



University of
Zurich^{UZH}

Institute of Social and Preventive Medicine

10th Annual Meeting and 5th Conference of HEPA Europe



World Health
Organization

REGIONAL OFFICE FOR Europe



Physical activity promotion in health care settings



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August 27–29, 2014 – University of Zurich, Switzerland

Programme and Abstracts

10th Annual Meeting and 5th Conference of HEPA Europe
27-29 August 2014
University of Zurich, Switzerland

Programme and Abstracts

Organised by
Institute of Social and Preventive Medicine
University of Zurich

Scientific Committee

- Brian Martin, University of Zurich (president)
- Fiona Bull, International Society for Physical Activity and Health ISPAH
- Charlie Foster, University of Oxford
- Ueli Grüninger, Swiss College for Primary Care Medicine
- Sonja Kahlmeier, University of Zurich
- Milo Puhan, University of Zurich
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- Barbara Weil, Swiss Medical Association

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- Emily Stone, University of Zurich
- Miriam Wanner, University of Zurich

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Patronage



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Site visit organisers



We thank the city and the canton of Zurich for supporting the conference reception

We thank Helsana for printing the Programme and Abstracts book

Welcome

Dear members of HEPA Europe, dear participants of the HEPA Europe Conference

It is a great pleasure and a great honour for us to have HEPA Europe returning to Switzerland. Ten years ago, a preparatory expert meeting in Magglingen was the starting point for its development. Building on the experiences of an earlier European network run by our Finnish and Dutch colleagues in Tampere and in Papendahl, the funding of the European Network for health-enhancing physical activity was prepared together with the World Health Organisation WHO. The first meeting of HEPA Europe took place in 2005 at the Gerlev Sports Academy in Slagelse. Annual meetings followed in Tampere, Graz, Glasgow, Bologna, Olomouc, Amsterdam, Cardiff, Helsinki and now at the University of Zurich.

In these ten years, the number of participants at our meetings, conferences and symposia has increased from 24 to almost ten times this number, and membership of HEPA Europe has grown to more than 130 institutions from 32 countries. We are looking forward to welcoming colleagues from research and practice, from European countries and from overseas, at the University of Zurich. We are confident that HEPA Europe will continue to thrive at the interface between research and practice as well as between the scientific aspects of physical activity and health and the public health approaches to physical activity promotion. The international speakers, the steering committee and the members of HEPA Europe as well as our team at the Institute of Social and Preventive Medicine will do everything they can to make your stay at our conference, in our city and in our country a memorable one.



Brian Martin
President of the scientific committee
HEPA Europe Conference 2014



Sonja Kahlmeier
President of the organising committee
HEPA Europe Conference 2014



Participants at the Physical Activity Expert Meeting in Magglingen, Switzerland, 13.-15.06.2004

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General information

Venue

The conference takes place at the University of Zurich (UZH) City Campus, in the main building (UZH Zentrum). The main entrance is on Rämistrasse 71. The conference venues are mostly on level D and best accessed from the rear entrance at Künstlergasse 9.

The plans on page 8 and on the back of this book of abstract, respectively, provide an overview of all relevant locations in the city and the conference venue.

Public transport & tickets

Zurich has a comprehensive public transport network made up of buses, trams and trains which can take you comfortably to any part of the city. The transport network is zone-based and the entire city of Zurich is contained in zone 110. The airport is zone 121.

Tickets can be purchased at machines in the train station and at almost all local tram and bus stops. Most of the machines now take credit cards, in addition to coins. You can switch the machine to English on the first screen. 24-hour passes for zone 110 (city of Zurich) cost CHF 8.40, and 1-hour passes cost CHF 4.20. This ticket is valid on all buses, trains and trams as long as stay in zone 110. For short distances (up to about 2 kilometers), you can also purchase a “Kurzstrecke”-ticket (CHF 2.60, coins or card).

Further details about the public transportation network can be found on www.zvv.ch/en/.

How to get to the conference venue

There are trains bringing you from the airport directly to Zurich main station (Zurich HB) in the centre of the town. From there you can walk to the conference venue (10 – 15 minutes) or you can take tram no. 10 (direction Zurich Flughafen / Oerlikon) or tram no. 6 (direction Zoo) and exit at the third stop at ETH/Universitätsspital. Purchase a ticket for short distances (“Kurzstrecke”) please.

If you want to travel from the airport directly to the conference venue you can also take tram no. 10 at the airport (direction Zurich HB) and exit at ETH/Universitätsspital.

Be sure that you don't enter ETH, the Federal Institute of Technology, which is located next to the University. From the tram station, walk to Rämistrasse 71, enter the University main building and follow arrow signs in the building for HEPA Europe.

Registration

All participants are requested to register on-site for receiving their conference material. The registration desk is located on the D-level of the building, just next to the rear entrance on Künstlergasse. The registration & information desk will open on Wednesday, 27.08.2014 at 9:30 and stay open during the conference hours.

Badges, vouchers etc

All registered participants receive a badge upon registration. We kindly ask you to wear the badge visibly during all events. Participants who have registered for specific events (site visits, swimming in the Limmat, conference dinner) will receive the respective detailed information and vouchers upon registration. No voucher is required for the reception on Wednesday evening, 27.08.2014.

Meals and coffee breaks

- All coffee breaks are included in the conference fee
- The reception on Wednesday evening, 27.08.2014 is included in the conference fee
- Lunch on Thursday, 28.08.2014 is included in the conference fee
- Lunches on Wednesday, 27.08.2014 and on Friday, 29.08.2014 are included for registered participants of the preceding events (HEPA Europe –EU contact group meeting and HEPA Europe network meeting, respectively)
- For the conference dinner, participants had to register (25 Euros). If you purchased a ticket and are not able to join the conference dinner, we kindly invite you to leave your ticket at the information desk; someone else might be interested in participating.

