

9th Annual Meeting and 4th Conference of HEPA Europe

21–24 October 2013

Helsinki, Finland

Programme and abstracts

Organized by

Fit for Life Program

UKK Institute



Welcome

Dear friends,

It is our pleasure to warmly welcome you all to Helsinki. We are very happy to host the 9th Annual Meeting and 4th Conference of HEPA Europe. Finland has had an active role in launching HEPA promotion and it is now time for us to stimulate the participants in the field of HEPA promotion.

We as organizers of the conference take responsibility, together with HEPA Europe Steering Committee, that the conference and Annual Meeting will succeed in expectations for a high quality event. In the program the following themes will be handled: Population based measurement of physical activity and inactivity, promotion of physical activity during life span, promotion of physical activity in multisectoral approach, and effective programs to enhance physical activity at population level. During the conference Helsinki, the second most northern capital city in the world with full of contrasts and activities, reflects its unique identity that has been formed by the cultural influences from both the East and West. Thus, please enjoy your stay also socially.

Jyrki Komulainen
Chair
Organizing Committee

Tommi Vasankari
Chair
Program Committee



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General Information

Venue

The conference takes place at Hilton Kalastajatorppa Hotel and its Conference & Events Center. The Registration desk is located in the hall (Aula) of the Conference & Events Center. A map of the Congress & Events Center can be found on page 2.

Registration

All participants are requested to register on-site for receiving their conference material. Registration takes place at the Registration desk. The conference material is handed out upon registration according to reservations made on the registration form.

The registration lists for Outdoor activities can be found at the Registration desk. In most activities the amount of participants is restricted.

Badges

All registered participants and accompanying persons receive a badge upon registration. We kindly ask you to wear your badge visible during all events. The badge is your document to enter the Conference Site and the social activities.

Social Programme

City Reception

Tue 22 Oct, 19.00–20.30

City Hall, Pohjois-Esplanadi 11–13

All participants and registered accompanying persons are invited to the City Reception on Tuesday evening. An invitation card is included in your conference material.

There is a bus transport to the City Reception from Hilton Kalastajatorppa Hotel. The buses depart from the hotel at 18.15 and back to the hotel from City Hall after the reception at 20.45.

Conference Banquet

Wed 23 Oct, 19.30–22.30

Tenalji von Fersen banquet hall, Fortress Suomenlinna

The Conference banquet and dinner will be held in the Tenalji von Fersen banquet hall in Fortress Suomenlinna on Wednesday evening. The banquet costs 20 euro including the ferry transport from Hilton Kalastajatorppa to Fortress Suomenlinna and back.

Dress code: smart casual.

FORTRESS SUOMENLINNA

Situated on a group of islands off Helsinki, Suomenlinna was built during the Swedish era as a maritime fortress and a base for the Archipelago Fleet. Work on the fortress was begun in the mid-18th century.

Today, it is a UNESCO World Heritage Site and one of Finland's most popular tourist attractions.

Suomenlinna is also a district of the city of Helsinki, with a permanent population of more than 800.

TRAVEL ADVICE

There is a ferry transport from Hilton Kalastajatorppa Hotel to Fortress Suomenlinna. The participants will be divided into two ferries, Aurora and Doris II. The name of your assigned ferry can be found in the invitation included in your conference material. The meeting point for all participants is in front of the Hilton Kalastajatorppa Hotel at 18.15. The ferry ride takes approximately one hour. The same ferries depart from Fortress Suomenlinna back to Hilton Kalastajatorppa after the banquet at 22.45.

If you want to travel by yourself there is also a public ferry service to Fortress Suomenlinna. The ferry runs from the Market Square (Kauppatori) near the centre of Helsinki.

Please notice the weather conditions in your clothing. There is an about 200 meter walk from Hilton Kalastajatorppa to the marina and a 700 meter walk from the public harbor to the banquet venue. Fortress Suomenlinna is a historical place and the streets are paved with cobblestones. The weather can be anything from a warm, beautiful evening to cold heavy rain.

Outdoor Activities

The registration lists for Outdoor activities can be found on a board next to the Registration desk in the hall (Aula). In most activities the amount of participants is restricted. All activities are free of charge.

Please notice that the weather in October can be anything from a beautiful, sunny autumn day to cold heavy rain. Outdoor activities are enjoyable with a proper gear – clothing and foot wear.

Tuesday 22 October

- 7.40–8.30 Nordic Walking
This guided walk will take us to Seurasaari Open-Air Museum, which was founded in 1909. The walk goes along the seaside of Helsinki.
Book in advance at the Registration desk at the conference venue. There is a maximum of 20 participants. Meeting point: in front of Hilton Kalastajatorppa.
- 7.45–8.30 Asahi Health
Asahi is a multi-level health-exercise system developed in Finland. Asahi is based on the tradition of the eastern and the western body exercise. The movements are soft and performed in the rhythm of breathing, similar to tai-chi. The movements open up the body systematically from head to toe. If the weather is good, Asahi will take place outdoors.
Book in advance at the Registration desk at the conference venue. There is a maximum of 20 participants. Meeting point: the conference Registration desk.
- 16.40–17.40 Outdoor activity with Polar
Welcome to join light activity with Polar. During this practical session you can personally experience activity technology. The session starts with a 35 minute light activity outdoors after which data collected will be analyzed in a mobile application and at a web service.
The total duration is one hour. No special exercise clothes needed.
Book in advance at the Registration desk of the conference venue. There is a maximum of 25 participants. Meeting point: in front of of Hilton Kalastajatorppa.
- 16.40–17.45 Senior Dance
Senior dance is a form of exercise which can be done without a partner and is considered an important source of strength, friendship and multiculturalism for old people.
Book in advance at the Registration desk of the conference venue. There is a maximum of 20 participants. Meeting point: the conference Registration desk.
- 16.45–17.30 Fun Run
On a guided run you can enjoy the best surroundings of Hilton Kalastajatorppa.
No booking in advance. Meeting point: outside of Hotel Kalastajatorppa.
- 16.45–17.30 Geocaching
Geocaching is a recreational outdoor activity. The participants are trying to locate a hidden treasure, called geocache, using a smartphone or GPS.
Book in advance at the Registration desk at the conference venue. There is a maximum 20 persons. GPS is provided. Meeting point: the conference Registration desk.

Wednesday 23 October

- 7.30–8.30 Nordic Walking
This guided walk will take us to Seurasaari Open-Air Museum, which was founded in 1909. The walk goes along the seaside of Helsinki.
Book in advance at the Registration desk at the conference venue. There is a maximum of 20 participants. Meeting point: in front of Hilton Kalastajatorppa.
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Book in advance at the Registration desk of the conference venue. There is a maximum of 25 participants. Meeting point: in front of Hilton Kalastajatorppa.

Programme

The Programme of the Conference comprises

- 6 Keynotes
- 16 Invited speakers
- 12 Oral sessions with a total of 59 presentations and
- 75 Poster presentations

Speaker Ready Room (Amiraali)

(open Monday 14.00–19.00, Tuesday and Wednesday 08.00–17.00)

Presenters are requested to use Microsoft PowerPoint and standard fonts (Arial, Times New Roman, Verdana etc.) as the computers in the presentation rooms will be Windows-based. Presentations created on a Macintosh computer should be converted to PC format. PowerPoint presentations are requested to be submitted to the Speaker Ready Room (Amiraali) on a USB flash drive and previewed by the presenting author personally, preferably the day before and at least 4 hours before their own session.

Inform the Speaker Ready Room technician when your presentation is ready to be uploaded. The PowerPoint presentation will be preloaded on a computer in the presentation room by our technicians.

Presentation Regulations

All presenters must be available at the respective lecture hall 15 minutes before the session starts. If a presenter does not appear for his/her presentation, the following presentations will be given as scheduled in the programme. The chair is requested to remain in the session room until the session timeline has expired. There is a Vice Chair and a Conference Assistant assigned to each presentation room to help the chairmen and the speakers with the presentations and material.

Poster Presentation (Aula)

The poster session will be arranged in the hall (Aula) on Tuesday and Wednesday between 13.00 and 13.30. The presenting authors are requested to be available at their posters during the complete time slot. The authors are also encouraged to stand by their posters during break times. The maximum size for the poster is 98 cm (width) x 118 cm (height). Posters should be put up at 8.30 of the presentation day and taken down by 17.00. Posters that are not taken down by the presenters can be found in the Conference Office (Matruusi). Please study the Poster Presenters list in this programme and note down the day of your presentation and the number of your poster. The number assigned to your poster will be given in the corner of the poster board reserved for you. Accessories and adhesive material will be available from the Conference Assistants in the exhibition area and at the Registration desk.

Programme

Monday 21 October

- 8.00– Registration (Aula)
- 11.00–14.30 Working Group on Sport Clubs for Health (Kreivi)
Moderator: Jorma Savola (Finland)
- 13.45–15.00 Steering committee meeting (Siirtomaasali I)
- 15.00–15.30 Coffee break (Aula)
- 15.30–16.30 Meeting working group leaders and steering committee (Siirtomaasali I)
- 16.30– Outdoor activities
- 17.00–19.00 Working Group on active ageing (Siirtomaasali I)
Moderators: Bob Laventure (United Kingdom), Lisbeth Preller (Netherlands)
-

Tuesday 22 October

- 7.30–8.30 Outdoor activities
- 8.00– Registration (Aula)
- 9.00–9.45 OPENING AND KEYNOTE (Siirtomaasali I)
Chairs: Francesca Racioppi (Denmark), Tommi Vasankari (Finland)
The promise of objective assessment of physical activity in populations
Richard Troiano (USA), US Public Health Services, National Cancer Institute
- 9.45–10.15 Coffee break (Aula)
- 10.15–12.00 PARALLEL SESSIONS
- 1. Physical activity and sedentary time in youth** (Siirtomaasali I)
Chairs: Niamh Murphy (Ireland), Tuija Tammelin (Finland)
- 10.15–10.45 Effectiveness of school based physical activity interventions
Andersen, L.B. (Denmark), University of Southern Denmark
- 10.45–11.15 What proportion of youth are physically active?
Ekelund, U. (Norway), Norwegian School of Sport Sciences, Oslo, Norway & MRC Epidemiology Unit, Cambridge, UK
- 11.15–11.25 Physical activity and reasonable screen time in adolescence predict high educational attainment in early adulthood
Kantomaa, M. (Finland), LIKES – Research Center for Sport and Health Sciences, Finland & Imperial College London, United Kingdom
- 11.25–11.35 Interrelationship of physical activity and mental disorders in children and adolescents
Mewes, N. (Germany) et al., Karlsruhe Institute of Technology
- 11.35–11.45 The contribution and potential impact of different modes of physical activity on the achievement of physical activity recommendations for adolescents

- Woods, C. (Ireland) et al., Dublin City University
- 11.45–11.55 Brain response and the level of motor development in children
Cepicka, L. (Czech Republic) et al., University of West Bohemia
- 2. HEPA promotion in older adults** (Siirtomaasali II)
Chairs: Eddy Engelsman (Netherlands), Harri Sievänen (Finland)
- 10.15–10.45 Safety aspects in HEPA promotion in older adults
Hindrich, T. (Germany), University of Bochum
- 10.45–11.15 Evidence of promoting HEPA in older age
Suominen, H. (Finland), University of Jyväskylä
- 11.15–11.30 Strength in old age – Health exercise for older adults (2005–2014)
Karvinen, E. (Finland), The Age Institute
- 11.30–11.45 Health enhancing physical activity in later life: The case of allotment and community gardening
Clayton, D., (United Kingdom) et al., Cardiff Metropolitan University
- 11.45–12.00 Combined resistance and balance-jumping exercise reduces older women's injurious falls and fractures: A 5-year follow-up of a 12-month randomized, controlled trial
Karinkanta, S. (Finland) et al., UKK Institute for Health Promotion Research
- 3. Promoting walking and cycling** (Merisali I)
Chairs: Jorma Mäntynen (Finland), Liisamaria Kinnunen (Finland)
- 10.15–10.45 City in motion. How to increase cycling and walking in a city
Vassilakou, M. (Austria), City of Vienna
- 10.45–11.15 From seat to saddle – How to get people to cycle
Vaismaa, K. (Finland), Tampere University of Technology
- 11.15–11.45 Promoting walking and cycling based on cost-benefit analyses
Foster, C. (United Kingdom), British Heart Foundation
- 11.45–12.00 Favourable health effects of electrical assisted bicycle use among commuters
Hendriksen, I. (Netherlands), TNO Research Centre Lifestyle
- 12.00–13.00 Lunch
- 13.00–13.30 Posters
- 13.30–14.15 KEYNOTE (Siirtomaasali I)
Chairs: Willem van Mechelen (Netherlands), Jyrki Komulainen (Finland)
- On the move – national strategy for physical activity promoting health and wellbeing 2020**
Riitta Kaivosoja (Finland), Director General, Ministry of Education and Culture
- WHO activities on physical activity promotion and NCD prevention**
Joao Breda, Programme Manager, Nutrition, physical activity and obesity, WHO Regional Office for Europe
- 14.15–14.45 Coffee break (Aula)
- 14.45–16.30 PARALLEL SESSIONS
- 4. Effective experiences in HEPA promotion in youth** (Siirtomaasali I)
Chairs: Nanette Mutrie (United Kingdom), Tuija Tammelin (Finland)
- 14.45–15.15 The childhood health, activity, and motor performance school study Denmark (CHAMPS)
Wedderkopp, N. (Denmark), University of Southern Denmark
- 15.15–15.30 Physical activity of German school children during physical education
Kobel, S. (Germany) et al., Ulm University

- 15.30–15.45 On the job training – a method for improving children’s motor skill development in kindergardens
Østergaard, C. (Denmark) et al., Metropolitan University College
- 15.45–16.00 Physical activity and obesity as combined health predictors and intermediate role psychosocial variables in children
Scatigna, M. (Italy) et al., University of L’Aquila
- 16.00–16.20 Changes in the physical activities at recess of students in grades 7 to 9 in Finnish Schools on the Move Programme in 2010–2012
Haapala, H. (Finland) et al., LIKES – Research Center for Sport and Health Sciences

5. Physically active environment (Siirtomaasali II)

- Chairs: Charlie Foster (United Kingdom), Liisamaria Kinnunen (Finland)
- 14.45–15.15 Integrating healthy lifestyles in urban planning
London, F. (United Kingdom), John Thompson & Partners LLP
- 15.15–15.45 Designing livable cities to promote daily activity
Westermark, E. (Denmark), Gehl Architects
- 15.45–16.00 Cleaner, Greener, Leaner (CGL) Study preliminary findings: the role of planning policy, socio-economics and neighbourhood characteristics on perceived walkability, walking and transport behaviours
Woods, C. (Ireland) et al., School of Health and Human Performance, Dublin City University
- 16.00–16.15 Oulu Parks: conditions for HEPA – from city parks to wilderness national parks
Lepikkö, T. (Finland) et al., Metsähallitus Natural Heritage Services
- 16.15–16.30 Volunteer Development in Finnish National Parks Project
Nygren, E. (Finland), Metsähallitus Natural Heritage Services
- 16.40–17.45 Outdoor activities
- 19.00–20.30 City Reception at City Hall

Wednesday 23 October

- 7.30–8.30 Outdoor activities
- 8.00– Registration (Aula)
- 9.00–9.45 KEYNOTE (Siirtomaasali I)
Chairs: Maarten Koornneef (Netherlands), Eino Havas (Finland)
- Health risks associated with sedentary behavior**
Peter Katzmarzyk (USA), Professor, Pennington Biomedical Research Center
- 9.45–10.15 Coffee break (Aula)
- 10.15–12.00 PARALLEL SESSIONS

6. Measuring different models of physical activity and sedentary time (Siirtomaasali I)

- Chairs: Richard Troiano (USA), Tommi Vasankari (Finland)
- 10.15–10.45 Population assessment of sleep and physical activity: the U.S. NHANES experience,
Troiano, R. (USA), US Public Health Services, National Cancer Institute
- 10.45–11.15 Comparison between objective measurements and subjective questionnaires in

physical activity and inactivity

- 11.15–11.25 A universal, accelerometry-based method for accurate classification of different physical activities by intensity
Sievänen, H. (Finland), UKK Institute for Health Promotion Research
- 11.25–11.35 Physical activity patterns based on a novel accelerometer data modeling: Characteristic differences of the proposed activity categories
Vähä-Ypyä, H. (Finland) et al., UKK Institute for Health Promotion Research
- 11.35–11.45 Physical inactivity patterns based on a novel accelerometer data modeling: Characteristic differences of the proposed inactivity categories
Suni, J. (Finland) et al., UKK Institute for Health Promotion Research
- 11.45–12.00 Sedentary behavior in association with academic achievement and cognition in children
Husu, P. (Finland) et al., UKK Institute for Health Promotion Research
- Syväoja, H. (Finland) et al., LIKES – Research Center for Sport and Health Sciences & University of Jyväskylä

7. HEPA promotion in pregnancy and early childhood (Siirtomaasali II)

- Chairs: Michelle Mottola (Canada), Riitta Luoto (Finland)
- 10.15–10.45 Preventing long-term risk of obesity for two generation
Mottola, M. (Canada), University Western Ontario
- 10.45–11.15 Primary prevention of gestational diabetes mellitus: from research to practice
Luoto, R. (Finland), UKK Institute for Health Promotion Research
- 11.15–11.35 Mothers' everyday life and physical activity relationship
Saaranen-Kauppinen, A. (Finland) et al., LIKES – Research Center for Sport and Health Sciences
- 11.35–11.55 Prevention of overweight in 0–3 year old children: effect of the BBOFT + intervention on sleep, TV time, soft drinks intake and weight status
Vlasblom, E. (Netherlands) et al., TNO

8. Life-course approach to HEPA promotion (Merisali I)

- Chairs: Sonja Kahlmeier (Switzerland), Kaarlo Laine (Finland)
- 10.15–10.45 Integrating research into practice to develop physical activity counseling in Finnish health care centres
Kukkonen-Harjula, K. (Finland) et al., UKK Institute
- 10.45–11.00 Which behaviour change techniques are associated with changes in physical activity, diet and BMI in people with recently diagnosed diabetes? Lessons from the ADDITION-Plus trial
Hankonen, N. (Finland) et al., University of Helsinki
- 11.00–11.15 Guidance on HEPA promotion in socially disadvantaged groups-outcomes from the WHO PHAN project
Murphy, N. (Ireland) et al., Waterford Institute of Technology
- 11.15–11.30 Methods for multi-level economic evaluation of a community-based physical activity program
van Ophem, J. (Netherlands) et al., Wageningen University
- 11.30–11.45 Promoting physical activity in cardiac rehabilitation: a novel concept using intelligent technology
Hautala, A. (Finland) et al., Verve Research
- 11.45–12.00 12-mo intervention of physical exercise increased work ability- especially subjects with poor to moderate baseline work ability
Kettunen, O. (Finland) et al., UKK Institute for Health Promotion Research & Paavo Nurmi Center, University of Turku

- 12.00–13.00 Lunch
- 12.30–13.30 LUNCH MEETINGS (Pyöreä Sali)
Working Group on HEPA monitoring and surveillance
Working Group on health care approaches
- 13.00–13.30 Posters (Aula)
- 13.30–14.15 KEYNOTE (Siirtomaasali I)
Chairs: Winfried Banzer (Germany), Jari Parkkari (Finland)
How to combine physical activity promotion and sports injury prevention?
Toomas Timpka (Sweden), Professor, University of Linköping
European Commission activities on HEPA promotion
Le Costecque, Y., Head of Sport Unit, DG Education and Culture European
Commission activities on HEPA promotion
- 14.30–15.00 Coffee break (Aula)
- 15.00–16.00 PARALLEL SESSIONS

9. Counteracting sedentary time – is it possible (Siirtomaasali I)

Chairs: Anne Vuillemin (France), Jaana Suni (Finland)

- 15.00–15.15 Sitting time, physical activity and all cause mortality risk in 222,497 Australian adults
van der Ploeg, H. (Netherlands) et al., VU University Medical Center
- 15.15–15.30 Independent and replacement effects of sedentary behaviour, physical activity and
standing on all-cause mortality: an analysis of 191,983 Australian adults
Stamatakis, E. (United Kingdom), et al., University College London & University of
Sydney
- 15.30–15.40 Objectively assessed sedentary time and diabetes: a case control study
Hamer, M. (United Kingdom) et al., University College London
- 15.40–15.50 Occupational sitting, television viewing, and positive mental wellbeing: The Scottish
Health Survey
Gravante, F. (United Kingdom) et al., UCL
- 15.50–15.00 Sedentary behaviour and health – a selective literature review
Füzéki, E. (Germany) et al., Goethe University Frankfurt

10. Safety in sport and HEPA promotion (Siirtomaasali II)

Chairs: Willem van Mechelen (Netherlands), Jari Parkkari (Finland)

- 15.00–15.25 Effective exercises to prevent acute lower limb injuries in sports and exercise
Pasanen, K. (Finland), UKK Institute for Health Promotion Research
- 15.25–15.50 Implementation of sports injury prevention at community and school level
Nauta, J. (Netherlands), EMGO, University of Amsterdam
- 15.50–16.00 Associations of objectively assessed levels of physical activity, aerobic fitness and
motor coordination with injury risk in 7–9 year old school children
Martin-Diener, E. (Switzerland) et al., University of Zurich & Institute of Social and
Preventive Medicine

11. Sports Clubs for Health (Merisali I)

Chairs: Narcis Gusi (Spain), Pekka Oja (Finland)

- 15.00–15.20 What are the health benefits of sport disciplines? A systematic review of observational
and experimental studies
Oja, P. (Finland) et al., UKK Institute for Health Promotion Research
- 15.20–15.30 Which factors help men maintain increased physical activity following a group-based
healthy lifestyle programme delivered through top professional football clubs?
Gray, C. (United Kingdom), et al., University of Glasgow

- 15.30–15.40 Sport participation and sedentary behavior
Hendriksen, I. (Netherlands) et al., TNO
- 15.40–15.50 Evaluation framework for Ireland's GAA Healthy Club Initiative
Lane, A. (Ireland) et al., Waterford Institute of Technology
- 15.50–16.00 Factors facilitating and inhibiting implementation of easy accessible sporting programs
Veenhof, C. (Netherlands) et al., Netherlands Institute for Health Services Research
- 16.10–17.30 HEPA WORKING GROUP SESSIONS
- National approaches to HEPA promotion: results and conclusions from an analysis across 7 countries** (Siirtomaasali I)
Moderator: Sonja Kahlmeier (Switzerland)
- Physical activity and sport promotion in youth** (Siirtomaasali II)
Moderator: Catherine Woods (Ireland)
- HEPA promotion in socially disadvantaged groups** (Merisali I)
Moderator: Niamh Murphy (Ireland)
- Active ageing** (Keltainen Sali)
Moderators: Bob Laventure (United Kingdom) & Liesbeth Preller (Netherlands)
- Workplace HEPA promotion** (Kreivi)
Moderator: Ingrid Hendriksen (Netherlands)
- HEPA promotion in health care settings** (Merisali II)
Moderators: Malcom Ward (United Kingdom) & Minna Aittasalo (Finland)
- HEPA promotion and injury prevention** (State Room)
Moderator: Eva Martin-Diener (Switzerland)
- 19.30– Banquet at Fortress Suomenlinna

Thursday 24 October

- 9.00–9.30 Registration (Aula)
- 9.30–12.00 ANNUAL MEETING (Siirtomaasali I)
- New applications for membership
 - Results of the Steering Committee and Chair elections
 - Communication strategy for HEPA Europe
 - Activity report 2012–2013 and Work programme 2013–2014
 - Other business
- 12.00–13.00 Lunch (Pyöreä Sali)

Poster Sessions

Tuesday

1 School-Based Physical Activity Intervention among Adolescent Girls

Kudlasec, M. (Czech Republic) et al., University Palacký in Olomouc

2 Sedentary behavior in children: ex-ante evaluation of a proxy-report questionnaire

Scatigna, M. (Italy) et al., University of L'Aquila

3 Physically active commuting in youth and young adulthood predicts physical activity in early midlife: the Young Finns Study

Yang, X. (Finland) et al., LIKES Research Center for Sport and Health Sciences

4 Persistence or change in leisure-time physical activity habits and waist gain during early adulthood: a twin-study

Rottensteiner, M. (Finland) et al., University of Jyväskylä

5 Physical activity behaviour of 13-year-old girls in rural communities – an accelerometer study

Titze, S. (Austria) et al., University of Graz

6 Interventions related to sport, exercise and physical activity among Finnish children and adolescents – A systematic review

Piirtola, M. (Finland) et al., UKK Institute

7 Sport, exercise, and physical activity among Finnish children and adolescents – A systematic review

Berg, P. (Finland) et al., Finnish Youth Research Network

8 Gender differences in physical activity levels of children with long-term illness, disability, or medical conditions

Ng, K. (Finland) et al., University of Jyväskylä

9 Youth Athletes' Motivation, Perceived Competence and Persistence in Organized Sports: A 12-month prospective study

Rottensteiner, C. (Finland) et al., Research Institute for Olympic Sports

10 A systematic review of school-based physical activity and sedentary behaviour interventions with adolescents

Hynynen, S-T. (Finland) et al., University of Helsinki

11 Adolescent physical activity and sedentary behaviour: a pathway in reducing overweight and obesity. The 2-year cluster randomized control trial PRALIMAP

Abdou Omorou, Y. (France) et al., University of Lorraine

12 Children's right to be physically active and the role of Corporate Social Responsibility practices: a review

Leone, L. (Italy) et al., University of Rome Foro Italico

13 The role of Croatian universities to advance health enhancing physical activity of students

Caput-Jogunica, R. (Croatia) et al., ENGSO

14 School physical activity: promotion of daily healthy

Kudlasec, M. (Czech Republic) et al., University Palacký in Olomouc

15 Validity and repeatability of self-reported leisure-time PA and screen-based sedentary behavior among school-aged Finnish children: a validation study using accelerometer as an objective measure

Määttä, S. (Finland) et al., Folkhälsan Research Centre

16 Objectively measured physical activity and sedentary time between school-aged girls and boys in Finland. How many of them met the level of 60 minutes of physical activity per day?

Määttä, S. (Finland) et al., Folkhälsan Research Centre

17 Associations of objectively measured sedentary time to objectively measured physical activity, sleep and self-reported use of computer and television among school-aged Finnish children

Määttä, S. (Finland) et al., Folkhälsan Research Centre

18 Assessing physical activity and screen time recommendations among 8th graders: baseline results from the Finnish Kids out! -intervention

Jussila, A-M. (Finland) et al., UKK Institute

19 Utilizing health education lessons to reduce screen time and to increase physical activity among 8th graders: The protocol of a randomized, controlled Kids Out!-trial in 14 Finnish schools

Aittasalo, M. (Finland), UKK Institute

20 Sports and Exercise Safety in Finland: LiVE – an Implementation Program to Sport Clubs and Schools

Jussila, A-M. (Finland) et al., UKK Institute

21 Teko - promoting safety in school sports via internet and education

Oksanen, R. (Finland) et al., UKK Institute

22 School staff's awareness of Finnish physical activity recommendations for school-aged children

Kämppi, K. (Finland) et al., LIKES - Research Center for Sport and Health Sciences

23 A more pleasant and peaceful learning environment – school staff's experiences and views on promoting a physical activity based operating culture in school

Kämppi, K. (Finland) et al., LIKES - Research Center for Sport and Health Sciences

24 Can Physical Education (P.E.) foster a lifelong commitment to physical activity?

Lewis, K. (United Kingdom), University of Huddersfield

25 Feasibility and Effects Of A 2-Year Supervised Exercise Program On Functional Performance And Quality Of Life Among Older Home-Dwelling Women

Patil, R. (Finland) et al., UKK Institute

- 26 The quality of life comparison between physically active and inactive older women
Benesova, D. (Czech Republic), University of West Bohemia
- 27 Health and physical functioning as predictors of strength and balance training adoption among older adults aged 75 and over
Aartolahti, E. (Finland) et al., University of Jyväskylä
- 28 Self-report physical activity and correlates of activity in older adults in Ireland
Murphy, M. (United Kingdom), University of Ulster
- 29 Exercise Buddies for Seniors
Ekman, M. (Finland), City of Helsinki
- 30 Go out with the elderly campaign
Starck, H. (Finland) et al., The Age Institute
- 31 Psychosocial and behavioural predictors of changes in television viewing in older adults
Hamer, M. (United Kingdom), University College London
- 32 Older People's Exercise Councils
Havas, A. (Finland) et al., The Age Institute
- 33 The national policy programme for older people's physical activity - health and well-being from physical activity
Karvinen, E. (Finland) et al., The Age Institute
- 34 Air project: embedding nature in promotion of HEPA among special target groups
Mansikkaviita, R. (Finland) et al., Metsähallitus
- 35 Recreation, Physical Activity and Environment for Rustavi Population
Beruchashvili, M. (Georgia) et al., Rehabilitation Center for Drug Addicts; Mental Health and Prevention of Addiction Center
- 36 Cycling Benefits Health, Economics, Society, Environment and Transport, Review
Rzewnicki, R. (Belgium), ECF - European Cyclists' Federation
- 37 Bridging the gap: research to practice in an Irish context
Lane, A. (Ireland) et al., Waterford Institute of Technology
- 38 Implementing 'Smarter Travel' measures in Irish towns: Qualitative perspectives of key stakeholders
Lambe, B. (Ireland) et al., Waterford Institute of Technology

Wednesday

1 Lifestyle counselling in abdominally obese professional male drivers – RCT (NCT00893646)
Puhkala, J. (Finland) et al., UKK Institute

2 Be Active! Exercise counselling service chain
Laine, K. (Finland) et al., City of Helsinki

3 Introducing exercise counseling with training
Havas, A. (Finland) et al., The Age Institute

4 Physical activity pharmacy - building a health-enhancing –concept in Lahti region, Finland
Freundlich, H. (Finland) et al., Lahti Region Development LADEC Ltd.

5 Attitudes of Slovene family physicians about physical activity promotion in the primary health care system
Djomba, J. (Slovenia) et al., University of Ljubljana

6 Physical activity promotion by general practitioners: the role of a physical activity coach
Bogaerts, A. (Belgium) et al., KU Leuven

7 Evaluation of a tool kit and a training concept for developing physical activity counseling in primary health care
Toropainen, E. (Finland) et al., UKK Institute

8 Pharmacies on Move
Tuunanen, K. (Finland) et al., Fit for Life Program

9 Can the use of sport technology equipment increase exercise motivation and well-being in a group of inactive and overweight individuals
Pääkkönen, T. (Finland) et al., University of Jyväskylä

10 Physical activity and sleep profiles in Finnish men and women
Wennman, H. (Finland) et al., National Institute for Health and Welfare

11 Prevention of sports injuries: a systematic review and meta-analysis of randomized controlled trials
Leppänen, M. (Finland) et al., UKK Institute

12 Tule-KUNTOMITTA – a method to enhance musculoskeletal health
Rinne, M. (Finland) et al., UKK Institute

13 Exercise therapy, as a core element of a multidisciplinary lifestyle intervention in type 2 diabetes, is cost saving for the healthy national service
De Feo, P. (Italy) et al., University of Perugia

14 Substantial potential for welfare gains by increasing physical activity in Norway
Belander, O. (Norway) et al., The Norwegian Directorate of Health

- 15 Physical activity and body mass index predicts work productivity
Gusi, N. (Spain) et al., Universidad de Extremadura
- 16 The effectiveness of elaborating physical activity intentions in a 12-week physical activity program: a randomized trial
Seghers, J. (Belgium) et al., KU Leuven
- 17 Changes in kinesiophobia and physical activity in the early recovery phase after lumbar fusion and during 12 months exercise intervention (RCT)
Iives, O. (Finland) et al., University of Jyväskylä
- 18 Health-related quality of life and disability after a rotator cuff repair: Comparison between 12 month self-managed exercise program and usual care
Piitulainen, K. (Finland) et al., University of Jyväskylä
- 19 Associations of different domains of physical activity with cardiovascular risk factors and physical fitness in young adult men
Vaara, J. (Finland) et al., National Defence University
- 20 The adventures of Joe Finn campaign reach men
Malvela, M. (Finland) et al., Fit for Life Program
- 21 How to test masses of ordinary men: Adventures of Joe Finn – the lorry tour event 2013
Heiskanen, J. (Finland) et al., LIKES - Research Center for Sport and Health Sciences
- 22 Physical activity promoters and barriers among unfit working-aged Finnish men
Kaasalainen, K. (Finland) et al., University of Jyväskylä
- 23 Using Activity Monitor as Part of an Activation Method – A Pilot Study in Young Men
Jauho, A. (Finland) et al., University of Oulu
- 24, Enhancement of Physical Activity Advising in the Health Care System – Development of the Web-Tool “Physical Activity for Medicine”
Vuori, I. (Finland)
- 25 eLearning Fitness: standards for fitness instructing and personal trainer occupations
Rodriguez, M. (Italy) et al., FIAF
- 26 Physical activity patterns based on a novel accelerometer data modeling: Criterion validity against measured aerobic fitness
Suni, J. (Finland) et al., UKK Institute
- 27 Promotion of health enhancing physical activity in nature through cross-sectorial collaboration. Moved by Nature-project
Vähäsarja, K. (Finland) et al., Metsähallitus
- 28 Promoting the Health Enhancing Physical Activity through the prioritization and development of Healthy Urban Planning in the WHO European Healthy Cities Network
Mackiewicz, K. (Finland) et al., Baltic Region Healthy Cities Association - WHO Collaborating Centre for Healthy Cities and Urban Health in the Baltic Region

29 Comparison of the beneficial short-term effects of a nordic walking or a structured indoor exercise intervention program in patients with obesity and/or type 2 diabetes
De Feo, P. (Italy) et al., University of Perugia

30 ENGSO data and barriers on participation and health enhancing physical activity
Caput-Jogunica, R. (Croatia) et al., ENGSO

31 Research evidence and other types of knowledge in health enhancing physical activity policy making: results from six European countries
Hämäläinen, R-M. (Finland) et al., National Institute for Welfare and Health

32 Physical activity programs development in Russian regions
Potemkina, R. (Russia), National Research Centre for Preventive Medicine of the Ministry of health of Russian Federation

33 Adverse trends in physical activity in Finland
Borodulin, K. (Finland) et al., National Institute for Health and Welfare

34 Physical activity variability and its impact on the monitoring of physical activity
Bergman, P. (Sweden) et al., Linneaus University

35 Adherence to health-enhancing physical activity recommendation in Finnish adult population – assessed with objective and subjective methods
Husu, P. (Finland) et al., UKK Institute

36 Evaluation design to study the role of sport coaches in connecting primary care, sport and physical activity
Wagemakers, A. (Netherlands) et al., Wageningen University

37 The impact of area-based initiatives on physical activity trends in deprived areas; a quasi-experimental evaluation of the Dutch District Approach
Kramer, D. (Netherlands) et al., Academic Medical Centre

Keynotes

Richard Troiano (USA), US Public Health Services, National Cancer Institute:
The promise of objective assessment of physical activity in populations

The use of accelerometers to measure physical activity has increased dramatically over the past decade. Devices are being used in large cohorts and for population surveillance as well as smaller research studies. Experience from several countries has shown that population assessment with accelerometers is feasible. Measurement of activity with devices provides the ability to explore aspects of physical activity that were not available with reported activity. The presence of both reported and device-based physical activity measures in the U.S. National Health and Nutrition Examination Survey (NHANES) 2003-2006 has highlighted differences between the two methods. For example, population prevalence of meeting recommended levels of activity varies greatly by method and relationships with activity-related biomarkers appear to be stronger with objective measures than reports. The observed differences have stimulated new thinking about the roles of self-report and device-based measures of activity and inactivity.

