom  
(linda.mcbrearty@west-dunbarton.gov.uk)

Co-Authors Tonner, C. West Dunbartonshire Council, Dumbarton, Scotland

**Abstract Purpose:** West Dunbartonshire Council (Scotland) has developed the Travelling Green project with the purpose of increasing active commuting behaviour on the school journey amongst Primary 5 children (aged 9 years). The project is based on an intervention carried out in 2001 that increased the mean distance travelled by active commuting (walking).

**Methods:** In 2004, 223 children (4 schools) participated. Parental participation was encouraged through Parents' Evenings, weekly target setting and progress charts. Data on distances travelled by different modes on the journey to school was collected before and after children participated in the project. Children drew their route to school on maps, using different colours for different modes. The distances travelled by different modes were measured using a map-measurer. In 2005 (292 children from 7 schools), 2006 (450 children from 13 schools) and 2007 (610 children from 20 schools) questionnaires were used to collect data on how children travelled on their school journey before and after participating in the project.

**Results:** In 2004, the percentage of children walking the whole journey to school increased from 46% to 62%, with 81% walking some or all of the way after participating in the project. The mean distance walked increased from 0.43 kilometres to 0.71 kilometres.

In 2005, the percentage of children walking all or the main part of their journey increased from 59% to 72% on the journey to school, and from 64% to 72% on the journey home.

In 2006, children walking to school increased from 57% to 68%, and from 62% to 72% on the journey home. In 2007, there was an increase from 56% to 66% in children walking to school, and from 64% to 67% on the journey home.

**Conclusion:** The Travelling Green project is effective in achieving an increase in the number of children walking and the distance walked on the school journey. This has been recognised through Scottish Government funding for the national rollout of Travelling Green.

#### References

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Title **A six-week intervention to increase adolescent girls' walking, perceived social support, and walking self-efficacy using parental support and pedometers with goal setting.**

Author Ms Sarah McMahon  
Graduate Assistant  
Centre for Sport and Exercise  
Heriot Watt University  
Edinburgh, United Kingdom  
(s.mcmahon@hw.ac.uk)

Co-  
Authors

Abstract **Purpose:** It is well documented that girls' activity levels drop when they reach adolescence. This can have an impact on their fitness, health and well-being. The purpose of this study was to examine the effectiveness of a six-week pedometer with goal setting and parental support intervention to increase the walking, perceived social support and walking self-efficacy of early adolescent girls.

**Methods:** Participants (n = 44; mean age 13.65 years) from two high schools participated in baseline testing including assessment of step-count using pedometers (Omron Active Steps HJ-109-E) , social support and walking self-efficacy using standardised questionnaires. The participants were then matched for step counts and allocated to the intervention or control group. The intervention group (n = 28) continued to wear their pedometers for a further 6 weeks (weeks 2 – 7) and met with the researcher each week to record weekly step data and set individualised step goals for the following week. Parents of the intervention group were invited to attend a session with the researcher that was designed to offer information, practical tools and guidance on how to provide additional social support to the participants during the intervention.

**Results:** The study is ongoing and at week 5 all girls are adhering to the intervention. Full results will be reported in the revised abstract.

**Conclusion:** As above.



**Author** Mrs Minna Säpyskä-Nordberg  
 Programme Planner  
 Health Exercise Programme for Older Adults  
 Age Institute  
 Helsinki, Finland  
 (minna.sapyska-nordberg@ikainst.fi)

**Co-Authors** Karvinen E, Vuorjoki-Anderson E, Salminen U, Kalmari P, Age Institute, Helsinki, Finland

**Abstract Purpose:** National Walking Day is meant to support frail elderly who cannot or dare not walk alone outdoors. The aim is to encourage various actors to organize outdoor events and outdoor assistance and to develop outdoor services for older adults.

**Methods:** National programmes "Strength in Old Age" with its local projects and "Fit for Life" started the Walking Day for older adults. Various actors were encouraged to organize outdoor events or walking assistance for frail elderly. Various communication materials were produced for the Walking Day. An Internet site gave instructions on organizing local events, which were also covered by local news media. Instructor training for 'Walking Friends' was launched at the Age Institute at the same time. The graduated instructors trained volunteers in their region to help frail elderly in walking. The programmes produced a mutual declaration that was given to the Minister of Health and Social Services on the National Walking Day.

**Results:** About 200 local events were organized by various actors such as service houses for the elderly, municipal social and health care and sports authorities, as well as associations and organizations. The events included walking, Nordic walking, and outdoor games. Games, infos, caterings, and assistants of various ages made the day into a social event that gave a boost to many old and lonely people.

On account of the Walking Day, local cooperation networks became stronger and new partners were discovered. Thousands of older adults and their assistants all over Finland enjoyed an autumn day of outdoor exercise.

The Walking Day gained wide coverage in local news media. It was also reported in national newspapers and on radio. Interest in the event was reflected in the website visits of the "Strength in Old Age" programme. 'Walking Friends' training has been established in many regions.

**Conclusion:** The significance of outdoor walking for the mobility and quality of life of older adults has gained attention. Cooperation between various actors must be developed to promote opportunities for regular outdoor mobility for frail elderly at home and in service housing. 'Walking Friends' training programme ensures reliable outdoor activities of good quality.

- Title**      **Objective and subjective assessments of 'normal' walking pace, in comparison with that recommended for moderate intensity physical activity.**
- Author**    Ms Kathryn Taylor  
Student  
University of Strathclyde  
Glasgow, United Kingdom  
(katyt101@hotmail.com)
- Co-Authors**   Fitzsimons, C., Mutrie, N.  
Sport, Culture and Arts, University of Strathclyde, Glasgow, UK
- Abstract**   **Purpose:** Walking, in relation to pace and intensity, is under-researched. Few studies have addressed whether people normally walk at a pace which meets the public health recommendations for moderate intensity physical activity ( $1.34\text{--}1.79\text{ ms}^{-1}$ ) and there is no known research on individuals' perceptions of factors which influence walking pace. This study aimed to determine whether the participants were walking at speeds within the recommended moderate physical activity values, both over a 1 km outdoor walk and a 150m outdoor time trial. The study also attempted to ascertain the participant's perception of their walking speed and factors which may influence it.
- Methods:** Participants, ( $n=10$ , mean age  $53.9 \pm 8.43$ ) were drawn from those already taking part in a trial based at the University of Strathclyde (Walking for Wellbeing in the West). Walking pace was examined via a Global Positioning System (GPS) device over a 1km outdoor walk and a stopwatch timed 150 m trial. In both tests participants were instructed to walk at their 'normal' pace. The factors that the participants thought influenced their pace were investigated through short interviews.
- Results:** Over both trials, all participants successfully walked at a pace considered as moderate intensity ( $\geq 1.34\text{ms}^{-1}$ ). Height was significantly correlated with 'normal' walking pace, although the mechanisms behind this cannot be explained as neither stride length and step frequency were measured. The interviews provided an in depth insight into factors that affect walking pace, with ground surface and footwear frequently mentioned, and weather providing the most conflicting views, prompting a need for further research in the area.
- Conclusion:** The participants' 'normal' walking pace was of moderate intensity, suggesting that they intuitively self-selected an appropriate pace and may therefore acquire the associated health benefits of moderate intensity physical activity. The utilisation of the GPS device showed the enormous potential of the technique as a human locomotion measurement tool, as it enabled the participants to walk unobstructed and unobserved in an outdoor setting, making the results relevant to real life situations.

- Title** Different correlates of walking in adult inhabitants of the Czech Republic on weekdays and at weekends
- Author** Dr Frantisek Chmelik  
Center for Kinanthropology Research  
Palacky University  
Olomouc, Czech Republic  
(frantisek.chmelik@upol.cz)
- Co-Authors** Frömel, K, Center for Kinanthropology Research, Palacky University, Olomouc, Czech Republic. Mitas, J, Center for Kinanthropology Research, Palacky University, Olomouc, Czech Republic. Sigmund, E, Center for Kinanthropology Research, Palacky University, Olomouc, Czech Republic. Pelclova, J, Center for Kinanthropology Research, Palacky University, Olomouc, Czech Republic. Vasickova, J, Center for Kinanthropology Research, Palacky University, Olomouc, Czech Republic.
- Abstract** **Purpose:** Numerous studies have shown that physical activity (PA) is lower at weekends than on weekdays. The influence of various demographic factors and characteristics of the environment on PA in relation to the week regime has not been examined, yet. The aim of the study was to examine the correlates of meeting the recommendation for walking (10000 steps/day) on weekdays and at weekends in the Czech Republic.  
**Methods:** The Czech version of the NQLS questionnaire was used for data collection. Yamax SW-700 pedometer was used to measure the daily number of steps during a week. Respondents aged 17-69 years were selected randomly in the Czech Republic cities. 387 females and 283 males were included into the analysis. The criterion of 10000 steps/day was required to meet the walking recommendation. Logistic regression was used to assess the associations between meeting the walking recommendation and other variables from the questionnaire: BMI; sex; age; access to parks; access to shops; walking and cycling friendly conditions; safety; type of housing; driving license holding; ownerships of a motor vehicle; earnings; smoking; participation in organized PA; living in a neighbourhood with family houses; places accessible via walking; more ways to reach one place; access to paths and attractive natural locations.  
**Results:** On weekdays, those living in a location with more ways to one place (59% – more ways, 47% – less ways) (OR=1.746,  $p=.007$ , CI=1.17-2.61) and participating in organized PA (61% participating; 53% not participating) (OR=1.415,  $p=.032$ , CI=1.03-1.95) are more likely to meet the recommendation. Less likely to meet the recommendation are those who own a motor vehicle (66% not owning, 54% owning) (OR=0.537,  $p=.007$ , CI=0.34-0.84). None of the factors observed had a significant association with meeting the recommendation at weekends.  
**Conclusion:** We found correlates significantly associated with meeting the walking recommendation on weekdays. The most significant is the environment with good condition for walking, with number of sidewalks or roads used less by motor vehicles. At weekends no statistically significant correlates were found.  
Funding, Supported by research project “Physical activity and inactivity of the inhabitants of the Czech Republic in the context of behavioral changes”, RP #: 6198959221.

- Title**      **Neighbourhood socio-economic status influences body composition not physical activity in adults**
- Author**     Dr Stacy Clemes  
Lecturer  
Department of Human Sciences  
Loughborough University  
Loughborough, United Kingdom  
(S.A.Clemes@lboro.ac.uk)
- Co-Authors**   Sheppard, ZA and Griffiths, PL, Department of Human Sciences, Loughborough University, Loughborough, Leicestershire, UK
- Abstract**   **Purpose:** Obesity and physical inactivity are major risk factors for non-communicable diseases such as cardiovascular disease and diabetes. While neighbourhood socio-economic status (SES) is associated with health, little evidence currently exists to describe the relationship between physical activity and neighbourhood SES in UK adults. The aim of this study was therefore to investigate associations between neighbourhood SES, physical activity and body mass index (BMI) in adults living in the UK.  
**Methods:** 188 adults recruited through advertisements in Leicestershire and Cornwall (61% female, age =  $40.1 \pm 13.1$  years, BMI =  $27.4 \pm 4.6$  kg/m<sup>2</sup>) wore a pedometer (Yamax Digi-Walker SW-200) and recorded their daily step count for 4 weeks. Participants' height and body mass were measured at baseline. Mean step counts recorded over the 4-week monitoring period were calculated. Neighbourhood SES statistics were obtained, using participants' postal code, from the Office for National Statistics' Neighbourhood Statistics website. Logistic regressions were used to investigate associations between neighbourhood SES variables and two outcomes: 1) BMI (categorised as overweight or not, BMI  $\geq 25$  kg/m<sup>2</sup>) and 2) Step counts (categorised as achieving the recommended 10,000 steps/day or not) whilst controlling for sex and age.  
**Results:** Significant associations were found between both neighbourhood education deprivation score and the percentage of lone parents in the neighbourhood and BMI. However, no significant associations were found between neighbourhood SES and mean step count.  
**Conclusion:** Residents in less educationally deprived areas or with a lower proportion of lone parents were less likely to be overweight. Although there is still a need to understand the association between individual SES measures and BMI/step counts, neighbourhood SES appears to influence BMI but not physical activity suggesting that perhaps diet is a mediating factor worthy of further investigation.

Title **Individual and small area level predictors of physical activity in urban communities**

Author Prof Tom Cochrane  
Professor of Sport, Health & Exercise  
Sport & Exercise  
Staffordshire University  
Stoke on Trent, United Kingdom  
(t.cochrane@staffs.ac.uk)

Co- Davey RC, Gidlow CJ, Smith GR Fairburn J Staffordshire University, Stoke on Trent, United  
Authors Kingdom

Abstract **Purpose:** Multi-level analysis of small area indices and individual factors determining physical activity across a range of socio-economic disadvantage.

**Methods:** Setting: Stoke on Trent, UK. Ten Lower Level Super Output Areas (LSOA) selected randomly from the three most deprived quintiles of deprivation. Aggregation performed to output area level to investigate variation both within and between LSOAs. Sample Population: random sample of addresses in selected LSOAs, 600 required to provide adequate precision for population proportion estimates and power to detect area effects, one adult (aged ≥16) selected. Measures: Environmental Indices: a) proximity of physical activity spaces, b) neighbourhood connectivity, c) land use mix and population density, d) transport, e) traffic, safety and crime, f) food, retail outlets and g) weather. Physical activity International Physical Activity Questionnaire (Long). Individual measures: a) socio-demographics, b) neighbourhood perceptions, c) social capital, d) social support e) beliefs about physical activity. Procedures: survey carried out independently by National Centre for Social Research, comprising 45-minute interview administered using computer assisted personal interviewing. Data Analysis, multi-stage explanatory model development, firstly, establishing base set of individual factors and then examining area-level indices through their influence on individual factors, using multi-level analysis.

**Results:** Survey yielded 761 (49%) productive interviews from 1545 eligible addresses.

Overall predictive model summarised in Table.

Individual	Area Level	Coeff	p
Intercept		24.8414	<.001
	Moderate traffic level within 800m buffer	1.8201	0.003
	Count/km road - casualties in a bus	-68.7766	0.002
	Count/head - criminal damage	-384.7072	0.001
Gender		4.8255	<.001
Age		0.1153	0.018
Walking distance to fast food restaurant		-1.7783	0.03
Walking distance to work/place of study		-1.6356	0.031
Several shops within easy walking distance		2.9000	<.001
	Count/km road - casualties in a bus	16.3428	0.009
Whether intends to participate in moderate PA in the future		1.2705	0.002
Belief in ability to participate		2.0130	<.001
	Count/km road - casualties in a bus	-12.2078	0.006
Sunshine		0.0565	0.007
	Percent <200m green space ≥ 2 hectares	-0.0006	0.043
	Count/head - criminal damage	1.8775	0.002
Rainfall		-0.6738	0.03
	Percent <200m green space ≥ 2 hectares	0.0310	0.004

**Conclusion:** Neighbourhood characteristics and individual's perceptions are important determinants of physical activity.

Title **Longitudinal associations between active commuting to school, physical activity and fitness**

Author Dr Ashley Cooper  
Reader  
Exercise, Nutrition and Health Sciences  
University of Bristol  
Bristol, United Kingdom  
(ashley.cooper@bris.ac.uk)

Co- Authors Page, A.S., University of Bristol, Bristol, UK Jago, R., University of Bristol, Bristol, UK  
Wedderkopp, N. University of Southern Denmark, Odense, Denmark Andersen, L. B.,  
University of Southern Denmark, Odense, Denmark

**Abstract** **Purpose:** Observational studies have consistently shown that young people who walk or cycle to school have higher physical activity than those travelling by car. Cycling to school has also been associated with higher cardiorespiratory fitness (CRF). However these observations are limited by the cross-sectional nature of the studies and would be strengthened by identifying whether change in travel mode was associated with changes in physical activity or CRF. The purpose of this study is to investigate whether changes in travel mode to school are associated with changes in physical activity or CRF within cohorts measured at two time points.

**Methods:** Associations between change in travel mode to school and objectively measured physical activity (Actigraph GT1M) were investigated in participants in the PEACH project. PEACH is a longitudinal study investigating the personal and environmental determinants of physical activity across the transition from primary to secondary school in 1300 English primary school children. Associations with CRF were investigated in the Danish arm of the European Youth Heart Study (EYHS). Participants were 384 children who participated in the study in 1997 and who were followed up six years later. CRF was assessed by a maximal cycle ergometer test. In both studies travel to school was investigated by questionnaire at both time points.

**Results:** Preliminary analyses from the 197 children who provided follow up data to date within PEACH indicate that physical activity was significantly lower at follow-up ( $P=.047$ ) in those children who changed from active to passive travel to school compared with those using active travel at both time points. In the EYHS, higher CRF was significantly associated with cycling to school in children and adolescents of both sexes. Longitudinal regression models showed that a change in travel mode from non-cycling to cycling was a significant predictor of CRF at follow-up ( $p<0.001$ ) after adjustment for potential confounders.

**Conclusion:** Longitudinal changes in travel to school are associated with changes in physical activity and CRF, supporting the observation that active travel to school may contribute to higher physical activity and cardiovascular fitness in young people.

- Title**      **Availability of and access to physical activity opportunities across Scotland and links with health behaviours and obesity among adults**
- Author**     Dr Anne Ellaway  
Senior Researcher  
Social & Public Health Sciences Unit  
Medical Research Council  
Glasgow, United Kingdom  
(anne@sphsu.mrc.ac.uk)
- Co-Authors**   Ferguson, N, Department of Civil Engineering, University of Strathclyde, Glasgow, UK. Ogilvie, D, MRC Epidemiology Unit, Cambridge, England, UK
- Abstract**   **Purpose:** Obesity levels are rising with a simultaneous decline in physical activity. Efforts to increase physical activity levels which focus upon changing individuals' behaviour have had limited success. Increasing attention has therefore been directed towards the potential of the local environment (e.g. the availability of physical activity amenities and resources) to influence physical activity levels and obesity. However, the precise mechanisms through which the UK environment can impact upon physical activity levels and obesity are not well understood. One potential contributory factor is the extent to which the availability of and access (by different modes of transport) to facilities for physical activity is distributed equitably across different neighbourhoods. This new nation wide study (funded under the National Prevention Research Initiative II) will examine the following research questions, using information from existing data sources:
- (i)               Does the spatial distribution across Scotland of fixed PA amenities vary by small area level deprivation, by the degree of urbanicity or rurality or both?
  - (ii)              To what extent are fixed PA amenities accessible (in terms of distance, time and cost) by alternative modes of transport (walking, cycling, public transport and private car) and does this accessibility vary by small area level deprivation, by the degree of urbanicity or rurality or both?
  - (iii)             How do people report that they travel to fixed PA amenities and does this vary by e.g. time of day, day of week, season and by gender, age or socioeconomic status (SES)?
  - (iv)              Are proximity and access to fixed PA amenities associated with PA behaviour and, in turn, obesity, and do these relationships vary by age, sex, SES or degree of urbanicity or obesity, and does this vary by age, sex, SES or degree of urbanicity?
- Details on the data sources and methodology of the study will be provided.