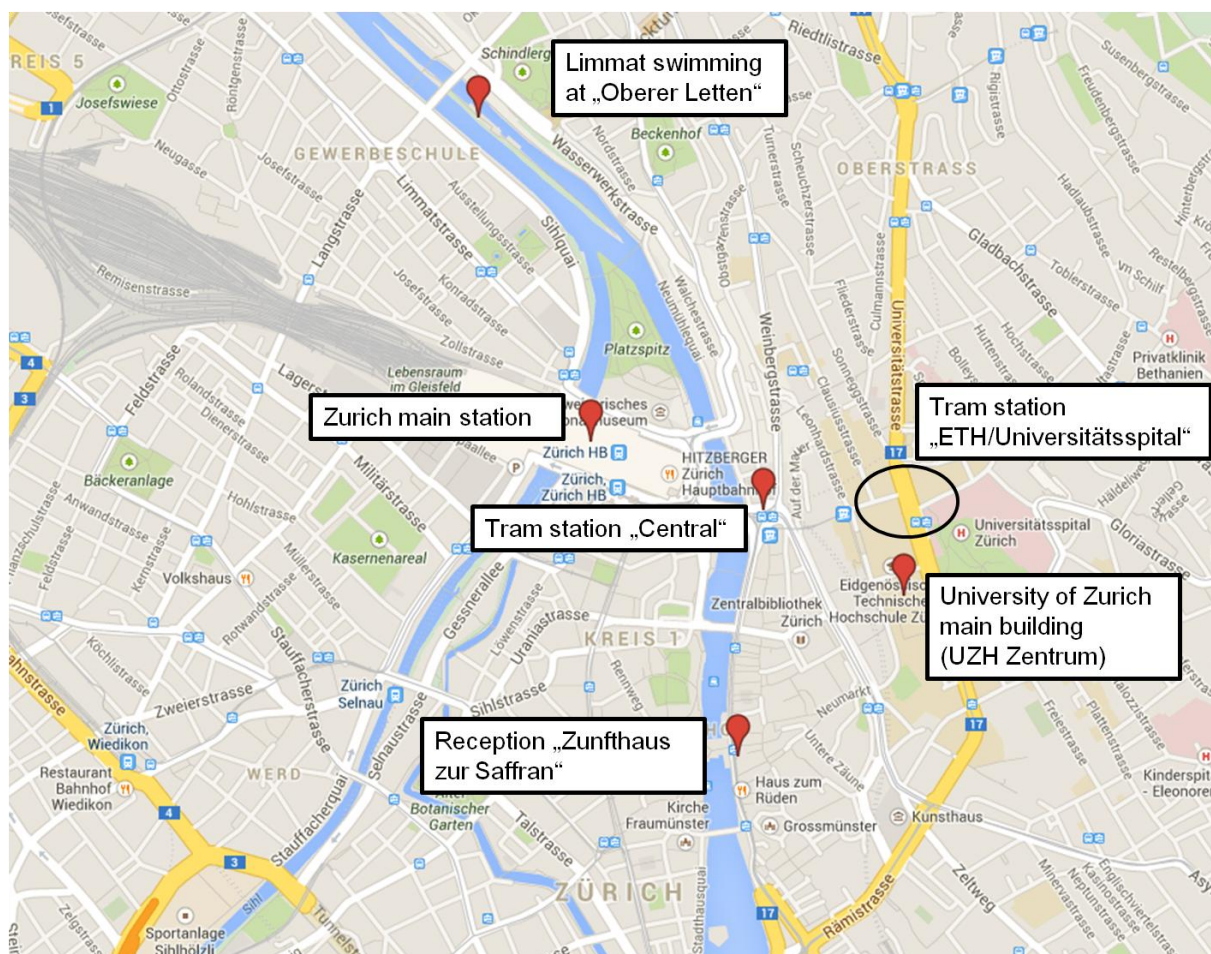
Internet access

The University of Zurich is part of the eduroam (education roaming) network. eduroam was developed to allow secure, world-wide roaming access services for the international research and education community. You need to configure your device only once, as instructed to by your home institution. The configuration instructions are specific for your institution. If your device is not yet configured, please go to www.eduroam.org or contact your institution's IT staff.

If your institution does not provide eduroam access, WIFI access at the University main building is possible through specific congress accounts. Please follow these steps:

- Go to http://www.id.uzh.ch/dl/mobil/kongresskonten/registration_en.html
- Enter event ID (will be provided at the conference)
- Enter name, surname and a valid email address
- Note your user name and password
- Connect to WIFI called “public”
- Start your web browser (Internet Explorer, Netscape, Mozilla, Firefox etc.).
- Open any web page, e.g. www.google.com.
- You will be redirected to the University GATE site.
- Log-in to the Internet using your user-name and password.
- Accept the certificate permanently and ignore the following warning.
- You now have Internet access. Repeat the above steps if you lose your connection.

Overview of locations



Programme at a glance

	Wednesday, 27.08.2014	Thursday, 28.08.2014	Friday, 29.08.2014
08:00	Possibility for Side Events or Work Meetings	Site visits	
09:00			HEPA Europe Annual Meeting
10:00	Coffee Break	Coffee Break	Coffee Break
11:00	HEPA Europe – EU Contact Group Meeting (EU1)	Plenary Session 2 (PL2) - Key Notes: Current Topics in Research	HEPA Europe Annual Meeting (continued)
12:00		Parallel Oral Sessions 2 (O2_A to O2_E)	
13:00	Lunch for participants of contact group meeting	Lunch	Lunch for participants of annual meeting
14:00	Plenary Session 1 (PL1) - Conference Opening - Key Notes: Physical Activity Promotion in Health Care Settings	Poster Sessions (PO_A to PO_J)	
15:00	Coffee Break	Coffee Break	
16:00	Parallel Oral Sessions 1 (O1_A to O1_E)	Plenary Session 3 (PL3) - Key Note: Physical Activity Policy - Panel Discussion: Future of PA & Sport Promotion - Closure	
Evening	Reception, Zunfthaus „Saffran“	Conference Dinner, Uetliberg	

Wednesday, 27.08.14**Pre-Conference Side Event, 10.30-12.00**

	Session EU1 (room KOH-B-10)
Topic	HEPA Europe-EU contact group
Chair 1	Tommi Vasankari

Plenary Session 1, 13.30-15.00

	Session PL1 (room KOH-B-10)	
Topic	Opening	Health Care Settings
Chair 1	Brian Martin	Milo Puhan
Chair 2		Ueli Gr�ninger
Presentation 1	Milo Puhan, ISPM University Zurich	Jacques Cornuz (abstract 1)
Presentation 2	Tommi Vasankari, HEPA Europe	Thierry Troosters (2)
Presentation 3	Roy Salveter, Swiss Federal Off PH	
Presentation 4	Gauden Galea, WHO	

Coffee Break, 15.00-15.30

(room Lichthof)