The presentation will include discussion of logistical and conceptual benefits and challenges of using accelerometers in population assessment of physical activity and sedentary behavior. Example resources supported by the U.S. National Cancer Institute to facilitate handling and processing the large volumes of data provided by current accelerometer technology will be described as will an effort to promote consensus approaches to analyzing and interpreting the resulting data.

Riitta Kaivosoja (Finland), Ministry of Education and Culture:
On the move – national strategy for physical activity promoting health and wellbeing 2020

Although Finnish people pursue fairly much physical activity during their leisure time, the rest of the day largely consists of sitting for long periods of time beginning from early childhood education and care to school, work, institutions, means of transport, and to home.

Even in early childhood education and care children sit for 60 per cent of their time, and for adults the proportion is as much as 80 per cent. There is thus a great need for increasing physical activity and reducing sedentary time in the Finnish society. At the beginning of the 21st century an intensive and effective cross-sectoral cooperation has been achieved on actions to promote health-enhancing physical activity. It will be intensified further as a result of the preparation of the present national strategy, the aim of which has been to achieve an even deeper and more concrete approach, and a strong commitment among the stakeholders.

The guidelines of the strategy up to the year 2020 are to strengthen the status of physical activity in the Finnish society, to make people more physically active and to make them sit less during the

course of their lives. Physical activity is also highlighted as a vital element in enhancing health and wellbeing, prevention and treatment of diseases and in rehabilitation.

The vision highlights the following elements: 1) the importance of exercise and physical activity as a basic prerequisite for individuals' and society's health, wellbeing and competitiveness is understood, 2) the different administrative branches and organizations will create the opportunities for a physically active life, 3) promotion of physical activity is based on partnerships between stakeholders, effective structures and good leadership, 4) factors contributory to gender equality and equal treatment will be identified and impacted on effectively, 5) individuals will take advantage of the improved opportunities to increase their daily physical activity, and 6) Finland will be an increasingly strong model country for physical activity culture in Europe.

The guidelines are particularly aimed at persons not physically active enough for their health and wellbeing, and changing the operational culture of organizations to encourage physical activity at different stages of people's lifespan. Furthermore, targeted actions will be aimed at inactive groups in regard to which development measures have been scarce.

The means of the principle of integration, the contribution of all the administrative branches and partnerships are vital in order to accomplish the goals of the strategy. The methods to encourage, support and guide individuals towards a more active and healthy lifestyle include influencing knowledge and skills, the living environment, circumstances, structures and cultures. The strategy describes the state of the population's physical activity, the present actions and objectives for physical activity that enhances health and wellbeing as well as critical factors to achieve the objectives. Concrete actions for different stakeholders are suggested in the strategy, and the detailed measures described in a separate action plan. The strategy also contains a description of the resources and monitoring of health-enhancing physical activity and exercise.

Peter T. Katzmarzyk (USA), Pennington Biomedical Research Center:
Health Risks Associated with Sedentary Behaviour

The health benefits associated with engaging in moderate-to-vigorous physical activity are widely recognized. More recently, considerable interest has emerged in understanding the health risks associated with behaviours at the low end of the energy expenditure continuum, particularly sitting. There is evidence that physical activity and sitting are independent behaviours, and are not highly correlated. Several cross-sectional studies have documented associations between sedentary behaviour and chronic disease risk factors such as obesity, insulin resistance, dyslipidemia, and high blood pressure. Further, evidence from prospective cohort studies shows significant associations between levels of sitting or television viewing and the development of obesity, type 2 diabetes and cardiovascular diseases. To date, approximately a dozen studies have been published which show significant associations between sitting or television viewing and mortality rates among adults. In general, the results of these studies demonstrate a dose-response relationship between sedentary behaviour and mortality, which are independent of physical activity levels. The results are strongest for all-cause and cardiovascular disease mortality, whereas the link between sedentary behaviour and cancer mortality is less strong. Although the results presented to date are encouraging, further research using randomized study designs are required to determine the optimal levels of sitting related to health outcomes prior to developing public health recommendations for sedentary behaviour.

Invited speakers

Lars Bo Andersen (Denmark), University of Southern Denmark, Denmark:
Effectiveness of school based physical activity interventions

The world today is facing an increasing number of individuals with lifestyle related diseases such as cardiovascular diseases (CVD), type 2 diabetes and certain types of cancers [1]. This has tremendous consequences both at the individual and the societal level in terms of decreased quality of life, increased morbidity and mortality [1]. Recent research has shown that physical activity and high aerobic fitness (VO₂peak) level are associated not only with insulin sensitivity, obesity and other metabolic risk factors, but also with improved cognitive function in relation to biological markers (brain derived neurotrophic factor, BDNF), and cognitive tests [2]. Furthermore, it has been found that BDNF is closely associated with the metabolic risk factors [3, 4]. These apparently very different parameters, obesity, physical activity, fitness and cognitive function, seem to be interlinked. Associations between physical activity, fitness, obesity and CVD risk factors such as insulin resistance are well known, while knowledge of the association between the physical activity and cognitive function and biological mechanisms behind this association is increasing fast.

School-based interventions have shown that it is possible to improve CVD risk factor profile in children with an adverse risk factor profile [5, 6]. However, many school-based interventions have now shown effect. It is therefore important to elucidate how much, what type and what intensity of physical activity is needed to reveal changes in CVD risk factors and other health related parameters. Just as important is it to find effective ways it can be implemented into the school system. The main problem related to implementation is probably that the purpose of the school system is primarily to teach children academic skills. The reluctance from teachers teaching other subjects and politicians to increase PE might be based on the concerns of taking time from theoretical subjects will decrease the abilities in these subjects. The scientific knowledge about the association between PA or physical performance and cognitive function in children is still deficient and inconclusive [7, 8]. It is therefore of utmost importance to obtain more knowledge both about implementation of PA and benefits of PA on cognitive function in different age groups in order to implement preventive strategies in the school system. In order to do so knowledge about biological mechanisms of how PA exerts the effects on cognitive function and how this can be measured is needed.

1. Lee, IM et al., Lancet 2012; 380: 219-29.
2. Aberg, MA et al., Proc Natl Acad Sci U S A 2009
3. Tyler et al., Learn Mem 2002; 9: 224-37.
4. Krabbe, KS et al. Brain-derived neurotrophic factor (BDNF) and type 2 diabetes. Diabetologia 2007; 50: 431-8.
5. Kriemler, S. et al., BMJ 2010; 340: c785.
6. Heath, GW et al. Lancet 2012; 380: 272-81.
7. Chaddock, L. et al., J Int Neuropsychol Soc 2011; 17: 975-85.
8. Biddle, S.J., Asare, M., Br J Sports Med 2011; 45: 886-95.

Ulf Ekelund (Norway), Norwegian School of Sport Sciences, Oslo, Norway & MRC Epidemiology Unit, Cambridge, UK: *What proportion of youth are physically active?*

Accurate and valid methods for measuring physical activity are necessary to determine dose-response associations between PA and health outcomes, to specify which aspect of PA is important for a specific health outcome, to monitor temporal trends in populations, to make cross-cultural comparisons and to determine the effect of interventions. Despite much progress in developing instruments for assessing physical activity in youth limitations for precise measurements of young peoples' habitual physical activity and sport participation still exist.

Most public health authorities agree that young people should accumulate at least 60 min of moderate and vigorous intensity physical activity (MVPA) on at least 5 days/week. In addition, the benefits of more vigorous intensity activity are acknowledged. Recent data on self-reported physical activity from the global school-based student health survey and the health behaviour in school-aged children survey in 13 to 15 year olds from 66 low and middle income countries and from 38 European countries, the US and Canada suggest approximately 60% to 80% of youth do not do 60 minutes of MVPA per day. Data on the prevalence of sufficiently active (i.e., accumulation of >60 min of MVPA per day) young people from studies using accelerometry vary considerably (from 1% to 100%). This variability is largely explained by the use of different intensity thresholds when defining MVPA.

Sport participation is likely to contribute to higher levels of physical activity whereas the magnitude and direction of changes in physical activity and sport participation by time in young people is less clear.

In conclusion, the number of youth meeting current physical activity guidelines varies by assessment method and the intensity thresholds used when physical activity is measured by accelerometry. It is unlikely that any self-report method is sufficiently accurate for examining cross-cultural differences and temporal trends in young people's physical activity and sport participation over time. Surveillance systems therefore need to strive for an international standardisation using objective measurements of physical activity to complement existing self-report instruments.

Timo Hinrichs (Germany), University of Bochum, Germany:
Safety aspects in HEPA promotion in older adults

Regular exercise can help improve physical function and prevent the progression of a number of chronic diseases, even in old age. When an older person has a chronic disease (or even more than one), however, before an exercise program is initiated, the question of eligibility arises. Everyone involved (health care professionals, patient, relatives) may be confronted with concerns about negative health outcomes, which are known to be major barriers to prescribing – and to participating in – an exercise program. As with every other type of prescription (e.g., a medication), health care providers must be equipped with information on safety – including the frequency and types of adverse events (AEs) to be expected. Summing up available data on AEs in exercise interventions for older adults (e.g., Cameron et al. 2013, Hinrichs et al. 2011, Pahor et al. 2006), AEs appear to be quite common and diverse, exercise-related AEs seem to be mainly musculoskeletal in nature, and exercise-related “serious” AEs appear to be rare. The high overall rate of AEs and of AEs leading to temporary suspension from exercise or to restrictions might constitute a critical

challenge to sustained exercise participation. Eligibility screening for exercise should therefore not be considered as a one-time medical clearance at baseline but as a basis for ongoing monitoring to help participants adapt the program to their needs and abilities, stay motivated and remain active despite temporary health problems. Previously sedentary individuals in particular have to learn to differentiate normal symptoms associated with exercise (e.g., hard breathing, muscle soreness) from those that can be warning signs of cardiovascular events or musculoskeletal problems.

Cameron, ID et al., BMC Med 2013;11:65.

Hinrichs, T. et al., Trials 2011;12:263.

Pahor, M. et al., J Gerontol A Biol Sci Med Sci 2006;61:1157-65.

Charlie Foster (United Kingdom), Brit Heart Found, UK:
Promoting walking and cycling based on cost-benefit analyses

Foster C¹, Cavill N², Kelly P¹

¹British Heart Foundation Health Promotion Research Group, Nuffield Department of Population Health, University of Oxford, Oxford, UK

²Cavill Associates, Stockport, UK

The risk reduction of walking and cycling for all cause mortality is estimated to be between 10-12%, when adjusted for other physical activity. The impact of this independent effect could be substantial if interventions are successful in shifting these active travel behaviours. The value of these benefits can also be expressed not only in behavioral or estimates of risk reduction but also in the direct and indirect economic benefits. Values of benefits are presented as benefits obtained versus the costs to achieve them (e.g. cost benefit analysis) or with estimated gains in future health (e.g. he quality-adjusted life years measurement (the 'QALY')).

Identifying what interventions offer the best cost-benefit analysis has been conducted by a number of national policy bodies, academic and non government organizations. Each group may adopt a different stance and action to the role of economic evidence, i.e. policy – “decides to pay or not”, academics “produce” and NGOs “promote to get interventions funded”. This role of different user of cost-benefit will be presented alongside real world examples of cost-benefit walking and cycling interventions, particularly using evidence generated from practice with new appraisal tools (e.g. WHO/Europe Health Economic Appraisal Tool – HEAT). This tool estimates the value of reduced mortality that results from specified amounts of potentially new walking or cycling.

The use of economic data in physical activity advocacy could be seen as a quest to find the biggest number possible (larger than rival funding stream). Perhaps the strength of cost-benefit analysis data is in how it is used rather than the final number. The most powerful expression of impact of costs and values can be achieved by making simple comparisons that are easy to understand and offer not only just the burden/cost/future estimates of a problem, but also a solution.

Fred London (United Kingdom), John Thompson & Partners LLP, UK:
Integrating healthy lifestyles in urban planning

The built environment has always played a central role in shaping the people's health. Historically slums and tenements were at the root of health problems in cities and today many of the layouts we have developed continue to exert a strong, negative influence by supporting sedentary lifestyles both inside and outside buildings.

Physical activity is encouraged or even demanded in any number of ways through the formal education system and in the adult world. But for many people exercise is something to be avoided, and the conditions created by modern society makes this easy.

The people who respond to being told to be physically active are the ones who would choose to do so in any case. For those who don't, we need to think how we can incentivise healthier lifestyles by removing obstacles and offering attractive, joined up systems that work better than the lazy, sedentary default alternatives.

Having recognised this situation, as designers our task is to find ways to turn these problems into solutions in order to create healthy cities. This talk looks at the ways we can coax people into getting the exercise they need, and the role that the design of our settlements can play to achieve this.

Health and well-being consist of a wide range of interrelated factors; physical activity is a fundamental component of these.

The evolution of mankind can be traced in the ways that people have adapted to their environments in the search for safety, shelter, nutrition and business. Over the millennia, people have joined together to harness the benefits of security and the exchange of goods and ideas. Cities are the result of this process.

Since the Industrial Revolution, the intensity of urbanisation has moved ever faster and has now reached unprecedented levels. Intellectually we may understand the issues, however our other cognitive faculties and our bodies have had insufficient time to adapt.

The specialisation of jobs and occupations, combined with mechanisation of production and transport typically means that, for the majority of city dwellers in the developed world, physical activity no longer seems to be a necessity for continued, comfortable life.

This 'easy life' is really the logical conclusion of the reasons why people chose to live in ever larger groups. However we are increasingly recognising the multiple challenges that our societies face when physical activity is neglected, reducing the quality of people's lives and imposing heavy and costly burdens on our health and other social services.

The challenge for the design of our cities is to provide environments that enable and encourage people to lead healthy lifestyles. But how should we respond to this elusive challenge? There is a wide range of things we do that are good for our health, but involve no meaningful physical activity. Also, people can engage in physical activity without carrying it out either in a healthy environment, or even in a city!

So how can we focus on the measures that will deliver the outcomes we want?
A sure indication of good design is when it addresses and solves multiple problems, rather than

single ones. So, when we think about how cities can encourage physical activity, the answer must lie in integrating the exercise we need with the other aspirations and interests we have in our daily lives. Fortunately, or perhaps inevitably, the incredibly complex, multi-functional character of cities is ideally suited to meet this challenge.

The healthy way through this urban jungle is a combination of physical frameworks and lifestyle priorities and choices, but the result must always be that people enjoy a better quality of life, in a great environment, for longer.

My talk will examine practical examples of projects where such goals have been addressed and set out some key principles that can guide urban projects in a healthy direction!

Richard Troiano (USA), US National Cancer Institute:

Population Assessment of Sleep and Physical Activity: the U.S. NHANES Experience

Reported physical activity has been assessed in the National Health and Nutrition Examination Survey (NHANES) since NHANES I (1971-1973). Accelerometer-based physical activity assessment was included in the 2003-2006 survey cycles. NHANES 2003-2006 accelerometer data were the basis of more than 50 publications as of December 2011, including several analyses that focused attention on health effects of sedentary time.

NHANES 2011-2014 includes an accelerometer component with three substantial modifications. First, monitor technology was updated to the ActiGraph GT3X+, which has a water-resistant case and will log 80 Hz raw acceleration data (milli-g) in three axes and ambient light for 8 days. Second, the sensor location was changed from the waist to the non-dominant wrist. Finally, the monitoring period was changed from waking hours to continuous (24hr/day) wear. These protocol modifications were selected to 1) enhance wear compliance, 2) enable simultaneous monitoring of physical activity and sleep, and 3) allow data processing flexibility as methods evolve. In addition to the accelerometer for activity and sleep measures, body strength is being measured by hand-grip dynamometer with 3 trials for each hand. Accelerometer measures are being obtained on survey participants aged 3 year and older and strength is being measured on participants aged 6 years and older.

This presentation will provide an overview of physical activity measurement in NHANES with a focus on the objective measures currently being obtained. Planned outcome variables from the NHANES 2011-2014 accelerometer component will be described. Wrist wear of a water-resistant accelerometer in NHANES 2011-2014 has improved component compliance and added sleep monitoring. The survey will provide researchers with valuable nationally representative objective data from the United States on physical activity, sleep, and body strength for children, adults and older adults.

Michelle Mottola (Canada), University Western Ontario, USA:
Preventing long-term risk of obesity for two generation

Women of childbearing age are at an increased risk for developing obesity because of excessive gestational weight gain and weight retention after birth. Offspring of women who gained excessively are at risk for future obesity development and co-morbidities. Promotion of a healthy lifestyle during pregnancy and post-delivery that prevents excessive gestational weight gain and minimizes weight retention are important to prevent obesity in both the mother and her offspring. Prenatal lifestyle interventions with high compliance that combine nutrition counselling and supervised exercise sessions including a behavior change approach appear to be the most successful. We have developed a family-based Nutrition and Exercise Lifestyle Intervention Program (NELIP) that prevents excessive gestational weight gain and with the re-initiation of the program at 2 months post-delivery minimizes weight retention at one year in the mother. The Nutrition component of the NELIP consists of a modified gestational diabetic meal plan that controls carbohydrate consumption and the exercise component is a walking program that starts at 25 minutes per session, 3 to 4 times per week, adding 2 minutes per week until reaching 40 minutes of walking that is maintained until delivery. The family-based NELIP is re-initiated at 2 months after delivery and continued until the baby is one year of age, as a stroller walking program that also includes information regarding breastfeeding and infant feeding practices. We have found that this two-pronged approach of preventing excessive gestational weight gain early during pregnancy and then re-initiated at 2 months post-delivery with the promotion of a healthy lifestyle in overweight and obese women may be important in preventing weight retention in the mothers and also important in reducing body fatness in the infants at one year of age.

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Riitta Luoto (Finland), UKK Institute:
Primary prevention of gestational diabetes mellitus: from research to practice

Physical activity and diet are both known to have favourable effects on insulin resistance during pregnancy. In the Finnish NELLI (Counselling, lifestyle and physical activity in maternity care) study we aimed to investigate, whether gestational diabetes mellitus (GDM) could be prevented by counseling on diet, physical activity and gestational weight gain during pregnancy. A cluster-randomized controlled trial was conducted in the south-western part of Finland, Pirkanmaa county. Recruited women in the NELLI study were at 8-12 weeks' gestation and fulfilled at least one of the criteria for GDM. Intervention was effective in controlling birthweight of the newborns, although an effect on GDM primary prevention was left open. However, favourable changes in lifestyle may decrease the risk of GDM and also have beneficial effects on offspring weight development. The latter was found in a follow-up study of the NELLI pilot mothers and their offspring. NELLI research project has also included substudies on cost-effectiveness of gestational physical activity and dietary counselling and prevalence of metabolic syndrome a few years after delivery.

Practical applications of the research project include a number of domestic articles, interviews and educational materials even in 14 language versions. Especially migrant women are in need of information in their own language. Integration of the pregnancy weight development charts in

the maternity care patient e-records is in progress. Collaboration with third sector (Finnish Heart Association, Finnish Diabetes Association) has been important in conveying the research findings into practice. Finally and most importantly, the NELLI research project findings are incorporated in the new Finnish Maternity Care Guidelines, which will be released in October, 2013.

Joske Nauta (Netherlands), EMGO, University of Amsterdam, The Netherlands:

Implementation of sports injury prevention at community and school level

The low number of children that regularly partakes in moderate-to-vigorous activity is worrisome. In the EU, only one-in-five children are sufficiently active on a regular basis. Not surprisingly, many initiatives have been developed to promote physical activity in children. Increasing physical activity levels, however, also increases the risk of sustaining a physical activity related injury.

Research in physical activity related injuries in children has primarily focused on the organized sports setting. Children, however, do partake in a substantial amount of unorganized leisure time physical activity. Furthermore, research suggests that children with low physical fitness levels are at increased injury risk. These children are not reached via injury promotion in an organized sports setting since they are less likely to partake in organized sports. Besides being more prone to sustain an injury, children with low levels of physical activity have reported to benefit most from injury prevention. Thus, to target younger children at risk, physical activity related injury prevention should be developed for use outside the organized sports setting.

In this lecture, the effectiveness of community-, and school-based physical activity related injury prevention will be presented. The focus will be on Dutch experiences with school-based injury prevention programs.

Harri Suominen (Finland), University of Jyväskylä, Finland:

Evidence of promoting HEPA in older age

Advancing age is associated with structural and functional changes in various physiological systems that can cumulatively compromise the physical performance required for activities of daily living and the potential for independent life in older adults. In addition to primary ageing processes, the decline in performance can be attributed to life style factors such as decreased physical activity. While physical activity has increased in older adults during the last 30 years, only a minority of the elderly population meets the recommendations for health enhancing physical activity as regards endurance, muscle strengthening, and flexibility training (Koskinen et al. 2012).

Current evidence clearly shows the benefits of regular exercise and physical activity in counteracting the detrimental effects of sedentary life-style on health and functioning in both healthy older adults and in elderly people with chronic diseases and disabilities. According to the criteria published by the American College of Sports Medicine (ACSM 2009), the benefits of aerobic endurance training reach the highest categories of evidence (A or B) in increasing VO₂max in healthy middle-aged and

older adults, reducing total body fat in overweight individuals, and inducing a variety of favourable metabolic adaptations. Similarly, older adults can substantially increase their muscle strength and power after resistance training and preserve or improve bone mineral density, with a direct relationship between muscle and bone adaptations. High-intensity exercise training programmes are not necessary in reducing the risks of developing chronic cardiovascular and metabolic disease, but the treatment of some established diseases and geriatric syndromes, such as osteoporosis, sarcopenia, and type 2 diabetes, may be more effective with higher-intensity exercise. In recent guidelines (ACSM 2011), a comprehensive program of exercise including cardiorespiratory, resistance, flexibility, and neuromuscular exercise of sufficient volume and quality is recommended for apparently healthy adults of all ages. Older, deconditioned, or frail individuals may begin with light intensity and low resistance to achieve an acceptable level of conditioning before performing the exercises prescribed for healthy adults.

Koskinen S et al. 2012. National Institute for Health and Welfare, Report 68

ACSM. 2009. Position Stand. *Med Sci Sports Exerc* 41:1510-1530

ACSM. 2011. Position Stand. *Med Sci Sports Exerc* 43:1334-1359

Niels Wedderkopp (Denmark), University of Southern Denmark, Denmark:

The Childhood Health, Activity, and Motor Performance School Study Denmark (CHAMPS)

An increasingly passive life-style in the Western World has led to a rise in life-style related disorders. This is a major concern for all segments of society. The county council of the municipality of Svendborg in Denmark, created 2008 six Sport Schools with increased levels of suitable physical activities through an increase in physical education from two lessons per week to six lessons per, which made it possible to study the health outcomes in these children whilst comparing them to children who attended the 'normal' schools of the region using the design of a "natural experiment" or "quasi experimental" approach. This research is embedded in a local community, which set up the intervention (The Sport Schools) and thereafter invited researchers to provide documentation and evaluation. Sport schools are well matched with the 'normal' schools, making comparisons between these suitable. However, subgroups that would be specifically targeted in lifestyle intervention studies (such as the definitely obese) could be relatively small. Therefore, results specific to minority groups may be diluted. Nonetheless, the many rigorously collected data will make it possible to study, for example, the general effect that different levels of physical activity may have on various health conditions and on proxy measures of life-style conditions. Specifically, it will help answer the question on whether increased physical education in the sport schools has a positive effect on health in children.

Children between the age of 6 and 10 years, who accepted to be included in the monitoring process, were surveyed at baseline with questionnaires, physical examinations (PEX) and physical and biological testing, including DXA scans. The PEX and testing was repeated every half year during the first two years of the study, and then once a year. Every week over the whole study period, the children will be followed with an automated mobile phone text message (SMS-Track) asking questions on their leisure time sports activities and the presence of any musculoskeletal problems. Children who report any such problems are monitored individually by health care personnel. Data are collected on demography, health habits and attitudes, physical characteristics, physical activity using accelerometers, motor performance, fitness, bone health, life-style disorders, injuries and

musculoskeletal problems. Data collection will continue a least once a year until the children reach grade 10.

There was a significant lowering effect of risk factors on sport schools compared to the control schools, both some of the individual risk factors and clustering of risk were significantly reduced. "Number needed to treat was 48-50 children (2 classes) depending upon what factors that were analyzed, e.g. for obesity it was 50, this would account for prevention of 1200 cases of obesity for each yearly birth cohort in Denmark. Increase in high physical activity increases bone accretion in children, but there was no effect of increase in physical education (PE) on bone accretion, after two years with six instead of two PE lessons.

As the first study in the world we were able to get an accurate number and estimate of the risk of overuse injuries, as all children were followed weekly. There are twice as many overuse injuries as traumatic injuries, and there is a clear seasonal pattern. Further the children run the greatest risk of injuries in organized leisure time sport, compared to the risk during unorganized leisure time physical activity and PE lessons. While children attending a sport school had a significant odds ratio of 1.6 of getting a traumatic injury in the lower extremities, there was no other significant differences between sport schools and control schools when comparing risk of injuries.

The risk of back pain in children seems to increase until 2nd to 3rd grade and then stabilize when looking at children from preschool to 6th grade, with a weekly incidence of approximately 1%. There was no difference in back pain incidence in children attending sport schools or control schools. This study is unique as it is a study looking into the implementation of increased PE, not a researcher started intervention but an intervention brought forward by the community. This has enabled us to determine the effects of implementing increased PE in schools on childhood health, a so called "Natural Experiment". One of the important aspects is that we are not only determining the possible positive effects on risk factors of life style diseases as type II diabetes and cardiovascular diseases, but also the impact on the risk of injuries of the extremities and back problems. Thus also taking into account the possible negative impact on health.

There was a significant lowering of the risk factors of life style diseases, e.g. getting obese and having clustering of risk factors. But also only an increased risk of traumatic lower extremity injuries, in no other injury types or back pain was there any differences between sport schools and control schools. Interestingly, there was twice as many overuse injuries as traumatic injuries. So the highest risk of injury was during organized leisure time sport, not in schools PE or during unorganized leisure time physical activity. Injuries were most frequent during spring, summer and fall while the lowest risk of injury was during the winter.

In conclusion, an increase in PE to six lessons per week seems to have positive health implications, but also an increased risk of traumatic injuries in children. However, an increased physical activity between moderate and high intensity seems to be beneficial both to present and also to the future health of the children.

Oral Presentations

12-mo intervention of physical exercise increased work ability- especially subjects with poor to moderate baseline work ability

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Introduction

The relationship between increased physical activity and improved fitness on perceived work ability is concluded to be somewhat inconsistent (Smolander et al. 2000, Sörensen et al. 2008). This study evaluated the effect of 12-month physical exercise intervention on work ability (WAI) and cardiorespiratory fitness (CRF) in healthy working adults. We hypothesized whether the WAI will improve during the intervention and whether these results are associated with the changes in CRF.

Methods

The study group included healthy employees (n=371). 338 subjects (212 women and 126 men) were allocated in the exercise group and 33 in the control group (17 women and 16 men). The exercise group underwent a 12-mo exercise program followed by 12-mo follow-up. WAI and CRF were evaluated at baseline, and at 4, 8, 12 and 24 study months in both exercise and control group. The exercise group was further divided into subgroups according to baseline WAI classification (poor/moderate, good, excellent).

Results

During the 12-mo exercise intervention the exercise group increased their leisure-time physical activity by 66% (p=0.016) and improved the mean WAI by 3% and CRF by 7% (p<0.0001, in both), while WAI (p=0.066) and CRF (p=0.39) did not change in the control group. There was a light positive correlation between the change in WAI and the change in CRF (r=0.19, p<0.01). The improvement of WAI was the highest (13%, p<0.0001) in the subgroup having poor/moderate WAI at baseline.

Conclusion

In conclusion, work ability is suggested to improve during exercise intervention which results in enhanced cardiorespiratory fitness. The WAI improved especially in the subjects with poor/moderate baseline work ability. The improved WAI was associated with improved cardiorespiratory fitness, which may indicate that improved WAI is at least partly explained by increased cardiorespiratory fitness.

Reference

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Keywords: cardiorespiratory fitness, exercise, work ability

A universal, accelerometry-based method for accurate classification of different physical activities by intensity

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Introduction. Accelerometers are increasingly used for objective assessment of physical activity. However, because of proprietary analysis algorithms direct comparisons between accelerometer brands are difficult. In this study we propose and evaluate open source methods for commensurate assessment of raw accelerometer data irrespective of the brand.

Methods. Twenty-one participants carried simultaneously three different triaxial accelerometers were on their waist during five different sedentary and five different intensity levels of bipedal movement from slow walking to running. Measured raw data were analyzed with several classifiers both in time and frequency domain. Their performance in classifying the activities was compared.

Results. Of several classifiers mean amplitude deviation (MAD) provided consistently the best performance in separating different sedentary activities and different speeds of bipedal movement. Most importantly, the universal cut-off limits based on MAD classified sedentary activities and different intensity levels of walking and running equally well for all three accelerometer brand and reached at least 97% sensitivity and specificity in each case.

Discussion. Irrespective of the accelerometer brand, a simply calculable MAD with universal cut-off limits provides a universal method to evaluate the physical activity using raw accelerometer data. A broader application of the present approach is expected to render different accelerometer studies directly comparable with each other.

This study was funded by the Competitive Research Funding of the Pirkanmaa Hospital District, Tampere, Finland (Grant 9G070) and the Finnish Funding Agency for Technology and Innovation (Tekes Grant 40247/12)

Keywords: physical activity, objective assessment, ac-

Associations of objectively assessed levels of physical activity, aerobic fitness and motor coordination with injury risk in 7-9 year old school children

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Introduction: The beneficial effects of physical activity (PA) are well accepted. However, its promotion may lead to more activity-related injuries. Little is known about injuries in young children when exposure to PA is taken into account, in particular in children of the general population and not only in child athletes. Also the relationship between PA behaviour and total injury incidence is unclear: Do inactive children overall have an elevated injury risk compared to their more active counterparts? The aim of this study was to assess activity-related correlates of injuries in children of the general population under the age of 10 while accounting for exposure to objectively assessed PA.

Methods: Cross-sectional study with 249 7-9 year old children from 20 school classes. All-cause injuries were assessed with a parental questionnaire, asking for injuries that had occurred during the past 12 months, had needed treatment by a medical professional or a guardian and had caused the child to stop the current activity for the rest of the day. PA exposure was measured with accelerometers for seven days, aerobic fitness with the 20m shuttle run test and motor coordination with the "Körperkoordinationstest für Kinder" (KTK test). To describe injury risk factors the numbers of injuries per 1000h of moderate to vigorous physical activity (MVPA) were calculated and a multivariate logistic regression counting for clustering within classes was developed.

Results: For 15% of the children an injury was reported, the incidence rate was 0.29 injuries/1000h of MVPA. 64% of all injuries had been treated professionally and more than 90% were related to some kind of physical activity. For all outcome measures, levels of PA were not associated with injury risk. After controlling for socio-demographic variables and accounting for exposure to PA and all other PA-related exposures of interest, children with medium and high compared to those with low levels of aerobic fitness were at decreased injury risk (OR=0.33 (0.13-0.83); OR=0.29 (0.14-0.64). Children with high motor coordination scores were at increased injury risk compared to those in the normal range (2.65 (1.05-6.73).

Discussion: Low aerobic fitness and good motor coordination, but not PA were related to injuries in prepubescent school children. These results suggest that in HEPA promotion in this age group it might be useful to supplement measures aimed to promote motor skills with those aimed to promote fitness.

Brain response and the level of motor development in children

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Introduction. The level of motor development in children is essential for the execution of physical activity. Motor skills are important for social interaction on the playground, performance in physical education, and in sport. The measurement of motor skills is widely used to identify children with developmental delay. There is a close connection between motor development and brain activity so the electro-physiological methods can be used to investigate motor development of children. The electro-physiological method as the evoked potentials (EP) gives us information on the processing of sensory perception from the level of sensory organs to the processing in the cortical centres. The visual, auditory and cognitive EPs can be used to investigate cognitive and developmental disorders. We can suppose that there is a dysfunction of differentiation of the complex signals, which can be confirmed by the variance of latency and amplitude of cognitive or sensory EPs. We can also suppose that other developmental disorders have the same pathophysiological basis. Thus the aim of the work was to evaluate the differences in brain response according to the level of motor development.

Methods. The study covered 27 children, mean age 5.87 (SD = 0.55), 19 boys, mean age 5.80 (SD = 0.65), 8 girls, mean age 6.03 (SD = 0.03) The relation between motor activity and brain response has been analysed. There is a presumption that it can be modified in children with developmental coordination disorder. It is modified by pathological disorders, primarily by cognitive disorders. Gross Motor Quotient (GMQ) has been used to evaluate disorder and it has been obtained through TGMD-2.

Results. Findings in children with GMQ 100-120 correspond to more matured processing of simple sensory stimuli. Children with lower GMQ have smaller amplitude of response. It means that these children respond on stimuli but they are not concentrated very well. They make a little account to response. In children with lower score of GMQ the disorder results from inadequate processing of sensory perception.

Discussion. Children with low score of GMQ reflect different processing of stimuli at sensory level. They have different reaction of exposure, enhance of attention and categorization of stimuli. It means that coordination disorder is not related to motor demonstration only.

Acknowledgement. This research was supported by a grant from the Grant Agency of the Czech Republic no. 407/12/1525.

Keywords: physical activity, children, motor development, brain response

Changes in the physical activities at recess of students in grades 7 to 9 in Finnish schools on the move programme in 2010–2012

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Introduction

The physical activity levels of school-aged children decrease as they age, and school-based interventions have been established to reverse this trend. The ongoing Finnish Schools on the Move programme aims to make the school-day more physically active, and this study investigated how participation of grade 7–9 students in physically active play at recess developed over two academic years, and what school actions contributed to such changes.

Methods

The data were obtained from the Finnish Schools on the Move programme's 2-year pilot phase 2010–2012. Students in grades 7–9, in four schools, responded to an anonymous questionnaire every six months (four times). The numbers of respondents varied between 791 and 704, and the proportions of boys were 45–47%. Project co-ordinators within schools were interviewed twice (spring of 2011 and 2012). Changes in student participation in physically active play at recess (at least sometimes), and school actions, were evaluated.

Results

Participation in physically active play at recess increased in three schools over the follow-up period. One school succeeded in increasing the participation rates of both boys and girls (from 62% to 77%, and from 23 % to 36%, respectively); a second school increased the rate of girls (from 32% to 43%); whereas a third school increased the rate of boys (from 40% to 67%). In the fourth school, physically active play decreased in both genders during the 1.5-year study period. The observed gender difference was remarkable; boys participated more often in physically active play at recess in every school.

Key methods used to increase physically active play at recess were novel structuring of the schoolday to provide opportunities for physical activities at recess, and development facilities and equipment both for indoor and outdoor recess activities. Student involvement played a significant role in ensuring that recess time was more physically active; students were allowed to plan and implement versatile recess activities.