- Title**      **Is proximity to physical activity opportunities in the West of Scotland associated with health related behaviours and outcomes?**
- Author**     Dr Anne Ellaway  
Senior Researcher  
Social & Public Health Sciences Unit  
Medical Research Council  
Glasgow, United Kingdom  
(anne@sphsu.mrc.ac.uk)
- Co-Authors**   MacDonald, L, MRC Social & Public Health Sciences Unit, Glasgow, UK Macintyre, S, MRC Social & Public Health Sciences Unit, Glasgow, UK  
Travaglini, N, MRC Social & Public Health Sciences Unit, Glasgow, UK
- Abstract**   **Purpose:** There is increasing interest in the distribution of amenities and facilities across different neighbourhoods in cities and surrounding environs. We are mapping the location of sports and recreation facilities across the central Clydeside conurbation to examine (a) their distribution by degree of neighbourhood deprivation, and (b) whether distance to these facilities is associated with health outcomes (e.g. BMI & waist hip ratio) and the likelihood of adults undertaking sports-related activities.  
**Methods:** Data on the location of amenities has been collected (using e.g. the internet, service providers and data provided by Sport Scotland). Facilities are being mapped and distance calculated using ArcGIS. Data on health measures and behaviours has been obtained from participants in the West of Scotland Twenty-07 Study (n=2661). The association between distance to facilities (from respondents' home address) and health outcomes and behaviours will be examined (controlling for social class) separately by age and gender.  
**Results:** Patterns by neighbourhood deprivation in the distribution of amenities such as swimming pools and sports facilities will be presented. The extent to which proximity to physical activity facilities is associated with physical activity and body size and shape in the West of Scotland will be discussed.



- Title**      **Modelling the effects of stair width on choice of the stairs under time pressure in stations**
- Author**     Dr Frank Eves  
Sport and Exercise Sciences  
University of Birmingham  
Birmingham, United Kingdom  
(evesff@bham.ac.uk)
- Co-Authors**   Lewis, A. University of Birmingham, Birmingham UK Griffin, C. University of Birmingham, Birmingham UK
- Abstract**   **Purpose:** While the built environment constrains lifestyle physical activity, the potential cost of changing the environment is a significant barrier to progress. This paper suggests one relatively cheap approach, namely increases in stair width. Commuters leaving a train station often choose the stair as a quickest route. Here we model the effects of speed leaving the station and stair width on choice of the stairs or escalator in commuters.  
**Methods:** Aggregated data from two previous studies (n=82,347) revealed a curvilinear relationship between the number of passengers leaving the train and the choice of stair rather than the escalator; at high pedestrian traffic levels, both methods of ascent were saturated. Subsequently, the time taken by passengers on the stairs and escalator was measured in a busy station in the UK (n=5,848). Two inconspicuous observers counted the number of passengers using each method of ascent and timed the total duration of the ascent from the first passenger stepping on the bottom step until the last passenger from the same train left the top of each method of ascent. The resulting transport rates (passengers.s<sup>-1</sup>) for stairs and escalators at the average commuting traffic were used to estimate the effects of increases in stair width on choice of the stairs.  
**Results:** Average transport rates were higher for the escalator ( $0.93 \pm 0.33$  passengers.s<sup>-1</sup>) than the stairs ( $0.58 \pm 0.24$  passengers.s<sup>-1</sup>). Modelling of the effect of passengers numbers on transport rate with multiple regression with linear and quadratic components provided a good fit to the data (both  $R^2 > 0.90$  p<.001). The transport rates for the escalator and stairs at the average rush hour value (1.1894 and 0.7975 passengers.s<sup>-1</sup> respectively) were used to model increases in stair width. A doubling of width of the stairs could result maximally in a 17.2% increase in stair use.  
**Conclusion:** The putative effect of a doubling of stair width is almost three times that produced by point-of-choice prompts for stair climbing. Further, changes to the width of stairs could produce a permanent increase in lifestyle physical activity immune to the effects of time on healthy intentions.

Title **A Qualitative Investigation into the Psychological Benefits of Urban Park Versus Urban City Walking**

Author Ms Denise Goodwin  
LAC Researcher & PhD Student  
Sport and Exercise Sciences  
Liverpool John Moores University  
Liverpool, United Kingdom  
(D.M.Goodwin@ljmu.ac.uk)

Co- Nesti, M. RISES, Liverpool John Moores University, Liverpool, United Kingdom  
Authors Stratton, G. RISES, Liverpool John Moores University, Liverpool, United Kingdom

**Abstract Purpose:** This research explores how exposure to nature and exercise combined promotes health and well-being. To date this area has largely been investigated using quantitative methodologies (Pretty *et al*, 2005) although the attraction of natural spaces for physical activity needs has recently been explored (Krenichyn, 2006). This investigation seeks to demonstrate that physical activity in the natural environment can promote individual well-being over and above physical activity alone.

**Methods:** Using repeated methods, sixteen participants (40+) walked on a treadmill for twenty minutes at a moderate intensity, whilst viewing and listening to either an urban city (Liverpool City Centre) or urban park (Sefton Park) scene. Directly after the walk participants engaged into a semi structured interview looking at why they choose to access particular environments for physical activity, what it means to them and why. Recording individual perspectives provided an opportunity to gain humanistic viewpoints about green exercise and feelings evoked through interaction with the park environment. This allowed the study to go beyond standardised psychometric testing.

**Results:** Study findings related to the individual and how they interact within the urban park and urban city environments. Access to urban parks, which provided structured and pleasant walking routes, were expressed as essential to the 'self' and others' wellbeing. Positive feelings were expressed when discussing the natural elements of the park environment, although the same feelings were reflected to a lesser degree in city areas that contained some 'greenery'. Potential enhancements to each environment included additional sports areas for urban parks (e.g. bowling green), and 'greening' of urban cities.

**Conclusion:** In the context of physical activity and the environment, policy makers should take into account the personal meaning natural areas like parks provide individuals, in addition to the already recorded health benefits. Many people create lasting memories and view parks as havens away from 'everyday life'. Results suggest the main barrier to participation is non-realisation of additional psychological benefits from physical activity within natural environments, with such revelations only likely to emerge through personal experience.

- Title** To what extent do ethnicity and the built environment influence physical activity in children from a deprived area in London?
- Author** Ms Pippa Griew  
Research Associate  
Exercise, Nutrition and Public Health  
Bristol University  
Bristol, United Kingdom  
(pippa.griew@bristol.ac.uk)
- Co-Authors** Page, A - Bristol University, UK Cooper, A - Bristol University, UK Davis, L - Bristol University, UK
- Abstract** Background: An active lifestyle in childhood has been found to have immediate benefits on both physical and mental well-being. However recommended levels of activity are currently not being reached by many children within the UK. Very little is known about the habitual physical activity of children from minority ethnic populations in the UK. Accelerometry measures the level of children's activity, but does not tell you where activity takes place. Global positioning systems allow accurate mapping of the location of an individual. Integration of these two methods will enable identification of where around the school or home environment physical activity takes place.
- Research Aims**
- 1) To investigate the activity levels of young people from an ethnically diverse population within a deprived area of London using accelerometry data
  - 2) Combining accelerometry data with findings from GPS monitors to assess how this population interacts with the built environment to understand where physical activity commonly takes place.
- Methods:** Four primary schools within Brent, London were recruited to participate in the PEACH project. All pupils in year 6 (age 10-11 years; n=296) were eligible to participate. Consent was received from the parents/guardian of 187 children (61% consent rate). Children wore an accelerometer (Actigraph GT1M) during waking hours for 7 days to measure habitual physical activity, and a GPS watch (Garmin foretrex 201) on four evenings to monitor where periods of activity occurred.
- Results:** Physical activity levels were found to be lower for the minority ethnic children than previously reported levels from predominantly Caucasian children of similar socio economic status (Trayers et al Arch Dis Child 2006; 91157-6). Female participants were significantly ( $p = 0.001$ ) less active than males across the whole sample, with Asian girls significantly ( $p = 0.004$ ) less active than girls from other backgrounds.
- Conclusion:** Children from minority ethnic groups in London may be less active than children from elsewhere, making them a potentially important group to target for intervention. Further analysis of data collected from GPS monitoring may provide insight into how young people interact with the built environment.

- Title**      **The influence of the environment on walking behavior during lunch break**
- Author**     Dr Ingrid Hendriksen  
 Researcher/consultant Physical Activity & Health  
 Prevention and Health  
 TNO Quality of Life  
 Leiden, Netherlands  
 (ingrid.hendriksen@tno.nl)
- Co-Authors**   Simons M., TNO Quality of Life, Leiden, The Netherlands Boer A. de, TNO Quality of Life,  
 Leiden, The Netherlands Jans M.P., TNO Quality of Life, Leiden, The Netherlands
- Abstract**   **Purpose:** Recent literature suggests that the amount of physical activity is importantly influenced by the physical environment. A Dutch company with a high number of employees walking during lunchtime moved to another location within the same village. They moved from a building without a decent company restaurant and a pleasant walking environment to a new building with a modern company restaurant and a less appealing walking environment. The aim of this study was to investigate the effect of the changed working environment on walking behavior during lunch break.
- Methods:** Information on walking behavior and factors hindering participants from walking during lunch break were collected by web based questionnaires at baseline (eighteen weeks before moving) and one-year follow-up. To monitor the walking behavior during the study year, emails containing a few short questions were sent to the participants on a regular basis.
- Results:** 123 participants (55% of the eligible employees) completed both questionnaires. At baseline 64% walked at least once a week and 49% walked at least four times a week during lunch break. At one-year follow-up these percentages decreased significantly to 31% and 9%, respectively. The decrease in amount and frequency of walking during lunch break was noticeable directly after the company's removal. The duration of a walk during lunchtime had not changed significantly. At one-year follow-up, 73% of the participants reported that the company's restaurant as well as the changed company's environment had influenced them to walk less.
- Conclusion:** The amount of employees walking during lunch break decreased drastically after moving. The results suggest that both the presence or absence of a company restaurant and the attractiveness of the neighborhood of the company building strongly influence the walking behavior of employees during lunch break.

- Title**      **The environmental characteristics of schools and associations with children's physical activity**
- Author**     Dr Natalia Jones  
Senior Research Associate  
School of Environmental Sciences  
University of East Anglia  
Norwich, United Kingdom  
(n.jones@uea.ac.uk)
- Co-Authors**   Harrison F C D, School of Environmental Sciences, University of East Anglia, Norwich, UK  
Jones A P, School of Environmental Sciences, University of East Anglia, Norwich, UK Panter J R, School of Environmental Sciences, University of East Anglia, Norwich, UK Sluijs EMF van, MRC Epidemiology Unit, Cambridge, UK
- Abstract**   **Purpose:** Children's physical activity is an important public health issue that has received increasing attention in recent years due to its association with childhood obesity. Research indicates that the environment plays a significant role in influencing levels of physical activity. One specific environment where children can be physically active is at school, and yet few studies have investigated the links between the school environment and children's physical activity.
- Methods:** This study examines the environmental characteristics of primary schools and their association with the physical activity of year five pupils. An audit tool was developed to measure the environmental characteristics of the outside grounds of 92 primary schools in Norfolk. The tool was used to examine the accessibility of the area surrounding the school (including the presence of cycle lanes and pavements), the facilities for physical activity in the school grounds (such as the numbers and quality of different sports amenities), the aesthetics of the grounds (incorporating the presence of trees and litter), the suitability for different play activities and standards of maintenance. Alongside the audit 2064 year five children attending these schools wore accelerometers which measured their physical activity levels over seven days as part of the SPEEDY study.
- Results:** In total 92 schools were audited, with the audits taking an average of 29 minutes to complete. The audit tool suggested that 46% of the schools had grounds which were very suitable for both formal and informal play. Altogether 27% of the schools had very well maintained grounds, while 16% had very good aesthetics. Significantly higher levels of moderate and vigorous physical activity were found in children attending schools with more aesthetic grounds ( $p < 0.001$ ) and in schools which were located in residential surroundings compared to those surrounded by fields or a mixed environment ( $p = 0.002$ ).
- Conclusion:** The school audit tool was simple to implement and was found to be an effective method of quantifying the characteristics of the school environment and its suitability for physical activity. Some association between audit scores and the physical activity of pupils was determined.

- Title**      **Neighbourhood walkability and walking in Switzerland**
- Author**    Prof Bengt Kayser (colleague Dorith Zimmermann will present poster)  
 Director  
 Institute of movement sciences and sports medicine  
 University of Geneva  
 Geneva, Switzerland  
 (bengt.kayser@medecine.unige.ch)
- Co-Authors**    Dorith Zimmermann-Sloutskis, ISMMS, University of Geneva, Switzerland Jonas Schmidt, OUM, University of Geneva, Switzerland Sonia Lavadinho, EPFL, Lausanne, Switzerland Marcos Weil, Urbaplan, Geneva, Switzerland Giuseppe Pini, OUM, University of Geneva, Switzerland Jean-Christophe Loubier, OUM, University of Geneva, Switzerland Jean-Paul Thibaud, CRESSON, Grenoble, France Yves Winkin, ENS, Lyon, France
- Abstract**    **Purpose:** Sedentary behaviour seems related to the built environment's effect on habitual physical activity levels like walking. There is paucity of data on correlates of walking behaviour in relation to the built environment in Switzerland.  
**Methods:** Two neighbourhoods within two cities, Geneva (Pommier N=200, Cressy N=200) and Zurich (Seefeld N=237, Witikon N=240) with contrasting GIS-determined walkability (Pommier/Seefeld wk+, Cressy/Witikon wk-) were compared. Randomly selected representative samples of habitants answered questionnaires by phone (Geneva) or mail (Zurich). Time spent walking to work, shopping, leisure and exercise was reported as the number of days and its respective duration. Daily duration was computed as log transformed summation of all walking periods and dichotomized (above vs. below the median). Age, weight and height, nationality, working status and income were self-reported. Statistical analysis was carried out with SAS 9.1. Generalized linear model and chi-square statistic were used for univariate analysis. Log transformation was used to normalize a right skewed distribution. Linear and logistic regression models were applied for multivariate estimates adjusted for selected covariates.  
**Results:** Mean age was 39.1±11.5 and similar in each area (p>0.5). In Geneva the proportion of foreign nationality was significantly higher in Cressy (36.7%) versus Pommier (25.5%) (p=0.01); in Zurich 13.4% were non-Swiss in both areas (p=0.3). Areas did not differ in the proportions of low income (12.2% <4'000 CHF/month). BMI was significantly higher in Witikon (p=0.04) but similar in the two Geneva areas (p=0.5). Median walking time was different between areas for both cities (Pommier 18 min/day, Cressy 13 min/day, p=0.003; Seefeld 15 min/day, Witikon 8 min/day, p=0.005). In Pommier 76.5% walk for leisure compared to 64.5% in Cressy (p=0.009) and in Seefeld 24.5% walk to work compared to 10.8% in Witikon (p<0.0001). Adjusting for gender, age, BMI, proximity to facilities and income, the risk of low walking time (below median) was significantly higher for wk- areas (Cressy OR=1.7, 95% CI=1.1-2.7), Witikon OR=1.6, 95% CI=1.1-2.5).  
**Conclusions:** In Switzerland habitual walking levels seem related to the built environment in terms of walkability. Interventional research is necessary to show causality in this relationship and to evaluate any public health efficacy.

- Title** Interventions to increase stair climbing behaviour; investigating the effect of message specificity.
- Author** Mrs Amanda Lewis  
PhD Research Student  
Sport and Exercise Health Sciences  
The University of Birmingham  
Birmingham, United Kingdom  
(alb296@bham.ac.uk)
- Co-Authors** Eves, F.F. The University of Birmingham, Birmingham, UK
- Abstract** **Purpose:** Stair climbing is a physiologically vigorous way to accumulate activity, which can be readily incorporated into daily life. While point-of-choice prompts consistently increase stair climbing, limited assessment of message content has been conducted. Interviews suggest specific consequences of stair climbing may be especially motivating but 'message specificity' has not been tested in the field. This study investigated effects of two messages differing in specificity upon stair climbing in a train station.  
**Methods:** The train station had two independent platforms, each with an identical 39-step staircase and adjacent escalator. Baseline observations (2 weeks) were followed by a 3 week exposure to a poster, positioned at the point-of-choice between ascent methods. Two posters were simultaneously tested, i.e. one placed on each platform; 'Regular stair climbing for 7 minutes per day protects your heart' (specific consequence) vs. 'Regular stair climbing protects your heart' (general consequence). Stair/escalator choices of ascending passengers (n=35,472) were coded for gender. Logistic regression analysis was conducted, controlling for effects of pedestrian traffic volume and gender.  
**Results:** The omnibus analysis contained a main effect of intervention (OR=1.11, 95% CIs 1.04-1.17 p<.001) that interacted with message (OR=0.94, CIs 0.89-0.99 p=.02). The specific message increased stair climbing (OR=1.42, CIs 1.12-1.78 p=.003) more than the general one (OR=1.07, CIs 1.01-1.13, p=.02). While pedestrian traffic volume affected stair climbing for both platforms (both prob <.001), there was an interaction between pedestrian traffic volume and the message phase only for the specific message (OR=0.998, CIs 0.997-0.999, p=.002).  
**Conclusion:** These data suggest that a specific health consequence message can potentially increase stair climbing more than a general health consequence message. The significant interaction between pedestrian traffic and the specific message could suggest that more complex messages may be more effective for less busy sites.

- Title**      **Novel information infrastructure to study the relationship between walking, environment and physical health**
- Author**     Professor Ronan Lyons  
Professor of Public Health  
School of Medicine  
Swansea University  
Swansea , United Kingdom  
(r.a.lyons@swansea.ac.uk)
- Co-Authors**   Rodgers, S.E., Swansea University, Swansea, UK Verplancke, J-P., Swansea University, Swansea, UK John G., Health Solutions Wales, Cardiff, UK Jones K.H., Swansea University, Swansea, UK Ford, D.V., Swansea University, Swansea, UK
- Abstract**   **Purpose:** There is growing interest in the relationship between the design of the urban environment, physical activity and health. However, lack of health data at fine spatial scales, data confidentiality legislation, and disparate approaches from planners, epidemiologists, social scientists, geographers and others have hindered research. Electronic health records and GIS data provide an opportunity for large scale or entire population studies. The Health Information research Unit (HIRU) has succeeded in overcoming data confidentiality issues for individuals in the SAIL (Secure Anonymised Information Linkage) Project whilst retaining the capability to link the data at the individual anonymised record level<sup>1</sup>. Our next challenge is to develop a system describing the environment surrounding each residence, retaining anonymity, but allowing linkage of environment metrics to individual health data.  
**Methods:** We are creating Residential Anonymised Linking Fields (RALFs). Each household in Wales will be assigned a RALF by the NHS organisation, and person-based Anonymous Linking Fields (ALFs) can be nested within RALFs. Independently, GIS datasets will be used to study the relationship between individual households and nearest points of interest (playgrounds, open space, schools, fields, shops, facilities), using network analysis and high performance computing, to provide environment metrics for every household. These data will be provided to the NHS organisation for encryption using RALFs, who will then make the tables available to HIRU.  
**Results:** This new method will allow an individual's health data and their corresponding environmental data to be related on a large scale for the first time in a completely anonymous way. The SAIL databank already contains anonymised information on 2.4M individuals. Work on expanding the databank and in developing RALFs and network analysis is progressing.  
**Conclusion:** This integrated approach will enable large scale observational studies on the relationship between walking, environmental design and physical health to be conducted, and will provide a framework for evaluating interventional studies.
1. Ford DV, et al. Overcoming confidentiality and disclosure issues in health-related data warehousing: the split-file approach to anonymisation. (In review)



- Title** Improving the local environment to increase everyday physical activity for people who are socially excluded
- Author** Prof Roger Mackett  
Professor of Transport Studies  
Centre for Transport Studies  
University College London  
London, United Kingdom  
(rlm@transport.ucl.ac.uk)
- Co-Authors** Achuthan, K, Centre for Transport Studies, University College London, London, UK Titheridge, H, Centre for Transport Studies, University College London, London, UK
- Abstract** **Purpose:** The purpose is to present a methodology to help remove barriers that prevent people who are socially excluded from walking in urban areas and so being as physically active as other members of society.  
**Methods:** A software tool, AMELIA (A Methodology for Enhancing Life by Increasing Accessibility), is being developed to test the extent to which transport policies can be used to increase social inclusion. This research is being carried out in the Centre for Transport Studies at University College London as part of a large programme looking at 'Accessibility and User Needs in Transport in Sustainable Urban Environments' (AUNT SUE). AMELIA is a user-friendly policy-oriented interface to a GIS (Geographical Information System). The overarching policy objective of AMELIA is to increase accessibility for people who are socially excluded. Benchmarks have been defined using focus groups and surveys to establish 'reasonable' levels of accessibility. AMELIA is used to investigate how many more people in a specific group meet the benchmarks by being able to walk to various activities including shops, medical and welfare centres, employment and leisure facilities as a result of policy interventions, such as removing obstructions on the pavement and improving road crossings. Micro-level data based upon street audits has been collected for the city of St Albans in Hertfordshire, including details such as steps, slopes, access to individual buildings and obstructions on the pavement.  
**Results:** In this poster, ways in which the tool is being used to test policies to increase walking for socially-excluded people will be presented. The results will be presented in terms of the increase in the numbers of people such as the elderly who are able to reach activities if the barriers to walking are removed. The results will show the effectiveness of the various policy actions in increasing the number of people in various groups who are able to walk.  
**Conclusion:** Conclusions will be drawn in terms of the effectiveness of the various policy instruments in increasing the numbers of socially-excluded people who are able to walk.