Parallel Sessions 1, 15.30-17.00

	Session O1_A (room KOH-B-10)	Session O1_B (room KOL-E-18)	Session O1_C (room KOL-E-21)	Session O1_D (room KOL-G-220)	Session O1_E (room KOL-E-13)
Topic	Health Care Settings 1	Physical Activity Policy 1	Active Transport 1	Active Ageing/Injury Prevention	Physical Activity Behaviour
Chair 1	J��ao Breda	Sonja Kahlmeier	Francesca Racioppi	Eva Martin	Pedro Hallal
Chair 2	Malcolm Ward	Anne Vuillemin	Charlie Foster	Bob Laventure	Miriam Wanner
Presentation 1	Potemkina et al (abstract 6)	Roure et al (12)	Scheepers et al (18)	Murtagh et al (24)	Omorou et al (30)
Presentation 2	Djomba et al (7)	Bonvin et al (13)	Kelly et al (19)	Fitzsimons et al (25)	Langlois et al (31)
Presentation 3	Thornton et al (8)	Oida et al (14)	Menai et al (20)	Kudlacek et al (26)	Cs�nyi et al (32)
Presentation 4	Jackson et al (9)	Mietinnen et al (15)	B�rger et al (21)	El Khoury et al (27)	Hooker et al (33)
Presentation 5	Preller et al (10)	Leenaars et al (16)	G�tschi et al (22)	Bain (28)	Berkemeyer et al (34)
Presentation 6	Sallis (11)	Mattli et al (17)	Rubin et al (23)	Br�gger et al (29)	De Hollander et al (35)

Limmat Swimming, 17.15-18.00**Reception at Zunfthaus „Saffran“, 18.30-20.00****Thursday, 28.08.14****Site Visits, 08.15-10.00**

Information goes to registered participants

Plenary Session 2, 10.15-11.15

	Session PL2 (room KOH-B-10)
Topic	Current Topics in Research
Chair 1	Charlie Foster
Chair 2	Willem van Mechelen
Presentation 1	Pedro Hallal (abstract 3)
Presentation 2	Ruth Loos (4)

Parallel Sessions 2, 11.15-12.30

	Session O2_A (room KOH-B-10)	Session O2_B (room KOL-E-18)	Session O2_C (room KOL-E-21)	Session O2_D (room KOL-G-220)	Session O2_E (room KOL-E-13)
Topic	Health Care Settings 2	Physical Activity Policy 2	Active Transport 2 (discussion)	Sedentary Worksite	Sport and Health
Chair 1	Brian Martin	Fiona Bull	Phil Insal	Hans Arends	Nanette Mutrie
Chair 2	Eszter F��zeki	Shigeru Inoue	Thomas G�tschi	Ingrid Hendriksen	Finn Berggren
Presentation 1	Salvador et al (abstract 36)	Malvela et al (41)	Walter (46)	Hendriksen et al (50)	Wyke et al (54)
Presentation 2	Cleland et al (37)	Murphy (42)	Sauter et al (47)	Hitters et al (51)	Vlasfeld et al (55)
Presentation 3	Dunlop et al (38)	Zillmann (43)	Lambe et al (48)	Van der Ploog et al (52)	Skovgaard et al (56)
Presentation 4	Greenwood et al (39)	Peclet et al (44)	Swennen et al (49)	De Cocker et al (53)	Lane et al (57)
Presentation 5	Smit et al (40)	Broberg (45)			Pedisic et al (58)

Lunch, 12.30-13.15

(room Lichthof)

Thursday, 28.08.14 (continued)

HEPA Europe Working Group Lunch Sessions, 12.30-13.15		
	Session LG_A (Foyer)	Session LG_B (Foyer)
Topic	Socially Disadvantaged Groups	Physical Activity and Environment
Chair	Niamh Murphy	Charlie Foster

Poster Sessions, 13.15-14.00					
	Session PO_A (Lichthof)	Session PO_B (Lichthof)	Session PO_C (Lichthof)	Session PO_D (Lichthof)	Session PO_E (Lichthof)
Topic	Health Care Settings 1	Health Care 2/Chronic Disease 1	Chronic disease 2	Policy/Interventions 1	Interventions 2
Chair	Adrian Hutber	Tommi Vasankari	Winfried Banzer	Kees de Keyser	Niamh Murphy
Poster 1	Pakravan et al (abstract 59)	Ward (66)	Semrau et al (73)	Mateu et al (79)	Gottin et al (86)
Poster 2	Florindo et al (60)	Ward et al (67)	Schaller et al (74)	Roure et al (80)	Gottin et al (87)
Poster 3	Knific et al (61)	O'Leary et al (68)	Schaller et al (75)	Kapetanovic (81)	Valkama et al (88)
Poster 4	Radež et al (62)	Bogaerts et al (69)	Jones et al (76)	Saubade et al (82)	Livson et al (89)
Poster 5	Fessler (63)	Lukács et al (70)	Beruchashvili et al (77)	Titze et al (83)	Kumahara et al (90)
Poster 6	Lackinger et al (64)			Elliot et al (84)	Seghers et al (91)
Poster 7	Dick et al (65)			Skovgaard et al (85)	Martien et al (92)
	Session PO_F (Foyer)	Session PO_G (Foyer)	Session PO_H (Foyer)	Session PO_I (Foyer)	Session PO_J (Foyer)
Topic	Children and Adolescents 1	Children and Adolescents 2	Physical Activity Behaviour	Health Effects/Other Dimensions 1	Health Effects/Other Dimensions 2
Chair	Susi Kriemler	Marie Murphy	Willem van Mechelen	Ilkka Vuori	Pekka Oja
Poster 1	Kobel et al (abstract 93)	Nahas et al (101)	Kalvenas et al (108)	Scatigna et al (114)	Gusi et al (120)
Poster 2	Brooke et al (94)	Frick et al (102)	Kudlacek et al (109)	Scatigna et al (115)	Wanner et al (121)
Poster 3	Moosbrugger et al (95)	Vlasbom et al (103)	Spratt-O'Shea et al (110)	Fischer et al (116)	Määttä et al (122)
Poster 4	Moosbrugger et al (96)	Vlasbom et al (104)	Herens et al (111)	Stassen et al (117)	Määttä et al (123)
Poster 5	Kiss-Tóth et al (97)	Naul et al (105)	Quack-Lötscher et al (112)	Kayser et al (118)	O'Hara et al (124)
Poster 6	Jallow (98)	Dreiskämper et al (106)	Ziesche et al (113)		Mota et al (125)
Poster 7	Kropf (99)	Shen et al (107)			
Poster 8	Hardie et al (100)				

HEPA Europe Working Group Parallel Sessions, 14.00-15.00						
	Session WG_A (room KOH-B-10)	Session WG_B (room KOL-E-18)	Session WG_C (room KO2-F172)	Session WG_D (room KOL-G-220)	Session WG_E (room KOL-E-21)	Session WG_F (room KOL-E-13)
Topic	Health Care Settings	National Approaches	Active Ageing	Worksite	Children	Sport Clubs for Health
Chair 1	Malcolm Ward	Sonja Kahlmeier	Bob Laventure	Hans Arends	Catherine Woods	Pekka Oja
Chair 2	Eszter Füzeki	Fiona Bull	Liesbeth Preller	Ingrid Hendriksen		