Discussion

Participation in physically active play at recess increased in three out of four secondary schools, mostly among boys. Boys participated in recess activities more than girls even at the beginning of the programme. The provision of a variety of recess activities and empowering students to plan and implement such activities seem to be of value in promoting physically active recesses. The challenge is to increase participation of girls in active recess.

Keywords: physical activity, recess, adolescent, school

Cleaner, Greener, Leaner (CGL) Study preliminary findings: the role of planning policy, socio-economics and neighbourhood characteristics on perceived walkability, walking and transport behaviours

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Introduction:

Neighbourhood walking, for recreation and transport, has benefits for both public health and reduction of transport related carbon emissions. The CGL study, guided by the social ecological model, examined the relationship between an individual's environment (social and physical) and their walking and transport behaviours. Neighbourhood walkability categorisation was assigned through a mixed-method process involving spatial and transport planners, engineers, urban designers, landscape architects, architects, public representatives and public health and advocacy professionals to ensure a comprehensive understanding of walkability and optimum transferability of the cross sectional study findings. Macro city level, meso neighbourhood level and micro street level characteristics were considered in site selection. This paper outlines the key findings from the population survey.

Method:

A cross-sectional population survey was conducted in 16 neighbourhoods in the Greater Dublin Area, each representing one of four area categories (i) high walkable deprived, (ii) high walkable not deprived, (iii) low walkable deprived or (iv) low walkable not deprived.

Results:

Preliminary analysis has been carried out comparing area categories (N=1063, 37% male, Average age 46.9 yrs (+16.1), response rate 47%). Key findings include (i) the planning policies of the construction era influence the neighbourhood structure and scale, and the resulting behaviours of its residents, (ii) the demographic and socio-economic profile of residents differed significantly between area categories and (iii) neighbourhood walkability is influenced by both social and physical neighbourhood attributes which differed

between area categories.

Discussion:

The specific environmental correlates which may influence an individual's behaviour come from a variety of experiences, associations and individual characteristics. Due to the complex interplay between personal, environment and behavioural correlates, within and between the neighbourhood categories, further investigation is required. A conceptual model has been generated using the preliminary findings of the CGL. Findings can be used to inform future planning, transport, public health and neighbourhood design policies thus linking neighbourhood design to functioning human health.

The CGL Study was funded by the Environmental Protection Agency and National Development Plan under the STRIVE programme

Keywords: deprivation, cross sectional survey, walkability, planning, transport

Combined resistance and balance-jumping exercise reduces older women's injurious falls and fractures: A 5-year follow-up of a 12-month randomized, controlled trial

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Introduction:

Earlier, 1-year four-arm RCT study was conducted among 70-79 year-old home-dwelling Finnish women (the KAAMU study, n=149) (Karinkanta et al., 2007; Karinkanta, 2011). Exercise groups did either resistance, balance-jumping, or combined resistance and balance-jumping (COMB) training. The COMB group benefited most and improved muscle strength, balance, physical functioning and bone strength – all important risk factors for falls and fractures. The current 5-year follow-up reports the rate of injured fallers, injurious falls, and fractures among the participants.

Methods:

Participants' health care visits from the end of the intervention (2003) to end of the year 2008 were collected from the computerized patient files. An injurious fall was defined as an event in which the subject contacted the health care system, or was taken to a hospital, due to a fall. The rate of injured fallers was assessed by Cox proportional hazard model, and that of injurious falls and fractures by Poisson regression. Age was used as a covariate.

Results:

81 injurious falls including 26 fractures occurred during the

follow-up. The rate of injured fallers was 62% lower in the COMB group compared to the controls (HR 0.38, 95% CI 0.17 to 0.85). In addition, the COMB group had 51% less injurious falls (RR 0.49, 95% CI 0.25 to 0.98) and 74% less fractures (RR 0.26, 95% CI 0.07 to 0.97).

Discussion:

A 12-month intensive multi-component exercise seems to reduce older women's risk for injurious falls and fractures for years after the intervention. The intervention can be recommended for home-dwelling older women to prevent functional decline and fall-induced injuries.

References:

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Keywords: older adults, injurious falls, fractures, exercise

Evaluation framework for Ireland's GAA healthy club initiative

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Introduction: Sports clubs have been identified as a new and important setting for health promotion (Kokko et al., 2011) where children, adults, parents, coaches and the wider community can be targeted for behaviour change. In Ireland, the nation's largest sporting organization, the Gaelic Athletic Association (GAA), has developed a Healthy Club programme to harness, support and further the current efforts of its clubs in promoting the health of individuals and communities throughout the country. This initiative is based on a health promotion settings approach with a set of clearly defined Healthy Club criteria based around four main target areas: governance, environment, partnerships and programmes.

Development: The purpose of this research is to evaluate the GAA Healthy Club initiative, which is being piloted in 16 clubs across Ireland. The evaluation has three components; namely to comprehensively assess (i) the process, and (ii) impact of the initiative in participating clubs, and (iii) to engage in action research to assist clubs in the implementation of the healthy club concept, from the initial development stage, to programme design and subsequent evaluation. Questionnaires will be used to carry out a needs and

resource analysis of clubs and communities, interviews and focus groups will be conducted to explore the experiences and engagement of these and other partners while membership numbers and effectiveness of programmes will also be assessed. Finally, observation will also be undertaken to monitor the implementation of newly developed club procedures and policies.

Conclusion: Engagement with participating clubs and GAA management at all phases of this evaluation will ensure that change can be implemented during the research process to facilitate learning and development throughout. Furthermore, charting the process of the development of a Healthy Club and translating it into a practical 'how to' guide is a key goal of this proposed evaluation. It is essential that findings from this research are transferable and subsequently, disseminated to other clubs.

References:

Kokko S., Oja P., Foster C., Koski P., Laalo-Haikio E., & Savola J. (2011). Sports Clubs for Health – Guidelines for health-oriented sports activities in a club setting. Finland: Finnish Sport for All Association.

This research is funded by the GAA.

Keywords: evaluation, Healthy Club, dissemination

Factors facilitating and inhibiting implementation of easy accessible sporting programs

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Introduction: The organized sport sector has been identified as a potential setting for physical activity promotion. In the Netherlands, ten national sporting organizations were funded to develop and implement easy accessible sporting programs, especially to increase the physical activity of the least active population groups. A total of fourteen programs were implemented during a three year implementation period. For a successful implementation of these sporting programs, insight into factors facilitating or inhibiting implementation was needed.

Methods: The study consisted of four phases. Phase one: In annual face-to-face interviews, representatives of the ten sporting organizations were asked about factors facilitating or inhibiting implementation of their programs. The results were yearly used by the Dutch Olympic Committee to facilitate implementation of the programs. Phase two: The most important factors were grouped according to implementation phase (concept development, organizational preparations, recruiting local sporting organizations, recruiting participants, local implementation, securing program for future). Phase three: The results were presented and discussed during a meeting with representatives of all ten sporting organizations. Factors were eventually added or removed. Additionally, it was discussed how to deal with these fac-

tors. Phase four: Based on the meeting, a final overview of factors was made, incorporating advice how to deal with these factors.

Results: Although factors varied by sporting program, there were some factors that were commonly mentioned. Important facilitating factors were: a program meeting the needs of potential participants (concept development), a program that is easy to perform locally (local implementation), an enthusiastic and persistent project coordinator (organizational preparations) and collaboration with other organizations (e.g. recruiting participants). Not complying with these factors, inhibited implementation. Factors that were specifically mentioned as inhibiting factors were: implementing a costly program (recruiting local organizations) and a conservative attitude of local organizations (recruiting local organizations).

Conclusion: The overview of factors, as well as the accompanying advice, can be used by sporting organizations when developing and implementing easy accessible sporting programs. This will facilitate development and implementation of current and future sporting programs.

Keywords: inhibiting factor, physical activity, sporting organisation, facilitating factor, implementation

Favourable health effects of electrical assisted bicycle use among commuters

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Introduction: In the Netherlands, electrical assisted bicycles (EABs or pedelecs) cover over 40% of the bicycle retail sales. This increased use of EABs can be beneficial for health, especially when utilized by employees formerly commuting by car. To study the possible health effects of EABs use by employees, a project that rewarded sustained EAB use by former car commuters was evaluated.

Methods: Employees commuting by car and having a commuting distance of at least 5 km were eligible to participate. At the start of the project, each participant signed an agreement specifying the estimated amount of kilometres they planned to cycle during the project. Their reward (€0.10 per km) was also paid out at that time, so participants could use this money to purchase their EAB. Data on commuting behavior, meeting the physical activity (PA) guidelines and subjective health were collected using web-based questionnaires before obtaining the EAB, at 3 and at 12 months. During one year follow-up, participants listed their EAB use weekly online.

Results: 150 participants (response rate 56%), mainly highly educated older men completed all questionnaires. EAB use during commuting was substantial in the first 3 months as well as on the long-term. The average commuting distance was 14 km, with a mean cycling frequency of 2.7 times a week. Among those participants who usually

used their EAB during commuting (90%), the average travelling time increased with about 10 minutes. The percentage EAB users complying with the PA guidelines almost doubled from 47% to 93%. Participants indicated to feel healthier and experienced a higher fitness level compared to baseline. The mean decrease in BMI was not significant.

Discussion: Regular EAB use among commuters results in positive health effects. The currently used rewarding system seems to play an important role in the sustained use of EABs among former car commuters.

Keywords: active transport, physical activity guideline, commuting, electrical assisted bicycle, employees

Guidance on HEPA promotion in socially disadvantaged groups-outcomes from the WHO PHAN project

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Introduction. Physical activity (PA) has increasingly been recognized as a priority for public health policy. PA levels tend to be low in socially disadvantaged groups (SDG) and it can be very difficult to promote PA in such population groups. Guidance on good practice and policy formulation on targeted approaches is needed and has recently been published as part of the WHO Physical Activity Networking (PHAN) project. Conclusions on good practice elements for HEPA promotion in SDG were based on (a) a review of existing evidence in Europe and elsewhere,(b) a compilation and analysis of case studies and (c)a review and analysis of national policies on PA.

Methods. A search of the European published and grey literature on PA and disadvantage produced data from all EU Member States but one (89 studies, and 6 review studies). A review of case studies in SDG yielded 91 eligible projects and an in-depth review and analysis of 29 case studies from 9 member states was conducted. Good practice elements and recommendations for PA promotion were identified. A total of 121 policy documents on promoting physical activity were reviewed for coverage of SDG for specific action.

Results and Discussion. The challenge of PA promotion in SDG lies in the complexity of understanding the multifactorial nature of 'social disadvantage', and also in respecting the importance of the process-how individuals are targeted and engaged, and how programmes are implemented is of the essence. SDG may need more intensive support at all stages, with greater project time, funding and capacity-building needs. SDG are often affected by a variety of life challenges and many of the compiled case studies reported on a range of physical activity related outcomes, such as general well-being, employability, and social integration. The policy phase indicated that only 24% of the 121 policy documents acknowledged the need to consider

SDG as a priority target, indicating that awareness of the issue, and integration into mainstream policies, is low. The policy review indicated that sports activities were most often cited as a way of promoting physical activity, with other sectors (e.g. transport, environment) much less frequently considered. There is potential for more multisectoral approaches. Key principles related to intervention delivery and evaluation,policy action and formulation, and research are outlined.

Acknowledgment:

Co-funded by the EU in the framework of the Health Programme 2008-2013.

Keywords: best practice, HEPA, policy, social disadvantage

Health enhancing physical activity in later life: The case of allotment and community gardening.

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Introduction. A growing body of evidence highlights the potential of gardening activity to enhance health and well-being, but there is a lack of robust scientific data to confirm this. The Growing a Healthy Older Population(GHOP) project is an ongoing investigation into the benefits of gardening for healthy ageing. Following on from our oral presentation at HEPA2012, we present new results regarding specific benefits of allotment and community gardening activity in later life.

Method. The study recruited 130 allotment and community gardeners and a wait-list control aged over 50 years old and utilised a mixed methods approach. Quantitative measures of physiological health and psychological well-being were collected in a 4-month prospective evaluation study. Qualitative methods included 'activity diaries' where participants recorded their experiences of gardening and semi-structured follow-up interviews with a sub-sample to explore these experiences in more depth. Interview data were analysed using thematic analysis.

Results. Compared to the general Welsh older population, a larger proportion of the gardener participants reported physical activity levels that met recommended guidelines. Data analysis has revealed improvements in some measures of health and well-being for the gardener participants compared to the wait-list control group. For example, there were decreases in body mass index and perceived stress levels, and increases in hand-grip strength and levels of self-esteem. Some results were unique to either allotment or community gardening, and to either male or female gardeners. The interview data highlights other benefits to health and well-being that were not picked up by the quantitative measures and thus deepens our understanding of the ways in which gardening can enhance health in later life.

Discussion. This project is taking new steps forward in the understanding of how gardening activity may be a particularly beneficial form of physical activity for healthy ageing. Our research has demonstrated that gardening can offer opportunities for tackling many of the current health concerns for the older population, including increased physical activity and reduced social isolation. The ongoing research that we are conducting will provide further understanding of the mechanisms through which allotment and community gardening in particular can lead to these outcomes.

Funded by the Welsh Government National Institute for Social Care & Health Research.

Keywords: Well-being, Older Population, Gardening, Green Exercise, Body Mass Index

Independent and replacement effects of sedentary behaviour, physical activity and standing on all-cause mortality: an analysis of 191,983 Australian adults

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Introduction:

Increased sedentary behaviour (SB) is thought to increase mortality risk independently of physical activity (PA) but it is unclear whether this is due to the direct physiological effects of sitting, or because SB replaces other classes of behaviour, e.g. moderate-to-vigorous PA (MVPA) or light intensity PA and standing. The main aim of this study was to examine the effects of replacing SB with equal amounts of other behaviour classes, particularly standing and PA.

Methods:

The sample included 191,983 Australians (100,670 women) aged ≥ 45 years (61.3 ± 10.5 years) from the 45 and Up Study. Cox models examined the associations between self-reported daily total sitting, screen time, standing, walking, and MVPA with all-cause mortality using: i) a partition model (i.e. adjusted for covariables – sex, age, education, BMI, smoking, health status – and mutually adjusted for other behavioural classes), and b) an isothermal substitution model (i.e. replacing one hour of each activity class with the same amount of another while holding total time in all other activity classes constant and adjusting for covariables).

Results:

Over 815,027 person-years of follow-up, 6,882 deaths occurred. Sitting (per-hour HR, 95%CI: 1.02, 1.01-1.03) and screen time (1.01, 1.00-1.02) were independently associated with increased mortality risk while standing (0.98, 0.97-0.99), walking (0.92, 0.87-0.98), moderate PA (0.95, 0.92-0.98), and vigorous PA (0.82, 0.73-0.93) were associated

with reduced risk. There were beneficial effects for replacing sitting with equivalent amounts of standing (per hour HR: 0.95, 0.94 – 0.96), walking (0.90, 0.85 – 0.95), and moderate (0.93, 0.90 – 0.96) and vigorous PA (0.80, 0.71 – 0.91). There were beneficial effects for replacing screen time with standing (0.96, 0.95 – 0.98), walking (0.91, 0.86 – 0.97) and moderate (0.94, 0.91 – 0.97) and vigorous (0.81, 0.72 – 0.92) PA.

Discussion:

Replacing SB with equal amounts of standing, walking and MVPA is beneficially linked to all-cause mortality risk. Our study is the first investigation to suggest that substitution of sedentary time even with standing could have health benefits. Our results have important implications for community/workplace programmes and support the implementation of interventions to replace sitting/screen time with physical activity and standing.

This work was funded by the Australian NHMRC and a Career Development Fellowship by NIHR (UK).

Integrating research into practice to develop physical activity counselling in Finnish health care centres

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Introduction: Based on our previous research, the Finnish Physical Activity Prescription (PAP) concept (including a prescription form) has proved feasible and effective in promoting physical activity (PA) in routine physician appointments. However, more local efforts are needed to facilitate adoption of PAP among health care providers.

Development: The development project in 2010-2013 was implemented at local level in municipal health centres, aiming 1) to increase health care providers' knowledge about PA and health, and about behavioural counselling, 2) to increase PA counselling and its documenting in electronic patient records, 3) to improve counselling practices by facilitating the uptake of PAP, and 4) to enhance collaboration between counselling providers.

Four health centres in Pirkanmaa district participated in the 6-month development process including seven phases. A multi-professional team responsible for the project was nominated in each centre. The researchers supported the teams with baseline and follow-up evaluation, four goal-oriented tutor meetings, and e-mailed tasks. In the beginning the researchers organized a training session and in the end a conclusion meeting to the whole staff.

Outcome evaluation is based on questionnaires to the staff and patients, and on counselling logs kept by the staff for 15 consecutive patient visits at baseline and at 6 months. The third sector agents were interviewed about counselling collaboration. The main outcomes are the staff's knowledge about PA and health, the frequency and contents of

PA counselling, the frequency of using PAP concept, the frequency of documenting PA counselling in patient records, and collaboration with the third sector. Process evaluation is based on meeting minutes of the teams and of the tutor meetings.

Conclusions: During the development project a working tool kit was developed, starting with an updated PAP form (also in English, www.ukkinstituutti.fi/filebank/820-liikkumisresepti-engl-copy.pdf). The kit contains assessment questionnaires, logs, and a working manual to guide multi-professional teams through the process. The tool kit (in Finnish) is available in Internet (www.ukkinstituutti.fi/liikkumisresepti).

The next phase is to assess the utilization of the tool kit in multi-professional work in three health centres in the autumn 2013. The results of both projects will be reported in 2014.

Funding: The Finnish Ministry of Social Affairs and Health

Keywords: counselling practices, physical activity prescription, development program, evaluation, primary care

Interrelationship of physical activity and mental disorders in children and adolescents

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Introduction

In recent decades, the number of physically active children and adolescents has declined steadily (Hallal et al., 2012). Meanwhile, the prevalence of mental health disorders in children and adolescents have increased (Barkmann & Schulte-Markwort, 2012). While meta-analyses revealed evidence based effects of physical activity (PA) on mental disorders, the causality is still unclear (Ahn & Fedewa, 2011). We aimed to determine the reciprocal relationship between PA and mental disorders.

Methods

1492 children and adolescents (age, 11 to 17 years) participated in 2003-2006 (t1) and in 2009-2012 (t2) in the Motorik Modul Longitudinal Study (Woll et al., 2013), a detailed substudy of the nationwide German Health Interview and Examination Survey for Children and Adolescents (KiGGS). Mental disorders were assessed using the Strengths and Difficulties Questionnaire (total difficulties score) in the KiGGS-Survey, and PA was assessed using the MoMo-Physical-Activity-Questionnaire (mean of the frequency of activity of at least 60 min in the last 7 days and in a habitual week). We tested competing structural models using full panel designs to investigate the proposed cross-lagged effects.

Results

The autocorrelations show a higher stability of mental disorders over time ($r=.41$; $p<.01$) compared to PA ($r=.20$; $p<.01$). At t1 the correlation of PA and mental disorders was slightly lower ($r=-.09$; $p<.01$) than at t2 ($r=-.11$; $p<.01$). The correlation of mental disorders (t1) with PA (t2) was higher ($r=-.08$; $p<.01$) than compared to that of PA (t1) with mental disorders (t2) ($r=.00$; $p>.05$).

Discussion

The cross-lagged correlations were weak presumably because of the low stability especially with regard to PA. The results of this study suggest that the severity of mental disorders rather predicts the amount of PA than vice versa. However, coefficients were very low, and we cannot rule out the impact of third variables. Hence, while a causal relationship between mental disorders and PA seems to exist, further evidence is needed to strengthen these results.

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Funding

Federal Ministry of Family Affairs, Senior Citizens, Women and Youth; Federal Ministry of Education and Research (Germany).

Keywords: adolescents, children, physical activity, mental disorders, interrelationship

Methods for multi-level economic evaluation of a community-based physical activity program

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Introduction

The Netherlands Institute for Sports and Physical Activity (NISB) developed a community-based physical activity program, Communities on the Move (CoM), to initiate and enhance physical activity in inactive groups. Up to 2012, the program has been carried out in 37 Dutch municipalities,

reaching over 100 low SES groups. Preliminary outcomes of CoM are promising. However, adequate scientific research is needed to demonstrate cost-effectiveness of CoM. The specific aim of this study is to report on the development of adequate indicators to assess cost-effectiveness at the individual and community level.

Methods

At the individual level, Willingness to Pay (WTP) was used. Based on literature, it is expected that WTP is positively affected by income, education level, contribution fees to CoM, membership of sports association and perceived health status.

Participants in three CoM programs (N=42) filled in a questionnaire, as part of a broader evaluation study including closed WTP questions. WTP was established for 1) physical activity, 2) sports clothing and accessories and 3) travel time to participate in physical activity.

At the community level the Effect Arena (EA) tool was used. The EA is a tool to structure the dialogue about investments and societal benefits of a program, as perceived by the different stakeholders. The EA was used in a workshop with stakeholders (N=9) in one CoM program in the city of Helmond: welfare work, municipality, the municipal health service, housing cooperation and the playground.

Results

WTP for physical activity was positively affected by education level, sports clothing and accessories and the level of contribution to CoM. On average WTP was 12 euro per month, but differed strongly across the three programs (7 – 22,50 euro). Higher educated participants have a higher WTP for all three.

At the community level, increased self-management, improved quality of life and feeling healthier by participants were mentioned by stakeholders as the most important benefits. The establishment of an overview of the costs of the program appeared to be a rather cumbersome exercise.

Discussion

Based on both individual level and community level results, a next step is to determine effectiveness, for example with a social return on investment (SROI) analysis or another method for cost benefit analysis.

Keywords: Physical activity, Economic evaluation, Willingness to pay, Perceived societal benefit

Mothers' everyday life and physical activity relationship
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There has been a lot of talk about the challenges women

face when trying to fit together family life and working life. However, motherhood and other areas of everyday life have been less talked about. This study focused on the physical activity relationship of physically inactive Finnish women with small children. The aim was to increase knowledge on mothers' everyday life and its relationship to physical activity by examining how the women described their way of living and daily routines as mothers.

The data consisted of qualitatively analyzed thematic interviews of 13 mothers who participated in a health enhancing action research intervention. The interviewees had been physically active earlier on in their lives. However, starting a family and becoming a mother had changed their physical activity relationship.

The everyday life descriptions of the mothers were divided into two main categories. These categories were regarded as thematic dilemmas that summarized mothers' way of narrating about their everyday life and physical activity: 1) Past vs. present; the mothers compared their current life situations to past ones, and tried to understand the multidimensional changes that had taken place during the years. As mothers of small children, active exercising and physical training were not considered appropriate and possible. 2) Family time vs. personal time; among multiple duties, routines and social bindings the mothers felt exhausted and frustrated and wished for more personal time and social support from peers. Social contacts with other mothers were presented to give motivation and justification to be physically active without children.

On the basis of the study, the everyday dilemmas of the mothers were related to their physical activity relationship. Everyone's personal history and current life situation had a key role in physical activity behavior and attitudes towards physical activity. By describing everyday challenges of being a mother the women reflected upon sociocultural conceptions of "good motherhood" in postmodern society. While enhancing health and physical activity, different social groups should be recognized and understood better. Physical activity should be promoted by taking into account specific characteristics of social groups.

Keywords: qualitative research, motherhood, physical activity relationship, everyday life

Objectively assessed sedentary time and diabetes: a case control study

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There is some evidence to suggest detrimental, linear associations of objectively assessed sedentary time with various metabolic risk factors (Healy et al, 2011), although the data remains equivocal (Stamatakis et al, 2012). If a reduction in diabetes risk can be achieved by rectifying the imbalance between sitting time and non-exercise light-intensity activity,

this would have important implications for early intervention and treatment. The aim of this study was to compare objectively assessed levels of sedentary time and physical activity in diabetic patients and healthy controls.

Participants comprised 122 diabetic patients (aged 63.9±6.9 yrs) recruited from primary care and 223 healthy controls (aged 64.0±6.3 yrs) matched on a 1:2 ratio for age, sex, and income. Participants wore an Actigraph GT3X around the hip during waking hours for seven consecutive days. All participants included in the present analysis recorded a minimum of 10 hours per day wear time for six to seven days. The first and last days of data were excluded from the analysis and non-wear time was defined as intervals of at least 60 consecutive minutes of zero cpm. General linear models were employed to compare Actigraph data between cases and controls, making adjustments for wear time.

In comparison with healthy controls, diabetic patients recorded more sedentary time (25.7, 95% CI, 10.3, 41.2 min/d), less light activity (-22.3, 95% CI, -36.2, -8.4 min/d), although similar levels of moderate to vigorous activity (-3.3, 95% CI, -8.8, 3.2 min/d) after adjusting for wear time.

In summary, our results show differences in the balance between sedentary and light-intensity activity in diabetic patients and healthy controls. The protective effect of physical activity on diabetes risk may be partly linked with a displacement of sedentary time. Given the barriers to physical activity, it would be desirable if patients could gain benefit from incorporating relatively light levels of activity into their treatment, which might be accomplished by simply reducing or breaking up sedentary time with movement.

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Funding:

The British Heart Foundation (RE/10/005/28296)

Keywords: Sedentary, Accelerometry, Case-control, Diabetes

Occupational sitting, television viewing, and positive mental wellbeing: The Scottish Health Survey

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Introduction:

Sedentary behaviours have been associated with adverse mental health although positive mental wellbeing has not been examined. We studied the association between two domains of sedentary behaviour (occupational and TV view-

ing during leisure) and positive mental wellbeing.

Methods:

Participants (N=1598, aged 49.6 ± 17.6 yrs) were drawn from the 2008 Scottish Health Survey, a representative sample of community dwelling adults. Self-reported TV viewing time, occupational activity (walking and standing; mixture; mainly sitting), and physical activity levels were assessed. The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) was used to measure positive mental wellbeing that is a 14 item scale which covers both hedonic and eudaimonic perspectives.

Results:

On average participants spent 24hrs/wk viewing TV and 30.5% had a largely sedentary occupation. Participants viewing TV > 4hrs/d had lower WEMWBS scores (B = -1.40; 95% CI = -2.50, -0.30) compared to those viewing TV <2.5hrs/d, after adjustment for age, sex, smoking, physical activity, chronic illness, socioeconomic status, body mass index. In analyses stratified by physical activity level, the association between TV viewing and positive wellbeing was stronger in physically inactive participants (p-trend = 0.001) compared with the medium and high activity groups (p-trend,medium = 0.12; p-trend,high = 0.98). There was no association between occupational sitting and positive mental wellbeing.

Discussion:

Positive mental wellbeing was inversely associated with television viewing during leisure. This association appeared to be moderated by physical activity since it became weaker as physical activity levels increased. However, not all types of sedentary behaviours are linked to lower positive mental wellbeing. It is likely that these associations are being driven by the contrasting environmental and social contexts in which they occur. Future studies might investigate such complex dynamics using mobile technologies and/or wearable sensors (e.g. smartphones, tablets, accelerometers) for objectively assessing real-time events in naturalistic settings with minimal burden for study participants.

Keywords: sedentary behaviour, epidemiology, positive mental health, positive wellbeing

On the job training – a method for improving children's motor skill development in kindergartens

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Introduction: Model Development Project "Klar – Parat Husum" (in English: Ready– Set Husum) is a health promo-

tion initiative in the Copenhagen suburb Husum aimed at providing better opportunities for physical activity and club sports participation as well as improving School PE for children and adolescents unfamiliar with sports and exercise. A large part of the project is training and education of front-line personnel in schools and kindergartens – an approach called "On the job training".

Development: The education program for kindergarten teachers is of 55 hours duration, spread over 12 months. The budget for the program is 22,000 euro. In 2011-2012, 32 teachers from 12 kindergartens that serve approximately 650 children (age 3-6 years) participated in the program. The program includes a 25-hour theoretical course about child physiology and development, senses and motor skills, play, games, and adaptation of activities, as well as 10 hours of practical teaching in organized playing sessions, where the teachers get inspiration for games that can be played to improve children's motor skills. The expected outcome is to improve the children's motor development and daily physical activity and consequently reduce the health inequality they are exposed to. The program is followed up by workshops and networks are established between the teachers to ensure cooperation and exchange of experience and knowledge.

Results and Conclusion: Course activities held at the kindergartens have contributed to the teachers' awareness on how to increase children's physical activity levels. More than 80% of the teachers report they are now contributing more to physical activity in the children's lives. 60% of the kindergartens have adopted the tools for conducting organized playing sessions. In the 5 kindergartens with the highest number of children with low motor skills, the education of kindergarten teachers has led to a decrease in the amount of children having motor skill difficulties from 41% to 11% ($p < 0.05$). Children from areas with low mean socioeconomic resources had significantly lower motor skill test scores than children from other areas. This highlights the need for improving the provision of high quality physical activities for children from neighborhoods with a high number of unemployed and low income residents. In 2013 and 2014 part of the project will be adapted to another area in Copenhagen with health inequality.

Keywords: health promotion, physical activity, children, education program for kindergarten teachers, motor skills

Oulu Parks: conditions for HEPA – from city parks to wilderness national parks

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Introduction

Sedentary lifestyle and mental health problems constitute emerging challenges across the globe. However, increasing evidence substantiates the beneficial effects of the natural environment on physical activity, health and well-being.

In Finland, a programme launched recently by Metsähallitus Natural Heritage Services promotes physical activity and public health by emphasising the significance and potential of green spaces in a physical-activity context.

Development

The Open project was launched in Oulu region in April 2012 to implement the programme. The two-year project is managed by Metsähallitus, and has a total budget of 380,000e. Collaboration partners are the municipalities of Oulu region, the University of Oulu and the University of Jyväskylä.

The Open project aims to introduce an "Oulu Parks" concept that will network green spaces in Oulu region regardless of the site owner/manager. The concept embodies piloting cooperation between two nation-wide public geographic information databases to enable the delivery of all information on Oulu Parks sites through one information channel. A further goal is to improve communication, visitor management and site accessibility.

The concept aims to activate people towards spending time outdoors and engaging in everyday physical activity in green spaces. The guiding idea that nature, outdoor recreation and the related benefits should be accessible to everyone would serve to reduce health inequalities.

The project also seeks to increase knowledge on the effects of green spaces on health and well-being. A literature review of international research and effect measurement methods on the health benefits of nature will be conducted as part of the project. A visitor survey assessing the perceived health benefits of nature visits will also be developed and piloted.

Conclusion

Access to good-quality green space is associated positively with individuals' physical activity levels. Providing information on nature sites, and on the health benefits of physical activity in the natural environment, may promote engagement in health-enhancing physical activity, as well as awareness of the significance of green spaces as environments that enhance such activity. A concept developed in the project will provide a model to be multiplied in other areas.

Grant funding

The project is funded by the European Regional Development Fund, as well as by Oulu region municipalities and Metsähallitus.

Keywords: accessibility, nature, health benefits, green space, outdoor activities

Physical activity and obesity as combined health predictors and intermediate role of psychosocial variables

in children

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INTRODUCTION. Children's overweight and lack of physical activity (PA) are major issues worldwide for their health consequences already present in early age [NICE, 2008]. PA involvement is determined 'by' and has influence 'on' psychological and social factors, especially in groups at risk such as obese children. PA is central to manage weight but, in the activity setting, obese children are commonly disadvantaged compared with normal-weight peers, so the major challenge remains to motivate them towards PA and to maximize enjoyment and adherence [Hills et al, 2007].

Our study is aimed at examining the differences between obese and non-obese children in psycho-social determinants also related to PA involvement and modifiable by means of effective interventions.

METHODS. A cross-sectional study, carried out from 2010 to 2012 in Abruzzo Region (Italy), collected data on 279 pupils 8-10 years old: anthropometric measures, organized physical activity (OPA), motor tests, psychosocial characteristics. Spearman correlation and non parametric tests were used to evaluate association between variables and differences in sub-groups. Mediation analysis [MacKinnon, 2008] with dummy independent variables was used to estimate indirect effect of mediators (actual motor competence; perceived physical competence; enjoyment; PA self-efficacy) in the causal relationships between obesity and OPA (predictors) and self-esteem (health outcome).

RESULTS. Self-efficacy, enjoyment, actual and perceived physical competence are higher in non-obese and/or OPA involved children at significant level. However combining obesity status and OPA involvement some unexpected situations appear: the enjoyment and self-esteem are worse in 'non obese-non active' children than in 'obese'. Mediation analysis highlighted that obesity and OPA are significantly mediated by perceived physical competence and self-efficacy in their effect on self-esteem (respectively 76.6 % and 47.8 % of effect size) while actual motor abilities or enjoyment haven't any significant mediation role.

DISCUSSION. Our study identified perception of physical competence and self-efficacy as important issues for health and physical education and confirmed the importance of psychosocial determinants of PA both for mental development and for chronic diseases risk reduction from childhood to later life.

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Keywords: children, physical activity, obesity, psychosocial

determinants

Physical activity and reasonable screen time in adolescence predict high educational attainment in early adulthood

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INTRODUCTION

Physical activity and sedentary behaviour may influence academic achievement and educational attainment. Only a few studies have examined both physical activity and sedentary behaviour in association with subsequent educational attainment. This prospective study investigated whether adolescent physical activity and screen-based sedentary behaviour predicted educational attainment in early adulthood.

METHODS

The study sample included 5,224 adolescents born in 1986 who were recruited through the Northern Finland Birth Cohort 1986 (NFBC 1986). At age 16 (in 2001-2002), the adolescents reported their participation in physical activity outside school hours, their sports club membership and their average daily TV viewing, computer use and time spent playing video games. Information about their educational levels (degrees earned) by the age of 25 (up to 2011) came from Statistics Finland's Register of Completed Education and Degrees. Odds ratios (OR) and their 95% confidence intervals (95% CI) for high educational level (polytechnic and/or university education) were obtained from multivariate logistic regression, and were adjusted for gender, self-rated health and mother's education. Mutual adjustment was employed for physical activity, sports club membership and screen-based sedentary behavior.

RESULTS

Moderate physical activity (OR 1.20; 95% CI 1.02, 1.41) and active sport club membership (OR 1.57; 95% CI 1.33, 1.84) in adolescence predicted high educational level in early adulthood. Furthermore, reasonable time spent viewing TV (1-2 hours/day vs. >2 hours/day) (OR 1.44; 95% CI 1.22, 1.69), playing or working on a computer and/or play-

ing video games (<1 hours/day vs. >2 hours/day) (OR 1.27; 95% CI 1.02, 1.58) were more likely predictors of high educational level, compared with high levels of screen time.

DISCUSSION

Physical activity and reasonable screen time in adolescence predicted high educational attainment (degrees) in early adulthood. Physical activity and reasonable screen time in adolescence may support favorable educational trajectories later in life.

This study was supported by grants from the Finnish Ministry of Education and Culture.

Keywords: physical activity, screen time, sedentary behaviour, longitudinal, education

Physical activity of German school children during physical education

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The increasing prevalence of physical inactivity, overweight and obesity in children and adolescents around the world is one of the major threats to public health. Physical Education (PE) at school offers one opportunity to foster regular physical activity (PA) in school children. However, previous research has shown that children engage in hardly any moderate to vigorous PA (MVPA) during regular PE lessons (Coe et al., 2000). Therefore, this study aims to investigate whether primary school children spend more time in MVPA during a single PE lesson, compared to double period of PE.