- Title**      **Physical activity in Glasgow's urban environment: initial findings from the GoWell Programme**
- Author**     Dr Philip Mason  
Research Fellow  
Urban Studies  
University of Glasgow  
Glasgow, United Kingdom  
(p.mason@lbss.gla.ac.uk)
- Co-Authors**   Kearns, A., Department of Urban Studies, University of Glasgow, Glasgow, UK  
Bond, L., MRC Social and Public Health Sciences Unit, Glasgow, UK;  
Tannahill, C., Glasgow Centre for Population Health, Glasgow, UK.
- Abstract**   **Purpose:** The GoWell Programme is a 10-year project to assess the effects of different types of regeneration interventions in social housing neighbourhoods within Glasgow, UK, at the personal, household, neighbourhood and community levels, with particular reference to health and wellbeing. One of our aims is to establish how aspects of the built environment influence healthy activities, such as partaking of physical exercise. Over the course of the programme we shall be able to observe how regeneration facilitates such behaviours.  
**Methods:** A random cross-sectional sample of 6,000 people from 14 areas of Glasgow due to undergo one of five types of intervention were interviewed in 2006. We analysed self-reported physical activity (moderate and vigorous exercise, walking in the neighbourhood, and a combined estimate of activity expressed as METs). Statistical modelling of responses, controlling for age, sex, long-term illness, employment status, educational level and housing tenure, was carried out with respect to aspects of the built environment and respondents' perceptions of the neighbourhood.  
**Results:** We describe a complex web of characteristics that are associated with the different types of exercise and the overall estimates of energy expenditure from physical activity.  
**Conclusion:** It seems unlikely that a "one size fits all" approach to encouraging people to take more physical exercise through the design of the urban environment will be universally effective. However, over the course of the programme we will be able to assess the effects of the interventions on patterns of physical activity.

- Title** **Woodland Mountain Biking as part of Physical Education in a Secondary School in the West of Scotland**
- Author** Mr Hugh McNish (colleague Kevin Lafferty will present poster)  
Health Advisor  
Forestry Commission Scotland  
Hamilton, United Kingdom  
(hugh.mcnish@forestry.gsi.gov.uk)
- Co-Authors** Lafferty K, Forestry Commission Scotland, Edinburgh, Scotland Riach J, Cycling Scotland, Glasgow, Scotland Clark D, Scottish Wildlife Trust, Cumbernauld, Scotland Griffin W, Abronhill High School, North Lanarkshire Council, Cumbernauld, Scotland
- Abstract** **Purpose:** Forestry Commission Scotland (FCS) in partnership with Cycling Scotland, Scottish Wildlife Trust (SWT) and Abronhill High School have developed an innovative School Mountain Bike project in North Lanarkshire, Scotland to encourage pupils to participate in mountain biking responsibly in a woodland setting as part of secondary school physical education (PE) and after schools program and to broaden the content of what is on offer to pupils in schools.  
**Methods:** Bikes and relevant equipment were identified and purchased with funding from FCS with a bike storage container and bespoke training for the PE teachers provided by Cycling Scotland. The project links into a new urban woodland mountain bike trail and skills loop constructed on SWT land in Cumbernauld Glen as part of a FCS Woodlands in and Around Town (WIAT) grant and associated scheme of works. The urban woodland mountain bike trail also provides an opportunity for the pupils to continue being active and develop their skills out with school.  
**Results:** The first of its kind, the project was piloted in 2007 and mainstreamed in 2008 and has been successful in offering mountain biking as part of core PE lessons within a woodland environment. A progressive mountain biking program is now offered as an elective in PE for pupils from S3 upward. There has been excellent uptake and enthusiasm from pupils as it was seen as one the most exciting activities on offer.  
**Conclusion:** In this pilot project mountain biking has been successfully offered as an option within core PE. The pupils have improved their bike handling skills and confidence in dealing with different terrain and environments. This has provided a different option for pupils away from the more traditional sport and game based options. The project has been popular with both boys and girls in equal measures and encouraged participating pupils to consider cycling as a means of active transport out with school.

- Title**      **Smart Move? A natural experiment of the health, wellbeing, economic and environmental impacts of a changing university environment.**
- Author**     Dr Norah Nelson  
Lecturer in Physical Activity for Health  
Sport, Culture & the Arts  
University of Strathclyde  
Glasgow, United Kingdom  
(norah.nelson@strath.ac.uk)
- Co-Authors**   Lowry, R; Rogerson, R; Agapiou, A; Ferguson, N; Fitzsimons, C; Rowe, D; Mutrie, N. All authors from University of Strathclyde, Glasgow, Scotland.
- Abstract**   **Purpose:** The University of Strathclyde is currently located on two campuses, the city centre John Anderson Campus and the Jordanhill Campus, five miles to the west of Glasgow City Centre. However, in March 2008 the University's Court approved the relocation of the Jordanhill Campus to a purpose built city centre location by 2011.  
The relocation has financial and environmental footprint implications for the university, but it also provides a unique opportunity to conduct a natural experiment in the creation of a healthy, sustainable, productive university environment. By this we refer to one that (i) improves the wellbeing and health of individuals; (ii) enhances worker participation as 'active citizens', resulting in improved social networks and social capital for the organisation; (iii) improves the attraction and retention of talented, 'knowledge workers' and the 'creative class'; and (iv) develops sustainable transportation behaviour through travel planning and the physical location of the campus (in terms of land-use patterns, urban design and transportation systems).  
Few studies have focused on health-enhancing university environments, and there is a distinct need for good quality studies using valid pre- and post-intervention measures that identify physical activity behaviour change as a result of intervening in any physical environmental or institutional context.  
'Smart Move?' will employ a mixed methods quasi-experimental investigation, sampling staff and students across both campuses before (2009/10), during (2010/11) and after (2011/12) the relocation. A cross-disciplinary team representing experts in physical activity, architecture, transport and geography will examine the impact of changes in the actual and perceived campus environment on three core themes: (i) health and wellbeing, for example physical activity behaviour and quality of life, (ii) sustainability, for example active travel and environmental footprints in relation to carbon emissions, and (iii) productivity, for example staff collaborations and social capital in the workplace. Initial funding for capacity building and pilot work has been requested from the university, with a view to future funding applications from external sources.  
'Smart Move?' is a novel, unique and timely study with implications for the design of healthy, sustainable, productive workplaces, as well as wider implications for population health and sustainable development.

- Title**      **How spatial planning encourages bicycle use, a comparison of two Dutch suburbs**
- Author**    Mr Hans Nijland  
researcher  
Ministry of Environment  
Environmental Assessment Agency  
Bilthoven, Netherlands  
(hans.nijland@mnp.nl)
- Co-Authors**   Hilbers, B.K., VU University Amsterdam, Netherlands
- Abstract**   **Purpose:** Policies to promote bicycling as a healthy and environment-friendly way of transport, often consist of push and pull measures. Pull policies focus on increasing the attractiveness of cycling, for example, by improving the bicycle network or by decreasing delay and hindrance. One of the available policy instruments is spatial planning.  
**Methods:** The main question in this paper is to examine the extent to which bicycle-friendly spatial planning encourages people to use the bicycle, instead of other means of transport. To answer this question, two Dutch suburbs are compared, which are similar in many aspects, but clearly different in terms of spatial planning; one being bicycle-friendly, the other bicycle-unfriendly. Initially, 700 interviews were held.  
**Results:** The results showed (i) that bicycle use was clearly higher in the bicycle-friendly suburb and (ii) that bicycle use by the individual inhabitants had increased after settling in the bicycle-friendly suburb. For the bicycle-unfriendly suburb, the opposite was true. The question remains whether this can be explained by assuming that spatial planning encourages residents to bicycle more, or that people who prefer bicycling choose to live in more bicycle-friendly neighbourhoods. This topic of self-selection was addressed in an additional round of 90 interviews. These showed a (slight) tendency of people who prefer bicycling to settle down in the bicycle-friendly suburbs, more often. However, the effect of self-selection was not large enough to explain the high bicycle use.  
**Conclusion:** Contrary to the claim of property developers that the market for building bicycle-friendly districts is limited, the findings of this research indicate that there is ample opportunity for developing more bicycle-friendly districts. Incorporating the bicycle in the planning phase of new districts would, therefore, lead to a higher bicycle use, which, in turn, would lead to less obesity and better health.

- Title**      **Physical Activity and Social Support in Adolescent Girls**
- Author**     Dr Ailsa Niven  
Lecturer  
School of Life Sciences  
Heriot Watt University  
Edinburgh, United Kingdom  
(a.niven@hw.ac.uk)
- Co-Authors**   Fawkner, S. G., Teenactive Research Group, Heriot Watt University, Edinburgh, Scotland  
Hutton, J., Teenactive Research Group, Heriot Watt University, Edinburgh, Scotland
- Abstract**   **Purpose:** The physical activity (PA) levels of Scottish girls decline with age from 8-10 years and only 41% of 13-15 year old girls achieve the recommended physical activity level for health. The social environment has been identified as an influential correlate of PA and the aim of this cross-sectional study was to consider whether sources of social support for PA, and the relationship between PA and social support change as girls get older.  
**Methods:** Sixty-five female participants were classified by school year into three groups; group 1 (Years 1 and 2; n = 31; mean age = 12.55 ± 0.5); 2 (years 3 and 4; n = 17; mean age = 14.41 ± 0.5); and 3 (years 5 and 6; n = 17; mean age = 16.53 ± 0.6). All participants completed the Physical Activity Questionnaire for Adolescents and a Social Support Survey to assess social support for PA from mother, father, and peers. ANOVA was used to examine group differences on PA and a MANOVA with follow-up univariate analyses were used to determine group differences on social support. Correlation analyses were used to consider the relationship between sources of social support and PA for each group.  
**Results:** Group 1 was significantly more active than group 3. There were significant differences between the groups on social support and group 3 had significantly less social support for PA from mother and father than the girls in groups 1 and 2 but there were no differences between the groups on levels of social support from peers. For groups 1 and 2 all sources of social support were positively related to PA and for group 3 only peer support was positively related to PA.  
**Conclusion:** As girls get older they become less active and the amount of social support for PA from parents declines. The strength of the relationship between parental support and PA appears to decrease with age and only peer support is consistently and strongly related to PA across the school years.

- Title**      **Personal and environmental correlates of active travel and physical activity in a deprived urban population**
- Author**     Dr David Ogilvie  
Clinical investigator scientist  
MRC Epidemiology Unit  
Cambridge, United Kingdom  
(dbo23@medschl.cam.ac.uk)
- Co-Authors**   Ogilvie D, MRC Epidemiology Unit, Cambridge, UK Mitchell R, University of Glasgow, Glasgow, UK Mutrie N, University of Strathclyde, Glasgow, UK Petticrew M, London School of Hygiene and Tropical Medicine, London, UK Platt S, University of Edinburgh, Edinburgh, UK
- Abstract**   **Purpose:** Environmental characteristics may be associated with patterns of physical activity in general or with particular types of physical activity such as active travel (walking or cycling for transport). However, most studies in this field have been conducted in North America and Australia, and hypotheses about putative correlates should be tested in a wider range of sociospatial contexts. We therefore examined the contribution of putative personal and environmental correlates of active travel and overall physical activity in deprived urban neighbourhoods in Glasgow, Scotland as part of the baseline for a longitudinal study of the effects of opening a new urban motorway.  
**Methods:** We conducted a postal survey of a random sample of residents (n=1322), collecting data on socioeconomic status, perceptions of the local environment, travel behaviour, physical activity and general health and wellbeing using a new 14-item neighbourhood rating scale, a travel diary, the short form of the International Physical Activity Questionnaire (IPAQ) and the SF-8. We analysed the correlates of active travel and overall physical activity using multivariate logistic regression, first building models using personal (individual and household) explanatory variables and then adding environmental variables.  
**Results:** Active travel was associated with being younger, living in owner-occupied accommodation, not having to travel a long distance to work and not having access to a car, whereas overall physical activity was associated with living in social rented accommodation and not being overweight. After adjusting for personal characteristics, neither perceptions of the local environment nor the objective proximity of respondents' homes to motorway or major road infrastructure explained much of the variance in active travel or overall physical activity, although we did identify a significant positive association between active travel and perceived proximity to shops.  
**Conclusion:** Apart from access to local amenities, environmental characteristics may have limited influence on active travel in deprived urban populations characterised by a low level of car ownership, in which people may have less capacity for making discretionary travel choices than the populations studied in most published research on the environmental correlates of physical activity.

**Title** Effectiveness and cost of two stair climbing interventions – less is more

**Author** Ms Ellinor Olander  
Research Student  
School of Sport and Exercise Sciences  
University of Birmingham  
Birmingham, United Kingdom  
(exo619@bham.ac.uk)

**Co-Authors** Eves, F. F. School of Sport and Exercise Sciences, University of Birmingham, Birmingham, UK

**Abstract** **Purpose:** Stair climbing is an ideal activity to promote in the workplace due to its ease and availability. In the past, several different methods have successfully encouraged workers to choose the stairs instead of the lift. While it has been suggested these interventions are inexpensive, no study has compared the cost of different interventions. The current study compared a stall at an occupational health information day (Workplace Wellbeing Day) with point-of-choice prompts for a) stair climbing response and b) cost in four university buildings. **Methods:** After one week of baseline observations, the Workplace Wellbeing Day took place. A subsequent week of observations assessed the effectiveness of the stall. Following this, the effects of A2 posters positioned at the point-of-choice between the stairs and the lift were assessed for a further week. **Results:** Logistic regression (n=4,279) showed no significant difference between baseline (47.9% stair climbing) and the Workplace Wellbeing Day (48.8% stair climbing; P=0.83). Point-of-choice prompts, however, increased stair climbing (52.6%; odds ratio = 1.20, confidence intervals = 1.06-1.37, p<.01). **Conclusion:** The Workplace Wellbeing Day's inability to increase stair climbing may reflect the low number of employees attending, i.e. 3.6% of the invited employees. In contrast, the point-of-choice prompts were visible to all employees entering the four buildings. The point-of-choice prompts were also less expensive; the Workplace Wellbeing Day cost £0.79 per employee compared to £0.03 per employee. Consequently, a Workplace Wellbeing Day is not only more expensive than a point-of-choice prompt, but is also inferior in promoting stair climbing due to its inability to disseminate the stair climbing message to all employees. In contrast, point-of-choice prompts were potentially visible to all employees using the four buildings and hence better able to disseminate the stair climbing message to the target audience



Title	<b>Health impact assessment of greenspace: a guide</b>
Author	Mrs Ea O'Neill Knowledge and Research Manager greenspace scotland Stirling, United Kingdom (Ea.ONeill@greenspacescotland.org.uk)
Co-Authors	Members of the editorial group Judy Barrow, Raploch Urban Regeneration Company Sheila Beck, NHS Health Scotland Yvette Christopher, IOM, lead researcher for the identification of the case studies Karen Croucher, University of York, lead author of the detailed literature review Margaret Douglas, NHS Lothian Scott Ferguson, Scottish Natural Heritage Martin Higgins, NHS Lothian Fintan Hurley, IOM Eilidh Johnston, greenspace scotland, coordinator of the overall project Russell Jones, Glasgow Centre for Population Health Della Thomas, NHS Health Scotland Salim Vohra, IOM, lead author and coordinator of input into the guide
Abstract	<p><b>Purpose:</b> The guide has been written to help people conduct a health impact assessment (HIA) of greenspace; whether these are greenspace policies, strategies, plans, frameworks, programmes or projects. Previous studies demonstrate important links between health and greenspaces, relating to mental, physical and community health. To maximise these benefits, it is important that health considerations, and that the health role of greenspaces is considered in strategies, plans and projects.</p> <p><b>Methods:</b> <u>A steering group</u> was formed in November 2006 to develop the project. The group commissioned a literature review from the University of York, Centre for Housing Policy, and subsequently appointed consultants from IOM to prepare the guidance on the <i>Health impact assessment of greenspace</i>.</p> <p><u>Scope of the literature review</u> This guide offers an overview of the best available international scientific evidence on the health impacts (both positive and negative) of greenspace. The focus of the review was to identify and explore the links between greenspace and physical, mental and social health and wellbeing.</p> <p><u>Case Studies</u> The case studies have been identified from the grey literature of actual health impacts that have been undertaken on greenspace and greenspace-related proposals.</p> <p><b>Results:</b> The guide</p> <ul style="list-style-type: none"> <li>• provides some background information on greenspace and current greenspace policy context in Scotland</li> <li>• contains a review of international research evidence on greenspace and health</li> <li>• suggests some questions to help apply this evidence to specific greenspace or greenspace-related proposals</li> <li>• outlines how to use this evidence to do a HIA in 8 clear steps</li> <li>• provides short case studies of some completed HIAs of greenspace</li> <li>• highlights sources of data and further information on greenspace.</li> </ul> <p><b>Conclusion:</b> The literature review carried out in relation to the guide came to the conclusion that the evidence base on the relationship between greenspace and health and wellbeing is weak both in terms of the types of greenspace that impact on health and the types and levels of impact on different social groups. Nevertheless, the evidence base does currently give some clear indications regarding the links between health and wellbeing and greenspace. The guidance on health and equity impacts of greenspace should contribute to greater recognition of the role of greenspace in improving health and greater emphasis on health greenspace in proposals.</p>

- Title** Independent mobility in relation to physical activity, mode of travel and perceptions of the built environment in 10-11 year old children: The PEACH Project
- Author** Dr Angie Page  
Researcher  
Exercise, Nutrition & Health Sciences  
University of Bristol  
Bristol, United Kingdom  
(a.s.page@bris.ac.uk)
- Co-Authors** Cooper, AR, University of Bristol, Bristol, UK Griew, P, University of Bristol, Bristol, UK Davis, L, University of Bristol, Bristol, UK Jago, R, University of Bristol, Bristol, UK Hillsdon, M, University of Bristol, Bristol, UK
- Abstract** **Purpose:** Children's independent mobility or freedom to roam unsupervised has fallen in recent years. Independent mobility is related to social well being and may in part explain reported declines in physical activity and active travel in young people. This study investigated whether independent mobility in boys and girls was related to weekday physical activity, active travel and perceptions of the built environment.  
**Methods:** Participants were 1135 children aged 10 to 11 years (567 boys, 578 girls) who were recruited from Bristol, England as part of the PEACH (Personal and Environmental Associations with Children's Health) Project. The PEACH project is a longitudinal study to investigate the role of the environment in relation to physical activity and obesity in adolescents undergoing the transition from primary to secondary school. Participants wore an accelerometer (actigraph GT1M) for 7 days and a personal Global Positioning System (GPS) receiver after school. Participants also completed a detailed computerised questionnaire to assess personal, social and physical environmental determinants of physical activity and usual mode of travel to and from school.  
**Results:** Independent subscales for *local* and *area* independent mobility emerged. Boys had greater independent mobility and physical activity (weekday counts per hour) compared to girls. In regression analyses (accounting for minutes of daylight after school, level of deprivation, pubertal status and body mass index) greater *local* independent mobility was related to increased likelihood of active commuting from school for boys and girls as well as to average weekday physical activity for boys only. Minutes of daylight and Body Mass Index (BMI) were also related to physical activity for boys, but not girls.  
**Conclusion:** Local independent mobility appears to be an important independent correlate of school day physical activity and active commuting, especially for boys. It should be included alongside more established social-environmental determinants of physical activity. These data show how perceptions of the environment could be linked to objective data provided by the GPS to explore the relationship between time spent outside, physical activity and adult supervision.