Coffee Break, 15.00-15.30
(room Lichthof)

Plenary Session 3, 15.30-17.00			
	Session PL3 (room KOH-B-10)		
Topic	Physical Activity Policy	Panel Discussion	Closure
Chair 1	Francesca Racioppi	Fiona Bull	Brian Martin
Chair 2	Sonja Kahlmeier		
Presentation 1	Nanette Mutrie (abstract 5)	Jóao Breda, WHO	
Participant 2		Agata Dziarnowska, Sport Unit EU	
Participant 3		Robert Sallis, Exercise is Medicine	
Participant 4		Jacob Schouenborg, ISCA	
Participant 5		Tommi Vasankari, HEPA Europe	
Participant 6		Ursula Zybach, Public Health CH	

Conference Dinner, Uetliberg, 19.00-23.00

Social programme

A refreshing swim in the river Limmat, Wednesday, 27.08.2014, 17:10-18:15

Keen swimmers join us at Oberer Letten public bath at the river Limmat (http://www.badi-info.ch/oberer_letten.html). You can take a bath in the clear waters of the river at the premises of the public bath, or you can walk about half a kilometer upstreams and then float back downstreams to the bath. Please notice that this activity is for swimmers only and that you join it at your own responsibility. The second option is only for those who are used to swim in open waters.

Registered participants receive all the details with their conference bag.

In brief:

- **Meeting point / time: Registration desk / 17:10**
- From there we will walk to the premises (25 minutes)
- After the swim you can walk to the reception at “Zunfthaus zur Saffran”, Limmatquai 54 (25 minutes) or take tram no. 4 (station “Rathaus”). Departure from the bath for the group taking the tram is at 18:15. Public transport tickets will be provided
- Students will guard your bags

Reception at the “Zunfthaus zur Saffran”, Wednesday, 27.08.2014, 18:30-20:00

After an easy 10 minute walk from the conference venue (or a 25 minute walk from the premises of Oberer Letten public bath) you will reach the site of the reception, right at the river Limmat (Limmatquai 54, see map on page 8). The “Zunfthaus zur Saffran”, a beautiful ancient building, is the house of the “saffron” guild. This guild was founded in 1336 and its traders brought precious goods from many regions of the world to Zurich. The “Saffron” is one of a number of guilds in Zurich.

We invite you to use the opportunity to network and to experience another unique site of Zurich.

Conference dinner on Uetliberg, Thursday, 28.08.2014, 19:00-23:00

Enjoy dinner and spectacular views from the Zurich area to the Alps!

Registered participants receive all information details, a voucher and the train ticket with their conference bag. In brief:

- We will travel to the Uetliberg by train. All trains leave twice an hour at **Zurich main station from track 22** (underground: second level below street level; on the left side of the station when coming from the bridge) at xx:05 and xx:35 (20 minute ride, then 10 minute walk from the **final station “Uetliberg”** to the restaurant).
- On Uetliberg, you can climb a lookout tower or have a walk in the area (not guided).
- We recommend taking the **trains at 18:05, 18:35 or 19:05**. In Zurich main station, there will be guides on the platform at track 22.
- The dining hall at restaurant “La Belezza” opens at 19:30; please do not arrive later than 19:45.
- The last train from Uetliberg leaves at 23:36.

Conference programme

The conference programme comprises:

- 5 keynote lectures
- 10 oral parallel sessions with a total of 53 presentations
- 10 poster sessions with more than 60 posters
- A panel discussion

Oral presentations

If not specified otherwise, oral presentations should be prepared to take 10 minutes, followed by 2 minutes for questions and discussion. The oral sessions will be chaired by two session chairs who will keep time and moderate the discussions.

All presenters are asked to be available at the respective lecture hall 15 minutes before the session starts.

If a presenter does not appear for his or her presentation, the session will proceed with the next presentation.

Speakers-ready-room / uploading final slides

Final slides have to be submitted in the speakers-ready-room (KOL-F-117, two levels above the registration desk) upon arrival and in no case later than 2 hours before presentation.

Poster presentations

Posters should be produced in the size of A0 (max. 90cm wide x 1.30 cm high). Posters should be mounted on 27.08.2014 before the start of the conference opening at 13:30 or latest during coffee break (15:00-15:30). Posters with numbers 59-92 have to be installed in the Lichthof and those with numbers 93-125 in the Foyer. The posters stay until the end of the conference.

A walking poster session will take place on Thursday, 28.08.2014 from 13:15 to 14:00. The sessions will be chaired. Please prepare a very brief (1-2 minutes) oral summary of the key findings. Presenting authors are asked to be available at their poster 5 minutes before the start of this walking poster session.

Posters have to be dismantled no later than 28 August, 17:15.

Recording

The plenary sessions will be recorded and made available through the conference website as podcasts after the event. A limited number of seats outside the camera angle are available.

Keynotes, oral parallel sessions and HEPA Europe working group sessions

Wednesday, 27.08.2014

PL1: Opening

Plenary session 1, Wednesday, 27.08.14, 13.30-14.00, room KOH-B-10

Chair: Brian Martin

Milo Puhān (Institute of Social and Preventive Medicine, University of Zurich), **Tommi Vasankari** (HEPA Europe), **Roy Salveter** (Swiss Federal Office of Public Health), **Gauden Galea** (WHO Regional Office for Europe)

PL1: Physical Activity Promotion in Health Care Settings

Plenary session 1, Wednesday, 27.08.14, 14.00-15.00, room KOH-B-10

Abstract Chairs: Milo Puhān, Ueli Grūninger

- 1 **Jacques Cornuz**
Department of ambulatory care and community medicine, University Hospital, Policlinique médicale universitaire, Lausanne, Switzerland
Health promotion and prevention in health care settings
- 2 **Thierry Troosters**
Department of Rehabilitation Sciences, KU Leuven, Belgium
The role of physical activity in treatment and rehabilitation of chronic disease