In a sub-sample of a large school-based intervention programme, for six days PA of 294 children (7.1±0.7 years, 16.0±2.2 BMI, 48% male) was objectively measured using Actiheart® (CamNTEch, Cambridge, UK). Based on the children's timetables, PE periods were determined and PA was individually calculated. PA was classified in light (1.5-3 METs), moderate (3-6 METs) and high (> 6 METs) intensities. Weight status and size of PE hall were determined during a school visit.

On average, children spent 8.5±7.3 min of their 45 min PE lesson in MVPA. Boys were significantly more active than girls (9.7±7.6 min vs. 7.5±7.0 min, respectively; p>0.01). All children participated in 135 min PE a week, 32.7% of children were scheduled one double period of PE in addition to one single PE lesson. The other two thirds of children were scheduled three single lessons of PE. Children, who had a double period of PE engaged in significantly less MVPA than children, who had three single periods of PE (6.7±6.9 min/45 min vs. 9.4±7.4 min/45 min, respectively; p>0.01). Weight status and size of PE hall did not influence children's MVPA during PE.

These results show that primary school children spend only

19% of their PE lessons in MVPA. Therefore, in this age group, several single periods of PE seem to be more effective in getting children to engage in more MVPA than one double period per week. This commends the daily PE lesson which some parts of Switzerland and also the city of Beijing have already integrated into their children's timetables.

Keywords: Physical Education, Moderate to vigorous physical activity, Primary School Children

Physical inactivity patterns based on a novel accelerometer data modeling: Characteristic differences of the proposed inactivity categories

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Introduction

There is plenty of evidence that physical inactivity (IA) is a risk factor for multiple health outcomes, independent of physical activity (PA). We have recently developed a method to derive IA parameters from raw, triaxial accelerometer data. The method is based on the mean amplitude deviation (MAD) of acceleration, and the IA categories are based on the amount of time spent sitting as a proportion of total measurement time and the average number of stand-ups during a day. The purpose of this study was to describe selected parameters of MAD and body weight in the three proposed IA categories.

Methods

The present study is based on the PA-sub-study of the Health 2011 survey. 2455 persons participated the sub-study and 84% (n=2064) of them were willing to participate objective activity assessment. Participants were given an accelerometer (Hookie AM 20, Traxmeet Ltd, Espoo, Finland) for seven-day-measurements. The third of participants who sat the most (50% or more of the measurement time) and the third of participants who stood up the least (80 times or less a day) were regarded as most inactive (IA+). The least inactive (IA-) were those who sat less than 50% of the measurement time and who stood up more than 80 times a day. The combinations of the most sitting and the most stand-ups as well as the least sitting and the least stand-ups were regarded as middle group of IA (IAM). The analyses were conducted by SPSS software, version 20 (SPSS Inc, Chicago IL).

Results

Only the participants who had accelerometer data for at least 4 days with >=10 h/day were included into the study (n=1472). The three proposed IA categories differed statistically significantly from each other in the average number of steps taken per day, in the proportion of light PA and in

the mean body weight. The IA+ group took fewer steps, had less light PA and weighted more than the IA- group, which differed correspondingly from the IA- group. The IA+ group also had less moderate PA than the other two groups as well as less vigorous PA and slightly less running steps per day than the IA- group. There was no statistically significant difference between the IA groups in the fulfillment of the current recommendation of aerobic PA.

Discussion

The present study showed that inactivity was only slightly associated with vigorous PA and running steps. There was no association with the fulfillment of the PA recommendation, which indicates that IA is a distinct characteristic from PA.

Prevention of overweight in 0-3 year old children: effect of the BBOFT + intervention on sleep, TV time, soft drinks intake and weight status.

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Background

The prevalence of overweight among children is rising rapidly and childhood overweight increasingly occurs at a younger age. The 'BBOFT+' intervention, offered at well baby clinics, focusses at implementing healthy lifestyle habits (healthy sleeping, reduced soft drinks intake, less TV time, outdoor exercise, activity and play, breastfeeding and eating breakfast daily) through effective child rearing from birth to age 3 years old. This study aims to evaluate the effects on the prevention of overweight of the BBOFT+ intervention, compared to care-as-usual (CAU). In this presentation we focus on the effect on sleep, TV time, soft drinks intake and weight status (BMI-SDS).

Method

In a cluster-randomized control trial, 51 Youth Health Care teams participated of 10 regional YHC organizations. Parents of more than 2500 children filled out questionnaires at the age of 2 weeks, 6 and 13 months. Weight status (BMI-SDS) is determined based on parent reported child's weight and length.

Preliminary results

Due to differences at baseline in SES of the mother and ethnicity in the BBOFT+ and CAU group, all analyses comparing both intervention groups were controlled for ethnicity and SES of the mother. At the age of 13-16 months, children of the CAU group slept at night on average 6.6 minutes shorter than children in the BBOFT+ group ($p < 0.05$). There were no significant differences between the CAU and BBOFT+ group on TV time, the intake of soft drinks, or BMI-SDS at the age of 6-8 months or 13-16 months. Furthermore, no

significant association was found between any of the variables and the BMI-SDS of the children at the age of 13-16 months.

Conclusion

The BBOFT+ intervention does not have an effect on BMI (parent-reported measures) at the age of 13-16 months. The BBOFT+ intervention has a positive effect on nighttime sleep duration at the age of 13-16 months. The BBOFT+ intervention has no effect on TV time and the intake of soft drinks. Further analyses will determine if the effect on sleep duration will remain in the long run (age 36 months) and in multilevel analyses. The analyses will be repeated when the objectively measured BMI-SDS up to the age of four years are available (September, 2013).

Keywords: Overweight, Child, Parenting, RCT, Prevention

Promoting physical activity in cardiac rehabilitation: a novel concept using intelligent technology

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Introduction:

Daily physical activity (PA) and exercise training (ET) are core tasks in cardiac rehabilitation (CR). However, the majority of cardiac patients are not engaging in targeted PA, even when they are enrolled or completed in CR. We hypothesized that CR concept using intelligent technology will increase PA and ET adherence in acute coronary syndrome (ACS) patients.

Methods:

ACS patients ($n=33$, age 61 ± 13 yr, BMI 28 ± 5 kg/m², left ventricular ejection fraction $63 \pm 10\%$, 94% on β blockade) completed a six month exercise based CR program, which was guided according to current guideline reported recently by Corra et al (2010). A wrist-worn accelerometer PA device (Polar Electro, Kempele, Finland) was used to collect PA during the intervention. The patients were able to self-monitor their daily realized vigorous PA (> 3.5 METs) by the device aiming to 30 min/day. Once a week the patients performed a guided exercise session followed by a physiotherapist in fitness room equipped with intelligent strength devices (HUR Oy, Kokkola, Finland). After each session patients received an individual feedback from health related indexes, e.g. aerobic fitness and muscular strength, which were gathered during exercise. Instructions were also given for home based training and patients wrote all the training sessions in a diary. The realized ET was summarized from the diaries by calculating training load (Rating of Perceived Exertion (RPE) x duration of exercise session) at monthly basis. PA data was analyzed accordingly to calculate daily

vigorous PA.

Results:

The average of monthly realized ET exceeded the prescribed ET (training load 14262 ± 1033 vs. 9653 ± 99 , main effect $p=0.019$). 79% of patients (26/33) crossed the target amount of ET during intervention. Accordingly, the average of objectively measured vigorous PA was 46 ± 1 min/day meaning that 25 out of 33 patients (76%) surpassed the daily 30 min of vigorous PA.

Discussion:

The exercise based CR concept using intelligent technology seems effective to increase PA to the recommended level. Self-monitoring techniques such as keeping ET diary, wearing PA device and feedback of health-related indexes at weekly basis contribute markedly to daily PA and ET realized in ACS rehabilitation.

Reference:

Corra U. et al, 2010, Eur Heart J, pp. 1967-1974

Grant funding:

This study was funded by grant from the Academy of Finland (Helsinki, Finland).

Keywords: technology, physical activity, cardiac rehabilitation, exercise

Sedentary behavior in association with academic achievement and cognition in children

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INTRODUCTION: Excessive sitting has been shown to be associated with higher levels of metabolic and cardiovascular risk factors. In addition, screen-based sedentary behaviour may have harmful effects on cognitive functions and academic achievement in children and adolescents. The purpose of this study was to determine the associations between sedentary behaviour, cognitive functions and academic achievement in children. **METHODS:** The study population consisted of 277 Finnish children (mean age 12.2 years, 56% girls). Sedentary behaviour was measured by a questionnaire (self-reported screen time) and objectively by using an ActiGraph accelerometer (sedentary time) with a cut-off value of 100 counts per minute (cpm). Grade point averages (GPA) were obtained from the education services of the City of Jyväskylä. A computerised Cambridge Neuropsychological Test Automated Battery (CANTAB) was used to assess cognitive functions: visual memory (Pattern

Recognition Memory), executive function (Spatial Span and Intra-Extra Dimensional Set Shift) and attention (Reaction Time [RTI] and Rapid Visual Information Processing [RVP]). Linear regression analysis was used to analyse the relationships between sedentary behaviour, academic achievement and cognitive functions. **RESULTS:** Self-reported screen time had a negative linear association with GPA ($p=0.002$) after adjusting for gender, children's learning difficulties, parental education, amount of sleep and physical activity. Self-reported screen time was not associated with measures of cognitive functions. Objectively measured sedentary time was not associated with GPA ($p=0.285$). A high level of objectively measured sedentary time was associated with weaker performance in the reaction time test (RTI) ($p=0.042$) after adjusting for gender, but the association did not remain statistically significant after adjusting for physical activity ($p=0.817$). A high level of objectively measured sedentary time was associated with good performance in the sustained attention test (RVP) ($p=0.003$). **DISCUSSION:** In this study, children's self-reported screen time was negatively associated with academic achievement, but not with cognitive functions. Objectively measured sedentary time was associated with certain types of cognitive function, but not with academic achievement. Further studies are required to clarify our understanding of these associations.

This study was supported by grants from the Ministry of Education and Culture, Finland.

Keywords: children, screen time, sedentary behaviour, cognitive functions, academic achievement

Sedentary behaviour and health – a selective literature review

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Background

Exercise related public health recommendations and research for increased fitness and health had long focused on vigorous exercise or the lack thereof. Recently scientific interest in possible effects of sedentary behaviour (SB) (sitting) independent of moderate-vigorous intensity exercise has been growing. A considerable body of research has emerged on various health related endpoints; this however, has not yet been synthesized. The aim of this review is to summarize and critically assess current literature on sedentary behavior and health.

Methods

We conducted a selective literature search in Pubmed and the Sedentary Research Database with the outcomes SB, risk factors, mortality and morbidity in adults. We included only reviews and systematic reviews.

Results

We identified 12 reviews. Because of the heterogeneity

of original articles, most of them did not perform a meta-analysis. Observational studies suggest an association between SB and all-cause (in two reviews: pooled HR 1,49 and pooled RR 1,13 respectively) and cardiovascular (in two reviews: pooled HR 1,9 and pooled RR 1,15 respectively) but not cancer mortality. SB also seems to be associated with diabetes (in two reviews: pooled RR 2,12) and overweight/weight gain. Evidence on other diseases, such as cardiovascular diseases, hypertension, cancer, and mental diseases is limited also because of the heterogeneity and poor methodology of the studies. Intervention studies found inconsistent evidence that SB is associated with detrimental effects on markers of cardiometabolic risk.

Conclusions

Evidence on detrimental effects of sedentary behavior is decreasingly convincing with the endpoints of mortality, morbidity, and markers of metabolic risk, in that order. Higher TV and screen time, but not total SB seems to be associated with higher all-cause and cardiovascular, but not cancer mortality. Further intervention studies are needed to establish dose-response relationships and the potential of cardiorespiratory fitness and physical activity.

Keywords: "sedentary behaviour", "morbidity", "mortality", "sitting", "markers of cardiometabolic risk"

Sitting time, physical activity and all cause mortality risk in 222,497 Australian adults

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Introduction: Prolonged sitting is considered to be a risk factor for several non communicable diseases independent of physical activity. However, research on sitting and health is still in its infancy and high quality evidence needs to be further accumulated. This study aimed to determine the independent relationships of sitting time and physical activity to all-cause mortality in a sample of Australian adults aged 45 years and older.

Methods: We linked prospective questionnaire data from 222,497 individuals aged ≥ 45 years from the 45 and Up Study to mortality data from the New South Wales Registry of Births, Deaths and Marriages (Australia) for the period 1 January 2006 to 31 December 2010. Cox proportional-hazards models examined all-cause mortality in relation to sitting time, adjusting for potential confounders, including sex, age, education, urban/rural residence, physical activity, body mass index, smoking status, self-rated health and disability.

Results: The mean follow-up time was 2.8 years, which resulted in 621,695 person-years of follow-up. During this period 5,405 deaths were registered. All-cause mortality hazard ratios (HR) were 1.02 (95%CI, 0.95 – 1.09), 1.15 (95%CI, 1.06 – 1.25), and 1.40 (95%CI, 1.27 – 1.55) for

4-8, 8-11, ≥ 11 hr/day of sitting, respectively, compared to less than 4hr/d of sitting, adjusting for physical activity and the other earlier mentioned confounders. Compared to an absolute all-cause mortality risk of 6.5 deaths per 1000 person years for participants with < 4 hr/day sitting and 150-299 min/wk of physical activity, the all-cause mortality risk was 13.6 deaths per 1000 person years for sitting ≥ 11 hr/day and no weekly physical activity. The population attributable fraction for sitting was 6.9%. The association between sitting and all-cause mortality appeared consistent across the genders, age groups, BMI categories, physical activity levels, as well as across healthy people compared to people with pre-existing cardiovascular disease or diabetes.

Discussion: Prolonged sitting appears to be a risk factor for all-cause mortality, independent of physical activity. Public health programs should probably focus on reducing sitting time in addition to increasing physical activity levels.

Keywords: physical activity, sedentary behaviour, all cause mortality

Sport participation and sedentary behavior

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Introduction: Prolonged sitting is a risk factor for mortality and is associated with deleterious health outcomes, independent of physical activity. As a result, those regularly participating in sport and complying to the physical activity guidelines can still be at risk when sitting a lot during the rest of the day. To get insight in the prevalence of this health risk among sport participants and non-sport participants among all age groups, the association between sport participation and sedentary time was studied.

Methods: Cross-sectional data were derived from a continuous monitor describing the prevalence of physical (in)activity and sedentary behaviour in the Netherlands, using telephone interviewing and internet questionnaires. Respondents were asked to estimate the number of hours spend sitting during a regular weekday -at work/school and in leisure time- and during a regular weekend day. A respondent was considered being a sport participant if he/she was engaged in sport at least once a week or at least 40 times a year, regardless of the type of sport.

Results: Between 2006 and 2011, a representative rolling sample of the Dutch population (n=almost 14.000) participated. Sport participation was highest among children (4-11 years; 69%) and lowest among elderly (65 years and older; 39%). 18- to-29 year-old sport participants spent significantly more time sitting during a school/work day than non-sport participants of the same age. Among older adults (50-64 years) the opposite association was found: non-sport participants spent significantly more time sitting at a regular work day than sport participants, independently of socio-demographic and behavioral variables. In both groups, the

difference in sitting time is on average more than half an hour per school/work day. At non-school/non-work days, sport participation was not significantly associated with sitting time, except among 30 to 49-year-olds. In this age group, sport participants spent significantly less time sitting (on average 15 minutes) than non-sport participants.

Discussion: There is no unequivocal answer to the question whether sport participants are more or less sedentary than non-sport participants. Probably, different aspects of the daily living pattern specific for the different age groups can explain the associations found. These should be explored in further detail.

Keywords: sedentary behaviour, prevalence, sport participation, cross-sectional study

Strength in old age – health exercise for older adults (2005-2014)

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Introduction

The national Strength in Old Age Programme is a health exercise programme for older adults that aims to promote the autonomy and quality of life of independently living older adults (75+) with decreased functional capacity. Decreased functional capacity includes anticipatory problems of mobility, early signs of memory illness or mild depression. The programme is coordinated by the Age Institute.

Development

The first stage of the programme (2005-2009) developed new practices for exercise counseling, strength and balance exercise and outdoor activities in third sector projects. In the second stage (2010-2014) the aim is that the 38 municipalities implement good practices in cooperation with NGOs and the public sector.

Local work is supported with the mentoring of the Age Institute including planning, implementation of good practices, follow-up, evaluation, communication, and training. With local networks, learning together and implementation are promoted.

In the municipalities, the development is done in cooperation groups including coordinators for social and health care, sports, and NGOs. The baseline mapping of 2010 showed that there are not enough physical activities or counseling for the target group.

The development work started with training. By the end of 2012, there were 128 new instructors for strength and balance exercise, outdoor activities and senior dance in the municipalities. Locally they have trained 1.950 leaders.

Twenty-seven municipalities have launched new activities.

The number of exercise groups for the target group has almost doubled compared to the baseline, from 367 in 2010 to 686 in 2012. Also the number of participants has doubled, from 4.981 in 2010 to 9.197 in 2012. The exercise groups are of better quality since the mobility of participants was tested in 158 groups (115 groups in 2010). Almost all tested participants (n=943) had better mobility or it remained stable. Outdoor activities and exercise counseling increased but still more development is needed.

Conclusion

The municipalities have introduced good practices. This has been aided by mentoring, training, commitment by decision-makers, networking, common goals, and inclusion of actors. The programme is financed by Finland's Slot Machine Association, Ministry of Education and Culture, and Ministry of Social Affairs and Health.

Keywords: training, mentoring, strength and balance exercise, the elderly

The contribution and potential impact of different modes of physical activity on the achievement of physical activity recommendations for adolescents.

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Introduction: The purpose of this study was to evaluate participation in, and contribution of, different modes of physical activity – physical education, extra-curricular and community based sport and active school transport – to the achievement of physical activity guidelines (PAGL; > 60 minutes of moderate to vigorous physical activity (MVPA) daily).

Method: Adolescents (N=4,122, mean age = 14.5 years + 1.7; 52% female) completed a valid and reliable self-report questionnaire.

Results: Twelve percent met the PAGL. Extra-curricular and community based sport contributed significantly, active school transport contributed but only for females, and minutes of physical education did not contribute to PAGL achievement. Age, gender, socio-economic status and area of residence inequalities were evident both in uptake of different modes of activity and in achievement of PAGL.

Discussion: Opportunities to accrue the required daily minutes of physical activity necessary for health vary greatly and intervention is needed to tackle these inequalities.

Acknowledgement: This research was funded by the Irish Sports Council

Keywords: Physical Education, Active School Transport, Adolescents, Sport, Guidelines

Volunteer development in Finnish national parks

project

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The beneficial effects of nature environment on health and wellbeing have been supported by increasing evidence. This has led to a need to connect nature, the health sector and the voluntary sector involved promoting health. To develop new ways to promote health through local community involvement, recreation and physical activity, Metsähallitus Natural Heritage Services (later the NHS), launched a programme for the promotion of health. The program is being carried out in multi-sectoral cooperation in Finland.

To increase the beneficial effects of recreation through volunteering in protected areas, the Volunteer Development in Finnish National Parks project was launched in February 2012. Studies show that social capital, created by volunteering and group efforts, has a positive effect on health. These effects combined with the health benefits created by just being, feeling and doing physical activity in nature environment, the NHS has a real possibility to have an effect on wellbeing by creating a "Green Gym" for the volunteers.

The objective of the project is to develop the possibilities for volunteering through public, private and third sector cooperation. This co-operation enhances access to nature for different kinds of target groups, thus promoting their health. The development work is based on defining the strategic goals for volunteer work and co-operation with the NGOs, testing new concepts, benchmarking best practices and improving the volunteer management done in the NHS local units. The NHS has managed volunteer work in Finnish protected areas for more than three decades. Yearly over 2000 volunteers give over 30 000 hours of their time for Finnish nature, at the same time gaining health and social aspects. Regardless of the long history of effective and profitable volunteer work, there is a need for development and innovation.

The project ends in January 2015 with a total budget of 200 000 euros. Metsähallitus Natural Heritage Services is responsible for the management of the project. As an expected outcome of the project the quality of volunteer management is improved giving more people a chance to participate. Through this participation the added health values of volunteering will simultaneously be increased. To model experiences and outcomes of combining natural environment and volunteering with social and health promotion targets, information of the results will be collected during the project.

Keywords: co-operation, nature environment, voluntary sector, social capital, health

What are the health benefits of sport disciplines: a systematic review of observational and experimental studies

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New evidence suggests that out of the different domains of physical activity, leisure-time physical activity may be associated with the most important health benefits. There appears to be an inverse dose-response relationship between the intensity of activity and the disease outcomes, suggesting an advantage of vigorous-intensity physical activity. As many sports involve vigorous-intensity efforts their potential as health-enhancing physical activity is receiving new interest. However, sport discipline specific evidence on the health benefits seems scarce. Therefore we took the task of summarizing the available evidence of the health benefits of different sport disciplines through a systematic literature review.

We performed a literature search from six electronic data bases: SportDiscus, Scopus, Physical Education Index, Scopus, PubMed, Web of Science. We searched for observational and experimental studies among healthy men and women of all ages published in peer reviewed journals in English or German languages during the past ten years. We obtained 2194 references with 123 duplicates. The remaining 2071 references were assessed by one researcher for eligibility as judged by participation in a specific sport discipline as the exposure and measures of health and/or function as the outcome. The internal consistency of the initial selection was checked independently by another researcher using every tenth reference resulting in a 92 % agreement with a consensus judgment for the outliers.

We identified 62 studies that met potentially our inclusion criteria. The range of sport disciplines was; 20 jogging/running, 10 football(soccer), 7 cycling (recreational), 4 swimming, 4 gymnastics, and two or one references on 14 other disciplines. Thirty-four studies used cross-sectional designs, 12 longitudinal, 10 interventional, but we could not assess the design for 6 studies. Additional publications found from the reference list of included papers or recent reviews as well as papers from the authors' archives fulfilling our inclusion criteria will be included in the review. Further assessment of studies will be done based on full papers. Finally included papers will be subjected to structured data extraction, and systematic assessment of the quality and the level of evidence.

We believe that the results of this review will be useful for the development of different sport disciplines as health-enhancing physical activity especially in the sport club setting.

Keywords: evidence, impact, fitness, exposure, sport type

Which behaviour change techniques are associated with changes in physical activity, diet and BMI in people with recently diagnosed diabetes? Lessons from

the ADDITION-Plus trial

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Introduction: Meta-analyses have identified that effective physical activity (PA) and dietary interventions include specific behaviour change techniques (BCTs). There is however uncertainty about the extent to which recipients of such interventions use BCTs, and whether use predicts behaviour change and weight loss. In the context of a randomised trial of a behavioural intervention we examined (i) whether participants used the BCTs that they were taught and (ii) which BCTs were related to behaviour change and weight loss.

Methods: Participants (N=239; 40-69 years) with recently diagnosed type 2 diabetes in the intervention arm of the ADDITION-Plus trial received intensive diabetes treatment plus a facilitator-led theory-based intervention to teach participants 16 BCTs. Participants reported BCT usage at 1 year. Height and weight, plasma vitamin C (objective marker of fruit and vegetable consumption) and diet and PA (by validated questionnaire) were measured at baseline and 1 year. PA was also measured objectively at 1 year using a combined heart rate and movement sensor. Analyses of covariance were adjusted for age, sex, socio-economic status and baseline BMI.

Results: 36% of participants reported having used all 16 BCTs. Use of specific BCTs (e.g. goal setting, preparing for setbacks) and use of a higher number of BCTs were significantly associated with reductions in BMI. Individuals who reported having used all BCTs lost more weight (Mean = -1.18 kg/m², SD=2.55) compared to those who used 10 or fewer BCTs (Mean = -0.10 kg/m², SD=1.42, p = 0.013). Use of a higher number of BCTs targeting PA was related to reductions in BMI. No single BCT was significantly related to change in self-reported PA or objective PA at one-year. Use of three BCTs for dietary change was associated with reductions in self-reported fat intake.

Discussion: Use of BCTs, particularly those targeting PA change, was associated with larger weight loss. These results support the efficacy of BCTs identified in meta-analyses. Since few participants used all BCTs, interventions might be more successful if they focussed on BCTs shown to be most effective. Future intervention studies should assess and encourage use of BCTs in daily life.

Funding: The ADDITION-Plus trial was supported the Wellcome Trust, the Medical Research Council, Diabetes UK and National Health Service R&D support funding. The first author was supported by the Kone Foundation.

Keywords: intervention, behaviour change technique, physical activity change, intervention fidelity, weight loss

Which factors help men maintain increased physical activity following a group-based healthy lifestyle programme delivered through top professional football clubs?

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Purpose: The 'draw' of professional football clubs has succeeded in attracting middle-aged overweight men, traditionally a hard-to-reach group, to lose weight through becoming more active and improving their diet. Football Fans in Training (FFIT) consists of 12, weekly classroom-based education and practical physical activity (PA) sessions delivered by community coaches at top football clubs across Scotland (Gray et al, 2013). FFIT uses behaviour change techniques based on control theory (e.g. self-monitoring and goal setting (Michie et al, 2009)), and pedometers to encourage men to find ways of incorporating PA into daily routine. Many men make positive PA, dietary and weight changes during FFIT, but some are less successful than others at sustaining change to 12 months. Self-determination theory (SDT) suggests that autonomy (intrinsic motivation), competence and relatedness support behaviour change maintenance. The aim of this study was to use SDT to understand men's experiences of sustaining change post-FFIT.

Methods: Thirteen focus groups with men (n=4-6) 12 months after participation in FFIT. Purposive sampling ensured a range of experiences. An analysis framework guided by SDT explored men's accounts of maintaining PA and dietary change.

Results: Participants who succeeded in maintaining PA post-programme described internalisation of motivation, "I've still got the mindset of a walk" and how being active had become habitual, "Before I'd have went to the shops round the corner in the car. I wouldn't even think about that now". Many spoke confidently about achieving a balance between energy intake (through diet) and expenditure (through PA). Work-related pressures, injury and life events emerged as barriers to successful maintenance, but PA had facilitated ongoing peer support and helped some men to deal with relapse, "I fell back into the bad ways, but I was still going walking wi' the boys. So I just gave myself a kick up the backside and said, "Right, just get yourself back into it".

Discussion: FFIT succeeded in promoting intrinsic motivation for PA and feelings of competence and relatedness, which SDT suggests should support behaviour change maintenance. Additional strategies could be introduced during programme delivery to help participants avoid and overcome relapse.

Funded by NIHR PHR programme

References:

1. Gray CM et al. 2013, BMC Public Health 10, 232

2. Michie S et al. 2009, Health Psychol 28, 690

Keywords: intervention, hard-to-reach, self determination theory, football clubs, maintenance

Poster Presentations

A more pleasant and peaceful learning environment – school staff's experiences and views on promoting a physical activity based operating culture in school

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Introduction. Finnish Schools on the Move is a national action programme aiming to enhance physical activity in the school setting and implement the national physical activity recommendations in elementary schools. The schools participating in the programme implement their own individual plans for increasing the amount of physical activity during the school day. The aim of this study is to describe school staff's experiences and views on promoting a physical activity based operating culture in school.

Methods. The staff at the schools that took part in the Finnish Schools on the Move programme's pilot phase (2010-2012) answered an online survey in January 2012. The survey covered areas such as the staff's experiences regarding activities at their own school and views and opinions on the school's role as a provider of physical activity. The survey was answered by 411 people from 38 different schools. The respondents worked in primary schools (40%, grades 1-6), in comprehensive schools (29%, grades 1-9) and in secondary schools (31%, grades 7-9).

Results. The school staff's experiences regarding the Finnish Schools on the Move programme's pilot phase were mostly positive. Based on the survey, most of the respondents believed that the pilot phase had introduced lasting changes in their schools. Most respondents agreed that physical activity during the school day increases satisfaction with school, and physically active recess contributes to peaceful learning environment. In primary and comprehensive schools, the staff's experiences of the programme and their attitudes towards adding physical activity to the school day were even more positive than in secondary schools. Class teachers' responses were similar regardless of whether or not the respondent taught physical education. Among subject teachers, attitudes towards adding physical activity to the school day were also quite positive, even among teachers who did not teach PE.

Discussion. The survey respondents took part in the Finnish Schools on the Move pilot phase for a duration of 1.5 years, which partly explains the positive results. The role that schools and teachers play as providers of physical activity was deemed important. It would be important to involve

the entire school staff when planning and implementing a physical activity based operating culture, because, based on the results, school staff members have numerous ideas and views on how to incorporate more physical activity to the school day.

Keywords: physical activity during the school day, school staff, school-aged children

A systematic review of school-based physical activity and sedentary behaviour interventions with adolescents

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Background: Earlier reviews have found that interventions to increase physical activity (PA) and decrease sedentary behaviours (SB) are feasible and relatively effective, especially in a school setting. Previous reviews of such interventions have not characterized intervention content in detail, making it difficult to draw conclusions about the effective ingredients of such interventions or to optimally inform intervention development. This systematic review will evaluate 1) the effectiveness of school-based interventions for physical activity and sedentary behaviours, and 2) whether intervention content (i.e. behaviour change techniques), delivery mode, provider, duration, and other features influence intervention effectiveness.

Methods: Five databases, Medline, Embase, Cinahl, PsycINFO and Cochrane Library were searched for papers published in English before February 2013. All studies that met the following inclusion criteria were included in the review: participants 15-18 years old, apparently healthy adolescents; intervention delivered in a school setting; a randomized controlled trial or cluster randomized controlled trial study design; PA or SB targeted and related outcomes reported. Two researchers independently screened the publications to ensure they met the inclusion criteria, and assessed quality using the Cochrane risk of bias tool. Intervention content was coded using Behaviour Change Technique Taxonomy v1 (Michie et al, 2013).

Results: Ten studies met our inclusion criteria and were included in the review. Out of these, six targeted PA but not SB, and four targeted both PA and SB. Eight interventions reported statistically significant effects on increasing physical activity, and two showed effects on reducing sedentary behaviours, but the effects were generally small and short-term. There was considerable variability in the rigour of reporting intervention content.

Discussion: Evidence of "active ingredients" of effective interventions will benefit the design of novel interventions. Improving the quality of study reporting would enable better identification of the BCTs implemented within interventions.

References: Michie S, Richardson M, Johnston M, Abraham C, Francis J, Hardeman W, Eccles MP, Cane J, & Wood CE (2013). The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: Building an international consensus for the reporting of behavior change interventions. *Annals of Behavioral Medicine*, 1-15.

Keywords: Physical activity, Systematic review, School-based interventions, Behaviour change techniques, Sedentary behaviours

Adherence to health-enhancing physical activity recommendation in Finnish adult population – assessed with objective and subjective methods

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Introduction

The current recommendation of health-enhancing physical activity (HEPA) is based on subjectively assessed physical activity (PA), which may include several weaknesses. Technical development during the last decades has offered objective tools to assess PA, which may modify the recommendation. The purpose of the study was to compare adherence to the HEPA recommendation assessed with accelerometer, diary and a specific interview question of HEPA in a representative sample of Finnish adult population.

Methods

The participants attended the health assessments of the Health 2011 survey. The PA sub sample also attended measurements of fitness and objective assessment of PA. The participants were given an accelerometer (Hookie AM 20, Traxmeet Ltd, Espoo, Finland) and a diary for seven-day-measurements. During a pretesting health screening they were interviewed on HEPA with a specific question. The agreement between different methods was analyzed by SPSS software, version 20 (SPSS Inc, Chicago IL).

Results

Only the participants who had sufficient accelerometer data (at least 4 days with ≥ 10 h/day) were included into the study (n=1472). According to accelerometer, 30% of the participants met the HEPA recommendation for aerobic activity. The corresponding proportions were 40% and 30% for the diary and interview, respectively. There were no gender differences in the assessments by accelerometer and interview, but according to diary men met the recommendation better than women.

Regarding musculoskeletal activity, only diary and interview could be compared since the current accelerometer algorithms fail to recognize musculoskeletal activity properly. According to diary 29% and according to interview 27% of the participants met the musculoskeletal recommendation. There were no differences between genders. Over one tenth of the participants met the whole HEPA recommendation (interview 12%, diary 13%).

Discussion

Adherence to the HEPA recommendation varied between the selected assessment methods. Among the study population accelerometer and interview gave corresponding results of aerobic PA, but on individual level the results varied. The diary seemed to overestimate aerobic PA, especially among the men. Regarding musculoskeletal PA, interview and diary gave nearly similar results, which may indicate that musculoskeletal activity is more reliably reported than aerobic activity. The whole HEPA recommendation was met by slightly over 1/10 of the participants.

Adolescent physical activity and sedentary behaviour: a pathway in reducing overweight and obesity. The 2-year cluster randomized control trial PRALIMAP

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Background: PRALIMAP was a school-based cluster randomized trial aimed to investigate the effectiveness of three public health strategies (educational, environmental and screening and care) on overweight and obesity prevention based on healthy behaviours such as physical activity (PA) and sedentary behaviour (SB). It put into evidence the effectiveness of a screening and care strategy. Therefore, it was particularly interesting to consider whether the effectiveness can be traced back to improved PA and decreased SB.

Purpose: The aim of this study was to measure a 2-year (grade 10 and 11) effectiveness of the screening and care strategy with regards to PA and SB improvement and to evaluate the relationship between PA and SB change and overweight and obesity.

Methods: The PRALIMAP trial included 24 state-run high schools in Lorraine, North-eastern France for two consecutive school-years. A sample of 1745 adolescents aged 14 to 18 were involved. PA and SB were assessed using International Physical Activity Questionnaire (IPAQ). Time spent in PA, time spent sitting, French and WHO PA guidelines and Canadian SB guidelines were considered as PA and SB outcomes and BMI, BMI z-score and overweight prevalence as weight outcomes. Hierarchical mixed models with adjustments for potential confounders were applied.

Results: The screening and care strategy was associated

with a more favourable change in PA and SB compared to the no-screening strategy. Screening and care strategy was associated with an increase in global PA (1h/week, $p=0.0486$), moderate PA (43 min/week, $p=0.0048$) and a decrease in SB (28 min/day, $p=0.0033$). Students of screening and care high schools were more likely to achieve PA and SB guidelines (OR=1.3[1.01-1.6] and 1.7[1.02-2.8] for French PA and Canadian SB guidelines, respectively). The 2-year weight change related to the screening and care strategy decreased about half when adjusted for PA and SB (-0.05 vs. -0.11 for BMI, -0.014 vs. 0.028 for BMI z-score) suggesting that the result was partly mediated by PA and SB.

Conclusions: The 2-year screening and care strategy was effective for overweight and obesity prevention as well as causing a favourable change in PA and SB. About half of the weight change was related to PA and SB, thus confirming their importance as components of adolescent overweight and obesity prevention.

Adverse trends in physical activity in Finland

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As physical activity is important for prevention of cardiovascular disease and other NCDs and for promotion of health, it is crucial to monitor it at population level. Finland ranks as one of the most physically active nations in international comparisons. Despite this, recent developments in activity are not that promising.

Self-reported physical activity was assessed among 25-64 year-old men and women in the National FINRISK Studies in 1972-2012. Samples were independent stratified random samples and each data collections took place in five-year intervals.