- Title**      **Personal and environmental influences on active commuting behaviour in school children**
- Author**    Ms Jenna Panter  
PhD student  
School of Environmental Sciences  
University of East Anglia  
Norwich, United Kingdom  
(j.panter@uea.ac.uk)
- Co-Authors**    Panter, J.R., University of East Anglia, Norwich, UK. Jones, A.P., University of East Anglia, Norwich, UK. Van Sluijs, E.F., MRC Epidemiology Unit, Cambridge, UK.
- Abstract**    **Purpose:** Many children fail to meet the recommended guidelines for physical activity. Walking or cycling to school has the potential to contribute significantly towards overall physical activity levels. However, rates of active travel have fallen in the UK in recent decades. Environmental factors appear to play a role in determining behaviour in children, although its influence on active commuting is still relatively unclear.  
**Methods:** This was a cross-sectional study of 2012 children (899 boys, 1113 girls) from 92 schools in Norfolk, England, who took part in the SPEEDY study. Data regarding the usual mode of travel to school and child perceptions of their neighbourhood and journey to school was assessed using a questionnaire which was completed by the children. Parents also completed questionnaires in which they provided information about parental and household characteristics. Further questions assessed parent's perceptions of the neighbourhood environment around their home and route their child used to travel to school. Distance to school, classified as the shortest route between home and school, was estimated using a geographical information system.  
**Results:** In our sample, forty percent reported usually cycling to school and over nine percent of children usually walked to school. Those who reported cycling to school travelled the shortest distance (1.0km) whilst those children walking to school tended to travel slightly further (1.3km). Car ownership and living in an urban area was associated with walking or cycling to school. Children whose parents also reported walking or cycling to work were more likely to walk or cycle to school. Negative correlates of walking or cycling to school included objectively measured distance to school and parental perception of heavy traffic, a lack of pavements and high convenience of the car. Encouragement from parents was also positively associated with walking and cycling.  
**Conclusion:** Results indicate that personal as well as parental and child environmental perceptions are associated with children's walking and cycling behaviour. These cross-sectional results suggest that supportive physical and social environments may encourage active commuting.

Title **Does the Built Environment's Walkability Help Determine Health?**

Author Dr Sarah Rodgers  
Lecturer in Spatial Epidemiology  
School of Medicine  
Swansea University  
Swansea, United Kingdom  
(s.e.rodgers@swansea.ac.uk)

Co-Authors Lyons, R. A. Swansea University, Swansea, UK

Abstract **Purpose:** We propose the local built environment can help or hinder us in living healthy, active lives. The availability of routinely collected health data at Swansea University's Health Information Research Unit allows us to directly but anonymously link objectively measured environment data to chronic disease data of individuals living locally.

**Methods:** We are using Ordnance Survey Master Map (OSMM) data to adapt the method of Leslie, Frank and colleagues (Frank et al. 2007, Leslie et al. 2007, Bauman et al. 2008) to select highly- and less-walkable areas in the UK. We will compare the prevalence of several obesity-related chronic diseases of residents living within ideal walking communities to the disease prevalence in areas with few walkable attributes.

**Results:** T-tests were completed to compare means of disease prevalence rates. No statistical differences were found between less and highly walkable areas in affluent communities ( $p=0.803$ ). However, significant differences were found between less walkable ( $m=22,135$  per 100,000) and highly walkable areas ( $m=17,928$ ) in deprived communities ( $p=0.011$ ).

**Conclusion:** We have successfully used GIS data to objectively measure dwelling density and connectivity, two parts of the walkability index, using OSMM data. Chronic disease prevalence is lower in walkable areas in deprived communities. However, there were no differences in disease prevalence found between walkable and less walkable areas in affluent communities. Future plans include linking walkability scores for each household to the resident's health data, thereby removing ecological fallacy.

Bauman, A., C. Ester, E. Leslie, and O. Neville. 2008. An Australian version of the neighborhood environment walkability scale: validity evidence. *Measurement in Physical Education & Exercise Science* 12: 31-51.

Frank, L., J. Kerr, J. Chapman, and J. E. Sallis. 2007. Urban Form Relationships with Walk Trip Frequency and Distance among Youth. *American Journal of Health Promotion* 21: 293-397.

Leslie, E., N. Coffee, L. Frank, N. Owen, A. Bauman, and G. Hugo. 2007. Walkability of local communities: Using geographic information systems to objectively assess relevant environmental attributes. *Health & Place* 13: 111-122.

- Title**      **Perceptions of the built environment in relation to physical activity in different contexts: The PEACH Project**
- Author**     Dr Maria Paula Santos  
Visiting Fellow/ Researcher  
Exercise Nutrition and Health Sciences/ Research Centre in Physical Activity Health and Leisure  
University of Bristol/ University of Porto  
Bristol, United Kingdom  
(pempms@bristol.ac.uk)
- Co-Authors**   Page, A. University of Bristol, UK Cooper, A. University of Bristol, UK Griew, P. University of Bristol, UK Davis, L. University of Bristol, UK Jago, R. University of Bristol, UK
- Abstract**   **Purpose:** Several indicators suggest that the built and social environment is becoming less conducive for physical activity. Parental fears for children's safety and perceived environmental risks such as traffic danger encourage greater car use, less walking to school, and restrictions for unaccompanied active play and transport. The aim of this study was to determine whether perceptions of the built environment were related to volume of physical activity as well as specific activity contexts (active commuting vs. active play vs. structured exercise/sport).  
**Methods:** 1135 children aged 10 to 11 years (567 boys, 578 girls) from the PEACH (Personal and Environmental Associations with Children's Health) Project took part. The PEACH project is a longitudinal study to investigate the role of the environment in relation to physical activity and obesity in adolescents undergoing the transition from primary to secondary school. Children's perceptions of their environment and frequency of participation in active play, mode of travel to school and structured exercise and sport were assessed using a self-completed computerised questionnaire. Volume of physical activity was assessed using an accelerometer (Actigraph GT1M) worn for seven days. Principal Components Analysis was conducted to reduce the original set of variables into a smaller set of uncorrelated components (subscales). These subscales were then used in all further analyses.  
**Results:** After Principal Components Analyses, six dimensions relating to the environment emerged (Aesthetics; Personal Safety; Local accessibility, General neighbourhood; Traffic safety and Accessibility to "big" spaces). These dimensions explained 50.95% of variance and showed acceptable reliability (Cronbach Alpha range 0.54 -0.81). Greater perceived accessibility was related to higher frequency of play, active commuting and structured exercise/sport for both boys and girls.  
**Conclusion:** Distinct dimensions representing perceptions of the built environment were evident for these primary school children. Accessibility or being 'easy' to get to places was predictive across different activity contexts.  
This work was supported by funding from the National Prevention Research Initiative

- Title** **Walking and Perceived Environmental Characteristics in a Portuguese Sample of Adults: Results from the Azorean Physical Activity and Health Study (APAHS)**
- Author** Mrs Rute Santos  
PhD Student  
Research Centre in Physical Activity, Health and Leisure.  
Faculty of Sports - University of Porto  
Porto, Portugal  
(rutemarinasantos@hotmail.com)
- Co-Authors** Vale, S.; Ribeiro, J.Santos, P.Mota, J. Research Centre in Physical Activity, Health and Leisure. Faculty of Sports – University of Porto. Portugal.
- Abstract** **Purpose:** The aim of this study was to determine which perceived neighbourhood environmental variables were associated with walking levels in a Portuguese adult sample. **Methods:** The sample comprised 7330 adults (4104 women), aged  $38.13 \pm 9.30$  who participated in the Azorean Physical Activity and Health Study (APAHS). Walking and environmental variables were assessed with the International Physical Activity Questionnaire (IPAQ). Walking was expressed as minutes per week and used as the dependent variable. To address the Environmental variables a Categorical Principal Components Analysis (CATPCA) was performed. Five dimensions emerged from CATPCA and explained 55.42% of the variance, but only two dimensions (1 - Infrastructures, Access to Destinations, Social Environment and Aesthetics; 2 - Neighbourhood Safety) showed acceptable or good reliability (Cronbach' Alpha > 0.6) and therefore indexes were constructed for these dimensions. The items of each dimension were summed, in the dimension 1 a higher index means that participants tended to have a positive overall perception of the questions that compose the dimension; in the dimension 2 a lower index means that the participants consider their neighbourhood safer. A Linear Regression model was fitted to assess regression coefficients and standard errors [ $\beta$  (SE)] predicting walking. Adjustments were made for age, body mass index and education level. **Results:** The dimension: Infrastructures, Access to Destinations, Social Environment and Aesthetics were positive predictors for walking  $\beta = 29.793(6.216)$ ,  $p < 0.001$  for women and  $\beta = 25.747(7.838)$ ,  $p < 0.001$  for men. The dimension: Neighbourhood Safety was also associated with walking levels in men  $\beta = -19.803(9.111)$ ,  $p < 0.05$ . **Conclusion:** Some perceived neighbourhood environmental attributes were found to be associated with walking levels in Azorean adults.

Title **Are green elements principal pull factors for physical activity?**

Author Dr Peter Schantz  
Associate Professor  
Research unit for movement, health and environment  
The Åstrand Laboratory, GIH  
Stockholm, Sweden  
(peter.schantz@gih.se)

Co- Stigell, Erik, The Research Unit for Movement, Health and Environment GIH – The Swedish  
Authors School for Sport and Health Sciences, Stockholm, Sweden

**Abstract** **Purpose:** The aim of this study is to further the understanding of how environmental factors relate to existing behaviours of walking between home and work/study place in urban settings. For this purpose physically active commuters rated their perceived experience of 10 environmental variables along their individual commuting routes. They also expressed whether the overall route environment stimulated or inhibited their commuting.

**Methods:** The commuters volunteered to participate in the study after being contacted through advertisements in two morning newspapers in Stockholm. A questionnaire was sent to 1950 people. The response frequency was 93%. 335 of the respondents walked in the inner urban area of Stockholm and constitute the basis for this study. The variables studied were exhaust fumes, noise, flow and velocities of motorized vehicles, respectively, congestion of pedestrians, incidence of conflicts between the individual and other road-users (including pedestrians), the extent of green elements, aesthetics, number of red lights, and the perceived distance. Semantic differential 15-point scales for responding were used. Whether the ratings of the environmental variables could explain to what extent the overall route environment stimulated or inhibited their commuting was tested with multiple stepwise regression analysis.

**Results:** The following variables were statistically significant in explaining variations in the ratings of whether the overall route environment stimulated or inhibited the respondents commuting: 1) aesthetics, 2) noise 3) green elements (nature, parks, trees, plantings). The multiple regression analysis built a regression equation of the form:  $Y = 5.78 + 0.52 \times \text{aesthetics} - 0.18 \times \text{noise} + 0.12 \times \text{green elements}$ . The perceived levels of green elements correlated significantly with aesthetics ( $r=0.496$ ).

**Conclusion:** The present findings point to the importance of different environmental variables in stimulating/inhibiting bicycling commuting in urban areas. The fact that there was a strong correlation between green elements and aesthetics indicate that, to a great extent, green element may constitute the dimension of perceived aesthetics. In such case, green elements can be seen as a major pull factor for being physically active in this context.

- Title** “Move towards better health”: A programme designed to encourage physical exercise, better health and to fight against obesity
- Author** Dr Manel Enric/ Montserrat Llorca Ibáñez / Tobella Major (ellorca@sabarca.cat)
- Co-Authors** Tobella M, council Sant Andreu de la Barca, Sant Andreu de la Barca, Barcelona, Spain  
 Sanchez I, council Sant Andreu de la Barca, Sant Andreu de la Barca, Barcelona, Spain
- Abstract** **Purpose:** The Council aims to encourage regular physical exercise in order to improve health and reduce the prevalence of obesity.  
**Methods:**
- To favour the creation of municipal facilities in every neighbourhood so that citizens can adopt healthy lifestyles.
  - Involve health professionals in the promotion of physical exercise.
  - Increase the number of lessons of physical education as part of the school syllabus.
  - Implement active leisure programmes, in order to decrease sedentary lifestyles and improve health.
  - Involve sports organizations in the promotion of physical exercise throughout the districts.
- Strategies:**
1. Promotion of healthy areas: through sustainable town-planning which contemplates the creation of public areas and parks at a maximum distance of 500 metres from citizens' homes, an increase in sports facilities, pedestrianization of the old part of the town, elimination of architectural barriers.
  2. Promotion of healthy habits: Youth and education area: “Score a goal and get hooked on sport” (physical activities during school time); “Sport in your neighbourhood”, a children’s active leisure programme carried out in parks in every district by instructors who promote physical activity, swimming courses, the municipal sports centre.
    - Senior Citizen Area: “Everyone Moves”, “Walk towards Health”, “Fitness Circuit”
    - General public area: improvement and increase in sports facilities and equipment; promotion of physical activities and leisure; integration of exercise in daily routines (in municipal buildings)
    - Health area; inclusion of physical exercise in therapeutic prescriptions for obese patients with chronic pathologies
  3. Coordination of a multisectorial group which works synergistically using the principles of transversality to promote physical activity from different sectors.
- Conclusion:** The numerous physical and psychological benefits related to the practice of regular physical exercise justify the council’s work and commitment to the strengthening of the services and programmes which guarantee and facilitate these activities, designed to improve our citizens’ health.



- Title** Reliability of ratings of environmental variables coupled to physically active commuting routes in urban environments
- Author** Lina Wahlgren  
Ph.D. Student  
GIH, The Swedish School of Sport and Health Sciences  
Stockholm, Sweden  
(lina.wahlgren@gih.se)
- Co-Authors** Stigell, E. GIH – The Swedish School for Sport and Health Sciences, Stockholm, Sweden  
Schantz, P. GIH – The Swedish School for Sport and Health Sciences, Stockholm, Sweden
- Abstract** **Purpose:** A previous study has indicated that that perceived levels of aesthetics and green elements along the commuting routes are stimulating factors for being physically active through commuting. On the contrary, exhaust fumes, congestion of motorized vehicles and conflicts between road users in route environments appear to be inhibitory factors in relation to bicycling commuting in inner urban areas<sup>1</sup>. Due to these findings it has been valued as important to scrutinize the reliability of the ratings of these environmental factors.  
**Methods:** The participants, physically active commuters, were recruited when they bicycled in the inner urban area of Stockholm, Sweden (n=53). The participants received a questionnaire twice, with about two weeks passing in between. The perception of 10 variables, concerning environmental factors regarding commuting route, and whether the overall route environment stimulated or inhibited their commuting were rated on separate scales, 1-15. Here the results of six of the variables (exhaust fume, congestion, conflicts, aesthetics, greenness, stimulation-inhibition) will be presented. Order effects were analyzed with Students paired t-test. The methodological error was described as typical error and the resemblances between test and retest were analyzed with intra class correlations.  
**Results:** No significant order effects were seen, except for in the variables conflicts (8.7%,  $p<0.05$ ) and stimulation-inhibition (7.5%,  $p<0.05$ ). The typical error ranged between 1.45-2.03 and the range for the intra class correlations was 0.58-0.77 ( $p<0.001$ ).  
**Conclusion:** The overall result points in the direction of a reasonably good test-retest reliability both with regard to the overall rating of stimulation/inhibition and the different environmental variables. This conclusion is even more valid taking into consideration the fact that the external environment differs to a certain degree from day to day.  
<sup>1</sup>Schantz, P. & Stigell, E. 2006. Which environmental variables support/inhibit physically active commuting in urban areas? In: Proceedings from the 11th Annual Congress of the European College of Sport Sciences (Eds. Hoppeler, H., Reilly, T., Tsolakidis, E., Gfeller L. & Klossner S.), Lausanne, July 5-8, 2006, p. 432. Abstract.

Title **Evaluation of Well@Work - a national workplace health initiative in the UK**

Author Ms Emma Adams  
Research Associate  
School of Sport and Exercise Sciences  
Loughborough University  
Leicestershire, United Kingdom  
(E.J.Adams@lboro.ac.uk)

Co- Bull, FC, Loughborough University, Loughborough, UK  
Authors Hooper, PL, Loughborough University, Loughborough, UK

Abstract **Purpose:** The workplace is recognised as an important setting to promote healthy lifestyles in adults, yet the evidence on what works is limited. This project aimed to evaluate a 2-year national workplace health initiative across 11 concurrent projects (32 diverse workplaces) undertaken in the UK during 2005-2007.

**Methods:** Within a pre-post design, the evaluation assessed process, impact and outcomes using quantitative and qualitative methods including an employee questionnaire, a new workplace environment and policy audit, key informant interviews and employee focus groups. Three novel instruments were developed for process evaluation of programme implementation. Interventions were delivered according to specific interests, needs and resources of each workplace. Examples of physical activity initiatives included pedometer challenges, promoting stair use and active travel programmes.

**Results:** Across the 11 projects, 546 initiatives were delivered 49% of which focused on physical activity. Significant increases were observed between baseline and follow-up for active travel to work (3 projects; range 8-22% increase), participation in sport and recreation (9 projects; range 9-37% increase) and the proportion of respondents meeting the current recommendations of 30 minutes of moderate physical activity on at least five days a week for males (3 projects; range 14-24% increase) and females (4 projects; range 8-19% increase). Additionally, a significant increase in support to be active from colleagues was observed in 4 projects. Baseline scores for the workplace physical activity environment were low (range 16-43%) indicating great potential for improvement yet at follow-up observed changes were small scale, low cost and non-structural. Few changes were made to policy. Key informant interviews identified the short time frame, lack of management support and limited funding as barriers to instigating environmental and policy changes.

**Conclusion:** Overall these results provide some support for the potential to improve employee health and specifically physical activity levels by delivering initiatives through the workplace. Programmes aimed at active travel and increased sports participation may be warranted however, changing workplace environments and policy is more challenging. Lessons learnt will inform future links with occupational health, programme delivery and evaluation methods.

Title **How active are the Girls on the Move?**

Author Ms Sophie Adams  
Student  
Sports Studies  
University of Stirling  
Colne, United Kingdom  
(sophieizastar@hotmail.com)

Co- Taylor, J, University of Stirling, Stirling, Scotland  
Authors Hughes, A, University of Stirling, Stirling, Scotland

**Abstract Purpose:** Girls on the Move (GotM) is a national programme that provides funding to community groups across Scotland to deliver activity that will increase physical activity participation in girls aged 11-18. The purpose of this study was to determine the amount of time girls spent in moderate and vigorous intensity physical activity during a typical activity session using objective methods and to compare the girls' habitual activity patterns (measured over 7 days) with physical activity guidelines.