Coffee Break

Wednesday, 27.08.14, 15.00-15.30, Lichthof

O1_A: Physical Activity Promotion in Health Care Settings 1

Parallel oral sessions 1, Wednesday, 27.08.14, 15.30-17.00, room KOH-B-10

Abstract Chairs: João Breda, Malcom Ward

- 6 **Potemkina R**, Boytsov S
Exercise in medicine in Russia
- 7 **Djomba J**, Knific T, Vrbovsek S
Education of health professionals working on physical activity promotion in primary health care
- 8 **Thornton J**, Frankovich R, Fortier M, Fremont P
Development of an «Exercise Prescription and Referral» tool to facilitate brief advice to adults in primary care – the Canadian perspective.
- 9 **Jackson F**
Physical Activity Promotion within the Healthcare Setting in Scotland
- 10 **Preller L**, Wagemakers A, Rutten G
Prevention through physical activity in primary health the BeweegKuur and beyond
- 11 **Sallis RE**
Exercise is Medicine Global Health Initiative

O1_B: Physical Activity Policy 1

Parallel oral sessions 1, Wednesday, 27.08.14, 15.30-17.00, room KOL-E-18

Abstract Chairs: Sonja Kahlmeier, Anne Vuillemin

- 12 **Roure E**, Castell C
Integral Plan for Health Promotion through Physical Activity and Healthy Eating (PAAS)
- 13 **Bonvin A**, Jungo G, Marcacci A
National Program on Nutrition and Physical Activity : the role of the Federal Office of Public Health
- 14 **Oida Y**, Inoue S, Takeda N, Bull F
Tailoring the Physical Activity Policy Audit Tool (PAT) for sub national use in Local Municipalities

15	Miettinen M , Vasankari T On the Move - Finnish Strategy for Physical Activity Promoting Health and Wellbeing 2020
16	Leenaars K, Smit E, Wagemakers A The role of the Care Sport Connector in connecting primary care, sport and physical activity: a qualitative study.
17	Mattli R , Hess S, Maurer M, Eichler K, Pletscher M, Wieser S The social cost of physical inactivity in Switzerland in 2011
O1_C: Active Transport 1 Parallel oral sessions 1, Wednesday, 27.08.14, 15.30-17.00, room KOL-E-21 <i>Abstract</i> Chairs: Francesca Racioppi, Charlie Foster	
18	Scheepers E, Wendel-Vos W , van Kempen E, van Wesemael P, Schuit J Are active transport users more physically and mentally healthy than car users? – Preliminary results of the AVENUE project
19	Kelly P , Götschi T, Kahlmeier S, Richards J, Foster C (on behalf of the HEAT Consortium) Calculating the independent effect on all-cause mortality from walking and cycling for the HEAT economic model
20	Menai M, Charreire H, Andreeva V, Simon C, Weber C, Enaux C, Hercberg S, Oppert JM Transport-related physical activity across age groups in 29,614 French adults (ACTI-Cités project).
21	Bürge R , Tomatis L, Murer K, de Bruin E Localization of physical activity in primary school children using an accelerometer and GPS
22	Götschi T , Kahlmeier S, Wanner M, Dons E, Int Panis L, de Nazelle A, Nieuwenhuijsen M, Brand C, Gerike R Physical Activity through Sustainable Transport Approaches (PASTA) – an innovative cross-European longitudinal study on active travel and physical activity
23	Rubin L , Mitas J, Dygryn J, Smida J, Gabor L, Patek A Creating a digital model of Liberec city for promotion of physical activity
O1_D: Active Ageing/Injury Prevention Parallel oral sessions 1, Wednesday, 27.08.14, 15.30-17.00, room KOL-G-220 <i>Abstract</i> Chairs: Eva Martin, Bob Laventure	
24	Murtagh E , Murphy M, Murphy N, Woods C, Lane A Correlates of physical inactivity in community-dwelling older Irish adults
25	Fitzsimons C , Dowens J, Mutrie N Altering the pattern of accumulation of sedentary time in older Scottish adults
26	Kudlacek M , Roberson D Active Ageing: The Green Solution
27	El Khoury F , Cassou B, Dargent-Molina P Effectiveness of a long-term fall prevention exercise program on the prevention of fall-related injuries in community-dwelling older women: the 'Ossébo' randomized controlled trial.
28	Bain F, Findlay I Delivering Strength and Balance Interventions in Care Homes - A Partnership Approach
29	Brügger O , Bianchi G Safety analysis of sport in Switzerland
O1_E: Physical Activity Behaviour and Sedentary Behaviour Parallel oral sessions 1, Wednesday, 27.08.14, 15.30-17.00, room KOL-E-13 <i>Abstract</i> Chairs: Pedro Hallal, Miriam Wanner	
30	Omorou AY , Langlois J, Lecomte E, Briançon S, Vuillemin A Cumulative and bidirectional relationship between physical activity, sedentary behaviour and health-related quality of life in adolescents
31	Langlois J , Omorou AY, Vuillemin A, Briançon S, Lecomte E Socio-economic, family and school-related environments: Are they determinants of adolescents' physical activity and sedentary behaviors?

32	Csányi T , Welk G, De Saint-Maurice Maduro P, Kaj M, Marton O, Ihasz F, Laurson K, Zhu W, Finn K, Karsai I Health-related Fitness among 10-18 y Hungarian Students: Results of a nationally representative study with the Hungarian National Student Fitness Test (NETFIT®)
33	Hooker S , Hutto B, Zhu W, Blair S, Colabianchi N, Vena J, Howard V Active or Inactive Aging? Sedentary Behavior and Physical Activity in U.S. White and Black Older Adults in the REGARDS Study
34	Berkemeyer K , Brage S, Wijndaele K Physical activity patterns in English older adults, analysis of accelerometer-measured physical activity data considering various cut-points and bout lengths
35	De Hollander E , Wendel-Vos W, Mohnen S, Proper K Physical activity behaviour among persons with chronic diseases or disabilities

Limmat Swimming: see page 12 / detailed information goes to registered participants
Wednesday, 27.08.14, 17.15-18.00

Reception at Zunfthaus "Saffran": See page 12 for further details
Wednesday, 27.08.14, 18.30-20.00

Thursday, 28.08.2014

Site visits See page 24 / detailed information goes to registered participants
 Thursday, 28.08.14, 08.15-10.00

PL2: Current Topics in Research

Plenary session 2, Thursday, 28.08.14, 10.15-11.15, room KOH-B-10

Abstract Chairs: Charlie Foster, Willem van Mechelen

- 3 **Ruth Loos**
Icahn School of Medicine at Mount Sinai, New York, USA
 Genes, physical activity and obesity – actions and interaction
- 4 **Pedro C. Hallal**
Federal University of Pelotas, Brazil
 Global research in physical activity and health

O2_A: Physical Activity Promotion in Health Care Settings 2

Parallel oral sessions 2, Thursday, 28.08.14, 11.15-12.30, room KOH-B-10

Abstract Chairs: Brian Martin, Eszter Füzeki

- 36 Salvador E, Garcia L, Ribeiro E, Andrade D, **Florindo A**
 Physical activity promotion in primary health care among adults living in a low socioeconomic area in Brazil: effects of six-month non-randomized controlled intervention trial
- 37 **Cleland J**, Buxton K, McGeorge S, McNish E, Bird W
 Primary care professional's knowledge, confidence and physical activity promotion practices.
- 38 **Dunlop M**, Edwards K, Batt M
 Confirmation that UK medical students 'tomorrow's doctors' under perceive the health risks of physical inactivity and are unaware of physical activity guidelines. Major reforms are needed
- 39 Lewis K, **Greenwood N**
 Health Promotion and overweight children – whose responsibility? An insight into paediatric nurses' attitude towards health promotion
- 40 Smit E, Leenaars K, **Wagemakers A**, Molleman G, van der Velden K
 A theoretical framework to connect health care and physical activity opportunities for the Care Sport Connector.