Leisure time physical activity has increased steadily over the past 40 years, yet this upward trend has attenuated. The proportion of those at least moderately physically active increased between 2007-2012 in men (77.1% vs. 79.9%) and decreased in women (79.3% vs. 76.7%). Occupational physical activity has steadily decreased during 40 years. The proportion of those having a physically demanding work decreased between 2007-2012 from 61.3% to 57.9% in men and from 54.3% to 52.5% in women. Daily commuting physical activity of 30 minutes or more has dramatically decreased over time but no change was observed from 2007 to 2012. In 2012 12.0% of men and of 18.4% women were physically active during commuting. Large geographical, age group and educational differences were observed in activity behaviors, such as the lower educated having lower levels of leisure time physical activity than the higher educated.

Leisure time physical activity, including commuting activity,

has great potential to improve health. Past 40 year trends in these activities have not developed along the health promotion efforts of the community. It is of primary interest to increase health-enhancing physical activity of the general population. Physical education at schools and a physically active lifestyle promoting infrastructure of the community and work places should be encouraged.

Air project: embedding nature in promotion of HEPA among special target groups

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Introduction

Evidence of the beneficial effects of the natural environment on physical activity, health and well-being increases rapidly. Nevertheless, nature has yet to be fully utilised in the context of health promotion. There is a need to find new ways for promoting health and well-being through nature, especially among most vulnerable population groups.

Development

The Air project (activation, interaction, recreation) was launched in April 2012 in Oulu. The two-year project is managed by Metsähallitus together with the Oulu Deaconess Institute. The total budget is €160,000.

Actions in the project include modelling use in the prevention of social exclusion of natural environments and nature-related activities in various forms of rehabilitation. Participants (Oulu Deaconess Institute rehabilitation groups) are taken on nature trips. The aim is to bring different outdoor experiences to the lives of young people and immigrants undergoing rehabilitation. Trips have involved engaging in various forms of physical activity in natural settings and taking part in nature management work in nature reserves, visiting cultural heritage sites, and observing nature. The experiences of the participants have been canvassed.

Another pilot involves activities related to occupational well-being. The objective is to utilise the effects of green spaces on health and well-being in maintaining and improving working capacity.

One action of the project is to develop training in the health care branch, in collaboration with the health sector. The target group consists of practical nurse students. The purpose of the study module is to increase the students' capacity to utilise the natural environment and outdoor activities in their future work.

Conclusion

Multisectoral cooperation is necessary for creating new and concrete ways to promote health and well-being by enhancing outdoor recreation and physical activity among different

target groups. Such cooperation utilises nature and outdoor experiences in preventing social exclusion among young people undergoing rehabilitation, and in improving occupational well-being. A new training module for health care professionals will be developed.

The Air project is funded by the European Social Fund and supervised by the Council of Oulu Region, Metsähallitus and the Oulu Deaconess Institute.

Keywords: rehabilitation, natural environment, cooperation, outdoor recreation

Assessing physical activity and screen time recommendations among 8th graders: baseline results from the Finnish Kids out! -intervention

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Introduction

The randomized controlled Kids out!-intervention aimed to promote physical activity (PA) and to reduce sedentary time among 8th graders in Tampere-city. This paper presents the baseline results about how the adolescents met the PA (every day at least 1h of moderate-to-vigorous intensity PA) and screen time recommendations (every day not more than 2h of screen time) according to a questionnaire, a Hookie-accelerometer and a 7-day evening recall.

Methods

The questionnaire was completed at all schools by 1306 (84%) pupils. The questions on meeting the two recommendations were "On how many days per week do you do at least 1h of moderate-to-vigorous PA?" and "On how many days per week does your screen time exceed 2h?". The accelerometer and the recall were volunteered by 458 pupils. 337 (74%) pupils completed the minimum of 4-day data with the accelerometer (10 h/d) and 367 (80%) with the recall. Each evening the adolescents entered into the recall their daily time spent in physical and sedentary activities.

Results

According to the questionnaire the PA recommendation was met by 10% of boys and 4% girls. The corresponding figures with the accelerometer and the recall were 8% and 14% in boys and 4% and 8% in girls. The average daily duration of accelerometer-based moderate-to-vigorous PA was 72 min in boys and 64 min in girls. With the recall the daily duration was 100 min in boys and 86 min in girls.

According to the questionnaire the screen time recommendation was met by 3% of boys and 12% girls. The corresponding figures with the recall were 16% and 29%. Accelerometer-data on screen time only is not applicable. Based on the recall the average daily screen time was 150 min in boys and 108 min in girls.

Discussion

All the measures showed that less than 15% of the 8th graders met the PA recommendation. The screen time recommendation was met slightly better except assessed with the questionnaire in boys. Overall, the boys met the PA recommendations more often and spent more time in moderate-to-vigorous PA than the girls. However, the girls were better in meeting the screen time recommendation and spent also less time at screen. The measures gave parallel information about meeting the PA and screen time recommendations. The next step is to examine more profoundly the concurrent validity of the measures.

Funding

The Finnish Ministry of Education and Culture, Research Programme on the Health and Welfare of Children and Young People (SKIDI-KIDS).

Keywords: subjective and objective measurement methods, adolescents, sedentary behavior, physical activity recommendations, screen time recommendations

Associations of different domains of physical activity with cardiovascular risk factors and physical fitness in young adult men

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Introduction

The majority of studies concerning cardiovascular diseases and its risk factors have concentrated on leisure time physical activity (LTPA). Commuting (CPA) and occupational physical activities (OPA) are less studied, although an increasing attention has been focused on them during the recent decades. The aim of the present study was to assess relationships between different domains of physical activity and clustered cardiovascular risk factor. In addition, cardiorespiratory and muscular fitness were compared between the activity groups in each of the physical activity domain.

Methods

781 young men participated in the study. Self-reported leisure-time (LTPA), commuting (CPA) and occupational (OPA) activity were determined. Blood pressure, s-triglycerides, s-HDL-cholesterol, s-LDL-cholesterol and plasma glucose were measured after an overnight fast. The continuous cardiovascular risk factor score was calculated

from the z-score mean of each cardiovascular risk factor. The cut-point was defined as 1 standard deviation above the mean. Muscular endurance consisted of push-ups, sit-ups and repeated squats (repetitions in one minute) and maximal strength in leg extension, bench press (N) and grip strength (kg). Cardiorespiratory fitness was determined by a cycle ergometer test until exhaustion (predicted VO₂max) and waist circumference (WC) was measured.

Results

The likelihood of continuous cardiovascular risk factor score was higher in moderate [OR 1.99 (95 % CI 1.21-3.28)] and low [1.87 (1.16-3.02)] CPA groups compared to the high group, whereas neither low nor moderate LTPA or OPA groups showed similar associations after adjustments for age, smoking and the other two types of physical activity domains. After further adjustment for WC, only the moderate CPA group had higher likelihood for CVD risk factor score [2.00 (1.17-3.41)] compared to low group. Moreover, LTPA was positively associated with all physical fitness parameters, CPA with cardiorespiratory fitness and muscular endurance, and OPA with grip strength ($p < 0.05$). LTPA and CPA were inversely related with WC ($p < 0.05$).

Discussion

The results emphasize the beneficial role of CPA regarding CVD risk factor score and therefore various approaches should be adopted to encourage active commuting. In addition, high LTPA associates beneficially with multiple fitness outcomes.

This work was supported by a grant from the Scientific Advisory Board for Defence.

Keywords: leisure time physical activity, physical fitness, commuting physical activity, cardiovascular risk factors, occupational physical activity

Associations of objectively measured sedentary time to objectively measured physical activity, sleep and self-reported use of computer and television among school-aged Finnish children

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Introduction:

Less is known about objectively measured children's sedentary time and factors associated with it. This study aimed to identify the associations of objectively measured sleep, moderate-to-vigorous physical activity (MVPA) and weight to objectively measured children's sedentary time. In addition, the associations of self-reported use of television and computer on sedentary time were tested.

Methods:

A convenience sample of 282 children participating in The Fin-HIT, Finnish Health in Teens, study was recruited in spring 2013. A total of 155 children (60% participation rate, aged 11 years, 94 girls) filled in a questionnaire and wore accelerometer (Actigraph, LLC, Pensacola, FL, USA) 7 consecutive days except when in water. In addition, children's weight and height was measured. For the analysis, the sleep time was separated from the waking hours. Children were included in the study if they had at least three weekdays and one weekend day with more than 8 hours of wearing time (N=126).

Average daily minutes of total sedentary time, MVPA and sleep were calculated. The questions of television and computer use were transformed into minutes and generated to form the average using times of computer and television (min/day) separately.

Multiple linear regression analyses were conducted to test associations. The associations were firstly tested individually for all the measures, and all the significant measures were chosen for the final model. All the analyses were adjusted for gender and collection month.

Results:

On average, children were 552 minutes (SD=64 minutes) in sedentary per day. Based on the individual regression analyses, television and computer use had significant positive associations on sedentary time whereas MVPA and sleep had negative associations on sedentary time. Weight status was not significantly associated with sedentary time.

In the final model, positive association of computer use and negative associations of sleep and MVPA to sedentary time remained significant indicating that children who were mostly sedentary, slept less, were less physically active and used more computers.

Discussion:

This study filled in the gap to measure objectively children's sedentary time. Based on the results, future interventions should concentrate on minimizing children's time in sedentary by paying attention to the computer use, sleeping habits and MVPA.

Keywords: sleep, Screen-based sedentary behavior, Accelerometer, sedentary time, Physical Activity

Attitudes of Slovene family physicians about physical activity promotion in the primary health care system

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Promoting physical activity (PA) is an important part of comprehensive treatment of patients in family practices. It has been proved that promoting PA in the primary health care system increases levels of PA (Orrow et al, 2012). Health professionals play an important role in advising PA, espe-

cially family physicians (Kreuter et al, 2009). Studies show that patients intending changing their lifestyle want support and assistance by their physician (Klemenc et al, 2011).

A total of 300 family physicians and family medicine residents were invited to fill in an on-line questionnaire, which included questions about attitudes towards PA promotion, frequency of advice on PA in different health conditions and knowledge about PA guidelines. Descriptive statistics were used for analysis.

145 physicians participated, 105 questionnaires were suitable for analysis.

All physicians (100%) agreed that » health promotion is an important part of primary health care«. 92.4% agreed that »the physician can influence the patient's PA habits with his advice«. 74.2% agreed with »I have enough knowledge to advice my patients about PA«.

91.3% would always advise PA to patients with obesity, 60.6% to patients with coronary heart disease, 87.5% to patients with diabetes type 2 and 60.4% to healthy individuals.

84.7% agreed that »min. 30 minutes of moderate PA on 5 days« is according to the PA guidelines, 52% agreed with »min. 150 minutes of moderate PA within a week« and 23.5% agreed with »min. 75 minutes of vigorous PA within a week«.

The results indicate that the majority of Slovene physicians have a positive attitude to PA promotion and that they are aware of the benefits of PA in different health conditions. There is a discrepancy between the perceived knowledge about health enhancing PA and the actual knowledge about PA guidelines. Training courses could be useful to improve PA promotion in family medicine practices.

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Keywords: "physical activity promotion", "primary health care system", family physicians

Be Active! Exercise counselling service chain

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ment, Finland)

What: a targeted, multi departmental service chain model for exercise counselling.

Who: City of Helsinki Sports Department and the Social Services and Health Department with separate funding. To whom: Helsinki residents at risk of suffering from type 2 diabetes of persons with BMI>30.

When: The programme launched in autumn 2012 at seven health centres and is continuing and spreading gradually to all 25 City health centres.

Background: The share of Finnish women and men who are engage in recreational exercise has been growing steadily throughout Finland according to Helakorpi et al (2007). However a third of the working-age population gets insufficient exercise according to Fogelholm et al (2007). Even though the majority of Helsinki's adult population consider themselves to be in good health, their average lifetime expectancy is shorter than that of the average Finn. Excess bodyweight is an increasing health risk for the people of Helsinki. Some 38,2% of 25-74 year old residents are overweight and 19,4% are obese.

Exercise and type 2 diabetes: Lack of exercise is mentioned as a key cause behind the proliferation of metabolic syndrome and type 2 diabetes. Even light exercise, such as walking, exercise while commuting and physically loading work, reduce the risk of contracting type 2 diabetes as has already been reported Kukkonen-Harjula (2005).

Lifestyle change: The goals of a lifestyle change usually involve general and concrete objectives, such as increasing the daily step count or taking up a hobby involving physical exercise according to Bodenheimer & Handley (2009). A lifestyle change is promoted by lifestyle guidance, which takes the form of reciprocal discussions between two people and the drafting of shared agreements according to Fogelholm (2007). Success is made possible by the client's own motivation making achieving success more difficult as has already reported Alahuhta (2010)

A picture of the process

Measuring project impact: 1) anthropometric measurements; height + weight (BMI), waist circumference, visceral fat 2) lifestyle/motivation survey

Results: This model represents an effective multi-departmental service chain, which offers the opportunity to individual and health-promoting exercise counselling. The model provides a positive boost to the physical capabilities of an inactive client and enables them to engage in more everyday activities as well as to set individual targets on a path towards a more active lifestyle.

Keywords: adults, type 2 diabetes and obesity, exercise counselling, lifestyle change, multi-departmental

Bridging the gap: research to practice in an Irish context

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Introduction: Despite an abundance of community based physical activity (PA) interventions, external validity is often poorly assessed and presented in literature and thus, there exists a lack of clarity in how to translate or disseminate research evidence into real life settings (Heath et al., 2012). Translation research is however becoming more prevalent and evidence of successful implementation can and should be communicated more frequently.

Development: Mass participation events are a useful prompt for activity in a community context but they are infrequently evaluated and thus, their impact has not been leveraged to instigate sustained increases in PA among participants. Recent research in Ireland on the Women's Mini Marathon has shown that incorporating evaluation into the delivery of PA related events can be a useful endeavor not only to provide evidence for the effectiveness of the event but also to help those charged with promoting PA and health. In relation to the latter, recommendations from this research includes the value of collating participant details to facilitate targeted post event contact at a local level, which appears necessary to build on the initial impact of events and the need to tailor PA promotion to reflect the motives of participants, particularly the least active, who take part in such events. Furthermore, efforts were devised to ensure that the lessons learned from this research transferred beyond the experimental setting and had a practical impact. Importantly, this research has subsequently prompted several similar evaluation projects on PA initiatives in other regions throughout Ireland incorporating tools and lessons learned from this initial undertaking.

Conclusion: It appears that simple reinforcement strategies before and after mass events that extend beyond the marketing of the event itself can enhance the public health impact of these initiatives in relation to promoting sustained engagement in PA. These can be incorporated into evaluation efforts that ideally are based on previously undertaken evaluations on related projects carried out in similar contexts.

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This research was funded by the Irish Sports Council.

Keywords: dissemination, mass events

Can physical education (P.E.) foster a lifelong commit-

ment to physical activity?

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According to Self Determination Theory (SDT), for post 16 physical activity to continue, students need to be intrinsically motivated (IM) (Ntoumanis, 2002). The majority of SDT research has used quantitative approaches or focussed solely on girls. In order to understand the complex issue of motivation for P.E. and uncover all the potential determinants, in depth qualitative research, including boys and girls, is needed.

Fourteen children (7 boys and 7 girls), aged 14, from a school in the North West of England were interviewed about their P.E. experiences. The whole year group (n=134) completed a self-evaluation of their P.E. ability (on a scale of 1-10) and from this a purposive sample of children from across the range of scores were selected.

Following transcription, thematic analysis was performed using Template Analysis. The children ranged from being IM in all aspects of P.E. to those who were extrinsically motivated (EM) (they took part as because they had to). Key themes emerging were i) EM disliked activities on offer and being made to participate ii) EM disliked competition when they felt they were not at a competitive level iii) EM were afraid of being mocked for their abilities or disliked being beaten by others iv) IM liked all types of activity and competing against others. These results suggest that boys and girls experience of P.E. is similar and it is not the gender of the child, but their perceived competence in the activity, that impacts on IM. As one pupil explained:

"..if its athletics then uurgg – I do anything to get out of it, but if it is something I'm good at then I look forward to it and enjoy it"

The current P.E. set up favours those who already have ability in physical activity and disengages both boys and girls who do not perceive themselves as competent. Newer additions to the curriculum such as trampolining and rock climbing were seen as positive by all with only the IM pupils enjoying the traditional sports. The research supports the need to involve young people in decisions about provision and train P.E. teachers in delivery. It also suggests that the Government's proposal to provide more competitive team games may only advantage those children who are already intrinsically motivated and further turn off those for whom P.E. is a lesson to be avoided at all costs.

Ntoumanis N., 2002, Motivational clusters in a sample of British education classes. *Psy of Sport and Ex* 3 (3) 177-194

Keywords: Physical Education, Intrinsic motivation, Physical Activity, Self Determination Theory, Children

Can the use of sport technology equipment increase exercise motivation and well-being in a group of inactive

and overweight individuals

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Introduction: Feedback on the effects of exercise such as physical fitness, body composition and blood values may support exercise motivation. The purpose of this study was to examine the impact of using sport technology equipment on exercise motivation and on well-being in inactive, overweight individuals. **Methods:** The subjects ($n = 25$, 20-57 years) were randomly divided into: technology group (TEC), trainer group (TRF) and the control group (VRT) for a 12-week study period. TEC used heart rate monitors and web-based exercise program, TRF received a personal training program and was advised every other week, VRT was not encouraged to increase physical activity, but kept an exercise diary. Cardiometabolic measurements included blood tests for fasting glucose, total cholesterol, HDL -cholesterol, LDL -cholesterol, triglycerides, and blood pressure measurement. Oxygen uptake (VO_{2max}) was estimated by cycle ergometer test. Physical activity was estimated based on heart rate measurements and reported data. Well-being was measured by the three-day, continuous well-being analysis based on a heart rate variability measurement (First-beat). **Results:** Vigorous physical activity increased the most in TRF in which VPA increased statistically significantly (2.8 ± 3.1 vs. 5.7 ± 3.7 h/wk, $P < .05$). 88% ($P < .05$) of the TRF, 78% of the TEC and 25% of the VRT reported that and their free-time physical activity had increased. VO_{2max} increased significantly (30 ± 5 vs. 33 ± 4 ml/kg/min, $P < .05$) only in TRF. VRT had increased levels of total cholesterol (4.8 ± 0.9 vs. 5.5 ± 0.9 mmol/l) and LDL - cholesterol (2.6 ± 0.6 vs. 3.1 ± 0.7 mmol/l). Sleeping period average of beat to beat heart rate variability (RMSSD) increased in TEC group (32 ± 10 vs. 38 ± 10 ms, $P < .05$) and in TRF (31 ± 10 vs. 36 ± 10 ms, $P < .05$). In the VRT group average of heart rate variability decreased significantly (32 ± 8 vs. 26 ± 8 ms, $P < .05$). **Discussion:** It can be concluded that for the inactive persons exercise motivation can be increased with some personal guidance, and with the assistance of technological equipment. In addition, it was shown that an increase in physical activity can improve the well-being by impacting to oxygen uptake, blood cholesterol levels and heart rate variability changes. Differences between the heart rate based and reported physical activity indicate that in order to obtain realistic results there is a need to use technology to measure physical performance.

Keywords: motivation, physical activity, technology, well-being

Changes in kinesiophobia and physical activity in the early recovery phase after lumbar fusion and during 12 months exercise intervention (RCT)

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trict, Finland, ² VU University Medical Center, Amsterdam, Netherlands, ³ Tampere University Hospital TAYS, Finland, ⁴ University of Jyväskylä, Finland, ⁵ Central Finland Health Care District, Finland, ⁶ Medcare Oy, Finland)

Sixty percent of the lumbar fusion patients report disability (Marghout-Juratli, 2006) and are concerned about physical activity (PA) after operation. Aim of the present study was to study kinesiophobia and physical activity before and three months after lumbar spine fusion (LSF) and to evaluate the effectiveness of 12 months postoperative exercise intervention in these outcomes.

Altogether, 100 patients who underwent LSF, attended to the study (mean age 59 y, 73% females). After the surgery all patients received similar postoperative instructions of the exercise. Three months after LSF patients were randomized to the intervention group (IG) ($n=49$) and control group (CG) ($n=51$). IG started progressive back specific exercise program of 12 months. Physical activity limitations and fear of movement were individually worked out by physiotherapist every second month. CG received only the oral and written instructions of exercises given in one session by physiotherapist. The 17-item Tampa Scale for Kinesiophobia (TSK), short form of the International Physical Activity Questionnaire (IPAQ, total MET-min/week), pain intensity (VAS), and depressive symptoms (DEPS-scale) were used for outcome measurements.

Before the surgery patients had high TSK (mean 38.8 points) and it decreased by 7.1 points ($p=0.001$, ES 1.02) in the whole sample at 3 months after LSF. During the 12 months intervention TSK of IG improved by 1.6 points (ES 0.23) while in CG change of 0.1 points was not significant (ES -0.02). In the whole sample preoperative median PA level was 1799 METs and 3 months after the surgery it was 2079 METs (ns.). During the intervention the mean change in PA was 59% in IG and 31% in CG (both $p < 0.01$, between groups ns.).

In these LSF patients preoperative kinesiophobia level was high. The main decrease in kinesiophobia was found at 3 months postoperatively. In patients who were encouraged to progressive rehabilitation the kinesiophobia still decreased between 3 to 15 months. PA increased gradually in both groups after the surgery. It is clinically important to identify and diminish barriers of PA and encourage patients to physical activities.

Study is funded by Academy of Finland and by Medical Research Funds of Central Finland Central Hospital and Tampere University Hospital.

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Marghout-Juratli S, Franklin GM, Mirza SK, Wickizer TM, Fulton-Kehoe D. Lumbar fusion outcomes in Washington State workers' compensation. *Spine* 2006; 1:2715–2723.

Keywords: spinal fusion, kinesiophobia, physical activity, spondylodesis, exercise

Children's right to be physically active and the role of Corporate Social Responsibility practices: a review

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Introduction: The children's rights to be physically active, to accede to leisure time and free play have been highlighted several General Comments of the United Nations Committee on the Rights of the Child (UNCRC 2013), and recommended in Concluding Observations to various States. Business enterprises have adhered to codes of conduct and are increasingly engaged in promoting sport and physical activity (PA) initiatives within the frame of Corporate Social Responsibility (CSR). However, the upward trend toward physical inactivity has been recently considered a 'pandemic', with four fifth of adolescent people not reaching the recommended level of PA (Hallal et al.2012).

Purposes: The purposes of the study are: (a) Based on the legal framework for children's right identifying a model of corporate engagement in CSR PA initiatives, (b) synthesising main results, mechanisms and weaknesses of CSR practices for PA promotion and (c) analysing the interrelations and the transferability of CSR strategies between main promotion topics: physical activity, nutrition, alcohol, tobacco.

Methods: To review the literature the Realist Synthesis approach has been used (Wong et al.2013). The following data sources were jointly analysed: scientific literature about Sport CSR and PA initiatives, evaluation studies, Convention of the Child Right Country Reports in Europa Region, as well as monitoring reports about national pledges and the E.U. 'Platform on Diet, Physical Activity and Health'.

Results: It is argued that both 'positive dragging effects of obesity policy' and risks of competition between different health promotion topics exist with possible negative 'compensatory mechanisms' between nutrition and CSR practices in sport. PA 'Cindarel' role at E.U. level is partially due to market actors lobbying for food and beverage industry and for agricultural policy (Kurzer & Cooper 2011). Actors within the fields of public health ethics, human rights and CSR should be seen as complementary (Nixon & Forman 2008) for the development of a PA promotion mainstreaming strategy. New forms of democratic accountability, with verifiable commitments and more transparent CSR monitoring practices are strongly suggested.

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Comparison of the beneficial short-term effects of a nordic walking or a structured indoor exercise intervention program in patients with obesity and/or type 2 diabetes

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INTRODUCTION. Considering the growth of obesity and type 2 diabetes (DM2) more research is necessary to analyze the cost-effectiveness of exercise interventions. The present study was designed to compare the beneficial short-term effects of similar volumes of a Nordic Walking (NW) or a structured indoor exercise program in patients with obesity and/or type 2 diabetes. **METHODS.** Using the propensity score matching technique, 116 patients affected by obesity (n=78) or DM2 (n=38) enrolled in the Healthy Lifestyle Institute C.U.R.I.A.MO. trial, were equally divided in a NW Group (NWG) and an Indoor Training Group (ITG) with the same exercise duration (90 min), intensity (50-65%), frequency (twice/week), and volume (180 min/week). The two groups were matched at baseline for age (NWG=58±1, ITG=57±8 years; p=0.684), gender, BMI (NWG=33±5, ITG=34±7 kg/m²; p=0.571), waist circumference (NWG=112±13, ITG=108±12 cm; p=0.360), and percent free fat mass (NWG=37±8, ITG=40±1; p=0.598). These parameters together with HbA1c (in DM2), total, HDL, LDL cholesterol, triglycerides, blood pressure, daily defined doses (DDD) of drugs for diabetes, and total costs have been compared by one way-ANOVA after 3 months of intervention. **RESULTS.** In comparison to baseline, in both groups there was a reduction in BMI (NWG -0.62±3.1, ITG -0.83±1.3; p<0.05), waist circumference (NWG -2.7±3.2, ITG -3.2±6.6; p<0.05), and free fat mass (NWG -2.3±3.7, ITG -2.3±3.4; p<0.05), without differences between groups. In DM2 patients, only ITG (not NWG) significantly decreased HbA1c (-0.7±0.9%, p<0.05) and triglycerides (-51±91 mg%, p<0.05). Obese patients of both groups decreased systolic blood pressure (NWG= -6.6±13.1, p<0.05; ITG= -5.8±13.5, p<0.05; p=0.818 between groups); diastolic blood pressure decreased only in obese ITG (-3.3±7.8, p<0.05, total cholesterol decreased only in NWG (-13±25 mg%, p<0.05. DM2 patients of both groups did not significantly change DDD for diabetes. The cost estimate of the two interventions (equipment, personnel, mortgage) was considerably more favorable for NWG (98 euro/patient/year) than ITG (1182 euro/patient/year, p<0.01). **DISCUSSION.** NW is an effective and cost saving exercise strategy for obese/DM2 patients when the major target of treatment is weight and/or fat loss. However, comparable volumes of NW exercise are less effective of structured indoor training in ameliorating glucose control and blood pressure in DM2 patients, at least after a short-term follow-up.

Keywords: diabetes, costs, obesity, exercise, walking

Cycling benefits health, economics, society, environment and transport, review

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Cycling Benefits to Health, Economics, Society, Environment and Transport: A Review

There is wide acknowledgement that cycling is one of the very best ways to good health and fitness. People cycling regularly live longer and lead healthier lives than those who do not as Paffenbarger et al reported in 1986, and has been repeatedly reconfirmed. Regular cycling to work (to school etc) has been shown to be the most effective thing an individual can do to improve physical and mental health, enhance quality of life and increase longevity. Concern about cyclists' exposure to air pollution, especially ultrafine particles, is rebutted by numerous studies showing that the benefits to health and well-being greatly outweigh risks. HEAT and other tools for counting the economic benefits of cycling are reviewed together with reports of their use and impact on decisions regarding mobility infrastructure and policy. Other benefits of cycling such as improvements to social, environmental and transportation are briefly reviewed.

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The author/presenter of this review is policy officer at the ECF – the European Cyclists' Federation. ECF is the umbrella Federation of more than 70 bicycle user associations across Europe and beyond. ECF represents over 500,000 individual cyclists. On behalf of our members we lobby, we advocate, we network, we research, we attend events, we organize.... we work for a brighter future for cycling and bicycle users.

Keywords: HEAT, cycling benefits, transport

ENGSO data and barriers on participation and health enhancing physical activity

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The mission of ENGSO is to promote interest of sports organisation in Europe, to be a respected voice for grassroots sport; to be a credible partner in European sport policy and an effective platform for the active network of sport organisations (1). To be efficient in this process, ENGSO participates in the work of four Council Expert Groups as an observer as well as in the EU Platform Action on Diet, Physical Activity and Health. With the aim to explore ways how ENGSO members promote health enhancing physical activity and participation in grassroots sport, we have provided the analysis in 2012. The main aim of the analysis was to determine the actual situation about implementation of the EU Physical activity guidelines related to sport sector (G 6-13). The questionnaire (PAGAS 6-13) consists of 7 ques-

tions about public authorities support, research and cooperation with the universities, activities, events and educational programmes for different target groups as well as the NGOs image on national level related to sport and health issue. According to the data for 36% members that have answered, we can conclude the following: 1. The majority of the ENGSO members has supported for its project related to grassroots sport through public budget (G6-7): some of the project examples are: "Get2Sport (Denmark) and "Floorball to schools" Basketball to schools" (Czech Republic), 2. The majority of the ENGSO members has participated in researches related to health, physical activity, etc. (G9), 3. Half of the ENGSO members, such as: Denmark, UK, France and Finland, provide events and activities attractive to everyone (G10), 4. ENGSO members from Denmark, Slovakia, France, Latvia and Serbia are known as body for sport and health promotion (G13). According to the NOCs and NSFs structure and this data we have determined the main barriers in process of providing EU PA guidelines: 1. Internal structure and priorities of the NOC and NSF as well as the cooperation on national level with other stakeholders 2. Lack of relationship between local government and educational institutions, and 3. Different policy, position and influence of physical activity, sport and health issue on national level. Increasing the participation will be a key to successful European HEPA policy. As a next step ENGSO supports the idea of UN Sport for Development and Peace to use elite and mass sport events as an educational platform to promote positive health messages.

Keywords: barriers, sport, health, PA guidelines

Enhancement of physical activity advising in the health care system – Development of the web-tool "Physical Activity for Medicine"

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The health care system (HCS) has both the responsibility and mandate to enhance the use of physical activity (PA) for health. Individual-based approaches are most familiar and best accepted means for this purpose in the HCS. Thorough behavioral counseling would be desirable, but it is seldom possible due to its low priority, and consequently lack of various resources. The most feasible means to enhance the use of PA by the HCS is brief advising, and it has been shown to be effective, efficacious, and cost-effective (Vuori, 2013). However, only a minor part of the physicians and other health professionals use this means. Several barriers are reported, most frequently lack of time and lack of education and training on PA and its behavioral counseling (Vuori, 2013).

The key barriers of PA advising could be decreased, if the providers would have at hand reliable means to review the rationale and evidence for benefits of PA, and have a model advice for common indications. On this basis, a web-based tool in Finnish language, "Physical Activity for Medicine", was developed. The tool consists of a concise

indication-specific package of evidence-based information to support prescribing PA for 35 indications. The information includes the following one screen-page wide sections: connection of PA to the indication; clinically relevant and patient-centered benefits of PA in prevention, treatment, and secondary prevention/rehabilitation as appropriate; risks and potential adverse effects of PA; advisability and limitations of PA; rationale/basis for planning an appropriate PA regimen; and one-page advice for appropriate PA for the person and for the given indication to be printed or e-mailed as needed. The provider can make changes on the advice. The tool is available free of charge for medical professionals on the web-pages of the Finnish Medical Association, and it was made available also for the public by a link (www.potilaanlaakarilehti.fi/palvelut/liikuntalaake/) in the web-journal of the Finnish Medical Journal for Patients.

The feed-back on the tool from physicians has been positive, and the public has shown great interest in it in the web-journal.

References

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Polar Electro Inc. has supported financially the development of the tool.

Evaluation design to study the role of neighbourhood sport coaches in connecting primary care, sport and physical activity.

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In the Netherlands policy is aimed to prevent illness and to promote health in the neighbourhood. Therefore, since 2012, neighbourhood sport coaches are employed to connect primary care and sport, to guide residents towards local physical activity facilities and to promote health. This type of coaches is new. Adequate scientific research is needed to demonstrate the role coaches have in connecting primary care, sport and physical activity. The aim of this study is to evaluate the role of coaches on connecting care and sport and the effect thereof on collaboration of professionals (care, sport, municipality, welfare), lifestyle interventions, participation of residents, health of residents and perceived societal benefits.

The theoretical framework will be built on an ecological perspective that includes multiple levels. At the community level, concepts of the social network approach and community participation will be used. At the individual level, theories on behavioural change and evidence on the effectiveness of lifestyle interventions will be used.

The study is based on a multiple case study in which both qualitative and quantitative methods (mixed methodology) are used. Data will be collected through questionnaires, (in-depth) interviews, document analysis, focus groups. Several tools will be used. To monitor collaboration processes, the coordinated action checklist will be used. To measure health of residents, e.g. BMI and fitness, the 'Fysiofitheidsscan' will be used, a tool developed by the royal Dutch Society for Physical Therapy. To assess perceived societal benefits, the effect arena will be used, a tool to structure the dialogue about investments and societal benefits of an intervention, as perceived by stakeholders. Data will be gathered in 10 neighbourhoods in municipalities all over the Netherlands.

Anticipated results are:

Empirical evidence on the role of coaches in connecting care, sport and physical activity and the health of residents; Methods to facilitate, improve and evaluate lifestyle interventions; A toolbox for coaches to connect care, sport and physical activity in the neighbourhood and a national database with process outcomes and results of the work of coaches.

The research will result in 10 municipal reports for policy makers and other stakeholders on the (perceived) societal benefits of the role of coaches and peer reviewed international papers.

Keywords: sport and physical activity, collaboration, neighbourhood sport coaches, evaluation design

Evaluation of a tool kit and a training concept for developing physical activity counselling in primary health care

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Introduction

A tool kit for developing physical activity counselling practices in primary health care was developed during a research and development project in 2010-2012. The project was continued in 2013 to assess

- 1) the utility and effectiveness of the tool kit in supporting multi-professional teams in primary care to improve their physical activity counselling practices (Part 1) and
- 2) the training concept on disseminating the tool kit and information about physical activity counselling at local level

(Part 2).

Development

Three health care centres in primary care participated in Part 1. In each centre a multi-professional team including physicians, physiotherapists and nurses was nominated to be responsible for the development process. The tool kit guided the teams through the seven-phase process providing them a working manual with step-by-step instructions, questionnaires and logbooks for outcome evaluation and summary sheets. Adopting written physical activity prescription as a counselling tool is embedded in the process. A researcher was available for external support. Process evaluation will be based on the team-feedback, notes in the working manual and researcher-observations.

The tool kit (in Finnish) is freely available in web (www.ukkinstituutti.fi/liikkumisresepti).

For Part 2 a nation-wide training tour will be conducted in seven cities in collaboration with Fit for Life Program. The aim of the one-day training is to help counselling providers to recognize needs and offer them tools to improve physical activity counselling and collaboration between counselling providers (including exercise specialists in municipalities and in the third sector) at local level. The training concept will be evaluated by participant feedback evaluation and group discussions.

Conclusions

The evaluation and implemental phase of the project will be carried out in the fall 2013 and the results will be reported in 2014. If the tool kit on physical activity prescription (Part 1) proves useful and effective it will be disseminated to primary care units countrywide. The experiences and feedback from Part 2 will be utilized in developing a training concept for physical activity counselling practices in municipalities.