**Methods:** Preliminary data was collected from 11 girls (mean age 13 years) from one GOTM project; we intend to collect data from another two projects over the next two months. Actigraph accelerometers were used to record physical activity levels during a 90 minute activity class and over a 7 day period.

**Results:** Girls spent 62% (55 minutes) of the 90 minute activity class in sedentary behaviour, 28% (25.6 minutes) in light intensity activity, 10% (9.4 minutes) in moderate intensity activity, and 0% (0 minutes) was spent in vigorous activity. Over a period of 7 days, 88% (590.8 minutes) was spent in sedentary behaviour, 9.5% (62.8 minutes) was spent in light intensity activity, 1.8% (12.2 minutes) was spent in moderate intensity activity, and 0.2% (1.5 minutes) was spent in vigorous intensity activity. Total physical activity (accelerometry counts/min) was higher on weekdays compared to weekend days (291916 vs. 239348.9;  $p=0.05$ ). Girls spent 14 mins/day in moderate intensity activity on weekdays and 10 mins/day in moderate activity at weekends ( $p=0.1$ ). The extent to which the project was able to increase girls' levels of activity was affected by the suitability of the community hall and the availability of community hall staff and tutors.

**Conclusion:** During the activity session, it appeared that the Girls on Move Programme had a minimal impact on increasing the girls' levels of physical activity, particularly levels of moderate and vigorous intensity activity. Habitual levels of physical activity in the adolescent girls studied were well below the recommendations.

Title **Evaluation of physical activity, physical condition and health profile in children.**

Author Dr Pere A. Borrás  
Professor  
Physical Education and sports  
University of the Balearic Islands  
Palma de Mallorca, Spain  
([pa-borras@uib.es](mailto:pa-borras@uib.es))

Co-Authors Vidal, J. University of the Balearic Islands, Palma de Mallorca, Spain

**Abstract** **Purpose:** This paper aims to establish a basic school-based protocol to analyse the relationship between physical activity levels, physical conditioning and a health profile.  
**Methods:** This paper is a summary of an investigation carried out in Majorca, Spain, with 364 students (11-12 years). The tools used in the investigation are the "SHAPES" questionnaire (Wong, Leatherdale, and Manske, 2006) from the University of Waterloo, the Fitnessgram, to measure the Physical conditioning, and the "CHIP-CE/PRF" Child Health and illness profile, child edition parent report form.  
**Results:** The child health profile from the parents report form (completed by parents) indicates that the level of health of these students is high (4.6 on a 1-5 scale, reporting 5 as an excellent health and 1 as very low level of health). On the contrary, the levels of physical activity are extremely low (less than 20 minutes of moderate to vigorous physical activity per day), and the level of physical condition is very poor compared to Eurofit Data. This data confirms that the students with high levels of strength perform better in the child health profile questionnaire. Highs levels of physical activity in students correlates with high levels of parental physical activity.  
**Conclusion:** The presented group of questionnaires and physical conditioning tools are a satisfactory protocol to investigate levels of physical activity, physical conditioning and health profile in children at school.

- Title** **iConnect – an integrated approach to measuring and evaluating the physical activity, travel and carbon impacts of interventions to improve the connectivity of infrastructure for walking and cycling**
- Author** Dr Christian Brand (co-authors will present poster)  
Senior Researcher  
Oxford University Centre for the Environment  
University of Oxford  
Oxford, United Kingdom  
(christian.brand@ouce.ox.ac.uk)
- Co-Authors** Bull, F, Loughborough University, Loughborough, UK  
Cooper, A, University of Bristol, Bristol,  
Mutrie, N, University of Strathclyde, Glasgow, UK  
Ogilvie, D, MRC Centre Cambridge, Cambridge, UK  
Powell, J, University of the West of England, Bristol, UK  
Preston, JM, University of Southampton, Southampton, UK  
Rutter, H, National Obesity Observatory, Oxford, UK
- Abstract** **Purpose:** Connect2 is a £138 million investment programme in walking and cycling infrastructure at 79 sites across the UK that provides a unique opportunity to determine the impact of infrastructure provision on walking and cycling and to assess the impact of other interventions including promotional activities. The challenge is to ensure this opportunity is used to fill evidence gaps, assess transferability and influence policy. The recently awarded 5-year iConnect project aims to just do that. Its main aim is to measure and evaluate the travel, physical activity and carbon impacts of interventions to improve the connectivity of infrastructure for walking and cycling. To achieve this aim an interdisciplinary consortium of eight institutions with expertise in energy, environmental, physical activity, public health and transport research, as well as computerised urban modelling was developed. The objectives of the research are: (1) to develop and refine measurement instruments and evaluation frameworks for assessing the effects of these interventions on travel activity, physical activity and carbon emissions; (2) to apply these methods in longitudinal population-based studies at a sample of Connect2 case study sites; (3) to determine the likely benefits of additional promotional interventions using a randomised controlled trial at one Connect2 site; and (4) to enhance and collate data at all Connect2 sites to develop strategic evaluation measures.
- Methods:** Our methodological approach will be informed by the realist approach to evaluation which advocates determining not simply whether an intervention has worked but also understanding why it is effective (or not), in what ways, for whom and in what circumstances. We will therefore collect data on context, mechanisms and outcomes using a longer self complete household questionnaire, to which we anticipate a total of approximately 10,000 useable responses from the main case studies; a shorter user intercept questionnaire, developed in conjunction with Sustrans; and more detailed objective measures from subsets of our study cohorts.
- Results:** The main outputs will be an improved set of measurement and evaluation tools at the strategic and more detailed, local levels, validated using a heterogeneous set of Connect2 case studies; evidence on the impacts of infrastructural and promotional interventions, which will inform policy and practice; and strategic benefit and cost measures which will inform and influence government policy and appraisal of infrastructural interventions.
- Conclusion:** The research will demonstrate the extent to which cycling and walking infrastructural interventions can improve air quality and physical activity, reduce road congestion and accidents, carbon emissions and noise, including consideration of the role of context and mediating factors. Connect2 provides the platform for research to fill evidence gaps, assess transferability and influence policy.

- Title** Can online self-graphing help to increase physical activity level?
- Author** Dr Frantisek Chmelik  
Center for Kinanthropology Research  
Palacky University  
Olomouc, Czech Republic  
(frantisek.chmelik@upol.cz)
- Co-Authors** Frömel, K, Center for Kinanthropology Research, Palacky University, Olomouc, Czech Republic. Kren, F, Center for Kinanthropology Research, Palacky University, Olomouc, Czech Republic. Stelzer, J, Valdosta State University, Valdosta, GA, USA. Engelova, L, Center for Kinanthropology Research, Palacky University, Olomouc, Czech Republic. Kudlacek, M, Center for Kinanthropology Research, Palacky University, Olomouc, Czech Republic. Mitas, J, Center for Kinanthropology Research, Palacky University, Olomouc, Czech Republic.
- Abstract** **Purpose:** The increase in physical inactivity across populations advocates for the internet to be used as a means of promoting positive changes in lifestyle. Profound and immediate feedback about one's physical activity (PA) enhances awareness of the need to change lifestyle. The aim of the study was to verify the use of the Indares.com internet system for PA data collection and analysis and its user friendliness.  
**Methods:** The sample consisted of 110 students (42 men, 68 women) from the Valdosta State University (Valdosta, GA, USA) enrolled on Physical Fitness class. During the spring term (January – May 2008), the students recorded information about their PA into the Indares.com system and could compare their PA to health recommendations and their goals. For the analysis, we used data from the first 9 weeks of monitoring. The data from the Indares.com system were transported into Statistika 6.0 program for further analysis.  
**Results:** The number of students who recorded their PA into the system on more than one date was 81 (74%). Eight students (7%) recorded their PA every day. These data show that men are more physically active ( $Z=3.72$ ,  $p<.001$ ,  $d=1.46$ ) on weekdays (169.3 METmin/day) than at weekends (97.6 METmin/day). A significant difference ( $Z=5.40$ ,  $p<.001$ ,  $d=1.46$ ) in physical activity on weekdays (101.9 METmin/day) and at weekends (57.2 METmin/day) was also found in women. The students showed more physical activity on weekdays when some organized PA takes place than on the other weekdays. During the first five weeks of monitoring students' PA level increased at weekends. After 4 weeks of monitoring, the number of students recording data into the system slightly decreased.  
**Conclusion:** Indares.com can be used for efficient data collection on PA, to increase self-reflection and to enhance self-efficacy. Using the system can have a positive impact on motivation and increased participation in PA and can promote changes in physical activity behavior of its users.  
Funding, Supported by research project "Physical activity and inactivity of the inhabitants of the Czech Republic in the context of behavioral changes", RP #: 6198959221.  
Competing interest: The main author of study is a co-author of the Indares.com system.

- Title**      **Increasing our understanding of pedometer reactivity: what factors are involved?**
- Author**    Dr Stacy Clemes  
Lecturer  
Department of Human Sciences  
Loughborough University  
Loughborough, United Kingdom  
(S.A.Clemes@lboro.ac.uk)
- Co-Authors**    Parker, RAA Department of Human Sciences, Loughborough University, Loughborough, Leicestershire, UK
- Abstract**    **Purpose:** Pedometers are increasingly being used to objectively measure free-living ambulatory activity, however the impact of wearing a pedometer, and recording daily step counts, on participants' activity level has received little attention. If activity changes as a result of wearing the pedometer, defined as reactivity, this could affect the validity of pedometer-determined activity data. The aim of this study was to investigate the presence of reactivity, if any, in response to wearing sealed and unsealed pedometers, with and without step count recording.
- Methods:** On the first visit to the laboratory 63 participants (41 female, 22 male: age =  $23.6 \pm 9.6$  years, BMI =  $22.7 \pm 3.0$  kg/m<sup>2</sup>), blinded to the study aim, were provided with a sealed pedometer (New Lifestyles NL-1000) (with the visible display restricted) and informed that it was a 'Body Posture Monitor' (covert monitoring). Participants wore the pedometer throughout waking hours for 1 week. Upon return to the laboratory, stored step counts were downloaded and participants were informed that the device was a pedometer. Participants wore the pedometer under 3 more conditions – sealed, unsealed (no restriction on viewing step counts), and unsealed plus logging daily steps in an activity diary - each having a duration of 1 week. The order of participation in each condition (sealed/unsealed/diary) was balanced across participants. Mean daily step counts recorded during the 4 conditions were compared using a repeated-measures ANOVA.
- Results:** There was a significant overall effect of condition ( $p < 0.001$ ) (covert monitoring =  $8362 \pm 2600$  steps/day; sealed condition =  $8832 \pm 2845$  steps/day; unsealed condition =  $9176 \pm 3299$  steps/day; diary condition =  $9635 \pm 2709$  steps/day), with post hoc analyses revealing that mean step counts were significantly higher in the diary condition than those recorded during both the covert and sealed conditions (both  $p < 0.003$ ). No significant gender effects were observed ( $p = 0.33$ ).
- Conclusion:** The greatest increase in step counts occurred in the diary condition, suggesting that reactivity to pedometers is greatest when participants are requested to wear an unsealed pedometer and record their step counts. This has validity implications for short-term pedometer studies investigating habitual free-living activity that require participants to provide a daily log of their step counts.

Title **Do step counts approximate overall physical activity in youth?**

Author Ms Kirsten Corder  
Post-doc  
MRC Epidemiology Unit  
Institute of Metabolic Science  
Cambridge, United Kingdom  
(kirsten.corder@mrc-epid.cam.ac.uk)

Co- Brage, S. MRC Epidemiology Unit, Cambridge, UK Wright, A. MRC Human Nutrition  
Authors Research, Cambridge, UK Wareham, NJ. MRC Epidemiology Unit, Cambridge, UK  
Ekelund, U. MRC Epidemiology Unit, Cambridge, UK

**Abstract** **Purpose:** Pedometers measure steps walked but are often used as a proxy for overall physical activity (PA). This study aimed to determine the extent to which step-counts approximate overall PA in youth, and to compare adherence to different PA recommendations. **Methods:** A total of 79 young people (54% male) were recruited from schools in Cambridgeshire, UK in three age groups; 4-5 y (n=26), 12-13 y (n=28), and 16-17 y (n=25). Pedometry and accelerometry were used to assess PA over 11 consecutive days, concurrent with energy expenditure (EE) measurement using the doubly labelled water method (DLW). For each participant, adherence to the PA recommendations of 12,000 and 10,500 steps·d<sup>-1</sup> (males and females respectively) and 60 min·d<sup>-1</sup> of accelerometer-derived MVPA was determined. Linear regression analysis was used to determine the variance in DLW-derived PAEE·kg<sup>-1</sup> ((PAEE·kg<sup>-1</sup> = 0.9·total EE – measured resting EE)/weight (kg)) and accelerometer counts explained by step-counts and sex, separately by age group. Agreement between adherence to the two PA recommendations and DLW-derived PAEE·kg<sup>-1</sup> was assessed using receiver operating curve (ROC) analysis. **Results:** Step counts explained 19% of the variance in PAEE·kg<sup>-1</sup> for the 12-13 year-olds, 4% for the 16-17 year-olds, but none for the youngest group. Step counts explained 28% of the variance in accelerometer counts for the youngest group, 48% for the 12-13 year-olds and none of the variance for the oldest group. There was good to excellent agreement for adherence to the pedometer- and accelerometer-based PA recommendations (area under the ROC curve 0.89 to 0.93). However, there was only poor to fair agreement between adherence to these recommendations and DLW-derived PAEE·kg<sup>-1</sup> (area under the ROC curve 0.63 and 0.73 for steps and accelerometry respectively). **Conclusion:** Steps do not appear to provide a good estimate of overall EE in youth; however, step counts explain a moderate amount of variance in accelerometer-assessed PA in 4-12 year-old children. There was good agreement for adherence to pedometer- and accelerometer-based PA recommendations. Despite this, different methods of measurement assess varying aspects of PA, and differ with age, and should not be used interchangeably.



Title **Compliance of physical activity guidelines in a working population using an objective monitoring technique**

Author Dr Philippa Dall  
Research fellow  
School of Health & Social Care  
Glasgow Caledonian University  
Glasgow, United Kingdom  
(philippa.dall@gcal.ac.uk)

Co- Chastin CFM, Grant PM, Ryan CG, Tigbe WW, Rafferty D, Granat MH  
Authors School of Health & Social Care, Glasgow Caledonian University, Glasgow, UK.

Abstract **Purpose:** The purpose of this study was to survey the compliance of a working population to the 2007 American College of Sports Medicine (ACSM) guidelines<sup>1</sup> using an objective activity monitoring technique.

**Methods:** Participants were Glasgow postal workers, who wore an accelerometer based free-living physical activity monitor, continuously for seven days. The ACSM defines brisk walking as walking at 5 MET, which corresponds to a walking cadence of  $123 \pm 4.9$  steps/min<sup>2</sup>. We selected a relaxed cadence threshold 10% below this mean value. Compliance with the physical activity guidelines was assessed in terms of the total time each day spent walking in bouts longer than 10 min with a mean cadence above the threshold.

**Results:** Data from 107 postal workers (15 f; mean age 40) revealed that only three participants met the ACSM recommendations<sup>1</sup>, while 62 participants did not meet the criteria on any day of the week. Relaxing the criteria regarding bout length, 30% of participants walked above the threshold pace for an average of more than 30 min per day.

**Conclusion:** Even using a relaxed cadence criteria, compliance with the ACSM guideline was extremely poor, although 30% of participants actually exceed the guidelines if the 10 min bout criteria was removed. This probably illustrates the issue that in an urban environment there are frequent events, such as stopping to cross a road, which require individuals to temporarily cease walking. This only becomes apparent when using an objective measure of free living physical activity with associated information on timing.

<sup>1</sup> Haskell et al. Physical activity and public health: Updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Circulation* 2007;116:1081-1093.

<sup>2</sup> Tudor-Locke C et al. Pedometer-determined step count guidelines for classifying waking intensity in young ostensibly healthy population. *Can J App Physiol*, 2005, 30, 666-676.

- Title**      **Accuracy of three activity monitors in recording step number and cadence during treadmill and outdoor walking**
- Author**     Ms Margaret Grant  
Head of Division of Physiotherapy  
School of Health and Social Care  
Glasgow Caledonian University  
Glasgow, United Kingdom  
(m.grant@gcal.ac.uk)
- Co-Authors**     Dillon, A. School of Health and Social Care, Glasgow Caledonian University
- Abstract**     **Purpose:** Promoting walking is central to most active health and rehabilitation programmes and consequently, many devices have been designed to quantify ambulatory activity. Accelerometer-based activity monitors have been found to be more accurate than waist-mounted pedometers particularly at slow walking speeds<sup>1,2</sup> and can provide information about the frequency, intensity and patterns of physical activity (periods of activity and inactivity)<sup>2,3</sup>. The purpose of this study was to compare the accuracy of three single-unit activity monitors in measuring step number and cadence.
- Methods:** The monitors used in the study were the *activPAL*™ (PalTechnologies Ltd), the AMP331 (Dynastream Innovations Inc) and the Stepwatch-3 (Cymatech Inc). Wearing the monitors simultaneously, 20 healthy adults (mean age 25.0±3.6 years; body mass index 23.6±2.3 kg/m<sup>2</sup>) on a treadmill for five minutes at each of five different speeds (0.90; 1.12; 1.33; 1.56; 1.78ms<sup>-1</sup>) and outdoors around a 500-metre course at three self-selected speeds (slow, normal; fast). Output from the monitors was compared to video observation.
- Results:** Bland and Altman analyses revealed small mean differences (< 0.45%) and narrow limits of agreement between all devices and observation for both step count and cadence. Absolute percentage errors were also small (< 0.7%). The results were consistent at all speeds both on the treadmill and outside.
- Conclusion:** The findings suggest that all three monitors are accurate in measuring step number and cadence in healthy young adults. Consequently, it is recommended that other features of the monitors should be taken into account when selecting an appropriate monitor for clinical or research use.
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  2. Ryan et al. The validity and reliability of a novel activity monitor as a measure of walking. *Br J Sports Med* 2006; 40: 779-784.
  3. Warms C. Physical activity measurement in persons with chronic and disabling conditions. Methods, strategies and issues. *Fam Community Health* 2006; 29(18): 78S-88S.