O2_B: Physical Activity Policy 2

Parallel oral sessions 2, Thursday, 28.08.14, 11.15-12.30, room KOL-E-18

Abstract Chairs: Fiona Bull, Shigeru Inoue

- 41 Malvela M, **Kinnunen L**
 The Adventures of Joe Finn campaign promotes men's socio-economic equality
- 42 **Murphy N**
 'More of the same is not enough'-joining up efforts to promote physical activity in hard to reach groups
- 43 **Zillmann N**
 HEPA or no HEPA by Austrian health insurances?
- 44 **Peclet V**, Zollinger M
 Swiss Association of Professionals in Adapted Physical Activities (ASP-APA): Presentation
- 45 **Broberg P**
 Economic effects by doing sport and physical activity in voluntary sports clubs

O2_C: Active Transport 2 (discussion session)

Parallel oral sessions 2, Thursday, 28.08.14, 11.15-12.30, room KOL-E-21

Abstract Chairs: Phil Insall, Thomas Götschi

- 46 **Walter U**
 Zurich invites for cycling - The new Bicycle Masterplan of Zurich
- 47 **Sauter D**, Wyss K
 Is public transport a danger to transport-related physical activity? Thoughts for debate from a Swiss perspective.
- 48 **Lambe B**, Murphy N, Bauman A,

	Harnessing the power of the trader lobby to increase active travel in urban centres	
49	Swennen B , Haubold H, Rzewnicki R ECF Recommendations to Improve Fiscal Systems for Home-Work Travel in Europe	
02_D: Worksite Physical Activity Promotion and Sedentary Behaviour Parallel oral sessions 2, Thursday, 28.08.14, 11.15-12.30, room KOL-G-220		
<i>Abstract</i>	Chairs: Hans Arends, Ingrid Hendriksen	
50	Hendriksen I , Buma L Sedentary behaviour during work: Prevalence and correlates of sitting among office workers and homeworkers	
51	Hitters K , Mol PJ Sedentary at work: two case studies in the Netherlands	
52	Van der Ploeg H , Chau J, Daley M, Bauman A The Stand@Work study: The feasibility and effectiveness of sit-stand workstations for decreasing office workers' sitting time	
53	De Cocker K, Cardon G , De Bourdeaudhuij I Sedentary behaviour on a working day: exploring executives' and employees' opinions on potential intervention strategies through focus groups	
02_E: Sport and Health Parallel oral sessions 2, Thursday, 28.08.14, 11.15-12.30, room KOL-E-13		
<i>Abstract</i>	Chairs: Nanette Mutrie, Finn Berggren	
54	Wyke S , Hunt K, Gray C, Bunn C on behalf of the FFIT consortium How top flight football clubs can engage men in effective lifestyle change	
55	Vlasveld A , Slinger J Effectief Actief: a validation system as a quality incentive for sport- and physical activity interventions	
56	Skovgaard T , Smedegaard S Sport and health for all - Physical activity and sedentary behavior: The Danish case	
57	Lane A , Murphy N, Donohoe A Baseline Health Promotion Status of GAA Sports Clubs in Ireland	
58	Pediscic Z, Jurakic D , Heimer S, Foster C, Rakovac M, Oja P The relative importance of process evaluation indicators for the implementation of Sports Club for Health (SCforH) programmes	
Lunch Thursday, 28.08.14, 12.30-13.15, Lichthof		
HEPA Europe working group lunch sessions Thursday, 28.08.14, 12:30-13:15		
LG_A: HEPA Promotion in Socially Disadvantaged Groups Chair: Niamh Murphy		Foyer
LG_B: Physical Activity and Environment Chair: Charlie Foster		Foyer
Walking poster sessions: see pages 20-23 for details Thursday, 28.08.14, 13:15-14:00		
HEPA Europe working group parallel sessions Thursday, 28.08.14, 14.00-15.00		
WG_A: HEPA Promotion in Health Care Settings Chairs: Malcolm Ward, Eszter Füzeki		room KOH-B-10
WG_B: National Approaches for HEPA Promotion Chairs: Sonja Kahlmeier, Fiona Bull		room KOL-E-18

WG_C: Active Ageing	room KO2-F172
Chairs: Bob Laventure, Liesbeth Preller	
WG_D: Worksite HEPA Promotion	room KOL-G-220
Chairs: Hans Arends, Ingrid Hendriksen	
WG_E: HEPA Promotion in Children and Adolescents	room KOL-E-21
Chair: Catherine Woods	
WG_F: Sport Clubs for Health	room KOL-E-13
Chair: Pekka Oja	
Coffee Break	
Wednesday, 27.08.14, 15.00-15.30, Lichthof	
PL3: Physical Activity Policy	
Plenary session 3, Thursday, 28.08.14, 15.30-16.00, room KOH-B-10	
Abstract	Chairs: Francesca Racioppi, Sonja Kahlmeier
5	Nanette Mutrie
	<i>Physical Activity for Health Research Centre, Institute for Sport, Physical Education and Health Sciences, University of Edinburgh, Scotland</i>
	Let's make Scotland more active – experiences after 10 years
PL3: Panel Discussion "Promotion of Physical Activity and Sport – Constructing the Future"	
Plenary session 3, Thursday, 28.08.14, 16.00-17.00, room KOH-B-10	
Chair: Fiona Bull (International Society for Physical Activity and Health ISPAH)	
João Breda (WHO Regional Office for Europe), Agata Dziarnowska (Sport Unit, DG EAC, European Commission), Jacob Schouenborg (International Sport and Culture Association ISCA), Robert E. Sallis (Exercise is Medicine), Tommi Vasankari (HEPA Europe), Ursula Zybach (Public Health Switzerland)	
PL3: Closure	
Plenary session 3, Thursday, 28.08.14, 17.00, room KOH-B-10	
Chair: Brian Martin	
Conference Dinner, Uetliberg: see page 12 / Detailed information goes to registered participants	
Thursday, 28.08.14, 19.00-23.00	