Funding: The Finnish Ministry of Social Affairs and Health

Keywords: evaluation, physical activity, a tool kit, training concept, primary health care

Exercise buddies for seniors

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Background and objective: Helsinki is home to thousands of lonely old people who need assistance to get out or require encouragement, company and support for outings in their neighbourhoods. The City's exercise buddy programme has already helped almost one hundred senior citizens to find company for outdoor activities. The exercise buddy programme is a volunteer-based project organised by the City of Helsinki that, at its best, can bring joy and positive feelings to both involved parties. Outdoor activities are an important aspect of good living for the elderly. Many people who have passed their 75th birthday get less outdoor ex-

ercise as their physical capabilities diminish, even though the need for it does not decrease. The exercise buddy programme was launched in 2007 to support the ability of elderly people living independently to get around and function physically as well as to promote outdoor exercise and thus enhance their quality of life.

Operating model: The programme looks for volunteers who will be an exercise buddy for an elderly person living at home. The City provides participants with training, which focuses on, the benefits of exercise and outdoor activities, moving about with physical aids and other ways to assist mobility, the principles of volunteer work and showcases practical experiences of this activity. The goal is to pair participants with suitable exercise buddy immediately after training is completed so that they can start their shared outings right away. The aim is to arrange regular exercise meetings, so that the elderly partner could gain more benefits from the outings. Most volunteers meet up with their buddies for an outing once a week.

Experiences: The elderly participants have given extremely positive feedback on the programme:

"The visit of my exercise buddy is the highlight of the week."

"I eagerly anticipate the arrival of my exercise buddy, it gives me someone to talk to and enables me to go out – I'd get cabin fever if didn't leave the house."

"I'm still able to move about, but I would lose that ability over the long term if I was stuck at home."

Keywords: quality of life, outdoor exercise, exercise buddy, elderly, volunteer work

Exercise therapy, as a core element of a multidisciplinary lifestyle intervention in type 2 diabetes, is cost saving for the healthy national service

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INTRODUCTION. The present study was designed to compare national health system (NHS) direct costs after 1 and 2 years of a multidisciplinary lifestyle intervention, in which exercise therapy is a core element, with those of standard ambulatory type 2 diabetes (DM2) care. METHODS. Using the propensity score matching technique, 150 DM2 patients enrolled in the Healthy Lifestyle Institute C.U.R.I.A.MO. trial (IG, intervention group) were compared with 150 DM2 patients followed by international standard care guidelines for type 2 diabetes (SCG, standard care group). Patients were matched at baseline for age, gender, BMI, waist circumference, HBA1c, and blood pressure. The cost analysis was performed calculating the costs of personnel, equipment, lab exams, drugs for diabetes, hypertension and

dyslipidemias in the IG and SCG at baseline and after 1 and 2 years of follow-up. RESULTS. ONE YEAR FOLLOW-UP. IG in comparison to baseline decreased HBA1c by $0.7 \pm 1.0\%$ ($p < 0.001$), SDG by $0.3 \pm 1.0\%$ ($p < 0.05$ vs baseline and $p < 0.001$ between groups). In comparison to baseline IG decreased BMI by 0.85 ± 1.4 ($p < 0.001$), waist circumference by 3.0 ± 6.3 ($p < 0.001$), SDG decreased BMI by 0.43 ± 1.1 kg/m² and waist circumference by 1.5 ± 2.9 cm ($p < 0.001$ vs baseline; $p < 0.05$ between groups). In comparison to baseline, IG decreased by 8 ± 14 ($p < 0.001$) systolic and by 5 ± 8 ($p < 0.001$) diastolic blood pressure, SDG by 3 ± 12 mmHg systolic ($p < 0.05$ vs baseline; $p < 0.05$ between groups) and by 2 ± 8 mmHg ($p < 0.001$ vs baseline; $p < 0.05$ between groups) diastolic blood pressure. In comparison to baseline IG decreased DDD of drugs for diabetes and hypertension by 0.30 ± 1.1 ($p < 0.05$); SDG increased the DDD by 0.70 ± 1.5 ($p < 0.001$ vs baseline and $p < 0.05$ between groups). Over 2 years, direct NHS costs resulted for IG 3078 euro/patient and for the SCG 4409 euro/patient ($p < 0.001$). DISCUSSION. An intensive multidisciplinary lifestyle model, centered on exercise therapy, is economically advantageous in comparison to standard DM2 care after a follow up of 1 and 2 years. Since the reduction of drug use observed with the lifestyle model is associated with better anthropometric, glucose and blood pressure outcomes, it is likely the long-term follow up of the present study will further enlarge the cost difference between the two care models. The present data provide the evidence for health policy decision makers that exercise therapy in DM2, as a core element of a lifestyle intervention, is cost-saving for the NHS on a short-term basis.

Keywords: diabetes, cost, obesity, exercise, lifestyle

Feasibility and effects of a 2-year supervised exercise program on functional performance and quality of life among older home-dwelling women

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Introduction: In older adults, exercise may effectively reduce risk factors of falling, prevent functional decline, increase confidence and improve quality of life. The purpose of this randomized study was to assess the feasibility and effect of supervised exercise on functional ability and quality of life among older home-dwelling Finnish women.

Methods: 409 women aged 70-80 years were randomly assigned to the exercise group (EX) or control group (CON), as part of a randomized controlled trial for falls prevention (DEX) (NCT00986466). The 24-month intervention consisted of structured, progressive, moderate-intensity group exercise classes 2 times a week for the first 12 months and once a week for the subsequent 12 months. Leg extension

strength, dynamic balance and quality of life were assessed. Data was analyzed using analysis of covariance (ANCOVA). Corresponding baseline values and age were used as covariates.

Results: Training compliance was 73.4%, and the drop-out rate was only 7.1%. Maximal leg extension strength (per kilogram body weight) improved in the EX group (mean inter-group difference 0.3 kg/kg; 95% CI: 0.2-0.5). Dynamic balance, i.e. backwards walking time, also improved significantly in the EX group compared with the CON group (mean inter-group difference 3.5 seconds; 95% CI: 0.2-6.8). At the end of the intervention, the EX group was more likely to complete the backwards walking test compared with the CON group (OR 4.2; 95% CI: 2.4-7.2). There were no inter-group differences in quality of life scores.

Discussion: Structured exercise prevented functional decline in home-dwelling older women. It remains to be seen whether further efficacy analyses will enhance the between-group effects, particularly on relevant subscales of quality of life scores.

Acknowledgements: Academy of Finland, National Doctoral Program for Musculoskeletal Disorders and Biomaterials, Juho Vainio Foundation

Keywords: older adults, quality of life, supervised exercise, functional ability

Gender differences in physical activity levels of children with long-term illness, disability, or medical conditions

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Introduction.

A lot of research has pointed out the benefits for promoting physical activity (PA) for children as a prevention of chronic disease later in life, and daily participation in moderate-to-vigorous PA (MVPA) is recommended for overall health. However, little is known about PA in children with existing long-term illness, disability or medical conditions (LTID) or its benefits. The purpose of this study is to report the amount of recommended PA levels between genders of children, in general education, with LTID.

Methods.

Finnish data from the 2002 (n=5388) and 2010 (n=6723) self-report based Health Behaviour in School-aged Children (HBSC) study was analysed. Only children aged 13 (n=3799) and 15 (n=3869) who answered yes (n=1126) to having LTID and their MVPA (number of days in the past 7 days they had been physically active) were included into the final analysis. The group was further split into categories as defined by the types of difficulties the children experience and were grouped into LTID categories; breathing

(n=339), motor (n=70), communications (n=31), visual difficulties (n=29), epilepsy (n=20), a combinations of motor and breathing difficulties (n=32) or had not specified their condition (n=605). Mann-Whitney tests of gender differences in MVPA of each category were used.

Results.

A seventh (14.7%) of the sample reported to have LTID and a little over a seventh of this group (15.6%) had met PA recommendations for daily participation. More Boys (19.9%) reported to be active daily than girls (12.2%), and the differences are statistically significant ($p=.000$). For each LTID category, there were only significant (95% C.I.) gender differences for children without specified difficulties ($p=.024$) and breathing difficulties ($p=.027$), where more boys met the recommendations than girls.

Discussion.

In this study, the prevalence of LTID in mainstream schools was almost 10%, and over a seventh met recommendations for daily PA. In support of much of the research on gender and PA (particularly in those without LTID), boys take part in PA more regularly. There is an overall difference between girls and boys, and it is most pronounced in children with breathing difficulties. Focus to improve inclusive PA for children with LTID does not seem to be gender specific with the exception of children with breathing difficulties, such as asthma. Further studies of these population groups are needed.

Keywords: inclusive PE, daily PA recommendations, Adapted Physical Activity, breathing difficulties

Go out with the elderly campaign

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Introduction

Regular outdoor exercise helps older people to maintain the mobility needed for independent living. It promotes well-being and inclusion. It is the most important hobby of the elderly. According to Koskinen et al (2012), more than a half of 75+ women and more than a third of men had problems in walking 500 meters. Fear of falls and lack of friends can often prevent outdoor mobility.

Development

The campaign aims to promote the outdoor mobility of frail older people in safe company. In this campaign, organized by the Age Institute, private citizens and communities go out with older people, they record the events on the website www.vievanhusulos.fi, share their experiences, and challenge others to join the campaign. The outdoor events can be seen on the website in real time. The campaign has been executed twice so far. In 2011 it was organized during six months from spring to autumn, in 2012 it was on in the

wintertime for three months.

In 2011 the campaign was active in more than 70 municipalities. There were 23.286 recorded outdoor events (about 3.880/month) and there were 1.000 written stories. According to the feedback, 89 % of the respondents (N=158) reported that the campaign inspired to go out more with the elderly. In 2012 the winter campaign was active in as many municipalities. There were 5.710 recorded outdoor events (about 1.900/month), which means that the wintertime activity was about half of the summertime activity.

The most frequent outdoor activities occurred in service houses, social and health care institutions, NGOs and congregations. Also many private citizens went outdoors with their family members. The campaign drew a lot of positive publicity in the media. It was awarded the best innovation Innovillage award in 2012.

Conclusion

The campaign showed that in wintertime older people are easily left indoors. With the campaign, older people's supported outdoor activities achieved more attention and became more common among private people and communities. The campaign gave pleasure to the activists as well as the elderly. The next stage of the campaign will take place in the autumn of 2013. The campaign is part of the Strength in Old Age program financed by Finland's Slot Machine Association, Ministry of Education and Culture, and Ministry of Social Affairs and Health.

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Keywords: inclusion, quality of life, outdoor exercise, elderly

Health and physical functioning as predictors of strength and balance training adoption among older adults aged 75 and over

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Introduction

Despite the recognized health benefits, relatively few older adults participate in strength and balance training (SBT). Studies on the factors limiting the initiation of exercise among community-dwelling older adults are sparse (Baert et al 2011). Therefore we aimed to detect the factors related

to health and physical function that are associated with non-adoption of supervised SBT in a community-based sample of older adults by conducting a comprehensive geriatric assessment.

Methods

The study population consisted of 339 community-dwelling individuals (75 to 98 years, 72% female). As part of a population-based Geriatric Multidisciplinary Strategy for the Good Care of the Elderly study (GeMS), self-rated health, comorbidities, the sedative load of drugs, cognition (MMSE), physical activity (Grimby scale), nutrition (MNA-SF), the ability to perform instrumental activities of daily living (IADL), handgrip strength and balance (using the Berg Balance Scale (BBS) and the Timed Up and Go (TUG) test) were assessed. The participants received physical activity counseling from a physiotherapist and had the opportunity to take part in group-based SBT at the gym once a week.

Results

Compared with the SBT adopters, the non-adopters (n=157, 46%) were older ($p<0.001$) and less physically active ($p=0.009$); their physical activity was more often on a low level. They had more comorbidities ($p=0.011$), lower cognitive abilities ($p<0.001$), more often sedative load of drugs ($p<0.001$) or were at the risk of malnutrition ($p=0.002$); had lower grip strength (women: $p<0.001$; men: $p=0.025$), more difficulties with IADLs ($p<0.001$), and weaker performance in BBS ($p<0.001$) and TUG ($p<0.001$). In the multivariate logistic regression analysis, higher age, impaired cognition and lower grip strength were independently associated with non-adoption.

Discussion

SBT non-adopters were older and exhibited lower physical activity, poorer health and more impaired physical functioning compared with those who did start training. In the future, more individually tailored interventions are needed to overcome the factors that prevent exercise initiation.

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Funding

The GeMS study was financed by the Finnish Social Insurance Institution and the city of Kuopio, Finland. This work was supported in part by the Juho Vainio Foundation, Finland.

Keywords: adherence, postural balance, exercise, geriatric assessment, muscle strength

Health-related quality of life and disability after a rotator cuff repair: Comparison between 12 month self-

managed exercise program and usual care

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Introduction: Rotator cuff tears are among the most common causes of shoulder pain according to Boykin et al (2010). Rotator cuff repair (RCR) is generally considered when the pain and decline in shoulder movements and muscle strength cause serious functional disability despite conservative treatment as has been reported (Marx, 2009). The aim of this study was to compare a 12-month home-based muscle strengthening exercise program with usual care for health-related quality of life (HRQoL) and disability after rotator cuff repair (RCR).

Methods: A total of 67 consecutive working-age patients (age range 41 to 62 years, 57% males) who underwent RCR were randomized into either an exercise group (EG) or a usual care group (UCG). The UCG patients received only ordinary postoperative instructions, while the EG patients performed a 12-month dynamic shoulder muscle strengthening program at home. HRQoL was assessed with the Short-Form 36 Health Survey (SF-36) according to Ware et al (1994), and disability with the American Shoulder and Elbow Surgeons Standardized Shoulder Assessment Form (ASES) according to Richards et al (1994) at baseline and at 6 and 12 months thereafter.

Results: At the 12-month follow-up, both groups exhibited significant improvements ($p<0.001$) in the SF-36 Physical Component Score. In the UCG, improvements were also observed in the Social Functioning ($p=0.034$) and Role Emotional ($p=0.003$) dimensions. No between-group differences were observed in any of the outcomes. The mean (SD) baseline ASES score of 74 (14) had improved by 21 points (95% CI, 16 to 27, $p<0.001$) in the EG, and in the UCG from the baseline 70 (18) by 25 points (95% CI, 20 to 30, $p<0.001$). In the EG, 57% of the patients completed the exercises twice weekly for the first 6 months, after which the training adherence declined.

Discussion: The self-managed 12-month strengthening home exercise program and usual care were equally effective in improving HRQoL and disability after RCR in working-age persons. The self-managed exercise program proved to be a well-tolerated, feasible and inexpensive rehabilitation procedure for RCR patients.

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This study was supported by a grant from the Medical Research Foundation of the Central Finland Health Care District.

Keywords: Rotator cuff repair, Health-related quality of life, Exercise, Functional disability

How to test masses of ordinary men: The adventures of Joe Finn – the lorry tour event 2013

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Introduction

Fit for Life program executed the Lorry Tour Event of the Adventures of Joe Finn, which stopped on 36 locations during April-June in 2013. In the lorry there was a physical fitness test station, where men could test their fitness free of charge and effortlessly. The used test battery was Joe Finn's fitness tests. Feedback was given after the tests. The main goal of this campaign was to awaken the men to take notice of their physical fitness, nutritional habits and to improve their coping at work. LIKES physical fitness test station was responsible for the arrangements of the tests.

Development

Participants: To the tests participated 8797 men.

The tests in the lorry: Before the tests men filled in background information and consent form. Inside the lorry was a test station consisting of 2 places for hand grip strength measurement, 3 places for body composition analysis and 6 places to measure waist circumference and to assess cardiorespiratory fitness. Grip strength was measured with Saehan hydraulic dynamometer, body composition was assessed with InBody 720 bioimpedance analyzer, waist circumference was measured with Seca 201 measuring tape and cardiorespiratory fitness was assessed with Polar Own Index fitness test. The participants were given a written summary of the results and the feedback was given outside the lorry in a feedback tent.

The test staff consisted of two heads of testing from LIKES and 10-12 testers in the lorry. The testers were educated and recruited by the Regional offices of Finnish Sports Confederation. Outside the lorry were 5-10 assisting persons.

Feedback tent: After the tests the men were guided to the feedback tent, where head of testing had a Power Point presentation every 45 minutes on interpreting the results and the relationship of the results on health. After the feedback session the participants had a chance to get individual advices from the assisting personnel.

The personal summary report: Each participant got a body composition measurement report and a summary of personal results including Body Fitness Index which was cal-

culated from the most essential results and it described the situation compared to the average in the same gender and age population.

Conclusion

The tests were very popular in each location and the amount of men was high compared with our capacity to test. The feedback from the participants was excellent. Therefore it can be concluded that the lorry campaign reached its goal.

Keywords: health promotion, physical fitness, testing

Implementing 'Smarter Travel' measures in Irish towns: Qualitative perspectives of key stakeholders

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Introduction: Recent 'Smarter Travel' funding and Department of Transport policy documents are driving a move towards more active travel in Ireland. Rates of walking and cycling for transport are low when compared to other European countries. There is limited infrastructural support for walking and cycling for transport, a large portion of the population live in rural locations and the public transport systems within towns is largely inadequate. The attitudes of key stakeholders of 'Smarter Travel' and the political environment which is mediating change was analysed in two towns shortlisted in a national competition for funding (one funded).

Methods: Semi-structured interviews (n=7) were conducted with community advocates of active travel, traders and key policy makers to understand the drivers of change. Thematic analysis of the data was conducted using QSR NVivo 9 qualitative analysis software and using the methods outlined by Strauss and Corbin (1997).

Results: In one town 'Smarter Travel' has had a high media profile, due in part to public backlash to radical traffic flow alterations introduced in a medieval setting, and the perception of poor consultation. From the traders' perspective, the term 'Smarter Travel' has become synonymous with reducing accessibility and fears of reduced footfall against a backdrop of economic recession. Community advocates for 'smarter travel' suggested that the challenges experienced by local authorities were due to a flawed implementation process. This conflict between the key stakeholders has, however, changed the process of engagement and failure to secure national funding has led to shared cooperative approaches.

Discussion: The processes of change to more active travel are different in the towns investigated. The main lesson learned is that radical change cannot work if the community doesn't understand the concept of smarter travel. Communities need to be convinced of the merits and motives of smarter travel before change happens. Smarter travel measures should be introduced incrementally alongside social

marketing.

Keywords: Active travel, cycling, community, politics, walking

Interventions related to sport, exercise and physical activity among Finnish children and adolescents – A systematic review

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PURPOSE: The purpose was to find, summarize, and evaluate peer-reviewed original intervention studies, which were related to sport, exercise, and physical activity of 0-17-year-old Finnish children or adolescents from the years of 2000 to 2012.

METHODS: Systematic literacy searches were performed using international databases of PUBMED, SSCI, PSYCINFO, ERIC and SPORT. The review covered both behavioral and biomedical fields of research with the following inclusion criteria:

- 1) Human participants, under 18 years of age, and living in Finland.
- 2) Studies with a focus or scope of an intervention to change individual, social or environmental determinants of sport, exercise or physical activity.
- 3) Studies with a follow-up period included in the study: at least two assessments (baseline and follow up).
- 4) Organized by a Finnish research group.

RESULTS: Out of a total of 191 internationally published original articles, 13 (7%) were categorized as intervention studies and of which two were Randomized Controlled Trial-studies (RCT) and one cross over study. Four of the interventions were from behavioral sciences and nine multidisciplinary.

The number of subjects in the studies varied from 16 to 558, with age variation from 6-month-old babies to 17-year-old young adults. Majority of the studies (77%) included both boys and girls. Three studies (23%) included only girls.

Interventions were of variable contents: from lifestyle counseling of 6-month-old babies' parents on their children future physical activity to the effect of supplementation of creatine and sodium bicarbonate on consecutive maximal swims of young national level athletes. The study contexts varied and covered all age groups: family-based orientation (n=2), all school levels from pre- to junior high schools (n=6), special education (n=1), vocational training units (n=1), free time (n=1) and sport activities (n=2). Three interventions were

implemented among participants with special needs (Asperger syndrome, childhood acute lymphoblastic leukemia and children with motor learning difficulty).

ACKNOWLEDGEMENTS: The Study project was organized by the Finnish Society of Sport Sciences and supported by a multidisciplinary guidance group. The Finnish Ministry of Education and Culture provided financial resources for the project.

Keywords: intervention, children, physical activity, review, exercise

Introducing exercise counseling with training

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Background and aim

Strength in Old Age Health Exercise Program for Older Adults aims, with the help of health exercise, to promote the independent coping and quality of life of community-living older adults (75+) with mobility problems. The targeted 38 municipalities are to launch the use of three ways of exercise counseling (distribution of information, discussion and exercise plan) and implement the exercise services chain with the cooperation of social and health care and sports authorities as well as NGOs. The Age Institute coordinates the program and mentors the municipalities. The project will be evaluated and reported annually.

Enhancing expertise with training

Exercise counseling for older people is a training program for professionals within social, health care and sports. The training will inform the participants of the basics of exercise counseling and good practices and it will teach them to execute exercise counseling as a process and to make an exercise plan with the elderly.

Exercise Nurse training will be organized for professionals in elder care. It gives the trainee readiness to discuss exercise and support everyday mobility. The aim is to include the exercise plan into the care and service plan.

Exercise Doctor training offers information about the role of doctors in supporting older people's mobility and about the service chain of health exercise.

Results

In 2012, Exercise counseling for older people training program had 52 professional participants, and 853 Exercise Nurses were trained in municipalities. According to follow-up, exercise counseling somewhat increased compared to baseline. Exercise counseling was provided by 49 actors, compared to 30 previously. The number of older people receiving exercise counseling increased by 150, up to 1833.

In the city of Kokkola, the exercise services chain was devel-

oped by training professionals and reorganizing work models. There have been 100 Exercise Nurses trained. The trained nurses and physical education instructors at service houses have given exercise counseling to the older residents. Health Center Daalia for seniors has also offered exercise information. A joint effort, Exercise calendar 75+, designed by various actors, has been distributed to the target group.

Conclusions

The implementation of good practices in exercise counseling continues. The achievement of aims requires the attainment of target group, training of actors, and development of cooperation

Keywords: Older People, Co-operation, training, Exercise Counseling

Lifestyle counselling in abdominally obese professional male drivers – RCT (NCT00893646)

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Introduction: Long-distance drivers have irregular working hours and lengthy periods of sitting, both of which may predispose to obesity. The aim was to reduce weight in abdominally obese drivers by structured counselling on nutrition, physical activity and sleep.

Methods: Physically inactive men with waist circumference >100 cm were randomised into a lifestyle (LIFE) and control (CON) group. LIFE participated in individual monthly counselling by a nutritionist for 12 months. Counselling was structured, including manuals for the counsellor and the driver. Assessments took place at 0, 12, 24 months and included body composition (DXA), blood samples for metabolic syndrome, and health-related fitness tests. The main nutritional aims were regular meal times and decreased energy density. The goal for physical activity was to increase walking by accumulating 4000 steps above baseline on 5 days a week. There after, CON participated in 3-month counselling. The primary outcome was 10% weight loss at 12 months.

Results: Hundred thirteen men were randomized, 95 participated in assessments at 12 months and 80 at 24 months. At baseline the mean weight was 106.3 kg (SD 16.3) and waist 114.4 cm (9.9). At 12 months the mean weight change was -3.4 kg (SD 6.6) in LIFE and 0.7 kg (3.9) in CON. The between-group difference of the change (adjusted with baseline) was -4.0 kg (95% CI -6.2; -1.9) in weight, -4.7 cm (-6.6; -2.7) in waist and -3.1 kg (-4.9; -1.4) in fat mass (DXA),

all in favour of LIFE. At baseline, the men (n=83) reported 2.65 h (SD 2.41) of weekly leisure activity consisting of walking, other moderate-intensity activity and vigorous activity. At 12 months the between-group difference of the change in leisure activity was +2.02 h (95% CI 0.10; 3.93) in favour of LIFE. The mean 2-km Walk Test time at baseline was 17.49 min (SD 1.58). At 12 months, the between-group difference in the change was -0.36 min (95% CI -0.73; 0.01). At 24 months, there were no significant differences in changes between the groups in body composition, habitual leisure activity and aerobic fitness.

Discussion: At 12 months weight loss was moderate despite intensive counselling but leisure activity increased in physical activity among LIFE. Difficulty in maintaining living habits may partly be related to challenging working conditions.

Keywords: weight loss, professional drivers, abdominal obesity, walking, lifestyle counselling

Objectively measured physical activity and sedentary time between school-aged girls and boys in Finland. How many of them met the level of 60 minutes of physical activity per day?

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Introduction:

This study measured physical activity (PA) and sedentary time objectively among Finnish school-aged children. Two research questions were set: are there differences between boys and girls in their amounts of physical activity and how many of children met the level of 60 minutes of PA per day. In addition, the minutes of PA and sedentary time in leisure-time, school-time and weekend were checked separately.

Methods:

A convenience sample of 282 children participating in The Fin-HIT, Finnish Health in Teens, study was recruited in spring 2013. A total of 155 children (60% participation rate, aged 11 years, 94 girls) wore accelerometer (Actigraph, LLC, Pensacola, FL, USA) 7 consecutive days. For the analyses, the leisure-time and school-time were separated. Children were included for the study if they had at least three weekdays and one weekend day with more than 8 hours of wearing time in the leisure-time (N=126 children).

Average daily minutes of leisure-time PA and sedentary time were calculated. In similar manner, PA and sedentary time during school-time was formed. These variables were also summed up to see the total PA and sedentary time. In addition, separate daily minutes of weekend PA and sedentary time was formed for those children (N=119), who had enough wearing time for both weekend days.

The medians, standard deviations and quartiles were calculated. Spearman correlations between school-time leisure-

time and weekend were checked. Mann-Whitney U-test was used to test the differences between genders.

Results:

On average, children were 43 minutes (SD=20.5) physically active per day in their leisure-time. The children were more active in weekdays than in weekends. The children, who were more active during their leisure-time, were also more active in the school-time. The boys were more physically active than girls. No significant differences in sedentary time between boys and girls were found. 46 percent of children met the level of 60 minutes of PA per day. Of these children, 59 percent were boys.

Discussion:

This study indicates that there are differences between boys and girls in the amounts of PA. Also, more than half of the children in this study did not achieve the level of 60 minutes of PA per day. Future interventions should be more specific taking into account this variety among children.

Keywords: Accelerometer, gender, leisure-time, Physical Activity

Older people's exercise councils

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OLDER PEOPLE'S EXERCISE COUNCILS

Havas Anu, Säpyskä-Nordberg Minna, Karvinen Elina, The Age Institute

Topic: Social integration and Health Enhancing Physical Activity (HEPA)

Keywords: the elderly, inclusion, influence, environment, opportunities for mobility

Introduction

National recommendations and the new act on elder care services of 2013 encourage to increase the inclusion of older people in service development. Exercise councils for older people, started in the Strength in Old Age programme, are meant for community-living older adults who due to decreased functional capacity have problems in participating in physical activities. In these councils, the elderly can influence the development of exercise activities and environments. Exercise organizers, environmental planners and decision-makers can obtain information from the councils to support them in their work.

Development

Exercise councils will be organized in 38 Strength in Old Age municipalities by 2014. There will be a two-hour discussion group with 8-12 older people. The themes include exercise counseling, guided exercise and exercise environ-

ments. Municipal decision-makers and officials and representatives from NGOs will be invited to hear the conclusion of the discussion. The Bulletin of the results will be sent to the participants of the council, decision-makers, officials and local papers.

Results

Exercise councils have already assembled in 23 municipalities and the participants have applauded the current activities and made many suggestions. They suggested an exercise group calendar that would be mailed to older people and low-threshold exercise counseling. They hoped for more guided home exercise and outdoor exercise friends, as well as more support for exercise from health care professionals. Guided group exercises require transportation services in remote areas. There is a need for more outdoor exercise parks. People hoped for more benches in parks. In wintertime, streets should be kept clear of snow and ice. Municipal actors and officials brought their own ideas into the councils and received instant feedback. The ideas and suggestions of the councils will be taken into account in municipal strategies and action plans.

Conclusion

The feedback showed that the councils were useful channels of influence. The experiences proved that exercise councils can produce necessary information for the planners, decision-makers and organizers both locally and nationally.

Keywords: inclusion, The elderly, opportunities for mobility, influence, environment

Persistence or change in leisure-time physical activity habits and waist gain during early adulthood: a twin-study

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Introduction: Abdominal obesity is an alarming health challenge, and leisure-time physical activity has potential to prevent age-related waist gain. The aim of this study was to determine relationship between persistence or change in leisure-time physical activity habits and waist gain among young adults.

Methods: Prospective population-based cohort study among Finnish twins. Participants were 3383 twin individuals (men 1578) from five consecutive birth cohorts (1975-

1979), who answered questionnaires at mean age 24.4 y (SD 0.9) and later 33.9 y (SD 1.2), with reported self-measured waist circumference. Persistence or change in leisure-time physical activity habits was defined as maintaining or changing leisure-time physical activity category based on thirds of activity MET h/day (inactive, moderately active, active) during the follow-up (mean 9.5 y [SD 0.7]).

Results: Waist circumference increased among both genders in all activity groups during follow-up. Those who decreased leisure-time physical activity had greater waist gain compared to those who increased activity during follow-up (waist gain difference 3.6 cm, $P < .001$ for men and 3.1 cm, $P < .001$ for women). Among all same-sex twin pairs, who were discordant for activity ($N=85$), those twins who decreased physical activity during the follow-up gained mean 2.8 cm (95%CI, 0.4 to 5.1) ($P=.009$) and among monozygotic twin pairs ($N=43$) 4.2 cm (95%CI 1.2 to 7.2) ($P=.008$) more waist than their co-twins who increased physical activity. When comparing persistently inactive members of same-sex twin pairs to their co-twins who were at baseline inactive but increased activity during follow-up ($N=41$ pairs), the mean difference in waist gain was 4.7 cm (95%CI, 1.3 to 8.0) ($P=.007$). Respectively, when comparing twins who were at baseline active but decreased activity during follow-up to their persistently active same-sex co-twins ($N=85$ pairs), the mean difference in waist gain was (2.9 cm [95%CI, 0.5 to 5.3], $P=.02$).

Discussion: Among young adults an increase in leisure-time physical activity or staying active during the follow-up was associated with less waist gain, whereas any decrease in activity level, regardless of starting category, led to waist gain rather similar as in the persistently inactive. The present findings deliver an important public health message to promote high leisure-time physical activity habits from early adulthood towards adulthood to prevent age-related abdominal obesity.

Keywords: Waist gain, Twins, Leisure-time physical activity, Cohort study

Pharmacies on Move

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Introduction Physical activity (PA) has a role in the prevention and care of many diseases. There are nearly 800 pharmacies in Finland, and almost 99 percent of Finns live in a municipality with a pharmacy in it. Annually pharmacies have 50 to 60 million customer contacts. Thus, they are potential places to reach physically inactive people, and can play a significant role in promoting PA.

Development Pharmacies on the Move (PoM) is a concept created by Fit for Life Program, The Organisation for Respi-

ratory Health in Finland, Association of Finnish Pharmacies and Regional offices of Finnish Sports Federation. The aim of the concept was to affirm the role of PA in public health programs provided by pharmacies, and make it a part of everyday customer service.

PoM concept started as a two year project in 15 pharmacies. The goal was to create ways to promote HEPA in pharmacies, and to create new liaisons between pharmacies and local NGOs working in the field of health and fitness. Following ways were found to promote PA in pharmacies: Training concerning health and PA was provided to the staff so they could discuss the importance of PA with customers. Together with local NGOs, pharmacies organized PA theme days which included several health tests and information about local PA options. Many pharmacies built a designated shelf to promote PA, and added materials for customers to take home. "Find a medicine called PA" brochures were made, as well as folders that included information about different diseases and PA. HEPA module was developed to a training concept for specialists working in asthma service. The module was proved successful and is now part of diabetes service as well.

Conclusion At the end of the project PoM was broadened as a national campaign by organizing trainings in 16 towns. It consists of three levels ranging from beginner to frontrunner. These levels make it easy to begin, and they also give ideas on how to develop. Pharmacies that want to be recognized as a PoM can order a starter kit from the Fit for Life Program, which includes materials and instructions.

The concept has been well noticed, and it achieved a permanent place in the pharmacy world. Today there are approx. 100 Pharmacies on the Move and the number of them is gradually increasing. PoM concept showed that pharmacies are great places to reach physically inactive people and to promote PA. The PA advisory role of pharmacies suits well as a part of their holistic customer service.

Keywords: Physical activity, Pharmacy

Physical activity and body mass index predicts work productivity

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Introduction. The promotion of health enhancement physical activity at worksite requires support and resources from the occupational stakeholders but decision-makers ask for evidence-based knowledge associating the level of physical activity and productivity. The main purpose of the current presentation is to explore if work productivity is predicted by the level of physical activity and body mass index.

Methods: It was conducted a cross-sectional study gathering data from 2007 workers stratified by geographical region

of Spain and occupation. Participants respond to a core set of standardized and validated instruments regarding basic socio-demographic information, physical activity using IPAQ questionnaire, health status, Body Mass Index (BMI), health-related quality of life (HRQoL) using the questionnaires EQ-5D-3L and EQ-5D-5L, and work performance. Work productivity was evaluated using the World Health Organization Health and Work Performance Questionnaire (HPQ). Descriptive analysis was done using mean (SD) and frequencies. To determine the relationship of HRQoL and physical activity with work productivity variables, multiple linear regression analysis were conducted using a crude model and an adjusted model in which we adjusted for age, gender and BMI.

Results: The HRQoL index were significantly associated in adjusted model with higher levels of presenteeism and low levels of absenteeism. The increase of the level of physical activity predicted higher absolute presenteeism ($\beta = 0.91$) and higher absenteeism ($\beta = 2.7$) specially among most actives.

Discussion. The strenuous or hard exercise could increase the absenteeism (e.g., injuries) losing part of the benefits of exercise enhancing the quality and quantity of work. To conclude, the promotion of moderate physical activity could enhance the productivity among workers.

Keywords: quality of life, physical activity, work, productivity, occupational health

Physical activity and sleep profiles in Finnish men and women

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Introduction. Previous studies report positive relations between leisure time physical activity (LTPA) and sleep but negative ones between high occupational physical activity (OPA) and sleep. Poor or insufficient sleep is often followed by reduced physical activity (PA). Also, long time spent in bed (TIB) and late chronotype are related to lower PA and worse functional ability. Our aim was to recognize clusters of people with the same kind of PA and sleep behaviors within a sample of Finnish adults.

Material and methods. Data comprised the National FINRISK 2012 Health Study. A stratified random sample of 10 000 Finnish men and women were sent an invitation to a health examination along with a questionnaire including questions on health behaviors, such as sleep and PA. Participation rate was 65% (3041 men and 3383 women). Latent class analysis (LCA) that identifies unobserved underlying subpopulations of subjects based on their item response probabilities on measured items was used for statis-

tical modeling. We fitted models of 1 to 5 classes and based on the Bayesian information criteria, model entropy, class interpretation, prevalence and average posterior probabilities, we decided upon a 4 class model. Analyses were separated between men and women, because measurement invariance was not fulfilled.

Results. We found 4 latent classes that we call PA and sleep profiles in men and women respectively. The most prevalent profile in men (45%) and women (47%) was characterized by likelihood for employment status, high LTPA, low screen-time and 7-9h sleep which was felt sufficient. For women, profile 1 also included likelihood for commuting PA. Profile 2 in both men (30%) and women (25%) was characterized by likelihood for not being employed, light LTPA, 7-9h sleep and morning chronotype. Profile 3 in men (20%) and in women (17%) included those with likelihood for high OPA, short (<7h) sleep that was not found sufficient and evening chronotype. The smallest, fourth profile in men (5%) and women (11%) included likelihood for the shortest sleep, use of sleeping medication, dissatisfaction with sleep duration, no LTPA and high screentime.