- Title**      **What actigraph-based cut-point is the best in discriminating prepubescent regarding their overweight/obesity status?**
- Author**     Dr Benjamin Comlavi Guinhouya  
Research Associate  
Institute of Engineering in Health of Lille, EA 2694: Public Health  
University of Lille 2  
Loos, France  
(comlavi.guinhouya-2@univ-lille2.fr)
- Co-Authors**   Apete K. Geoffroy<sup>1</sup>, Vilhelm Christian<sup>1,2</sup>, Allart Laurent<sup>2</sup>, Ravaux Pierre<sup>2</sup>, Durocher Alain<sup>1</sup>, Lemdani Mohamed<sup>2</sup>, Hubert Hervé<sup>1</sup>  
<sup>1</sup>- Institute of Engineering in Health of Lille, EA 2694: Public Health, University of Lille 2  
<sup>2</sup>- Faculty of Biological and Pharmaceutical Sciences, EA 2694: Public Health, University of Lille 2
- Abstract**   **Purpose:** There is a confusing literature about the actigraph-based cut-points (cp) that define the lower limit of the moderate-to-vigorous physical activity (MVPA) among children <sup>1-4</sup>. The purpose of this study is to compare the diagnostic quality of actigraph-based thresholds by classifying children with different BMI-referenced criteria.  
**Methods:** One hundred and thirteen children aged 8-11 years from three randomly selected elementary schools wore the ActiGraph MTI for three consecutive days. Four cut-points expressed in count per minute (cpm) - cp1000, cp3000, cp3200, cp3600 - were used to compute their MVPA. The area under the ROC curves (AUCs) together with specific indices, obtained from the contrasting group statistics <sup>5</sup>, allowed assessing the performance of these cut-points relative to the overweight/obesity status of children. This status was defined according to BMI-based criteria from the IOTF <sup>6</sup>, French References (FR, <sup>7</sup>) and WHO standards <sup>8</sup>, respectively.  
**Results:** Overweight/obesity frequency ranged from 30% to 42%, with no sex-related difference. All AUCs (range: 0.623-0.660) were significantly higher than 0.500 except from those of cp1000 for both the IOTF (0.602±0.058) and the FR (0.608±0.060) criteria. Furthermore, with the WHO standards, all thresholds provided non-significant AUCs (range: 0.574-0.597). The cp3600 showed the highest probability of correct decision (0.65 and 0.68), the lowest misclassification errors (0.34 and 0.32), the highest validity coefficient (0.21 and 0.29), and the highest expected maximum utility (71 and 83), according to the IOTF and the FR criteria, respectively.  
**Conclusion:** When using BMI-based criteria as classification variables, the cut-point of 3600 cpm consistently performed better in distinguishing the most active from the less active children. Conversely, the cut-off of 1000 cpm appeared as the least useful for prepubescent.
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<sup>2</sup> Treuth et al.. Med Sci Sports Exerc. 2004;36:1259-66.  
<sup>3</sup> Puyau MR et al.. Obesity Res 2002;10(3):150-7.  
<sup>4</sup> Trost SG et al.. Med Sci Sports Exerc 2002;34(2):350-5.  
<sup>5</sup> Berk R. J Exp Educ. 1976;45:4-9.  
<sup>6</sup> Cole TJ et al.. Br Med J. 2000;320:1-6.  
<sup>7</sup> Rolland-Cachera MF et al.. Eur J Clin Nutr. 1991;45:13-21.  
<sup>8</sup> WHO. WHO child growth standards. Geneva: World Health Organization; 2006.

- Title**      **Validation of a parent physical activity questionnaire for children**
- Author**    Ms Gerda Jimmy  
 Researcher  
 Swiss Federal Institute of Sport  
 Federal Office of Sport  
 Magglingen, Switzerland  
 (gerda.jimmy@baspo.admin.ch)
- Co-Authors** Hänggi J, Swiss Federal Institute of Sport, Magglingen, Switzerland.  
 Mäder U, Swiss Federal Institute of Sport, Magglingen, Switzerland.
- Abstract** **Purpose:** The aim of this study was to validate a parent questionnaire for children's overall physical activity by comparing it to accelerometer measurements.  
**Methods:** Children's physical activity was assessed with parent proxy-questionnaires comprising questions on the child's physical activity involvement on the previous school day and the last Sunday. Children wore a uni-axial accelerometer for 7 days. Accelerometer data were considered valid if at least 10 hours on 3 days, including one weekend day, had been measured. Complete data for questionnaires and accelerometer measurements were available for 189 children, aged 4 to 12 years (mean: 8.37, sd: 1.7), 52% boys. Minutes spent in moderate, vigorous and moderate to vigorous activity (MVPA) were calculated from the accelerometer data for an average weekday, an average weekend day and an average day over the whole week. These minutes were then compared to activity minutes based on the questionnaire, for the weekday, the last Sunday and the average of both days, respectively. In addition, minutes in MVPA according to the questionnaire were compared to the mean counts per day measured with accelerometry in order to have a measure which does not depend on the choice of cut off limits for activity categories.  
**Results:** For a weekday, Spearman correlations revealed significant agreement between the active minutes based on the questionnaire and based on accelerometry for vigorous activity ( $r=0.306$ ,  $p<0.001$ ) only. For a weekend day, no significant correlations were found. For an average day over the whole week, significant correlations were found between active minutes for vigorous activity ( $r=0.291$ ,  $p<0.001$ ) and for MVPA ( $r=0.203$ ,  $p=0.015$ ). When minutes spent in MVPA according to the questionnaire were compared to average daily mean counts measured with accelerometry, significant correlations were found for the weekday ( $r=0.262$ ,  $p=0.001$ ) and for the average over the whole week ( $r=0.229$ ,  $p=0.009$ ).  
**Conclusion:** The questionnaire applied appears to reflect children's activities over the whole week inadequately, particularly for moderate activities and for weekends. Including questions about both weekend days may be necessary. Furthermore, the list of activities in the questionnaire may need to be modified to better reflect children's moderate activity.

Title **Physical Activity and Quality of Life in Obese and Institutionalized Elderly**

Author Prof Alexandrina Lobo  
University of Porto  
Braga, Portugal  
(damiaolobo@gmail.com)

Co-Authors Maria Paula Santos; Joana Carvalho Research Center in Physical Activity, Health and Leisure  
- Faculty of Sport - University of Porto, Portugal

Abstract **Purpose:** The aim of this study was to explore the relationship between quality of life (QL) and physical activity in obese (BMI>30) and institutionalized older adults. Physical activity patterns on weekdays and weekends were also studied.

**Methods:** Twenty elderly residents of long-term care homes aged 65 or older participated in the study. Health-related quality of life was observed using the Medical Outcomes Study 36-item Short-Form (MOS-SF-36) questionnaire. Physical activity was assessed with the MTI Actigraph accelerometer during seven consecutive days.

**Results:** The main results show: i) there were no significant differences between physical activity patterns during weekdays and weekends; ii) there were a positive and significant association between physical activity and physical function.

**Conclusion:** The association between physical activity and QL suggests that the more active older subjects have a better perception of their health-related quality of life, namely on physical function domain. This study emphasizes the concept that higher physical activity levels in home-dwelling elders are important predictors of a standardized quality of life estimate. The results also provide important and useful information for planning meaningful contents for quality of life interventions in elders.

Title **An evaluation of physical activity at Forest School**

Author Ms Rebecca Lovell  
PhD Student  
RUHBC  
The University of Edinburgh  
Pulborough, United Kingdom  
(R.Lovell@sms.ed.ac.uk)

Co- Mitchell, R. University of Glasgow. Glasgow. UK Mutrie, N. University of Strathclyde. Glasgow.  
Authors UK Petticrew, M. London School of Hygiene and Tropical Medicine. London. UK

Abstract **Purpose:** The purpose of this study was to evaluate the outdoor education programme 'Forest School' as a source of school based physical activity. Increasing evidence indicates that significant percentages of children, particularly girls, are not sufficiently physically active. Children spend a large proportion of their waking day at school; however their opportunities to be physically active during the school day are limited. Increasing children's levels of physical activity during their time at school may be a key approach to increasing children's overall levels of physical activity.

**Methods:** A two phase mixed method design was used. The first phase used a repeated measures controlled design to objectively measure the amount, intensity, duration and frequency of the participant's (n = 26 age 9-10) physical activity during Forest School. The second phase used semi-structured paired interviews (n = 24 age 10-11) to understand the subjective experience of the Forest School physical activity. The study was conducted in the central belt of Scotland.

**Results:** The results showed that during the Forest School sessions the participants engaged in a significantly greater total amount of physical activity, at a higher intensity, and with a greater frequency of longer bouts, in comparison to the two control day types. The children were also shown, on average, to reach the recommended hour of MVPA during the Forest School sessions. The children reported enjoying and appreciating the opportunity to be physically active in an environment they had little previous experience of using. Existing barriers to physical activity in other contexts, in particular bad weather and low motivation, did not appear to be relevant at Forest School. The inequality in levels of physical activity and motivation to be physically active, between males and females, was shown to typically be lower on the Forest School days

**Conclusion:** The findings suggest that participation in Forest School results in greater quantities of inclusive and enjoyable physical activity at higher intensities than otherwise experienced at school. In conclusion Forest School may be of value as an approach to increase children's school based physical activity.

- Title**      **Socioeconomic-related variation of objective physical activity measurements in female adolescents.**
- Author**     Aristides Machado Rodrigues  
PhD student  
Faculty of Sport Sciences and Physical Education  
University of Coimbra  
COIMBRA, Portugal  
(rodriguesari@hotmail.com)
- Co-Authors** Coelho e Silva, MJ, Faculty of Sport Sciences and Physical Education, University of Coimbra, Portugal  
Mota, J, Faculty of Sport, University of Porto, Portugal
- Abstract** **Purpose:** The present study examines the socioeconomic variation of physical activity [PA] among a sample of female adolescents.  
**Methods:** Somatic characteristics included body weight, height, sum of six skinfolds and umbilical circumference in 115 females aged between 13-16 years. PA was estimated using an uniaxial accelerometer (Actigraph 7164) on five consecutive days assuming a criterion of 10h per day for inclusion. Socioeconomic status [SES, provided by parents' education level] effect was tested on total PA and moderate-to-vigorous physical activity [MVPA] during week and week-end days. After presenting descriptive statistics, SES variation was tested using ANCOVA [chronological age as covariate] on physical activity.  
**Results:** Compared to high SES subjects, girls classified as low SES posed higher BMI [low SES:  $21.55 \pm 3.73 \text{ kg/m}^2$ ; high SES:  $20.18 \pm 2.66 \text{ kg/m}^2$ ,  $p < 0.05$ ], more adiposity given by the sum of skinfolds [low SES:  $95 \pm 35 \text{ mm}$ ; high SES:  $82 \pm 26 \text{ mm}$ ,  $p < 0.01$ ], and higher umbilical circumference [low SES:  $78.2 \pm 7.0 \text{ mm}$ ; high SES:  $74.5 \pm 6.5 \text{ mm}$ ,  $p < 0.05$ ]. No significant differences were found for weight and height. Among low SES girls, mean time spent in MVPA was 77 and 47 minutes in week and week-end days, respectively. Correspondent values for high SES peers were 75 and 49 minutes. No significant differences were found for PA and MVPA between low and high SES girls.  
**Conclusion:** Although low SES girls had more adiposity, they tend to be as active as their high SES peers in PA [counts/min] and MVPA [min]. This study showed that adolescents from high socioeconomic background do not significantly differ on either total PA or MVPA during week, this contrasts with results on adults<sup>1</sup>. The findings corroborate other Portuguese studies<sup>2,3</sup>. Among adolescents' girls, physical activity seems to be independent of SES. Research using large samples in girls and also in boys is needed to confirm current results.
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- <sup>3</sup> Mota J, Silva G (1999). Adolescent's physical activity: association with socioeconomic status and parental participation among a Portuguese

- Title**      **Physical Activity levels in middle aged Romanian women: a pedometer based study.**
- Author**     Mrs Flavia Rusu  
Assistant Professor  
Faculty of Physical Education and Sport  
Babes-Bolyai University  
Cluj-Napoca, Romania  
(flavia\_rusu@yahoo.com)
- Co-Authors**    Melania Campeanu, University Babes-Bolyai Cluj-Napoca, Faculty of Physical Education and Sport Romania, Gratiela Deak, University Babes-Bolyai Cluj-Napoca, Faculty of Physical Education and Sport Romania
- Abstract**    **Purpose:** There is a great lack of data regarding the physical activity habits of the Romanian population. The aim of this study is to assess the physical activity levels of the Romanian middle-aged women using pedometers.  
**Methods:** The target group is formed by women between 40-60 years of age. Once we have established the list of subjects, we intend to monitor them for a time period of 7 days using OMRON Walking style II step counters. The participants will also be asked to keep a journal in which they should write what kind of physical activity they do on a daily basis (e.g. gardening, stair climbing, shopping, cleaning, baby sitting).  
**Results:** We will report statistical data for a significant sample of the targeted population. This data will contain the mean value of the number of steps taken daily by our subjects. We expect to find that the Romanian middle-aged women don't meet the recommended value of 10,000 steps daily. We also expect to find out what type of activities they do on a daily basis that could count as physical activity.  
**Conclusion:** Pedometers are easy to use and they don't cost much. The data they provide is reliable and it is extremely valuable for the design and the implementation of community-based interventions.

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Bassett DR, Strath SJ: *Use of pedometers to assess physical activity*. In Physical activity assessments for health-related research Edited by: Welk GJ. Champaign, IL: Human Kinetics; 2002:163-77.



- Title**     **A criterion method for measuring route distance in physically active commuting**
- Author**     Dr Peter Schantz  
Associate Professor  
Research unit for movement, health and environment  
The Åstrand Laboratory, GIH  
Stockholm, Sweden  
(peter.schantz@gih.se)
- Co-Authors**     Stigell, Erik, The Research Unit for Movement, Health and Environment, The Åstrand Laboratory, GIH, Stockholm, Sweden.
- Abstract**     **Purpose:** Distance is a variable of pivotal importance for analysis of many different issues of physically active transportation. Thus, there is a need for accurate and reliable methods for determining route distances. The aim of this study was therefore to scrutinize if distances of commuting routes drawn by physically active commuters and measured with a digital curvometric distance measurement device could serve such a purpose.  
**Methods:** Participants were recruited when they walked or bicycled in the inner urban area of Stockholm, Sweden. Questionnaires and individually adjusted maps were sent twice to the participants (n=133). Commuting routes from home to work were drawn on the maps. These were measured using a digital curvometric distance measurer which was carefully checked for validity and reproducibility. Marked origin and destination points were checked for validity using stated addresses and geocoded site search systems. 19 commuters were followed with GPS for validity checks of drawn routes. An analysis of the effect of any deviations between GPS route tracings and drawn routes on distance measurements was undertaken.  
**Results:** The intra class correlation of test-retest was 0.999 ( $p \leq 0.001$ ). Thus the test-retest values accumulated along the line of identity. The typical percentage error for the method was 2.4 per cent. The map markings of the routes' origin and destination points were accurate and reproducible. GPS tracings of actual commuting routes taken (n=19) displayed in six cases slight deviations from the routes indicated by the commuters on the maps. However, these deviations played an insignificant role (0.4 per cent) for distances measured.  
**Conclusion:** Routes drawn on maps by physically active commuters represent a valid and reproducible basis for distance measurements in physically active commuting.

Title **Frequency of active commuting trips**

Author Mr Erik Stigell  
doctoral student  
Åstrand laboratory  
GIH The Swedish School of Sport and Health Sciences  
Stockholm, Sweden  
(eriks@gih.se)

Co-Authors Schantz, P. GIH The Swedish School of Sport and Health Sciences, Stockholm Sweden.

**Abstract Purpose:** Values on frequency of active commuting trips are used in cost-benefit analyses within the transport sector and in WHO's health-economic assessment tool for cycling. Values on frequency of trips per week over the year give estimations of the number of active commuting days per year. Such data should be assessed in different settings, e.g., in relation to climate and hours of light over the year. The aim of this study was to illuminate this in commuters walking and bicycling in Stockholm, Sweden.

**Methods:** The participants cycled or walked to work, lived in the County of Stockholm and were contacted through advertisements in newspapers. Questionnaires were sent to them in September 2005. We divided the participants into three groups: single mode bicyclists,  $n = 1171$ , dual mode commuters,  $n = 534$  (i.e., those who sometimes cycle, sometimes walk), and single mode pedestrians,  $n = 298$ . They responded to questions on average number of trips per week for each month.

**Results:** The table below presents median number of bicycle and walking trips per week during different months for the three groups.

Months:	jan	feb	mar	apr	may	jun	jul	aug	sept	oct
nov	dec									
Bicyclists	0	0	3	8	9	8	1	6	8	7
4	0.5									
Dual mode (cycling)	0	0	3	8	0	8	0.5	6	10	8
4	0									
Dual mode (walking)	4	4	3	0.5	0.5	0	0	0	0.5	0.5
2	4									
Pedestrians	8	8	8	8	8	8	0	5	8	9
8	7									

Mean value of median numbers of trips during the year was 4.54 per week for bicyclists, 6.37 for the dual mode commuters and 7.08 for pedestrians. Consequently, the number of commuting days per year was estimated to be 118 for bicyclists, 166 for dual mode commuters and 184 for pedestrians.

**Conclusion:** The frequency of bicycle and walking trips for commuting can vary substantially over the year. The consequence of this is that using spot data for this variable can create over- or underestimations of the level of physical activity connected to commuting over the year.

Title **Reproducibility of the frequency of active commuting**

Author Mr Erik Stigell  
doctoral student  
Åstrand laboratory  
GIH The Swedish School of Sport and Health Sciences  
Stockholm, Sweden  
(eriks@gih.se)

Co-Authors Schantz, P. GIH The Swedish School of Sport and Health Sciences, Stockholm Sweden.

**Abstract Purpose:** Values on frequency of active commuting are widely used in the transportation sector, e.g., in Cost-Benefit analyses and in the WHO Europe health economic assessment tool for cycling. Thus, there is a need for reliable methods for determining commuting frequencies in physically active transportation. The aim of this study was therefore to analyze if commuting frequencies stated in a questionnaire by bicyclists and pedestrians have sufficient test-retest reproducibility.

**Methods:** Participants were recruited when they walked or bicycled in the inner urban area of Stockholm, Sweden. Questionnaires were sent twice to the participants (n=67) in December 2005 with two weeks passing between the dispatches. The participants responded to questions about average number of walking and cycling trips per week for each month. In this study, we looked at four months (March, April, October, November) a period when the bicycling commuting rates changes radically in Stockholm. The commuting frequency of these months should therefore be the most difficult to reproduce.

**Results:** There were no order effects independently of transport mode (see table below). The typical error of the method ranged between 1.16 and 2.83. The test-retest intra class correlation coefficient ranged between 0.62 and 0.96 ( $p \leq 0.01$ ). The table below presents the mean number of commuting days per week and the test-retest difference in mean trips.

	Bicyclists (n=56)		Pedestrians (n=11)	
	Trips/week T1	Difference in means T1-T2*	Trips/week T2	Difference in means T1-T2*
March	7.1	0.3	8.5	0.3
April	8.4	0.2	8.1	0.2
October	8.7	0.2	7.0	1.2
November	7.3	0.1	8.5	0.1

\*No test-retest differences were significant.

**Conclusion:** Values of frequency stated in questionnaire by physically active commuters represent a reproducible basis for measurements in physically active commuting. This indicates that the questionnaire used might be a functional tool in assessing commuting frequency over the year.

- Title**      **Would stopping the school run increase children's activity levels? Cross-sectional findings from a large population-based study (ALSPAC).**
- Author**     Dr Esther van Sluijs  
Investigator Scientist  
MRC Epidemiology Unit  
IMS/Addenbrookes Hospital  
Cambridge, United Kingdom  
(esther.vansluijs@mrc-epid.cam.ac.uk)
- Co-Authors**   Fearn VA (Norfolk PCT, Norwich, UK), Mattocks C (University of Bristol, Bristol, UK), Riddoch CJ (University of Bath, Bath, UK) & Griffin SJ (MRC Epidemiology Unit, Cambridge, UK), Ness A (University of Bristol, Bristol, UK)
- Abstract**   **Purpose:** Physical activity (PA) levels in British children are low. Promoting a transition from inactive to active travel to school might help increase PA. The objective of this study was to assess the association between active travel to school and PA in a large population-based sample of 11 to 12-year old children.  
**Methods:** Cross-sectional analysis using data from the Avon Longitudinal Study of Parents and Children (ALSPAC), a longitudinal study including children born 1991-92. The analyses included all children providing valid data on objectively-measured PA (Actigraph accelerometer), and parent-reported data on travel mode (walk, cycle, public transport, car) and distance to school in four categories (N=4688). Main outcomes were PA levels defined as counts per minute and minutes of moderate-to-vigorous intensity PA (MVPA).  
**Results:** 41.5% of children walked and 2.0% cycled to school on a regular basis, with the proportion of active travellers decreasing with increasing distance between home and school. Compared with car travel, walking to school was associated with 5.98 (95%CI: 3.82 to 8.14) more minutes of MVPA on weekdays in those living 0.5 to 1 miles from school, and with 9.77 (95%CI: 7.47 to 12.06) more minutes in those living 1 to 5 miles from school. This equates to 24.6 to 40.2% of the average daily minutes of MVPA. Only modest differences were observed in those living <0.5 mile from school. Differences were exclusively observed during school travel times (8-9am and 3-4pm).  
**Conclusion:** Children who regularly walk to school are more active during the week than those who do not, especially if they live more than 0.5 miles from school. Successful promotion of active travel may result in a 13% increase in population levels of MVPA among schoolchildren and might form a useful part of a strategy to increase PA in the population. Alternative strategies would be required for those living close to school and for those for whom active travel to school is not feasible.