Poster presentations

PO_A: Physical Activity Promotion in Health Care Settings 1	
Poster sessions, Thursday, 28.08.14, 13.15-14.00, Lichthof	
<i>Abstract</i>	Chair: Adrian Hutber
59	Pakravan AH , Jones A Primary Care Exercise Referral Schemes in Suffolk, England
60	Florindo A , Salvador E, Costa EF Intervention for physical activity promotion in primary health care settings and its relationship with perception of environment in Brazilian adults
61	Knific T , Djomba JK Implementation of health educational workshops in the field of physical activity in Slovenia
62	Radež P, Ščepanović D, Backović Juričan A The physiotherapy and physical activity components within the antenatal classes in Slovenia
63	Fessl C Pharmacy in motion
64	Lackinger C , Dick D, Haider S, Dorner TE Commitment of primary care physicians to transfer sedentary adults to sport-club based exercise programmes. Results from the "SVA-Bewegt" programme in Vienna
65	Dick D , Sandra H, Lackinger C, Dorner TE Participation of primary care patients in a standardised exercise programme in Vienna
PO_B: Physical Activity Promotion in Health Care Settings 2 / in Patients with Chronic Disease 1	
Poster sessions, Thursday, 28.08.14, 13.15-14.00, Lichthof	
<i>Abstract</i>	Chair: Tommi Vasankari
66	Ward M HEPA Survey of Physical Activity in European Medical Curriculums
67	Ward M , Johnson B Motivate2Move
68	O'Leary E, McCaffrey N, Doyle F, Woods C An examination of factors associated with adherence to a community based chronic illness rehabilitation programme
69	Bogaerts A , Boen F, Vanroy J, Devloo K, Delecluse C, Seghers J Short and long term effects of physical activity coaching on health in diabetic persons
70	Lukács A , Szabó L, Barkai L Effect of physical activity on metabolic control, quality of life and aerobic endurance in youths with type 1 diabetes
PO_C: Physical Activity Promotion in Patients with Chronic Disease 2	
Poster sessions, Thursday, 28.08.14, 13.15-14.00, Lichthof	
<i>Abstract</i>	Chair: Winfried Banzer
73	Semrau J , Geidl W, Hentschke C, Pfeifer K Multidisciplinary rehabilitation with behavioural exercise therapy for adults with chronic non-specific low back pain: Short-term results from a randomised controlled trial
74	Schaller A , Frick F, Kerth S, Froboese I Domain-specific physical activity and factors associated with leisure time activity in chronic low back pain patients

75	Schaller A , Grieben C, Froboese I A multilevel approach promoting physical activity among chronic low back pain patients: participation and acceptance
76	Jones D , Eicher J What Are Patients Told? Are Their Leisure Activity Expectations After Hip/Knee Arthroplasty Appropriate?
77	Beruchashvili M , Baramidze L Georgian drug addicts' perceptions of physical activity and substance use
PO_D: Physical Activity Policy / Interventions 1 Poster sessions, Thursday, 28.08.14, 13.15-14.00, Lichthof <i>Abstract</i> Chair: Kees de Keyzer	
79	Mateu A, Cabezas C, Segura A, Roure E , Suelves JM The Inter-ministerial Public Health Plan (PINSAP): from inter-ministerial collaboration to 'Health in all Policies'
80	Roure E , Castell C Level of physical activity and other health-related dimensions in the Catalan population
81	Kapetanovic S Physical activity promotion in vulnerable groups in Bosnia and Herzegovina
82	Saubade M , Karatzios C Electrically assisted bicycle in 2014: what do we have to know ?
83	Titze S , Wenger C, Lackinger C Project 'Hupfn.at' - a face-to-face invitation on stair climbing in a shopping mall
84	Elliott L , White M, Taylor A Quantitative Content Analysis of Recreational Walking Brochures: The Development and Testing of a Behavioural Theory Informed Coding Taxonomy
85	Skovgaard T , Smedegaard S Sport and health for all - Physical activity and sedentary behavior: The Danish case
PO_E: Physical Activity Interventions 2 Poster sessions, Thursday, 28.08.14, 13.15-14.00, Lichthof <i>Abstract</i> Chair: Niamh Murphy	
86	Gottin M , Previti G, Bellan G, Vessio D Nordic Walking Campus
87	Gottin M , Previti G, Bosco G, Vessio D A conference in sneakers
88	Valkama N , Liukkonen T, Komulainen J Health promotion for employees in hospital catering
89	Livson M , Lusa S, Aittasalo M Moving To Business - physical activity promotion in small and middle-sized organizations
90	Kumahara H , Ayabe M Does increasing the daily step count improve the quantity and quality of physical activity for meeting physical activity guidelines in young adult women?
91	Seghers J , Schotte A, Bogaerts A, Delecluse C, Boen F Effectiveness of a 12-week workplace physical activity intervention based on self-determination theory
92	Martien S , Boen F, Seghers J, Delecluse C Are cycle ergometers effective to promote physical activity and physical function among older adults? Short-term effects of a 10-week structured versus need-supportive physical activity program in assisted living facilities.

PO_F: Physical Activity and Sport Promotion in Children and Adolescents 1

Poster sessions, Thursday, 28.08.14, 13.15-14.00, Foyer

Abstract Chair: Susi Kriemler

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| 93 | Kobel S , Kettner S, Erkelenz N, Wartha O, Steinacker J
Physical Activity of German Children during the Segmented School Day |
| 94 | Brooke HL , Atkin AJ, Corder K, Ekelund U, van Sluijs EM
Changes in time-segment specific physical activity between ages 10 and 14 years: a longitudinal observational study |
| 95 | Moosbrugger A , Amort FM
Assessment of the daily physical activity in adolescents (15-19 years) at school in European German speaking countries, 2000-2014. |
| 96 | Moosbrugger A , Schirmer S, Amort FM
Changes in general living conditions and their impact on physical activity in kindergartners |
| 97 | Kiss-Tóth E , Lukács A
Relationship between physical activity level, motor performances and health-related quality of life in school-aged children |
| 98 | Jallow P
Keys to Success project |
| 99 | Kropf M
Physical activity promotion in schools of the Canton of Zurich |
| 100 | Hardie M, Belton S, Woods C
A longitudinal analysis of uptake and drop out of physical activities during post primary education in Ireland. |