Discussion. Of the 4 PA and sleep profiles in men and women, we could recognize combinations of more favorable PA and sleep and unfavorable PA and sleep behaviors. These PA and sleep profiles will be used in future studies to further investigate the effects of PA and sleep on people's health and cardiovascular risk factors.

Keywords: physical activity, sleep, latent class analysis, health

Physical activity behaviour of 13-year-old girls in rural communities – an accelerometer study

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Introduction: Adolescents are recommended to accumulate 60 minutes of moderate- to vigorous-intensity physical activity (MVPA) per day. The aim of this study was to examine the proportion of 13-year old girls from rural communities meeting the physical activity guidelines. Furthermore, we investigated whether the moderate- to vigorous-intensity physical activity behavior differed between autumn and spring.

Method: As part of the project "Girls only" girls from four rural communities in the province of Styria participated in this study. In one school the measurement took place in autumn (n=20) and in another school in spring (n=13). In two schools the measurement took place in autumn 2011 (n=33) and in spring 2012 (n=32). The participants wore an accelerometer (ActiGraph, GT3x+) for the duration of seven days. In addition, participants filled in a logbook. Mann Whitney U test and Wilcoxon test were applied to compare the average minutes of moderate- to vigorous-intensity physical activity per day.

Results: Altogether 50 girls in autumn and 30 girls in spring

provided valid accelerometer data of a minimum of four days with at least 10 hours per day. On average the girls performed 41 minutes (SD=14 min) MVPA per day in autumn and 40 min (SD=10 min) MVPA per day in spring. Taking the cycling behavior from the logbook into account, MVPA increased to 47 min (SD=16 min) per day during autumn and to 53 min (SD=26 min) per day during spring. The activity recommendation of 60 minutes MVPA was achieved by four girls (8%) in autumn and by one girl (3%) in spring. No significant differences of the activity level were found between the two seasons.

Discussion: The results show that the activity level of 13-year-old girls in rural communities in the province of Styria is insufficient even when taking the cycling time into account. However, the results demonstrate that girls spend on average more than 10 min per day in cycling during spring. One speculation why we did not find the expected higher physical activity level during spring is that the girls were already half a year older during the spring measurement and at that age it is likely that the physical activity behavior decreases with increasing age.

Keywords: season, recommendation, girls, accelerometer

Physical activity patterns based on a novel accelerometer data modeling, part 1: Characteristic differences of the proposed activity categories.

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Introduction. UKK Institute recently developed algorithms to derive new parameters of physical activity (PA) from raw, triaxial accelerometer data. The method is based on the mean signal amplitude deviation (MAD) of acceleration. The derived MAD-parameters of PA were (1) intensity (light, moderate, vigorous) of walking, jogging, cycling and running as well as the (2) frequency and (3) duration of these PA bouts, and (4) their proportion (%) of total measurement time. Inactivity included lying, sitting, standing, and is described as % of total measurement time. Furthermore, the mean daily step count (mDSC), running steps and stand-ups were derived. The purpose of this study is to describe the differences in characteristic of selected parameters of MAD in the five proposed PA categories.

Methods. The study participants (n=2455) were from the PA subsample of the Health 2011 Survey, of which 84% participated in objective PA assessment. They were given an accelerometer (Hookie AM 20, Traxmeet Ltd, Espoo, Finland) for seven-day-measurements. Only those with sufficient data (min 4 days out of seven with min 10 h/day) were included (n=1472) in this study. The five PA categories were based on the mDSC, and meeting/not meeting the aerobic part of HEPA recommendation (HEPA_r). Inactive (IA): mDSC less than 6000. Movers (Mo) low and high: mDSC 6000 or more but does not meet HEPA_r. HEPA-low and high: meets HEPA_r.

Results. The type of association between PA categories for all parameters of vigorous PA was exponential and linear for moderate PA. All five PA categories differed from each other in the % of total intensive PA as well as for mean number of 10 and 3 minutes bouts, and running steps (p-values less than 0.001). Differences for moderate PA were found for the % of total time, as well as 10 and 3 minutes bouts (p-values less than 0.05) with the exception of no difference between Mo-low and HEPA-low. The IA group had less light PA time and more inactive time than the other groups (p-values less than 0.001). Mo-high group had higher mean count of daily stand-ups than the other groups (p-values less than 0.01) which did not differ from each other.

Discussion. The results indicate that accelerometer based activity parameters can identify new aspects of PA patterns that are not measurable with questionnaires or diaries. The associations of these parameters with different indicators of health need to be established.

Keywords: physical activity, triaxial accelerometer, patterns, parameter development

Physical activity patterns based on a novel accelerometer data modeling, part 2: Criterion validity against measured aerobic fitness

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Introduction. We have recently validated a novel method of categorizing the intensity (light, moderate, vigorous) and type (walking, jogging, running, cycling) of physical activity (PA) as well as inactivity (lying, sitting and standing) from the raw triaxial accelerometer data. The method is based on the mean amplitude deviation (MAD) of acceleration.

Health-enhancing physical activity (HEPA) has been defined as PA increasing physical fitness. Thus fitness results can be used as criterion measures to validate acceleration based PA patterns. The purpose of this cross-sectional study was to evaluate the validity of MAD based PA categories against measured cardiorespiratory fitness.

Methods. Participants were the PA subsample of Health 2011 survey who attended measurement of fitness and objective assessment of PA. They were given an accelerometer (Hookie AM 20, Traxmeet Ltd, Espoo, Finland) for seven day measurements. The five MAD based PA categories [inactive (IA), movers low and high (Mo-l, Mo-h), HEPA low and high (HEPA-l, HEPA-h)] were based on mean daily step count, and meeting/not meeting the intensity, duration and frequency of aerobic HEPA recommendation). The differences in the walking distance of the six min walk test (6 MWT) between the PA categories were analyzed by ANOVA (SPSS software, version 20, SPSS Inc, Chicago IL) and adjusted for age and sex.

Results. Only those who had sufficient accelerometer data

(at least 4 days with min 10 h/day) and finished the 6MWT were included into the study (n=1162). The proposed PA categories showed a strong graded association with aerobic fitness. The adjusted mean values of walking distance (m) from IA to HEPA-h group were: 574, 601, 617, 636 and 651. The IA group differed from all other PA categories (p-values less than 0.001), Mo-I from all other groups (p-values less than 0.001) except Mo-h (p-value 0.088), and Mo-h from IA and HEPA-h (p-values less than 0.001) as well as HEPA-I (p-values 0.036). HEPA-I differed from IA and Mo-I (p-values less than 0.001), and HEPA-h from all other groups (p-values less than 0.001) except HEPA-I (p-value 0.31).

Discussion. The results indicate that the new MAD based PA categories have good criterion validity against measured aerobic fitness. Selection of the most valid variables derived from the MAD data of the above presented PA categories was described in another paper.

Keywords: physical activity, criterion validity, methods development, cardiorespiratory fitness, accelerometer data

Physical activity pharmacy – building a health-enhancing –concept in lahti region, finland

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The MOTION! project aims to develop the exercise and well-being industry and create new collaboration models for co-operation between the private, public and third sectors. The MOTION! project considers health and exercise to be part of a wider development of the well-being industry which has been a focus of patient development work in the Lahti region.

To enhance physical activity referral process the MOTION!-project is establishing an on line physical activity pharmacy – liikunta-apteekki.fi. Physical activity pharmacy platform will provide a toolbox to support physical activity referral and exercise counselling. It will also offer private sector companies an opportunity to offer their services at all levels of the health and exercise service chain and to find new service and product concepts. Liikunta-apteekki.fi-platform will be available in Finnish in October (beta-version). It will be launched for wider healthcare and physical activity service providers' audience in 2014.

The physical activity pharmacy concept is a result of a co-development project. During the first year of the project developers, future users and service providers from public, private and third sector were brought together to discuss and to innovate what the physical activity pharmacy could be, what purposes it needs to fill. The focus group of 50 has included: doctors, managing nurses, public health nurses, physiotherapists, physical education instructors, entrepreneurs, planning officers and development personnel from local and national institutions. The data was processed

in a service design process based on Stefan Moritz's theory and process model. The outcome was the concept of the physical activity pharmacy pilot which will be developed further in use among the test group.

The physical activity pharmacy is a work method to which the on line service platform gives the right tools. According to the focus group the healthcare professionals often find it difficult to discuss physical activity and to give instructions to exercise because the right information and service providers are not easily found. The physical activity pharmacy provides support in this area. In addition it serves as a forum for new co-operation and discussion as well as a gate to relevant new information and research.

Keywords: co-operation, referral, , on-line, toolbox

Physical activity programs development in Russian regions

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In 2012 Russian Ministry of Health initiated a process of development of State Program on noncommunicable diseases (NCD) prevention and health promotion, including physical activity (PA) program as one of the main subprogram. Following that Russian Government has ordered to develop similar programs to all Russian regions (83).

National Research Centre was involved in the development of the State NCD program, and was responsible for expert evaluation of the regional programs.

Aim of the program: increasing of the level of PA of the Russian population. Criteria for evaluation of the general programs were developed. Criteria for evaluation of PA program were the following:

Correspondence of the goals and indicators to the aim of the program; degree of inter-sectoral collaboration (number of partners from different sectors: health care, education, sport, mass media, transport, land use and community design and other); legislation; financing; creation a surveillance system for monitoring and evaluation of the program.

Since beginning 2013 the process of expert evaluation of the regional programs has been conducting. Seventy five regional programs on PA from different Russian regions were presented for evaluation.

Results: Only five of the 75 reviewed regional programs were evaluated as corresponding to all requirements. Most frequent case comment were related with uncorrected goals and indicators definition, low level of inter-sectoral collaboration, insufficient legislation support, absence of evidence-based monitoring and evaluation of the programs, unclear of the action plan.

For further development and improvement of the regional

NCD prevention the training course on Evidence-based chronic Disease Prevention for decision makers was elaborated and conducted for 70 health administrators from 32 Russian regions in February 2013.

Physical activity promoters and barriers among unfit working-aged Finnish men

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Introduction

Over a half of working-aged Finnish men are insufficiently active. These men are hard to reach for physical activity (PA) programs. Although PA barriers and facilitators have been studied in general population, less is known on factors that promote PA among unfit men. This study examined, how low physical fitness is related to perceived barriers and promoting factors of PA in working-aged Finnish men.

Methods

Cross-sectional data on 899 Finnish men (aged 18-64) were collected in 2011 from "The Adventures of Joe Finn"- campaign. Participants engaged in fitness tests and answered a health behaviour questionnaire. A physical fitness index (PFI) was calculated based on the fitness test results, and the men were subsequently classified into low, moderate and high PFI groups. PA barriers and promoting factors were assessed in the questionnaire. The data were analysed with logistic regression analyses.

Results

Nineteen per cent of the men had low PFI (n=172), 42 per cent moderate PFI (n=382) and 38 per cent high PFI (n=345). The most important PA promoters among the low-fit men were health (83 %), physical fitness (82 %) and weight management (72 %), whereas tiredness (51 %), lack of motivation (56 %) and work responsibilities (48 %) were major barriers. Lack of motivation was more likely to constitute a barrier for the low-fit than moderate (OR 1.96, 95 % CI 1.36-2.81) or high-fit (3.74, 2.54-5.51) men. Low PFI was associated with the perception that a pleasant environment (OR 2.25, 1.36-3.71) and weight management promote engagement in PA (2.38, 0.15-3.75 and 1.58, 1.02-2.44 among the high and moderate PFI groups, respectively). Good exercise facilities (0.42, 0.23-0.76) and appearance (0.54, 0.35-0.81) were less important promoting factors for the low-fit men than high-fit men. Participants who considered friends or an exercise group as promoters of PA were less likely to be found among the low-fit than moderate-fit men (0.53, 0.36-0.76).

Discussion

Personal factors promoted PA in the low-fit men. PA programs should offer social support as well as counselling that

improves skills to acquire support from social and physical environment. For example, low-cost PA groups and easy access to everyday activities could encourage low-fit men to increase PA and contribute their weight loss goals. The present results suggest that pleasant environment may facilitate low-fit men's PA more than special exercise spaces.

Keywords: men, physical activity, working-aged, physical fitness, barrier

Physical activity promotion by general practitioners: the role of a physical activity coach.

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INTRODUCTION

General practitioners (GP's) have a mission to motivate patients to adapt a healthy lifestyle. However, their advice mostly results in a limited and short-term effect. Nowadays, GP's can refer patients to a dietitian for changing diet and to a tobaccologist for changing smoking behavior. Comparably, physically inactive people should be directed to a physical activity coach (PAC). This study wanted to investigate the barriers experienced by GP's for referral to a PAC and to explore whether the PAC is perceived by GP's as an added value to the health system in Belgium.

METHODS

11 doctor's offices, including 38 GP's, participated in the study and could refer patients to a PAC. The PAC was a Master in Kinesiology and trained in applying PA coaching strategies. Cost price for the patient was 5 euros/session (phase1: April-Sept '12) and 25 euros/session (phase2: Sept '12-April '13). At the end, all GP's were invited for an interview, which consisted of theorems regarding the collaboration with the PAC. Items had to be scored on a Likert scale (1 – totally disagree to 5 – totally agree).

RESULTS

111 patients (n=90 phase1, n=21 phase2) were referred from the GP to a PAC. 28 GP's (10 men, 18 women) completed the interview. According to the GP's, referral to the PAC was most suitable for patients with obesity ($\chi^2=4.79$), diabetes ($\chi^2=4.75$), cardiovascular diseases ($\chi^2=4.57$), chronic fatigue syndrome ($\chi^2=4.43$) and physically inactive persons without any health problems ($\chi^2=4.67$). The most important barriers to referral as perceived by GP's were: patients were not interested in coaching ($\chi^2=3.59$), cost price was too high (phase 2) ($\chi^2=3.37$), GP forgot to think about referring ($\chi^2=3.26$). The increase in cost price was a threshold for participation ($\chi^2=4.22$). 90 % of all GP's found it relevant to receive information regarding the progression of the patient, during and in the end of the coaching period. In general, GP's were convinced about the added value of a PAC in their doctor's office ($\chi^2=4.44$).

DISCUSSION

There seems to be an urgent need in Belgium for experts who can develop tailored physical activity programs for patients and who can motivate them to change physical activity behavior in the long term. This study indicated several barriers why referring to a PAC is difficult from the perspective of the GPs. More research is needed to develop efficient strategies that can be applied by the GP to reach and motivate patients and to refer them to a PAC.

Physical activity variability and its impact on the monitoring of physical activity

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INTRODUCTION

The transition from health enhancing physical activity (HEPA) guidelines that roughly recommended an individual to do a minimum of 30 minutes of at least moderate intensity physical activity (MVPA) per day towards a recommendation that advocate 150 minutes of MVPA per week, produces difficulties in the monitoring physical activity. Most accelerometer protocols state that around four days is a sufficient time to assess PA. Obviously this is too short a time to accurately estimate if an individual have reached 150 minutes of MVPA per week. In this study we aim to quantify the weekly PA variation in individuals and explore its potential impact on the number of weeks needed to accurately rank individuals according to their amount of PA.

METHODS

In this pilot-study a convenience sample of 32 subjects were recruited. They were asked to wear an accelerometer (Actigraph models GT1M or GT3X) during four consecutive weeks. The accelerometer was set to collect data using 5 second epochs. After data collection the data was treated according to normal procedures (wear time > 600 min * day⁻¹ after periods of > 20 minutes of epochs with 0 counts had been removed). All epochs with a count below 100 counts per minute (cpm) was considered as sedentary, 100-2000 cpm as lifestyle PA, 2000-6000 as moderate PA and >6000 cpm as vigorous PA. At least moderate intensity PA (MVPA) was considered as >2000 cpm. A subject was considered as valid if a minimum of 21 days of data was registered. The number of weeks of monitoring needed to achieve reliabilities between 0.5-0.9 was calculated using the Spearman-Brown prophecy formula.

RESULTS

Of the 32 subjects that volunteered to the study, 27 provided at least 21 days of valid data. The observed ICC ranged from 0,61 for inactivity to 0,79 for moderate physical activity. To achieve a reliability of at least 0,8 a minimum of 2,5 weeks is needed to accurately rank individuals sedentary activity and 1,0 weeks are needed for moderate PA. For

MVPA the corresponding was 1,3 weeks.

DISCUSSION

The consequence, from a physical activity assessment perspective, of the change from daily to weekly PA in the HEPA guidelines shows that longer measurement period are needed to accurately rank individuals according to their MVPA. A minimum of two weeks are recommended.

Physically active commuting in youth and young adulthood predicts physical activity in early midlife: the Young Finns Study

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Introduction. Research that tracks physically active commuting to school or work from childhood to adulthood is scarce, and there is a lack of prospective data that show a relationship between active commuting and physical activity later in life. The aim of the study is to establish the stability of physically active commuting (i.e. walking and cycling) over 27 years and to examine the longitudinal associations between active commuting in youth and physical activity in adulthood. **Methods.** Participants included 2,072 adults (925 men and 1,147 women) who participated in the follow-up measurements from their youth (9 – 18 years) and their adulthood (30 – 45 years) between the years 1980 and 2007. The modes and distance of their commutes to school or work were obtained through questionnaires in 1980, 1983, 1986, 2001 and 2007, completed separately for summer and winter conditions. The modes were categorized into four types: car, bus, walking and cycling. The individuals who walked or cycled to school or to work were defined as active commuters; while the others were defined as passive commuters. Physical activity was measured by these questionnaires. **Results.** The prevalence of physically active commuting declined sharply with age, particularly after age 12. Active commuting in youth and young adulthood was associated with concurrent physical activity and prospectively associated with physical activity in adulthood in both men ($r = 0.08 - 0.24$) and women ($r = 0.07 - 0.21$). The likelihood for a high level of physical activity in adulthood was > 1.6 times greater for those who had been consistently active commuters or increasingly active commuters in youth and young adulthood than it was for those who had been consistently passive commuters during these stages of their lives (all $p < 0.05$). **Discussion.** Walking and cycling to school or work should be encouraged since, based on the results of this study, physically active commuting in childhood and adolescence, and especially in young adulthood, predicts a high level of physical activity in early midlife and, therefore, contributes to a physically active lifestyle in later life as well.

Keywords: tracking, youth, cycling, walking, adult

Prevention of sports injuries: a systematic review and meta-analysis of randomised controlled trials

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Introduction

Although physical activity has multiple health benefits participation in sports also carries a risk of injury. Sports-related injuries are detrimental to an injured athlete's health, may cause permanent disability, or even terminate the athlete's sports career. In the last ten years, the number of published sports injury prevention studies has increased. Due to this, what is known about preventing sports injuries needs updating. The aim of the study was to update and summarise the effects of preventive interventions.

Methods

The systematic literature search was conducted in November 2012. Relevant trials were searched for in the following databases: PubMed, MEDLINE, SPORTDiscus, the Cochrane Central Register of Controlled Trials, CINAHL, PEDro, and Web of Science. The following key words were used in the search: sports injury/ies, athletic injury/ies, prevention, preventive, randomiz/s/ed, controlled trial, and randomiz/s/ed controlled trial. The reference lists of retrieved articles and reviews were hand searched. To be selected articles had to examine the effects of any preventive intervention on sports injuries, be randomised/quasi-randomised and controlled trials, published in a peer-reviewed journal. The outcome of the trial had to be injury rate or the number of injured individuals.

Results

Of the 5490 articles retrieved after a search of databases and the relevant bibliography, 67 randomised controlled trials were included in the systematic review and 59 trials were included in the meta-analysis. Insoles (OR 0.51, 95%CI 0.32 to 0.81), external joint supports (OR 0.40, 95%CI 0.30 to 0.53), and specific training programmes (OR 0.55, 95%CI 0.46 to 0.66) appeared to be effective in reducing the risk of sports injuries. Stretching (OR 0.92, 95%CI 0.80 to 1.06), modified shoes (OR 1.23, 95%CI 0.81 to 1.87), and preventive videos (OR 0.94, 95%CI 0.43 to 2.04) seemed not to be effective.

Discussion

This meta-analysis showed that certain interventions can reduce the risk of sports injuries. There were limitations regarding the quality of the trials, generalisability of the results, and heterogeneity of the study designs. In future, the mechanisms behind effective methods and the most beneficial elements of preventive training programmes need to be

clarified.

Keywords: randomiz/s/ed controlled trial, intervention, athletic injuries, sports injuries, prevention

Promoting the health enhancing physical activity through the prioritization and development of healthy urban planning in the WHO European healthy cities network

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Role of cities in promotion of physical activity, designing healthy settings and creating conditions for well-being is growing. It is the cities who need to tackle current public health challenges as they – by law and by social changes – become more responsible for health promotion. And it is the urban planners who need to create urban environment which encourages people to exercise.

Health enhancing physical activity is an integral part of public health interventions. At the same time it is widely acknowledged that urban planning have a significant impact on the citizens' health and strongly influence their lifestyle choices and if they exercise or not. Therefore it is crucial that the plans, strategies and initiatives of the city give a high value for health considerations, including the creation of environment that promotes active lifestyles. They also should emphasise equity, well-being, sustainable development and community safety in order to encourage the city inhabitants to truly benefit from them.

The WHO Healthy Cities programme acknowledges the influence of planning policies and built environment on health and physical activity in the cities and that the active lifestyle is very much affected by the living environment. For over 25 years it engages local governments to improve their intersectoral partnership planning and incorporate health, together with health enhancing physical activity into all local policies. Healthy Cities programme promotes comprehensive and systematic policy and planning with a special emphasis on inequalities, the needs of special groups (e.g. elderly population, migrants, young people from underprivileged areas), giving an opportunity for all city inhabitants to participate in exercise and thus enhance their health.

The City of Turku is a member of WHO Healthy Cities Network and it has strongly invested in the development of physical activity. The Recreational Department has worked in cooperation with cross-sectoral networks and numerous physical activity organizations on motivating the urban planners to create physical activity friendly environment. One of the examples is "Art for the Heart" project – a route by the River Aura, which combines physical activity with culture.

The presentation would explore the connection between Healthy Urban Planning and HEPA as well as give exam-

ples of city's policies and interventions in that area. Over 220 cities from Baltic Sea Region and around 1200 from Europe are Healthy Cities.

Promotion of health enhancing physical activity in nature through cross-sectorial collaboration. Moved by Nature-project

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Increasing evidence of beneficial effects of green environment on physical activity, health and wellbeing has yielded to efforts to connect professionals within park and health sector worldwide. However, nature as a health promotion context has been so far underutilized in Finland. To promote physical activity and public health, Metsähallitus, Natural Heritage Services, recently launched a programme for the promotion of health, which is currently being implemented as a cross-sectorial collaboration in Finland.

Moved by Nature-project was launched in Eastern Finland in April 2013. The aim is to develop services at public, private, and third sector that will improve the access to nature among different population groups, thus promoting their health and wellbeing. Development work is based on building new networks and increasing knowledge and skills. Needs assessments will be conducted, as well as workshops, and practical activities in nature that will serve as a learning tool for the professionals at different sectors, and also as an opportunity to collect data experiences of the participants and organizers. Pilot groups for these activities will be formed from individuals at risk of type 2 diabetes, and from individuals at risk of exclusion (e.g. immigrants, unemployed, youth). Groups will participate in health enhancing physical activity in four nature destinations. As a result, services and models will be developed for the promotion of health and wellbeing through physical activity in nature.

Project is due to January 2015 with a total budget of 335 000 €. The project is managed by Metsähallitus, Natural Heritage Services in Southern Finland. Project is co-operated with Savo Consortium of Education, and several public, private and third sector organizations. Data will be collected during the project for process and project evaluation.

Nature provides an important environment for health-enhancing physical activity. However, more is to be done to utilise nature in the prevention of physical, mental, and social health problems. The Moved by Nature-project will provide new models to promote health and wellbeing through physical activity in nature.

We acknowledge European Union Social Fund, Centre for Economic Development, Transport and the Environment, City of Lieksa, Municipality of Rautavaara, Savo Consortium of Education, Huoltoliitto ry/Spa Hotel Kunnonpaikka, and Metsäkartano Youth and Wilderness Centre for funding the project.

Keywords: nature, physical activity promotion, natural environment, services, green space

Psychosocial and behavioural predictors of changes in television viewing in older adults

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Television viewing is arguably the most prevalent form of sedentary behaviour in older adults, and has been associated with various adverse health outcomes, independently of physical activity (Grøntved & Hu, 2011). However, the correlates of TV viewing in older adults remain poorly understood. In addition, there are limited longitudinal population data on TV viewing. The aim of this study was to examine psychosocial and behavioural predictors of changes in TV viewing over 2 years follow-up.

We studied 6,089 (aged 64.9 ± 8.9 yrs) men and women from the English Longitudinal Study of Ageing, a cohort of community dwelling older adults. Self-reported TV viewing time was assessed at baseline and two years follow-up. At baseline we assessed several behavioural (physical activity, smoking), clinical (chronic diseases, body mass index, perceived difficulties in basic and instrumental activities of daily living), and psychosocial risk factors (depressive symptoms, socioeconomic status, club /society membership), which were used as independent variables in General Linear Models to examine changes in TV viewing at follow-up.

Average daily TV viewing increased from 5.3 ± 4.1 hrs/d at baseline to 5.5 ± 4.2 hrs/d at follow-up ($p < 0.001$). In models adjusted for age, sex, baseline TV time, and mutually for all other independent variables, the following variables were associated with TV viewing (hrs/d) at follow-up; moderate physical activity at least once a week compared with none ($B = -0.65$, 95% CI, $-0.92, -0.37$); smoking ($B = 0.71$, 95% CI, $0.39, 1.03$); depressive symptoms [CES-D >3] ($B = 0.43$, 95% CI, $0.12, 0.74$); obesity compared with normal weight ($B = 0.82$, 95% CI, $0.56, 1.08$); low social status, defined as manual/routine occupation ($B = 1.12$, 95% CI, $0.89, 1.36$); club /society membership ($B = -0.61$, 95% CI, $-0.37, -0.85$).

In summary, a nationally representative sample of older adults demonstrated increases in TV viewing time over 2 years. Changes in TV viewing are associated with several important behavioural and psychosocial risk factors. A better understanding of these risk factors might help inform future interventions for reducing sedentary behaviour in older adults.

References

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Keywords: Sedentary, Epidemiology, Ageing, TV viewing

Recreation, physical activity and environment for Rustavi population

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Introduction: Active recreation for all people is vital to the promotion and maintenance of physical and mental health and wellness. The relationship between recreations, physical activity and disease prevention is substantial and obvious.

Although the Georgian government stands high in the priorities the development of infrastructure of physical activity by renovating the public parks and supporting of sport tourism, there is a lack of recreational facilities in the country.

The purpose of this study was to understand the associations between physical activity and the neighborhood environment, to identify the access to recreational facilities and the levels of physical activity in the socioeconomic status of areas, in the second industrial city of Georgia, Rustavi (after capital city Tbilisi) and its surroundings.

Methods: Target group was Rustavi population and its surroundings, aged at 18-49 years, sample size about 500 respondents, sample design – cluster sampling. The study was conducted in 2011, during June-September and was supported by the Disease Prevention, Control and Non Proliferation Association. Respondents were selected randomly from households, stratified by socioeconomic status of area. They were relatively young, healthy, sedentary workers and homemakers from high or low socioeconomic status of areas.

The international standard methodology and instruments was adapted and used, which gave us the possibility to receive reliable data at reasonable expenditure and in a short period of time.

Results: Respondents in low socioeconomic status of areas had almost the same access to recreational facilities, but were less likely to use them compared with those living in high socioeconomic status of areas. They considered environment less attractive, and less conducive to walking due to traffic, air pollution and the lack of sidewalks. The respondents living in low socioeconomic status of areas were almost twice less likely to pursue vigorous activity, but they were more likely to walk. Environmental factors were associated with walking and vigorous activity; there is a lack of access to attractive spaces for walking.

Conclusion: Supportive and favorable environment with comfortable sidewalks has the potential to increase walking and vigorous activity in the Rustavi population. The quality of the environment may be more important for walking than the socioeconomic status of areas.

Keywords: physical activity, Recreation, environment, socioeconomic status, walking

Research evidence and other types of knowledge in health enhancing physical activity policy making: results from six European countries

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Introduction: Translating research evidence into policy is challenging although researchers and policy makers acknowledge its importance for effective policies. We aim to describe use and role of research evidence as well as needs for improved use of research evidence in health enhancing physical activity (HEPA) policy making. The role of institutions and stakeholders as carriers of research evidence and other types of knowledge into the policy making process will be discussed. REPOPA program aims to increase understanding of different backgrounds and policy processes and their impact on HEPA policy making in six EU member states.

Methods: In total 19 national, regional and local HEPA related policies were analysed using policy analysis complemented by interviews of 79 main stakeholders. Policy making processes were analysed focusing on use and types of evidence including barriers and facilitators for use of research evidence.

Results: International and national commitments, international policies and recommendations were in most cases triggering the HEPA policies. In some cases, stakeholders played the role of triggers of the entire policy. Research evidence was used mostly for justification of policies and mostly implicitly. In addition to demographic background reports and public consultations various types of stakeholders on national, regional and local levels had a focal role in the policy making via experts groups and advisory boards. Communication between policy makers and researchers and familiarity of policy making processes among researches facilitated the use of research evidence in HEPA policies. Media, networks, communication styles and access to internet resources appeared to interact seamlessly with the use of research evidence in policy making.

Discussion: Efficient policy making requires interaction between policy makers and researchers, development of communication skills and timely supply of information in relation to the policy making process. The knowledge of policy context is utmost important to all who would like to increase use

of research evidence in policy making.

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Keywords: *Europe, evidence informed, other type of knowledge, policymaking*

School physical activity: promotion of daily healthy lifestyle in Czech and Polish adolescents

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Background:

Besides family, school plays a special role in the prevalence of physically active and healthy lifestyle of young individuals. It is the only institution with the ability to affect a vast majority of young people thanks to evidence-based behavioral practice. In particular, it can help us to create and strengthen habits of regular physical activity (PA) and compensation of school (work) psychological load. The goal of this research was to learn more about the structure of school PA in girls and boys in terms of volume and intensity, and its role in daily PA in adolescents.

Methods:

The study was conducted at selected secondary schools of different types and residence sizes. Eighteen schools in the Czech Republic and 10 schools in Poland were included. The research sample consisted of 612 girls (age 16.15 ± .90) and 278 boys (16.16 ± .95). The ActiTrainer accelerometer and recording techniques were used for PA, inactivity and heart rate monitoring. Special software was used to evaluate the data and provide feedback to participants. One-way ANOVA and cross tables were implemented to analyze the results.

Results:

Girls spend 72% of time at school physically inactive (boys 68%), while before school it is 49% (boys 48%) and after school it is 62% (boys 62%). Total PA at school consists of 294 steps/hour (for boys 300 steps/hour) during classes without PE (physical education lesson – PEL), 1023 steps/hour (for boys 1048 steps/hour) during breaks and 1525 steps/hour (for boys 1471 steps/hour) during PEL. Both girls and boys participating in PEL recorded more PA expressed in steps/hour ($F = 229.46$; $p = .000$; $\omega^2 = .44$) and more vigorous PA (hours/day)(a) > intensity 6 MET ($F = 155.04$, $p = .000$; $\omega^2 = .34$), (b) intensity > 85% maximum heart rate ($F = 4.22$, $p = .040$; $\omega^2 = .01$). In addition, participants in PEL had more all-day long PA, both in terms of PA

volume and intensity.

Neither girls nor boys, who have had less PA in the classroom and during breaks, compensated their sedentary behavior with PA before school or during their after-school free time. Only 23% of girls and 29% of boys met recommendations of 60 min of PA per day.

Conclusion:

Physical inactivity during school-day is not compensated by physical activity before or after school neither in terms of volume nor intensity. "Mandatory" participation in PEL for all students, extension of breaks at the expense of shortening classes is one of many HEPA options.

Keywords: *physical education, health-enhancing physical activity, ActiTrainer, breaks, intensity*

School staff's awareness of Finnish physical activity recommendations for school-aged children

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Introduction. National physical activity recommendations for school-aged children in Finland state that a) all 7- to 18-year-olds should be physically active for at least one to two hours a day; b) sitting continuously for more than two hours should be avoided; and c) screen time with entertainment media should be limited to two hours a day (Ministry of Education and Young Finland Association 2008).

Finnish Schools on the Move is a national action programme aiming to enhance physical activity in the school setting and implement the national physical activity recommendations in elementary schools. The purpose of this study is to describe the school staff's awareness of national recommendations for physical activity and sedentary behaviour of school-aged children.

Methods. In spring 2013, staff from 3 reference schools ($n=63$) and 38 schools participating in the Finnish Schools on the Move programme ($n=438$) responded to a web-based survey, which included questions concerning their awareness of the physical activity recommendations. Respondents represented primary schools (39%, grades 1-6), combined comprehensive schools (40%, grades 1-9) and secondary schools (21%, grades 7-9).

Results. Almost all the respondents (95%) were aware of the physical activity part of the recommendation. The recommendations related to sedentary behaviour were less known: 89% of the respondents were aware of the screen time restriction and 75% knew about the limit in continuous sitting. The comparison between school levels showed that staff in primary schools (98%) were more aware of the physical activity part of the recommendation than those in secondary schools (91%) ($p=0.048$), but no difference was

observed in relation to sedentary recommendations. The comparison between programme and reference schools indicated that the awareness of both the physical activity recommendation (96% vs. 89%, $p=0.008$) and the sitting recommendation (78% vs. 60%, $p=0.002$) was higher among staff in programme schools, compared to those in reference schools.

Discussion. Almost all of the school staff were aware of the physical activity recommendation. The screen time recommendation was also well known. The recommendation concerning sitting periods was the least known, although three out of four respondents were aware of that part too. Awareness, specifically of the sitting recommendation, could be improved among school staff to decrease excessive continuous sitting among children during the school day.

Keywords: school staff, physical activity recommendations, school-aged children

School-based physical activity intervention among adolescent girls

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Background: The present study was designed to evaluate the effects of a physical activity intervention in high schools. The intervention is innovative as it combines environmental strategies with education through interactive computer-personalized feedback and education. It was hypothesized that 8 weeks of intervention would prevent the decrease in physical activity and promote the increase in physical activity levels.

Methods: The intervention was new as it combined environmental strategies with computer-personalized feedback to increase levels of moderate to vigorous physical activity. The intervention was implemented by a trained researcher. Physical activity was measured using a questionnaire and a pedometer. Furthermore, the online database concerning physical activity, PowerPoint presentations and the Sport Preferences Survey were used. Three evaluative instruments were implemented during the 8-week intervention: the International Physical Activity Questionnaire (IPAQ), Body composition analyzer – Tanita BC-418 (a segmental body composition analyzer) and pedometer – Yamax DigiWalker SW-700. The intervention was implemented during one school year from March 2013 to April 2013. The intervention program was designed in accordance with physical activity guidelines. The content of physical activities varied and so even less skilled students could participate in the study.