- Title**      **Membership in a sport association and the risk of low level sport activity (LSA) among adolescents and young adults. Cross-sectional and longitudinal analysis. The Swiss Household Panel 1999-2005**
- Author**     Mrs Dorith Zimmermann  
Epidemiology-bio-statistician  
Physical Activity and Health Branch  
Swiss Federal Institute of Sport  
2532 Magglingen, Switzerland  
(dorith@bluewin.ch)
- Co-Authors**   Zimmermann-Sloutskis, D, Swiss Federal Office of Sport, Magglingen, Switzerland Wanner, M, Swiss Federal Office of Sport, Magglingen, Switzerland Martin, B, Swiss Federal Office of Sport, Magglingen, Switzerland Zimmermann, E, University of Neuchâtel, Switzerland
- Abstract**   **Purpose:** The prevalence of low level of sport activities (lowLSA) increases with age particularly among adolescents and young adults and may be related to the alarming obesity epidemic. Membership of sport associations may play an important role in this context. The Swiss Household Panel (SHP), a longitudinal survey on social changes, offers a unique opportunity to assess determinants of change in sport participation among the young Swiss population.  
**Methods:** A sub-sample of adolescents and young adult males and females (N=1953) born between 1975 and 1990, aged 14 to 24 years at baseline and followed annually is drawn from the SHP 1999-2005. Trends in the probability of lowLSA over 7 years were assessed among non-members (mb-) of sport associations compared to members (mb+) at the population and individual level adjusted for gender, initial age, time and covariates for social status (lower education and household income, non-Swiss nationality). Statistical analysis was carried out with SAS 9.1. The generalized estimating equation with autoregressive correlation for marginal effects and the NLMIXED procedure with Gauss-Hermite quadrature integration for random model were used with Poisson distribution for risk ratios of common outcome.  
**Results:** The pooled probability of lowLSA is significantly lower in males (RR=0.7, 95%CI=0.6-0.8) and increases linearly with age in both genders. Independently of prior LSA, mb- have a higher risk of lowLSA (RR=4.3, 95%CI=3.6-5.1). Compared to members, younger non-members are at higher risk of lowLSA (RR<sub>14-19</sub>=5.6, 95%CI=4.6-6.7; RR<sub>20-24</sub>=3.8, 95%CI=3.1-4.6). Quitting a sport club versus remaining a member increases significantly the risk of lowLSA (RR=6.3, 95%CI=4.8-8.2), inversely joining a sport club versus remaining non-member decreases the risk of lowLSA (RR=0.5, 95%CI=0.4-0.6). LowLSA at T<sub>3</sub> versus T<sub>0</sub> is significantly higher only among the youngest non-members (RR<sub>14-19yrs</sub>=1.5, 95%CI=1.2-1.9). After adjusting for gender, initial age, income and foreign nationality, the RR of lowLSA remained significant for non-members (RR=4.8, 95%CI=3.9-5.8) and increased significantly over time in non-members (RR<sub>T3</sub>=1.3, 95%CI=1.2-1.5) but not in members (RR<sub>T3</sub>=1.1, 95%CI=0.8-1.6).  
**Conclusion:** Membership of sport associations protects against the increase in lowLSA with age among adolescents. Quitting a sport association should be avoided and joining group sport settings encouraged.

Title      **Electrical assisted cycling: a new mode for meeting the physical activity guidelines?**

Author     Dr Ingrid Hendriksen  
Researcher/consultant Physical Activity & Health  
Prevention and Health  
TNO Quality of Life  
Leiden, Netherlands  
(ingrid.hendriksen@tno.nl)

Co-         Simons M., TNO Quality of Life, Leiden, The Netherlands  
Authors    Engbers L.H., TNO Quality of Life, Leiden, The Netherlands

Abstract   **Purpose:** To assess the potential of the electrical assisted bicycle as a novel tool for meeting the physical activity guidelines, two studies were performed answering the following questions: 1) Is the intensity of electrical assisted cycling enough to meet the recommended intensity standards for health enhancing physical activity? 2) To what extent can the growing use of electric bicycles contribute to an increased number of subjects meeting the physical activity guidelines in the Netherlands?

**Methods:** To answer the first question 12 habitually active adult subjects were requested to cycle a track of 4.3 km at an intensity they would normally choose for commuter cycling, using three different support settings: no support (NO), eco support (ECO) and power support (PO). Energy expenditure (EE) was estimated using a portable gas analyzing system and heart rate was simultaneously measured. Data of an online survey (n=1400) focused on (electric) bicycle use and Dutch physical activity behavior data were used to make statements on the second topic.

**Results:** EE was 6.1 Metabolic Equivalent (MET) for NO, 5.7 MET for ECO and 5.2 MET for PO. EE was significantly lower in PO compared to NO. No differences were found between NO and ECO, and ECO and PO. Mean heart rate was significantly higher without electrical assistance compared to the eco and power mode. The results of the online survey indicate that 1.7% of the commuters is very interested in the electric bicycle and that 2.5% of the elderly people (65 years or older) is seriously considering to buy such a bicycle in the near future. The potential gain in meeting the physical activity guidelines can be about 1% as a result of increased electric bicycle use.

**Conclusion:** EE during cycling on an electric bicycle, in all three measured conditions, is sufficiently high to contribute to the physical activity guidelines for moderate intensity health-enhancing physical activity for adults (cut-off 3 MET). Promotion of electric bicycle use in the Netherlands can have a positive effect on the amount of subjects meeting the physical activity guidelines.

- Title**      **Effects of different Intervention Programs on levels of Physical Activity and Waist-Hip Ratio in Elders**
- Author**     Prof Alexandrina Lobo  
University of Porto  
Braga, Portugal  
(damiaolobo@gmail.com)
- Co-Authors** Paula Santos, Ph.D.\* Joana Carvalho, Ph.D.\* \*Research Center in Physical Activity, Health and Leisure, Faculty of Sport Sciences-University of Porto, Portugal
- Abstract**   **Purpose:** The lifestyle modification will be able to create conditions to prevent cardiovascular disease (CVD) and other health outcomes<sup>1</sup>. Inactivity increases the risk of excess of height<sup>2</sup>. With ageing, the fat-free mass declines and height is diminished. Waist-hip ratio is then the dominant predictor of CVD risk factors in elders<sup>3</sup>. The purpose of this study was to analyze the relationship between two different intervention programs and levels of objectively measured physical activity (MTI actigraph) and Waist-Hip Ratio in elders.  
**Methods:** 105 institutionalized elders from north of Portugal were randomly assigned to a one year programme following one of three different interventions: Aerobic Program (n = 38), Strength Training (n = 10) and Control Group (n = 57). Baseline data were collected in January of 2006 via face-to-face interview and an extensive clinical evaluation and analyzed using SPSS program.  
**Results:** WHR increased significantly in the control group but decreased in both intervention groups although this was only significant in the aerobic program. The levels of physical activity decreased in all groups, the difference was only statistically significant in the control group.  
**Conclusion:** The results provide evidence of the utility of the interventions in the change of the life styles, specifically for physical activity<sup>4</sup>.
- <sup>1</sup> ACC: American College of Cardiology-European Society of Cardiology. *Criteria for acute, evolving or recent*. Eur Hear J, 2000. 21(18).  
<sup>2</sup> Hughes, S. et al. *Promoting Physical Activity Among Older People Generations*, 2005: p. 54-61.  
<sup>3</sup> Heyward, V., *ASEP methods recommendation: body composition assessment*. JEPonline, 2001. 4(4): p. 1-12.  
<sup>4</sup> Gouveia, A., *Prevenção cardiovascular 2000*, Lisboa: Fundação Portuguesa de Cardiologia.

Title **Physical activity and mental health in Scotland: findings from a cross-sectional survey**

Author Ms Roz Pollock  
MSc student  
Public Health  
Edinburgh University  
Edinburgh, United Kingdom  
(roz\_pol@yahoo.co.uk)

Co-Authors Platt, S, Research Unit in Health and Behavioural Change, Edinburgh University, Scotland.

Abstract **Purpose:** While the benefits of regular exercise to physical health are well understood and accepted, the benefits to mental health have been less widely recognised. This paper reports the findings of an investigation of the association between physical activity and mental health among working-age adults in Scotland.

**Methods:** Secondary data analysis of the Scottish Health Survey 2003 examined the relationship between physical activity and psychological distress. Development of the final model is still underway. The main outcome variable was score on the 12-item General Health Questionnaire whilst physical activity was based on a self-measured estimate of frequency of exercise which was 30 minutes or more of moderate-intensity exercise over the previous month. Main effects between physical activity and psychological distress were explored separately for men and women, adjusting for confounders and interactions between confounders and physical activity.

**Results:** Analysis so far of main effects (without interactions) show a significant relationship between physical activity and psychological distress in the expected direction, after controlling for confounders (physical activity 0/1 times/week compared to 5+ times/week: males OR=1.82 (95% CI 1.31-2.53), females OR=1.45 (95% CI 1.10-1.90). After including interaction terms, however, the association between physical activity and psychological distress was not statistically significant for males and reversed for females.

**Conclusion:** Our findings cast doubt on the assumption of a simple association between no/low physical activity and poor mental health. Special attention needs to be paid to increasing physical activity among those who are unemployed or economically inactive and those who smoke. In considering the policy and practice implications, a methodological issue that should be noted is the need for caution in assuming causal directionality on the basis of a cross-sectional design.



Title **Physical activity and health of the working population: social costs of poor habits**

Author Rimma Potemkina  
Senior specialist  
Social development  
Financial Corporation "URALSIB"  
Moscow, Russian Federation  
(rpotem@istel.ru)

Co-  
Authors

**Abstract** **Purpose:** The financial corporation "URALSIB" is one of the largest finance and insurance businesses in the Russian Federation with more than 20,000 employees in different parts of the country. In 2007 a behavioral risk factor survey (BRF) was conducted among the employees on random samples of 2000 employees. The aim of this study was to detect the main health problems of employees and the priorities for the social program's development. **Methods:** The standard questionnaire includes questions on height and weight, fruit and vegetable consumptions, physical activity patterns during working time, leisure time and time spent walking. The survey was conducted through e-mail and telephone interview. Response rate was 75%. **Results:** A low level of PA is highly prevalent in the working population: 79% of men and 84% of women have mainly sedentary work, only 1/5 and 1/3 of men and women respectively have leisure time activity at least 30 min/day 5 days/week or more. Mean walking time was about 60 min/day in both genders. Data analysis has shown that overweight (body mass index  $\geq 25$ ) and obesity (body mass index  $\geq 30$ ) is highly prevalent in the working population: more than 60% of men and 36% of women were overweight and 15% of men and 11% of women were obese. More than 90% of men and women have low level fruits and vegetable consumptions. Data obtained from the survey were matched with the expenses of the Corporation for health care in 2006. It was discovered that those who have low level PA have health expenditures that are twice as high as those who have high levels of PA. Employees with low fruit and vegetable consumption had health expenditures that were 36% higher than those who have high fruit and vegetable consumption. **Conclusion:** The data obtained from the survey were used for the Corporation's social policy development as well as for creating the health promotion programs at workplaces. The employee PA promotion and healthy nutrition programs were adopted in the Corporation in 2008.

**Title**     **The effects of physical activity on the life quality of menopausal Romanian women: a study based on MOS SF-36 questionnaire**

**Author**   Mrs Flavia Rusu  
Assistant Professor  
Faculty of Physical Education and Sport  
Babes-Bolyai University  
Cluj-Napoca, Romania  
(flavia\_rusu@yahoo.com)

**Co-Authors**   Melania Campeanu, University Babes-Bolyai, Faculty of Physical Education and Sport, Cluj-Napoca, Romania, Gratiela Deak, University Babes-Bolyai, Faculty of Physical Education and Sport, Cluj-Napoca, Romania

**Abstract Purpose:** To determine the effect of physical activity on the health and life quality of the menopausal women. The premises were that regular practice of physical exercise increases the quality of life and provides healthiness for this category of population.

**Methods:** 44 pre or postmenopausal women (with ages between 47-58) were randomly assigned into two groups. The first group (22) was formed by women who practiced regularly physical exercise (less than two hours weekly). The second group was formed by non-physically active women. All participants completed the **Questionnaire MOS 36-Item Short Form Health Survey (MOS SF-36)**, a generic health-related quality of life measure, designed for use in clinical practice and research, health policy evaluations and general population surveys. The questionnaire includes one multi-item scale that assesses **eight health concepts:** 1) limitations in physical activities because of health problems; 2) limitations in social activities because of physical or emotional problems; 3) limitations in usual role activities because of physical health problems; 4) bodily pain; 5) general mental health (psychological distress and well-being); 6) limitations in usual role activities because of emotional problems; 7) vitality (energy and fatigue); 8) general health perceptions. The items 9, 10, are in relation with the level of satisfaction regarding the incomes and the habitation. The item 12 represents the age of the person. The assessment was completed with the evaluation of the Body Mass Index for all the persons of the two groups. The data collected were statistically processed using SPSS program.

#### **Analysis of the results:**

Significant differences by group were noticed for the following variables:

- | Physical functioning (p =0,007)
- | Social functioning (p=0,005)
- | Bodily pain (p=0,004)
- | General health (p= 0,009)
- | Body mass index (p=0,006)

Relationships with strong significance were found between:

- | Social functioning and mental health ( $R^2 = 0,3626$ )
- | Social functioning and vitality ( $R^2 = 0,3971$ )
- | Mental health and vitality ( $R^2 = 0,3657$ )

#### **Conclusions:**

The results show that for five of the variables taken into consideration in the study, the differences between the groups are significant. The conclusion is that regular practice of physical exercise by the pre and post menopausal woman has important health benefits on this category of population. Physical and social functioning are improved with physical activity and there are less bodily pains in the case of the women who practice physical exercise on a regular basis. The general health state is better for the women who practice physical activity.

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- Title** **Cardiovascular medication, physical activity and mortality: cross-sectional population study with ongoing mortality follow up**
- Author** Dr Emmanuel Stamatakis  
NIHR Fellow  
Epidemiology and Public Health  
University College London  
London , United Kingdom  
(e.stamatakis@ucl.ac.uk)
- Co-Authors** Hamer M, University College London, London, UK  
Primatesta P, University College London/Pfizer, London, UK
- Abstract** **Purpose:** To establish physical activity levels in relation to cardiovascular medication and to examine if physical activity is associated with benefit independently of medication among individuals with no diagnosis of cardiovascular disease (CVD).  
**Methods:** The sample comprised adults aged 35 and over participating in two household-based surveys, the 1998 and 2003 Scottish Health Survey and the Health Survey for England. The Main outcome measures were prescribed medication, moderate to vigorous physical activity (MVPA), and CVD mortality. Analyses were adjusted for age, sex, occupational physical activity, BMI, social class, ethnicity, non-cardiovascular long-standing illness, marital status, smoking, parental cause of death, alcohol consumption, mental health, self-rated health, doctor-diagnosed diabetes, hypertension, and type and number of prescribed CVD medicines.  
**Results:** We considered 22,671 respondents initially, although respondents with existing doctor diagnosed CVD (n=2,494) were excluded, leaving 20,177 respondents that were entered in the cross-sectional analysis (8,791 men; 3,116 on CVD medications). Fifteen percent (N=3,116) of the 20,177 respondents (8,791 men); were prescribed at least one CVD medication. Medicated respondents were less likely than those unmedicated to meet the physical activity recommendations (OR:0.89, 95%CI: 0.81 to 0.99, p=0.028). Following exclusion of 135 cases that died in the first year of follow up, 20,042 cases were entered in the longitudinal analysis, corresponding to 133,434 person years of follow up. The mean follow up ( $\pm$ SD) was 6.6 (2.3) years. There were 1,509 any-cause deaths and 427 CVD deaths. Increased physical was associated with all-cause and CVD mortality among both unmedicated (all-cause mortality HR for those with  $\geq 150$  min/wk of MVPA compared with those who reported no MVPA): 0.58, 95%CI: 0.48 to 0.69, p<0.001 ; CVD mortality: 0.65, 0.46 to 0.91, p=0.036) and medicated respondents (all-cause death: 0.54, 0.40 to 0.72, p<0.001; CVD death: 0.46 (0.27 to 0.78, p=0.008).  
**Conclusion:** Although physical activity protects against premature mortality among both medicated and unmedicated adults, CVD medication is linked with lower uptake of health-enhancing physical activity. These results highlight the importance of physical activity in the primary prevention of CVD over and above medication.

Title **Heartlinks - Reducing Coronary Heart Disease (CHD) Risk through Exercise Referral**

Author Mr Malcolm Ward  
Principal Health Promotion Specialist  
Public Health  
National Public Health Service  
Cardiff, United Kingdom  
(malcolm.ward@wch.wales.nhs.uk)

Co-  
Authors

**Abstract** **Purpose:** 'Heartlinks' was a 6 year exercise referral project funded by the Welsh Assembly Government that aimed to reduce CHD risk and increase physical activity amongst sedentary patients presenting with 2 or more risk factors but no pre-existing evidence of CHD. The project was based in Merthyr Tydfil in South Wales, where there is a particularly high prevalence of both CHD and sedentary behaviour.

**Methods:** Patients were referred into the project through primary care to an exercise specialist based with the local public health team. Following assessment patients were offered a 12 month programme of physical activity with exercise options including home exercise kits, classes, walk programmes and subsidised access to leisure facilities. Patients were monitored and supported by the exercise specialist with their programme reviewed regularly to accommodate individual needs. A 'before and after' study was used to evaluate the programme measuring readiness to change, general health status (SF36), activity levels, CHD risk using the CALMheart risk assessment tool and other physiological measures .

**Results:**

Results from 127 patients showed:

- significantly increased physical activity levels amongst the most sedentary individuals (545%.)
- significantly reduced modifiable CHD risk amongst an 'at risk' population by 8%(p<0.001) absolute, 20.5% (p<0.001) relative. For the first time the project has quantified the relationship between increasing physical activity through exercise referral and reducing CHD risk as identified using a general CHD risk assessment tool.
- significantly improved general physical (p<0.01) and mental health (p<0.05) in an identified 'unhealthy' population as evidenced by the SF36 data.
- sustained behaviour change of at least 12 months.
- a sustained (12 month) adherence rate of more than 45%.

**Conclusion:** The Heartlinks project illustrates that partnership working between the health and exercise sectors can lead to sustained behaviour change in sedentary patients with concomitant improvements both in their modifiable risk associated with CHD and their general physical and mental health. The existing evidence of the relationship between physical activity and other chronic health conditions and additional data collected by the project would suggest an even greater accrual of health benefits than those specifically identified.