Results: The results showed that the differences within the group with normal weight were not significant. However, the differences in the overweight/obese group were significant. There was no significant difference in body composition in

pre- and post- measurements. Finally, an increase in the number of steps within a week was found.

Conclusion: The physical activity intervention implemented by a trained researcher caused an increase in physical activity in both high school boys and girls. The combination of the environmental approach with computer-personalized interventions seems promising.

Keywords: physical activity, high school, body mass index, sport preferences, body composition

Sedentary behavior in children: ex-ante evaluation of a proxy-report questionnaire

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INTRODUCTION. Sedentary behavior (SB) is more than lack of physical activity (PA). As Pate et al say [2011] 'it is a distinct and independent construct from PA. An individual can spend a large proportion of time in SB and still meet guidelines for moderate to vigorous PA'. SB is defined as 1.5 METs or less intense activity and it embraces different kind of activities: screen time (TV, video games, computer), educational tasks, motorized travel, hobbies (reading, music), social behaviours (sitting, talking). In addition, other qualitative aspects are important such as contemporary snacking, advertising and bad models exposure throughout media, isolation, low cognitive functions activation. So, the SB assessment is an emergent methodological issue for PA epidemiology and subjective methods (questionnaires) have a strategic importance [Atkin, 2012].

This study was aimed to evaluate a parent proxy-report to assess SB of primary schoolchildren with an 'ex-ante' procedure (i.e. before validate or using it on the target).

METHODS. A panel of 111 experts were enrolled (80 primary school teachers and 31 physical education assistants of them) from Abruzzo Region (Italy) primary schools. They filled in a form with 29 items on these issues: contents, reliability of parents, technical aspects (clearness, readability, layout), suggestions, forecasting on its real use in school setting. Statistical analysis used only descriptive measures for central tendency (median) and variability (interquartile distance).

RESULTS. Not more than an half of panel judged parents mindful of their children's behavior, available and not reticent. Experts judged evenly positively the contents of questionnaire: they are relevant, not-discriminating by gender, age or socio-economic status of children, complete and not-excessive. All technical aspect were positively evaluated (some practical suggestion apart, such as assistance for foreign parents or bigger printed characters) and experts believed possible such kind of administration directly to the

children. Finally, they forecasted a real utilization in class activities by teachers.

DISCUSSION. The study highlight the teachers' interest in children's SB but the most serious problem was the reliability of source and parents couldn't promote health if unaware of their children lifestyle. So, the SB proxy-reporting could be a good way to involve and make them conscious.

REFERENCES: Pate et al, Br J Sport Med 2011. Atkin, Int J Epid, 2012.

Keywords: children, sedentary behaviour, questionnaire

Self-report physical activity and correlates of physical activity in older adults in Ireland

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Introduction: Regular physical activity (PA) is associated with reduced disease risk, better mental health and social integration in older adulthood. Currently there is limited all-Ireland evidence on levels of PA and factors that promote or inhibit PA to inform interventions for this population. This analysis used data from large-scale surveys to assess current PA levels and examine the correlates of PA in older adults. **Methods:** Total PA, moderate to vigorous (MVPA) and walking among older adults aged 60+ were analysed, across five population surveys; The Irish Longitudinal Study on Ageing (TILDA n=4892); Survey of Lifestyle, Attitudes and Nutrition in Ireland (SLÁN n=2691); Northern Ireland Sport and Physical Activity Survey (SAPAS n=1393); the Health Survey for Northern Ireland (n=1359) and Irish Sports Monitor (n=1998). Chi squared statistics and forced entry logistic regression was used to identify factors associated with sufficient PA. **Results:** Data from 12,333 participants (6627F) were included. Participation in MVPA and walking varied across survey but there was a clear inverse relationship between age and PA among adults aged between 60 and 75+. The percentage meeting PA guidelines varied from 12.5% to 34.7%. The odds of being insufficiently active increased with age. Adults aged 75+ were between 1.47 (ISM) and 3.27 (HSNI) times more likely than 60 -64 year olds to not meet PA guidelines. Females displayed higher odds of being insufficiently active (ORs:1.73-1.99) than males. A trend across datasets was not evident for socio-economic status (SES), with SLAN and SAPAS indicating that low SES groups were less likely to meet guidelines whereas TILDA indicated that less affluent were more likely to meet guidelines. Data from SLAN and TILDA indicate that urban dwellers were 1.2-1.8 times more likely to be insufficiently active than rural dwellers, and tertiary educated respondents had a 25% reduced risk of not meeting PA guidelines. **Discussion:** Older adults across Ireland are insufficiently active. PA declines with age with the oldest adults (75+ yrs) reporting very low levels and females, less

well educated and urban dwellers reporting lower levels of activity than their male, tertiary educated or rural dwelling counterparts. Interventions focused on maintaining PA with advancing age and targeting needs of older females and urban dwellers may be useful in addressing discrepancies in PA in older adults. This analysis was funded by CARDI.

Keywords: physical activity, older adults, correlates, physical activity guidelines

Sport, exercise, and physical activity among Finnish children and adolescents – A systematic review

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PURPOSE: The purpose was to find, summarize, and evaluate the quantity and quality of peer-reviewed publications on sport, exercise, and physical activity of 0-17-year-old Finnish children and adolescents from the years 2000 to 2012.

METHODS: Systematic literature searches were performed from the ARTO, MEDIC, LINDA, PUBMED, SSCI, PSYCINFO, ERIC and SPORT databases. Original, peer-reviewed research articles and reviews, and doctoral thesis accepted to any of the Finnish universities were included.

The review covered both behavioral and biomedical research fields with the following inclusion criteria:

- 1) Human participants, under 18 years of age, and living in Finland.
- 2) Relationships of sport, exercise, or physical activity among children and adolescents.
- 3) Relationships of sport, exercise, or physical activity in childhood with any factor in adulthood.
- 4) Organized by a Finnish research group.

RESULTS: After duplicates and irrelevant references were excluded, all together 334 relevant articles were found. In addition, relevant articles found from other sources (n=14) were included in the analyses. Finally, 348 references included: 191 internationally published original articles (n=178) or reviews (n=13), 88 original articles (n=73) or reviews (n=15) published in Finnish, and 69 doctoral theses published either in Finnish or in English language of which 38 were compilation of original articles.

66% of the original articles were mainly biomedical (N=185; 34 in Finnish; 151 in English), and 31% from behavioral or social sciences (N=86; 49 in Finnish; 37 in English). Mainly biomedical doctoral theses were 29 (42%) and 37 (54%) were from behavioral or social sciences. In addition, 11

studies in the fields of agriculture, ethnology, dance art, geography, economics, and information technology were present in the articles and in the doctoral theses.

Majority of the original studies used quantitative methods (96% of the international articles, 77% of the articles in Finnish, 67% of the doctoral theses). Both quantitative and qualitative methods were used in 14 studies (including 6 doctoral theses). Both boys and girls were included in the majority of the studies. The study contexts varied and covered all age groups.

ACKNOWLEDGEMENTS: The Study project was organized by the Finnish Society of Sport Sciences and supported by a multidisciplinary guidance group. The Finnish Ministry of Education and Culture provided financial resources for the project.

Keywords: children, physical activity, adolescent, review, exercise

Sports and exercise safety in Finland: LiVE – an Implementation program to sport clubs and schools

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Introduction:

Number of sports injuries has increased in Finland during the past decades. Today sports injuries are the most common injury type. Especially children and youth are at high risk. Treating of these injuries is difficult, expensive, and time consuming. Over 50% of the injured people estimated that the injury could have been easily prevented beforehand.

Development:

The purpose of the LiVE program is to increase safety of sports and exercise in a nationwide setting. The Research Center of Sports Medicine in Tampere focuses its research on sports specific injury incidence, risk factors, mechanisms and prevention strategies. Implementation of the study findings are conducted in two main projects; Healthy Athlete (2006-) and Safety in Schools (2010-). The primary target groups are young athletes, their coaches and parents, elementary school pupils and their teachers. Programs main communication channels are websites: www.terveurheilija.fi and www.tervekoululainen.fi.

Two RCT's have been carried out, one among female athletes (Pasanen et al. 2008) and another among army recruits (Parkkari et al. 2011). Numerous studies of injury epidemiology in sports have been published (Leppänen et al. 2013). According to the results, a remarkable part of sports injuries can be prevented by enhancing awareness of injury risks, improving quality and contents of training and taking care of sports environment and equipment.

The program has educated over 80 tutors who work in different organisations (e.g. Finnish Ice Hockey Association and Finnish Gymnastic Federation), built up sport safety networks, introduced itself to projects target groups in numerous events and organized several seminars to improve safety in sports. LiVE websites have attracted 6000-9000 visitors per month each.

Conclusion:

Successful development and implementation of preventive strategies against sports injuries are likely to result in reduction in the absolute number of health problems and in sport, work and school absenteeism and decrease in medical costs in Finland. The effects of the LiVE programme will be seen within five to ten years.

Funding:

The Finnish Ministry of Social Affairs and Health & The Finnish Ministry of Education and Culture.

References:

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Keywords: schools, sport clubs, sport injury prevention, children and youth, sports safety

Substantial potential for welfare gains by increasing physical activity in Norway

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Introduction

Welfare benefits of physical activity are estimated on results from large epidemiological studies. Norwegian estimates show that over the life course a physically active person, on average, will be expected to gain eight quality adjusted life years (QALYs) compared to an inactive person. The gain is spread on 3.25 years increased lifetime and 5 years with increased quality of life. An insufficiently active person is estimated to have on average half of the health gains (Sælensminde and Torkilseng 2010).

Objectively measured physical activity shows that 20 % of the Norwegian adult population met the national physical activity recommendations, on average 30 minutes moderate physical activity per day (Hansen et al 2012).

The purpose of this work is to increase the knowledge of welfare benefits of physical activity at the population level.

Method

The welfare gains are calculated by using a Markov model, based on the relative risk of death from all causes. The model calculates the expected remaining life and quality of life of the insufficiently active and physically inactive (Sælensminde and Torkilseng 2010).

Based on the measured activity level, the assumption is that 60% of the population are insufficiently active and 20% are inactive. Estimates have been made to see at the overall welfare gains if the insufficiently active part and the inactive part of the population meet the recommendations. The population was divided into ten-year groups (20-29 years, 30-39 years etc.). The work is based on the population 1st January 2013.

Results

The calculations shows that the overall welfare gain is about 406 000 QALYs each year if the population who are insufficiently active or inactive becomes physically active.

Discussion

The welfare gain is substantial at the population level if the population increases the physical activity level. The calculations of QALYs are conservative.

Knowledge about the effectiveness of implemented measures is uncertain. Further work will be necessary to gain better understanding of what measures are effective in changing behavior in a lifetime.

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Keywords: quality adjusted life year, population, physical active, welfare

Teko – promoting safety in school sports via internet and education

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Introduction:

In Finnish schools sport injuries happen mostly in PE classes, in recess and on the way to school. Ball games and skating are the most common activities causing injuries. A remarkable part of these injuries can be prevented by en-

hancing pupils' motor skills and awareness of injury risks, increasing quality and contents of PE, highlighting sport safety issues in health education classes and taking care of safety equipment and environment in schools.

Development:

The Sports and Exercise Safety in Finland program (LiVE) and its implementation project Safety in Schools (TEKO 2010-) has produced educational material to the internet to encourage PA and to promote safety of sports and exercise. The main focus of the TEKO project is to deliver national and international research findings to the schools by communication via website www.tervekoululainen.fi and to support this communication with education methods. The primary target group for TEKO is PE and health education teachers in secondary schools (grades 7 to 9).

The sports safety promotion focuses on ten segments based on the modified model by Van Mechelen (1992); PA, sports skills, maturation, nutrition, rest and sleep, environment and equipment, health care, atmosphere and rules, sports injuries and support network. TEKO has built up education material e.g. information packages, homeworks and PP-slides for teaching the segment contents. The material is available free of charge for all. The modification of the project's material to elementary school is ongoing.

Conclusion:

The websites attracts around 6 000 visitors per month. TEKO newsletter has over 800 subscribers. TEKO has taken part to a numerous international and national events. An web-based evaluation survey was done in January 2013 to PE and health education teachers (n=900). The response rate of the survey was 20% (n=177). 54% of the teachers knew TEKO. Half of those estimated that the content they use in sports safety education has expanded and the methods they use are more diverse based on the material TEKO has produced.

The project is under evaluation using the RE-AIM framework. The evaluation findings will be reported during spring 2014.

Funding:

The Ministry of Social Affairs and Health & The Ministry of Education and Culture

References:

Van Mechelen W. Incidence, severity, aetiology and prevention of sports injuries. A review of concepts. *Sports Med* 1992;14:82–99

Keywords: shoosls, adolescents, PE and health education, internet, sports safety

The adventures of Joe Finn campaign reach men

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Introduction

Fit for Life Program (KKI) promotes health-enhancing physical activities for working-age adult population. One important target group sedentary men for whom KKI has designed a successful, easy-going campaign called the Adventures of Joe Finn. Approx. 60 percent of men should improve their physical activity and/or eating habits. The life expectancy of Finnish working class men is six years shorter than men in higher positions.

A goal of the campaign is to awaken and activate working-aged men towards regular physical activity and healthy lifestyle. The Adventures of Joe Finn campaign includes Joe Finn Fitness tests, lorry tours, communication campaigns, materials, a website and local actions.

Methods

In spring 2013, the lorry tour stopped in 36 municipalities offering Joe Finn fitness tests for men. The roadshow was marketed in targeted media: local newspapers, web magazine, trade magazines, social media and nationwide tabloid and magazine. In addition the partners of the campaign recruited men from workplaces, vocational schools and via brochures and posters.

During and after the lorry tour, TNS Gallup carried out the study of the awareness and necessity of the Adventures of Joe Finn campaign. The survey was conducted via telephone interviews in nine towns altogether to 1400 men aged 30-60 years. The research was carried out for the first time in 2011.

Results

In 2013 a total of 8797 men were tested in the lorry tour. The TNS Gallup survey revealed that the overall awareness of the campaign has increased from 33% to 41% in two years among 30-60 year men who had noticed something about the Adventures of Joe Finn campaign or the lorry tour. Men PA activity levels had no impact on results. Nine of ten considered the Adventures of Joe Finn campaign to be necessary. Less educated and less active men were more interested in getting information about PA opportunities than highly educated and physically active men. Compared with the year 2011 men are not so convicted of their physical fitness any more.

Discussion

The great number of tested men shows that the lorry tour reached men. Because the attention value of the campaign is high (41 %) among men, it can be stated that the campaign has succeeded in creating models reaching the tar-

get group. The most difficult group among men, the passive and less educated, has shown awakened interest to healthy lifestyle. Targeted campaigns are worthwhile to activate population.

Keywords: sedentary men, campaign, physical activity

The effectiveness of elaborating physical activity intentions in a 12-week physical activity program: a randomized trial.

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Background: Self-efficacy has been found to be an important precondition for behavioral change in inactive people (1). A useful strategy to increase participants' self-efficacy is to elaborate and plan their physical activity (PA) intentions (2). The present study examined the effectiveness and added value of elaborating PA intentions by means of a 15-minute self-efficacy coaching at the start of a 12-week PA program.

Methods: A total of 224 adults (mean age = 42.8 ± 10.3 years) were randomly assigned to the standard-intervention. Participants of the standard-intervention group (N = 113) received a standard explanation of the PA plan, while participants (N = 111) of the extra-intervention group additionally received a 15-minute coaching focusing on increasing self-efficacy by elaborating their PA intentions (What? When? Where? With Whom? Barriers and solutions?). Body-Mass-Index (BMI), cardiovascular fitness (progressive cycle ergometer test), self-reported PA (Godin Leisure-Time Exercise Questionnaire) (GLTEQ) (3) and self-efficacy beliefs (five-point Likert scale) (4) were assessed at baseline and immediately after the intervention period. Perceived program adherence (e.g., I was able to attain my prescribed PA program goals) (five-point Likert scale) was assessed post-intervention. All statistical analyses were conducted using SPSS.

Results: At post-test, a significant decrease in BMI (-1 kg/m²) (P=0.001) and increase in cardiovascular fitness (+0.42 Watt/kg) (P=.017) was found in both groups. A significant time by group interaction effect was found for self-reported PA (P=0.04) and self-efficacy beliefs (P=.036), in favor of the extra-intervention condition. Furthermore, participants in the extra-intervention group reported a better program adherence compared with the standard-intervention group. The intervention effect on program adherence was mediated by self-efficacy.

Conclusions: Adding a 15-minute self-efficacy coaching to elaborate participant's PA intentions at the start of a PA program is a promising strategy to enhance the intervention effects on PA behavior, self-efficacy beliefs and program adherence.

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Keywords: randomized trial, adults, self-efficacy, program adherence, aerobic fitness

The impact of area-based initiatives on physical activity trends in deprived areas; a quasi-experimental evaluation of the Dutch District Approach

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INTRODUCTION.

Numerous area-based initiatives (ABIs) have been implemented in Western Europe to improve the living conditions in deprived areas. There is little robust evidence of their impact on physical activity (PA). This study aimed to assess the short-term impact of a Dutch ABI called the District Approach, on trends in leisure-time PA in deprived target districts.

METHODS.

Repeated cross-sectional data on 48401 adults across the Netherlands (of which 1517 residents of deprived target districts) were obtained from the Integrated Survey on Household Living Conditions (POLS) 2004 to 2011. A quasi-experimental interrupted time-series design was used. Multilevel logistic regression analyses were performed to assess pre- and post-intervention trends in leisure-time walking, cycling, and sports (>0 minutes per week). Trends in deprived target districts were compared with trends in various control groups. The role of the intensity of environmental interventions was also assessed.

RESULTS.

Deprived target districts showed a significantly positive pre-post intervention trend change in walking. The trend change in the deprived target districts was significantly larger compared to the rest of the Netherlands, but not compared to other deprived districts. For cycling and sports, neither deprived districts nor control districts showed a significant trend change. For all leisure-time PA outcomes, trend changes were not related to the intensity of environmental interventions in the deprived target districts.

DISCUSSION.

Some evidence was found to suggest that ABIs like the District Approach have a positive impact on leisure-time PA in deprived districts, regardless of the intensity of environmental interventions.

FUNDING.

This research was part of the URBAN40 study, which is supported by a grant from The Netherlands Organisation for Health Research and Development (ZonMw).

Keywords: deprivation, evaluation, area-based initiative, physical activity, quasi-experimental design

The national policy programme for older people's physical activity – health and well-being from physical activity

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Introduction

Finland is one of the fastest ageing countries in Europe. Exercise is important in supporting the health, mobility, mental well-being and memory of the older people. Research shows that the physical activity of older adults is decreasing and only a few are physically active according to health exercise recommendations. Especially strength and balance exercise is rare among the elderly.

The executive board of the national Strength in Old Age Health Exercise Programme (2005–2014) designed a national policy programme for older people's physical activity. The starting point was to increase everyday activity and physical activity independently or in guidance.

The target group of the programme includes older people who do not get enough exercise for their health: 1) 60+ people who are retiring, 2) 75+ people living independently and having early problems of mobility, 3) older people in home services, service housing or long-term institutional care.

Starting in 2013, the Age Institute will coordinate the national policy programme with support from Finland's Slot Machine Association (RAY), Ministry of Education and Culture, Ministry of Social Affairs and Health, key expert organizations and representatives of older people.

Development

The policy programme offers 16 recommendations in six areas. The policy programme will be realized by the increase of services to the elderly: more exercise counseling and activities, accessible and safe exercise environments, and training. The actors will be supported by the distribution of information, promotion of older people's health exercise in basic and advanced training, and production of learning and guidance materials.

The suggestions of the programme will be designed by organizing networks around the target groups. The networks will be formed in national, regional and local cross-administrative cooperation groups. Public knowledge about the significance of health exercise for the well-being of older people will be promoted with extensive communication, such as opinion and action campaigns.

Conclusion

The successful completion of the policy programme requires networking that enables the cooperation of key actors involved in older people's physical activity on national, regional and local levels. It is also essential to have a dialogue between research and development, and the support of RAY and ministries as agreed in the programme. The programme can be read on www.minedu.fi in Finnish and English.

Keywords: policy programme, physical activity, Older people

The quality of life comparison between physically active and inactive older women

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Introduction

The low birth rate in the Czech Republic makes the Czech population is getting older. This is not only a problem of the Czech Republic, but it almost concerns to all Europe. Population aging leads us to a broader reflection on this issue and not just in economic terms but also in terms of sociology and humanity. The aim of our survey is to undertake a pilot study of the subjective perception of quality of life and the health of physically active and inactive seniors.

Methods

The research group (N = 69) consists of women in age 61-76 years, an average age is 67,8 years.

All women are retired, they do not have permanent job contracts. The subjective quality of life perception was used by the Czech version of the questionnaire Q-LES-Q.

The frequency and the content of respondents' physical activities have been determined by using exploitation of the recreational physical activity questionnaire. The questionnaire also contains basic anthropometric indicators.

Health status was assessed by a respondents' health questionnaire. Both questionnaires objectify mentioned phenomena (frequency and regularity of physical activity and health status of the respondents).

By the evaluation of physical activity questionnaire we have obtained the criterion by which the research file was divided into three groups – physically inactive, moderately active

and very active seniors.

Results

Small intergroup differences were noted in the responses of the questionnaire that subjectively assessed the quality of life. Statistically significant differences between groups were found in responses on the regular physical activity and on the number of health problems. From the comparison of the items questionnaire Q-LES-Q it is evident that the groups differ widely in terms of the variation range, but maximum and median are very similar one another.

Discussion

The perception of subjective quality of life is influenced by many other factors affecting a human. The subjective perception of quality of life is not affected by their physical activity or by objective health problems in our group of seniors.

In conclusion, we can state that the adequate physical activity in seniors' age affects the individual health. We plan to continue in our research. We would like to concentrate on the content of the physical activities of the active seniors.

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The role of croatian universities to advance health enhancing physical activity of students

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According to Kwan and Faulkner (2011) there is a growing recognition that university and college students are an important target population for health promotion efforts, and that collegiate as well as the university are the crucial settings for the delivery of health and PA promotion. University life adds more stress and requires more independent decision making by young people. While the majority of young people are aware of the importance of healthy life-styles, only a small percentage of them actually take an active part in pursuing a healthy lifestyle. Many young people engage in a wide range of unhealthy habits and risk behaviours that lead to adverse health outcomes (Curkovic,2010, Pekmezovic at all. 2011).Most of the Croatian universities and Polytechnics provide the subject Physical education as an obligatory for the university students on first and second year of study. Since 2008, University of Zagreb has approved the new curricula of Physical education in higher education based on main aim to adopt active lifestyles and to develop motor skills and knowledge related how to enhance physical condition and particularly work abilities for their career(Neljak, Caput-Jogunica, 2012). According to the Croatian literature reviews, there are many studies that results have confirmed the importance of Physical education in higher education due to the analysis of student's morphological characteristics, physical activity and body dissatisfaction, students perceptions and interest of physical education and sport and students knowledge about health en-

hancing physical activity.

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Keywords: university, physical activity, environment, health

Tule-KUNTOMITTA – a method to enhance musculoskeletal health

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(UKK Institute for Health Promotion Research, Finland)

Introduction:

Musculoskeletal fitness is one of the most important factors in maintenance of ability to function and work-ability, and to support overall health. Globally, poor musculoskeletal conditions is currently the most common cause of chronic disability, and the number of people suffering of it has increased by 25 percent over the past decade. This trend will continue with overweight epidemic and ageing of population. However, only one in 10 of adult population, and a few percent of senior citizens in Finland meet physical activity recommendations to train muscular strength twice a week. Evidence-based and feasible procedures should be developed to enable the attainment of recommendations.

Development:

To enhance involvement with target-oriented neuromuscular and muscle strength exercises the Tule-KUNTOMITTA-project was established with collaboration of National Finnish Tule-Program (2010-2015) and UKK Institute. In the first place the project has aimed to give evidence-based methods for use of patients' associations for musculoskeletal disorders, and to give a tool at instructors conducting groups in different associations. Furthermore, the purpose has been to motivate the members participating exercise groups to adopt training on a regular basis. Tule-KUNTOMITTA –project has proceeded in different stages: 1) producing a booklet including assessments of four components of health-related fitness with seven test, and accordingly, selected evidence-based exercises for progres-

sive neuromuscular and strength training (in total 21 exercises), 2) producing open to all workout videos for UKK Institute's home pages (www.ukkinstituutti.fi/tulekuntomitta), 3) arranging further education for exercise group instructors, 4) starting implementation process in selected patients associations.

Conclusions:

The Tule-KUNTOMITTA-project has launched a structured and evidence-based model for the patients' associations. Many associations have expressed their interest in Tule-KUNTOMITTA tests and exercises. However, it seems that it requires more effort and financing to implement new kind of actions in practice. Yet, videos open to all have brought numerous visitors to UKK Institute's home pages, and when the booklet has been introduced in public events it has elicited interest. Overall, before people become aware of the benefits of neuromuscular and muscle strength training, and initiate it in terms of PA recommendations, need for specific allocation is indicated.

Keywords: physical activity, training, musculoskeletal, health

Using activity monitor as part of an activation method – A pilot study in young men

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INTRODUCTION Despite the known benefits of physical activity (PA) on health, recent evidence consistently demonstrates that a majority of adolescents do not meet current PA recommendations. The aim of this study is to examine whether the use of a wrist-worn activity monitor has an effect on the amount of daily PA in young men. This pilot study is a part of a larger MOPO study (Ahola et al. 2013).

METHODS For this three-month physical activation pilot trial, 280 conscription-aged men (mean 17.9, SD 0.7 years) were recruited. Participants were randomized to an intervention (N=141) and a control (N=139) group. The intervention group had a wrist-worn activity monitor (Polar Active) showing the daily PA during the whole study period. In addition, access to a gamified activation service was provided from the second week until the end of the trial. For the control group daily PA was measured by identical but blinded monitors during the entire trial.

RESULTS Activity data from 72 (51 %) and 90 (65 %) men from the intervention and control groups, respectively, were collected during the trial. A total of 6132 days were included for analysis while the analysis criterion was 8 hours of monitoring per day. The average daily wearing time was approximately 14 hours in both groups. During the first week the average time spent on moderate or vigorous PA (> 3.5 MET) was higher in those wearing activity monitors providing feed-

back compared with controls (69 vs. 57 min, $p=0.034$). In the second week the activity level of intervention group remained at the same level, however, the difference between the groups was not statistically significant. During the rest of the trial in the intervention group the level of activity had a decreasing trend so that in the end PA was at the same level in both groups (57 vs. 56 min).

DISCUSSION Wrist-worn activity monitor motivated young men to increase their daily PA at the early phases of the trial, but this increase was not sustained. Activity monitors may be a tool when planning future studies involving PA interventions and developing comprehensive, attractive services for the optimal motivation of young men.

ACKNOWLEDGEMENT

This study was funded by the Ministry of Education and Culture, Centre for Military Medicine, Northern Ostrobothnia ELY Centre, Tekes – the Finnish Funding Agency for Technology and Innovation and the Northern Ostrobothnia Hospital District.

REFERENCES

Ahola et al. BMC Public Health 2013; Jan 14;13:32,2458-13-32.

Keywords: physical activity, motivation, wearable monitor

Utilizing health education lessons to reduce screen time and to increase physical activity among 8th graders: The protocol of a randomized, controlled Kids Out!-trial in 14 Finnish schools

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Introduction:

Interventions to promote adolescents' physical activity are needed. Schools have a great potential to reach all adolescents. As a stand-alone subject in Finnish schools health education provides excellent opportunity for health promotion. The study evaluates Reach, Effectiveness, Adoption, Implementation and Maintenance (RE-AIM) of a randomized, controlled trial (RCT) developed for health education lessons to reduce screen time and to increase physical activity among 8th graders.

Methods:

All 14 secondary schools in Tampere were randomized to intervention (INT, $n=7$) and comparison group (COMP, $n=7$). In INT the health education teachers ($n=14$) were trained to integrate a specific content on screen time and physical activity into 3 health education lessons. The content was supported with an Internet-based SoftGIS ques-

tionnaire with feedback views and a FeetEnergy-material specifically developed for the trial (adolescents' homework leaflet, parental information leaflet, YouTube animation and a classroom poster). In COMP the teachers carried on their usual practices but scheduled the lessons on physical activity accordingly and received the same material as INT after the trial.

The primary indicators of Effectiveness are changes in the psychosocial factors, screen time, physical activity and parental interference. The measures are accelerometers, 7-day evening recalls and questionnaires at baseline and 1 and 7 months post-intervention (seasonal variation accounted). The evaluation of Reach, Adoption and Implementation is based on data collected during the trial. Interviewing the health education teachers in INT one year after the trial assesses Maintenance.

Results:

The trial was completed in October 2012 involving 1550 adolescents (INT=695, COMP=855). The teachers in INT were trained in August and the informed consents were acquired and the baseline measurements were conducted in September. The 7-month data collection ended in April 2013. The findings will be reported during 2013-15.

Discussion:

This is the first RCT in Finland to evaluate the utilization of health education lessons in physical activity promotion. The findings give indication of the value of integrating simple structured elements into the lessons. Currently the contents of health education lessons on physical activity vary greatly.

Funding: The Finnish Ministry of Education and Culture, Research Programme on the health and welfare of children and young people (SKIDI-KIDS).

Keywords: physical activity, intervention, schools, adolescents, promotion

Validity and repeatability of self-reported leisure-time PA and screen-based sedentary behavior among school-aged Finnish children: a validation study using accelerometer as an objective measure.

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Introduction:

Accurate assessment of physical activity (PA) and screen-based sedentary behavior in school-aged children is necessary. This study aimed to assess the repeatability and validity of the school-aged children's self-evaluated leisure-time PA and screen-based sedentary behavior using accelerometers as an objective reference measure.

Methods:

A convenience sample of 282 children participating in The Fin-HIT, Finnish Health in Teens, study was recruited in spring 2013. A total of 155 children (60% participant rate, aged 11 years, 94 girls) filled in a questionnaire, wore accelerometer (Actigraph, LLC, Pensacola, FL, USA) 7 consecutive days and filled in a diary of their leisure-time activities. Questionnaire included questions of frequency and duration of PA in leisure-time and questions of screen-based sedentary behavior in leisure-time. Average minutes of daily leisure-time PA, sedentary time, and total screen-time were formed. Repeatability was assessed by test-retest (appr.30 days apart) and Spearman's rank correlations. Validity was tested by Spearman's rank correlations and Kruskal-Wallis tests.

Results:

Test-retest repeatability measured by intra-class correlations indicated substantial or perfect agreement for PA and screen-based sedentary behavior and Spearman's rank correlations were moderate to acceptable for each measure. Validity of leisure-time PA and screen-based sedentary behavior was poor to moderate based on the Spearman's rank correlations. Kruskal-Wallis tests showed the significant differences between tertiles compared to self-reported PA and screen-based sedentary behavior indicating that the questionnaire correctly classifies the children in their levels of PA and screen-based sedentary behavior.

Discussion:

The repeatability and validity of self-evaluated PA and screen-time sedentary behavior varied between poor and perfect agreement, but are comparable to other self-reported physical activity and screen-time sedentary behavior questionnaires used among children. Our findings suggest that self-evaluated PA and screen-based sedentary behavior has acceptable measurement characteristics for ranking participants according to their level of physical activity and screen-based sedentary behavior.

Keywords: Accelerometer, Screen-based sedentary behavior, Validation, Physical Activity

Youth athletes' motivation, perceived competence and persistence in organized sports: A 12- month prospective study

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Introduction

Research shows that joining organized sports at an early age and continuing sporting activities through adolescence

increase the likelihood for physically active lifestyle later in adulthood (Kjonnixsen et al. 2009). Therefore, understanding the motives for participation and persistence in organized youth sports are important issues for sport practitioners, policy makers and researchers. The aim of the present study was to combine tenets of achievement goal theory, perceived competence and self-determination theory to examine motivational antecedents to maintain participation in sports.

Methods

This study applied a prospective longitudinal design assessing athletes' persistence behavior in organized sport over one competitive season. A sample of 1962 soccer, ice hockey and basketball players completed the Perception of Success Questionnaire, the Self-Assessment Questionnaire and the Sport Motivation Scale. Players ranged in age from 14 to 15 years (M= 15.09; SD = 0.28). Structural Equation Modeling within the framework of Mplus was used to test a model that incorporates goal orientation, perceived competence, relative autonomous motivation and persistence in sports.

Results

The model postulated that player's task orientation (beta=.17, p<.001), as well as ego orientation (beta=.30, p<.001) encouraged young player's perception of competence. Players with higher perceived competence reported higher levels of relative autonomous motivation (beta=.22, p<.001) toward soccer, ice hockey and basketball than those players who perceived lower competence. Finally, players with higher levels of relative autonomous motivation indicated greater persistence (beta=.29, p<.001) in organized sports than those players who reported lower levels.

Discussion

The present data suggest that ego and task orientation indirectly influence relative autonomous motivation and persistence in sports via young athlete's perceived competence. In addition, the current findings reinforce the necessity for sport practitioners to support and encourage adolescent's achievement goals, as well as enhance adolescent's perception of competence in order to keep them motivated, and thus, to create the foundation for lifelong engagement in physical activity

References

Kjonnixsen, L., Anderssen, N. and Wold, B. (2009). Organized youth sport as a predictor of physical activity in adulthood. *Scandinavian Journal of Medicine and Science in Sports*, 19(5), 646-654.

Keywords: discontinuation, achievement goal theory, self-determination theory, continuation

eLearning Fitness: standards for fitness instructing and personal trainer occupations

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The paper presents the main results and the methodology of eLF e-learning courses. The eLF system for the Sports Club x Health Program and the Sports for All activities will contribute to create one strong "critical mass", necessary to facilitate the growth and expansion of the Health Enhancing sport and physical activity sector in Europe and worldwide.

Currently, surveys in most countries show that there is a great inadequacy between the offer and the demand for professional skills in the Sport for Health activities, facilitating the recruitment of incompetent staff with great risk for the health and safety of the practitioners. To face this challenge, the eLF processes will consolidate the activities of the Sports for All sector, stimulating the creation of new ones and promoting entrepreneurial development, for the benefit of the organizations, the operators, the technical staff and, very important, the safety and satisfaction of the customers.

The first objective of the eLF project is the development of an eLearning platform. The eLF e-learning program aims to train professionals that will meet the European training standards in the fields of group exercise, to include cardiorespiratory, muscle conditioning and aquafitness as well as indi-

vidual fitness instruction with weights, resistance machines and cardiofitness equipment at EQF level 3 and Personal Training at EQF level 4.

The second objective is the development of a pilot national register platform for fitness professionals within the partner countries that do not have a national one. At the end of the testing the successful participants will be listed on the pilot register platform and the register template will also have been translated into the same languages. This will enable interaction and communication, which will enhance mobility of fitness professional across Europe.

A major impact of the project will be a more professional level of fitness instructor and personal trainer, who meet European occupational standards for fitness instructing and personal trainer occupations, which are referenced to the European Qualifications Framework (EQF). This will enhance consistency of vocational education and training, will promote the mobility of exercise professionals throughout Europe, which will ultimately safeguard consumers with a final impact on over 40 million Europeans through health enhancing physical activity.

Project (n. 511669-2010-LLP-KA3-KA3MP), co-financed by the EU by the EACEA.

Keywords: e-learning, European Qualification Framework, skills

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