Title      **Physical Activity Behaviours in Women with Type 2 Diabetes**

Author     Gayle Black  
Research Student  
School of Life Sciences  
Napier University  
Edinburgh  
United Kingdom  
[g.black@napier.ac.uk](mailto:g.black@napier.ac.uk)

Co-Authors     Dr. Jayne Donaldson, Prof. Richard Davison & Prof. Celia Brackenridge

Abstract     **Purpose:** Relatively little is known about how to produce long term increases in physical activity (PA) behaviours in women with type 2 Diabetes (T2D), or the thoughts, feelings and perceptions of these women towards regular PA. The main purpose of this grounded theory study is to develop a substantive theoretical framework on PA and women with T2D that will guide health professional working in diabetes care. This will involve investigating a number of research questions on the PA behaviours of the women involved in the study and the issues surrounding these behaviours.

**Methods:** 6 -8 women are to be sampled from the Metabolic Unit at the Western General Hospital in Edinburgh and will participate in 3 individual interviews over a period of 6 months. They will also be asked to keep a PA diary documenting any PA they take part in over the six month period. After data from individual interviews are collected the women will take part in a focus group that will help to clarify how the theoretical framework being constructed fits with the participants' views and perceptions. Further to this a focus group with Diabetes Specialist Nurses and telephone interviews with a G.P., Practice Nurse and Diabetes Consultant will be conducted with the purpose of gaining insight into the thoughts and feelings of health professionals towards women with T2D and the adoption regular PA. The methodological approach used to guide analysis will be a constructionist revision of Grounded Theory (Charmaz, 2006), which offers a set of systematic techniques and procedures for analysing qualitative data including constant comparison and theoretical sampling (Strauss and Corbin, 1998).

**Results:** Findings from the first and second interview with each participant will be presented. Some of the codes and categories emerging from the data include: social support, both positive and negative; social physique anxiety; learned helplessness; exercise specific self-efficacy; confidence; and physical inability to exercise.

**Conclusion:** Due to the study being ongoing and data collection in its infancy I am unable to offer a firm conclusion at this point. However, findings suggest that the issue of PA in women with T2D is complex: ranging across the physical, psychological and social domains of women's life. Early findings and observations suggest that a person-centred approach to increasing PA levels in this population may be the key to its success

Title **The influence of parental, family and home environment factors on children's physical activity**

Author Mrs Alison Callaghan  
PhD Student  
MRC Epidemiology Unit  
Institute of Metabolic Science  
Cambridge, United Kingdom  
(alison.callaghan@mrc-epid.cam.ac.uk)

Co- van Sluijs, EMF. MRC Epidemiology Unit, Cambridge, UK. Jones, AP. School of  
Authors Environmental Sciences, University of East Anglia, Norwich, UK. Griffin, SJ. MRC  
Epidemiology Unit, Cambridge, UK.

Abstract **Purpose**

To quantify the associations between parental, family and home environment factors and children's physical activity (PA) in 9-10-year-old British school children. A secondary aim was to assess the moderating effects of self-efficacy, PA beliefs, and gender on any observed associations.

**Methods**

Cross-sectional study of 1780 Year 5 school children (43.6% male, mean age (SD) 10.2 (0.3) years) from 90 Norfolk schools participating in the SPEEDY study (Sport, Physical activity and Eating behaviour: Environmental Determinants in Young People). PA was measured as average counts per minute over  $\geq 3$  days using Actigraph GT1M accelerometers. Data on 27 parental, family and home environment factors were collected from child and parent questionnaires. Simple and adjusted associations between these variables and PA were assessed using multilevel linear regression (to account for children being nested within schools). PA was log-transformed for all analyses. Effect modification by self-efficacy, PA beliefs and gender on observed associations was explored.

**Results**

The following factors were positively associated with children's PA: the presence of siblings in multiple age groups (those with siblings in multiple age groups had an average counts per minute that was 6% greater than those with no siblings; ratio of geometric means: 1.06 (95% CI 1.01, 1.11)), family participation and facilitation (ratio: 1.01 (95% CI 1.00, 1.02)), family encouragement (ratio: 1.01 (95% CI 1.00, 1.02)), freedom to roam (ratio: 1.01 (95% CI 1.00, 1.02)), having play equipment in the garden (ratio: 1.07 (95% CI 1.04, 1.11)) and having electronic equipment in the child's bedroom (ratio: 1.02 (95% CI 1.00, 1.03)). The effects of family encouragement and family participation and facilitation were moderated by negative PA beliefs, showing an association only in children scoring the highest for negative beliefs.

**Conclusion**

Various factors in the family and home environment may be key influences on children's PA and might form useful targets for interventions. Family support factors interacted with children's PA beliefs and this should be taken into account when designing and delivering interventions. Longitudinal data are needed to confirm these findings from a cross-sectional study.

- Title** **Comparison between young and older women in explosive power output and surface EMG during a 6 second all-out cycling effort at different loads**
- Author** Mr Charles Duffy  
University of Strathclyde  
Glasgow, United Kingdom  
(charles.r.duffy@strath.ac.uk)
- Co-Authors** Riches, P, Strathclyde Institute of Pharmacy and Biomedical Sciences/Bioengineering Unit, University of Strathclyde, Glasgow, United Kingdom. Pecoraro, F, Dipartimento di Scienze del Movimento Umano e dello Sport, Istituto Universitario di Scienze Motorie, Rome, Italy. Farina, D, Department of Health Science and Technology, Aalborg University, Aalborg, Denmark. Macaluso, A, Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, United Kingdom, and Dipartimento di Scienze del Movimento Umano e dello Sport, Istituto Universitario di Scienze Motorie, Rome, Italy.
- Abstract** **Purpose:** Many studies highlight the relevance of impaired explosive power, which depends on both strength and speed of movement, to the development of functional disability in older people. Nevertheless, the neural mechanisms underlying the decline of muscle power remain unclear. Advancements in surface electromyography (sEMG) linear array technique now provide a method of studying neuromuscular control during the performance of dynamic movements. The present study aims at comparing explosive power output and sEMG between young and older women during a 6 second all-out cycling effort at different loads, which mimics muscular actions relating to everyday activities.  
**Methods:** With University ethical approval, 10 older (OL, aged  $77.8 \pm 3.9$  years; mean  $\pm$  SD) and 8 young (YO, aged  $23.6 \pm 5.8$  years) healthy female participants were tested for peak power (PP) during 6-s all-out cycles against varying loads of resistance, ranging from 20% to 80% (10% increments) of the maximum load turned through 2 complete pedal revolutions, with a 5 min interval in-between. PP was measured using stereophotogrammetry<sup>1</sup>, and synchronised with sEMG recorded from the vastus lateralis of the dominant leg, during each cycle trial. Statistical analyses were performed using Repeated Measures ANOVA, followed where appropriate by post-hoc Bonferroni-adjusted one-way ANOVAs, with significance level set at  $P < 0.05$ .  
**Results:** The significantly lower OL PP ( $p < 0.001$ ) was accompanied by a significantly lower root mean square (RMS), averaged over each 6-s cycle, from all loads tested ( $p < 0.05$ ). No significant changes were observed in RMS, muscle fibre conduction velocity (MFCV) and median frequency (MDF) between the groups during any 6-s cycle trial ( $p < 0.05$ ).  
**Conclusion:** The lower averaged RMS suggests that neural changes contribute to the decline in PP with advancing age. Conversely, motor control strategies are unaltered with age in healthy older women, as indicated by the non-significant differences in sEMG over the duration of each 6-s 'all-out' cycle, from all loads tested.

<sup>1</sup> Watson M et al (2007) Proc XII ECSS Congress, Jyväskylä, Finland, p. 81

- Title**      **Effects of training on physical fitness in young and mature top-level soccer players**
- Author**    Ms Morteza Jourkesh  
Lecturer  
PF and Sports Science  
IA University  
shabestar, Iran  
(mjourkesh@iaushab.ac.ir)
- Co-Authors**    Sergej M. OSTOJIC<sup>2</sup>, Marko STOJANOVIC<sup>2</sup>, Igor JUKIC<sup>3</sup>, Emir PASALIC<sup>4</sup>, 1Department of Physical Education and Sports Science, Islamic Azad University, Shabestar Branch, IRAN, 2Faculty of Sport and Tourism, PA University of Novi Sad, SERBIA; 3Faculty of Kinesiology, University of Zagreb, CROATIA; 4Faculty of Sport and Physical Education, University of Sarajevo, BOSNIA
- Abstract**    **Objective:** The main aim of the present study was to investigate the effects of training on physical fitness components in adolescent elite soccer players and make comparisons with older counterparts.  
**Methods:** Twenty two male soccer players from the Serbian First Division team were allocated to two assigned trials according to age – young group (YG) and mature group (MG). Players in their teenage years (19 years and younger) were assigned to YG (10 subjects) and others to MG (12 subjects). Between the first and second test session, all subjects followed six weeks of soccer-specific periodized training programme.  
**Results:** There were no differences between groups at pre- and post-training trial for weight, vertical jump, average anaerobic power and  $VO_{2max}$  ( $p > 0.05$ ). Body fat was significantly lower in YG before and after training program as compared to MG ( $p < 0.05$ ). Body weight and fat dropped significantly in both groups after training program ( $p < 0.05$ ). Furthermore, average anaerobic power and  $VO_{2max}$  along with vertical jump height, were significantly improved in both groups ( $p < 0.05$ ) at post-training performance. Finally, the magnitude of change in  $VO_{2max}$  was significantly superior in MG as compared to YG after training program (18.3 vs. 7.8%;  $p < 0.05$ ).  
**Conclusion:** The findings of the present study indicate that the trainability indices are not highly influenced by age in top-level soccer players.



- Title**      **Family influences on children's physical activity and consumption of fruit and vegetables**
- Author**     Ms Natalie Pearson  
Student  
School of Sport and Exercise Sciences  
Loughborough University  
Leicestershire, United Kingdom  
(n.pearson@lboro.ac.uk)
- Co-Authors**   Timperio, A. Centre for Physical Activity and Nutrition Research, Deakin University, Australia.  
Salmon, J. Centre for Physical Activity and Nutrition Research, Deakin University, Australia.  
Biddle, S.J.H. School of Sport and Exercise Sciences, Loughborough University, United Kingdom.  
Crawford, D. Centre for Physical Activity and Nutrition Research, Deakin University, Australia.
- Abstract**   **Purpose:** To examine associations between parental modelling and support and children's physical activity (PA) and consumption of fruit and vegetables (FV).  
**Methods:** Parents of 775 Australian children, aged 10-12 years, reported how frequently their child ate 14 fruits and 13 vegetables in the last week. Fruit and vegetable consumption was summed and dichotomised as  $\geq 5$  portions/day (high FV) and  $< 5$  portions/day (low FV). Children wore accelerometers for 4 to 6 days during waking hours. Average time/day spent in moderate-to-vigorous PA was calculated and dichotomised as  $\geq 2$  hours/day (high PA) and  $< 2$  hours/day (low PA). Parental modelling was assessed using 3 items (e.g. 'How often did you and/or the co-carer do physical activity, sport or exercise together with the child in the past week?') and parental support (financial and transport) was assessed using 4 items (e.g. 'How often did you and/or the co-carer take the child to fast food restaurants in the past week?'). Binary logistic regression analyses examined associations between parental modelling and support and children's PA and consumption of FV.  
**Results:** Several parental modelling and support items were associated with children's PA and consumption of FV. Parental PA modelling was associated with a higher likelihood of high FV consumption among girls (OR=1.95, 95% CI=1.32-2.87,  $p<0.001$ ). Boys (OR=1.53, 95% CI=0.99-2.36,  $p<0.05$ ) and girls (OR=1.66, 95% CI=1.02-2.69,  $p<0.05$ ) whose parents regularly ate breakfast together with them, had a higher likelihood of high FV consumption. Parental financial support for PA was associated with a higher likelihood of high PA among girls (OR=1.56, 95% CI=1.08-2.26,  $p<0.05$ ). Parental support (transport) for fast food was associated with a lower likelihood of high PA among boys (OR=0.51, 95% CI=0.32-0.79,  $p<0.01$ ).  
**Conclusion:** Parental modelling and support were differentially associated with the likelihood of children spending  $\geq 2$  hrs/day in PA and consuming  $\geq 5$  portions/day of FV. Future research examining associations between parental and child behaviours across different behavioural domains will provide a greater clarity and depth of understanding of the dynamics of the relationships between parental and child behaviour. Findings give weight to the importance of addressing parental behaviours in interventions aimed at promoting healthy behaviours among children.

- Title** Time spent on screen-based entertainment and socio-economic status: The Scottish Health Survey 2003
- Author** Dr Emmanuel Stamatakis  
NIHR Fellow  
Epidemiology and Public Health  
University College London  
London, United Kingdom  
(e.stamatakis@ucl.ac.uk)
- Co-Authors** Mishra G, Medical Research Council, London, UK Hamer M, University College London, London, UK Hillsdon M, University of Bristol, Bristol, UK
- Abstract** **Purpose:** To examine the relationships between socioeconomic status (SES) and television viewing including other screen-based entertainment (TVSE).  
**Methods:** We used adults' data ( $\geq 16$  years) from the 2003 Scottish Health Survey (SHS), a cross-sectional study that is representative of the population living in households in Scotland. Multiple linear and logistic regression models were used to examine the independent relationship of SES with TVSE (minutes/day). We tested three SES indicators: a) household income (in thirds), b) Registrar General's social class (I/II, III NonManual, III Manual, IV/V), and c) education (age finished full-time education:  $\leq 14$ , 15-16, 17-18,  $\geq 19$  years). Analyses were weighted for non-response and adjusted for age, recreational and occupational physical activity, BMI, doctor-diagnosed CVD and diabetes, perceived health, activity-limiting conditions, smoking, alcohol, and household cluster.  
**Results:** Out of 8,148 eligible participants, 6,769 (3,008 men) had data on all variables and were included in the analysis. The mean ( $\pm$ SD) TVSE time was 214 (134) in men and 196 (123) minutes in women with an overall median of 180 minutes. For both sexes there was a strong gradient of TVSE from the highest to the lowest group of all three SES indicators ( $p < 0.001$ ). For example, the mean TVSE among respondents in the top household income third was 168(91) increasing to 248(163) minute/day for the bottom tertile. Multiple-adjusted linear regression showed that with the exception of men's education SES was strongly inversely related to TVSE: a) men's income: regression coefficient (95% CI): -4.5(-30.4 to -18.7),  $p < 0.001$ ; social class: -11.6 (-15.7 to -7.5),  $p < 0.001$ ; b) women's income: -15.1(-20.4 to -9.8),  $p < 0.001$ ; social class: -6.5(-10.2 to -2.85),  $p = 0.001$ ; education: -9.7(-14.7 to -4.7),  $p < 0.001$ . The odds for reporting  $\geq 180$  TVSE minutes/day increased steadily with lower SES: a) men's income: OR of lowest vs. highest (referent) SES group: 2.19(1.77 to 2.70),  $p < 0.001$ ; social class: 1.49 (1.20 to 1.87),  $p < 0.001$ , education: 1.25(1.02 to 1.54),  $p = 0.094$ , b) women's income: 1.63 (1.34 to 1.98),  $p < 0.001$ ; social class: 1.38 (1.12 to 1.71),  $p = 0.008$  education: 1.44 (1.03 to 2.01),  $p = 0.003$ .  
**Conclusion:** Lower SES groups are at increased risk for high sedentary time. Public health policies in Scotland should target sedentary behaviour in lower socioeconomic strata as well as promote health-enhancing physical activity.

Title **Low back pain in 10-12 year old schoolchildren**

Author Ms Josep Vidal-Conti  
Teacher  
Physical Education  
Balearic Islands University  
Palma de Mallorca, Spain  
(josep.vidal@uib.es)

Co- Pere Palou-Sampol. PPS. Balearic Islands University. Palma de Mallorca. Spain Xavier  
Authors Ponseti-Verdaguer. XPV. Balearic Islands University. Palma de Mallorca. Spain Pere A.  
Borras-Rotger. PBR. Balearic Islands University. Palma de Mallorca. Spain

**Abstract** **Purpose:** The aim of this study is to determine the prevalence and risk factors for low back pain among schoolchildren aged 10-12 years.  
**Methods:** A stratified random sample of 11 schools in Majorca was used. In those schools, 176 subjects were given a written questionnaire with 30 questions on back pain and potential risk factors. Also, backpack load, muscle strength, weight and height were determined.  
**Results:** Obtained results show that the prevalence of back pain was 61,2% (45,7% boys and 78,6% girls). No relation between sport practice and back pain prevalence was found. Backpacks average weight was 4,99 kg equivalent to the 11,9% of the body weight.  
**Conclusions:** This study suggests that back pain in schoolchildren aged 10-12 years is higher than formerly believed. The kind of sport and the hours/week of practices doesn't correlate with back pain prevalence. Backpack load exceed the 10% of body weight, considered the maximum healthy recommended. We conclude claiming the need to promote healthy lifestyle among children and design intervention programmes to prevent back pain.  
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- Title** Effectiveness of a stand-alone web-based tailored physical activity intervention: A randomized study in Switzerland
- Author** Ms Miriam Wanner  
PhD student, research assistant  
Federal Office of Sport  
Swiss Federal Institute of Sport  
Magglingen, Switzerland  
(miriam.wanner@baspo.admin.ch)
- Co-Authors** Martin-Diener, E Swiss Federal Institute of Sport, Magglingen, Switzerland Braun-Fahrlander, C Institute of Social and Preventive Medicine University of Basel, Switzerland Bauer, G Institute of Social and Preventive Medicine University of Zurich, Switzerland Martin, BW Swiss Federal Institute of Sport, Magglingen, Switzerland
- Abstract** **Purpose:** The purpose was to assess the effectiveness of active-online.ch, a web-based individually tailored physical activity (PA) program, as a stand-alone intervention in a real life setting.  
**Methods:** German-speaking volunteers were recruited by print and internet advertisements. After completing the web-based baseline questionnaire on PA, participants were randomly assigned to either active-online.ch (intervention group) or a non-tailored website with general information on PA (control group). Spontaneous users of active-online were directly recruited from active-online.ch. Online follow-up assessments took place 6 weeks, 6 months and 13 months after baseline. Mixed linear and logistic models were used to analyse changes in total time spent in moderate and vigorous intensity activities (total activity time) and changes in the proportion of individuals meeting the national PA recommendations.  
**Results:** 1369 subjects completed the baseline questionnaire and were randomized to the intervention group (N=681) or the control group (N=688). 162 spontaneous users were recruited directly from active-online.ch. The proportion of women was 74.9%, the mean age was 43.7 years, and 39.3% were overweight. 40.8% met the recommendations at baseline; mean total activity time was 277 min/week. There were no differences between the randomized groups, however, spontaneous users were significantly younger (mean age 38.8 years). Participation was 79.2% after 6 weeks, 70.1% after 6 months and 55.9% after 13 months; 48.8% responded to all four surveys. From baseline to the follow-up after 13 months, total activity time increased significantly by 42 min/week in controls, 55 min/week in the intervention group and 70 min/week in spontaneous users, however there were no significant differences between groups. The proportion of subjects meeting the recommendations increased significantly in all groups. There was a significant time\*group interaction for spontaneous users indicating that the increase in the proportion meeting the recommendations was larger than in the randomized groups.  
**Conclusion:** There was an increase in PA in all groups. However, judging from the comparison of the two randomized groups, active-online.ch was not more effective than the non-tailored website. The role of the time spent on active-online.ch and the potential of integrating active-online.ch in a wider context of PA promotion will have to be explored.

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