PO_G: Physical Activity and Sport Promotion in Children and Adolescents 2

Poster sessions, Thursday, 28.08.14, 13.15-14.00, Foyer

Abstract Chair: Marie Murphy

- | | |
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| 101 | Nahas M , Del Duca G, Silva K, Garcia L, Bezerra J, Barros M
Intervention to promote physical activity among high-school students in Brazil: effectiveness on active commuting, muscle-strengthening exercise, and the stages of behavior change |
| 102 | Frick F , Grieben C, Schaller A, Bucksch J, Froboese I
A vocational school-based intervention to promote physical activity: accelerometer-measured baseline data |
| 103 | Vlasblom E , Zwier E, Schavemaker J, Slinger J
Using intelligent video analytics to detect and measure physical activity and the nature of interactions between children in playgrounds: a research idea. |
| 104 | Vlasblom E , L'Hoir M, van Dommelen P, Dreiskämper D, Naul R
Healthy Children in Sound Communities in the Netherlands |
| 105 | Naul R , Heemsoth S, Dreiskämper D
Healthy children in sound communities – the influence of a multi-component intervention on German overweight and obese children |
| 106 | Dreiskämper D , L'Hoir M, Naul R
,Healthy Children in Sound Communities' – a longitudinal intervention and control study about BMI and physical fitness development of primary school children in the Dutch municipality of Cuijk |
| 107 | Shen J , Dreiskämper D, Naul R, You S
Healthy Children in Sound Communities (HCSC CN-DE): a German and Chinese Obesity Intervention Programme for Primary School Children |

PO_H: Physical Activity Behaviour

Poster sessions, Thursday, 28.08.14, 13.15-14.00, Foyer

Abstract Chair: Wilhelm van Mechelen

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|-----|---|
| 108 | Kalvenas A , Burlacu I, Abu-Omar K
Reliability and validity of the International Physical Activity Questionnaire: Lithuanian version (IPAQ-LT) long (LF) and short (SF) forms |
| 109 | Kudlacek M , Frömel K, Chmelik F, Groffik D, Jakubec L, Cuberek R
Improving the quality of monitoring physical activity with pedometers |

110	Spratt-O'Shea N , Murphy N, Lane A Meeting the Guidelines: Measurement of Activity Levels in Adolescents using Self Report
111	Herens M, Wagemakers A , van Ophem J, Koelen M Factors for Physical Activity Maintenance in socially disadvantaged groups in the Netherlands
112	Quack Lötscher K, Abt S Physical activity during pregnancy
113	Ziesche S , Köppel M The impact of movement at the workplace on leisure activity
PO_I: Health Effects of Physical Activity and Other Dimensions of Health Behaviour 1 Poster sessions, Thursday, 28.08.14, 13.15-14.00, Foyer <i>Abstract</i> Chair: Ilkka Vuori	
114	Scatigna M , Mariani T, Antonacci G Is the exercise practice always associated to health chances? Cross-sectional survey in Italian sport club attenders
115	Scatigna M , Ortenzi KM, Marconi MM Expected reduction in overweight prevalence by increasing physical activity in Italian adult population: contribution of national surveillance data in public prevention planning.
116	Fischer S , Busch Be, Rössler W Investigating stress at work using biometric measurement devices for measuring indicators of allostatic load
117	Stassen HH , Camussi E, Delfino JP, Lott P, Mohr C, Papagno C Vulnerability to Mental Health Problems, Chronic Stress, and Regular Exercises
118	Kayser B , Flury C Insufficient mineral and vitamin intake because of low energy turnover in physically inactive subjects
PO_J: Health Effects of Physical Activity and Other Dimensions of Health Behaviour 2 Poster sessions, Thursday, 28.08.14, 13.15-14.00, Foyer <i>Abstract</i> Chair: Pekka Oja	
120	Gusi N , Delgado-cruz B, Olivares PR, Corzo H Risk of chronicity of low back pain, physical activity and health-related quality of life in workers: CODEPA study
121	Wanner M , Tanutzer S, Martin B, Julia B, Rohrmann S, Bopp M, Fähr D Impact of different domains of physical activity on cause-specific mortality
122	Määttä S , Nuutinen T, Ray C, Eriksson JG, Weiderpass E, Roos E Associations of parental social support and educational level with children's physical activity during different times of week
123	Määttä S , Lehto R, Ray C, Roos E DAGIS – Determinants of Group Inequalities in Healthy Lifestyle among Preschool Children
124	O'Hara K , Esteves D, Brás R, Pinheiro P Childhood obesity prevention: developing learning environments in elementary school
125	Mota J , Santos MP, Ribeiro JC Organized Sports Participation, Self-Rated Health and obesity status among adolescents.

Site visits

Thursday, 28.08.2014

Registered participants receive detailed instructions with their conference bag. If you have not yet registered and nevertheless wish to participate in a site visit, go to the information desk. We will help you there. All groups will meet at specific meeting points in the area between the University and Zurich main building, and Zurich main station and be guided to their specific site visit locations. Public transport tickets from the meeting points to the locations will be provided.

For urgent matters regarding the site visits, please call +41 78 800 2685.

Site visit 1: Academic Sports Association Zurich ASVZ

Meeting point / time: Künstlergasse, statue at south entrance of UZH / **08:00**
Location / Site visit start: Academic Sports Association ASVZ at ETH, room MM Z 95.3 / 8:15

Site visit 2: Cycling safety

Meeting point / time: Künstlergasse, statue at south entrance of UZH / **08:15**
Location / Site visit start: Guided walk / 8:15

Site visit 3: Bikepark Sihlcity

Meeting point / time: In front of roofed bus stop (nr. 31) vis à vis Zurich main station / **7:45**
Location / Site visit start: Behind Sihlcity shopping mall, on Kanalstrasse / 8:15

Site visit 4: Traffic education training track

Cancelled

Site visit 5: Purzelbaum-Kindergarten

Meeting point / time: In front of Coop store between Central square and Zurich main station / **7:40**
Location / Site visit start: School Zurlinden, at Zurlindenstrasse 137 / 8:15

Site visit 6: Public swimming pools and public bathing beach Wollishofen

Meeting point / time: In front of hotel Limmathof at Central square / **7:45**
Location / Site visit start: Strandbad Wollishofen, Seestrasse 451 / 8:30

Site visit 7: Swiss Olympic Medical Centre balgrist move>med

Meeting point / time: In front of Coop store between Central square and Zurich main station / **7:35**
Location / Site visit start: balgrist move>med, Forchstrasse 319 / 8:15

Site visit 8: Everdance: stay active at 60+

Meeting point / time: Next to registration desk at UZH main building / **8:30**
Location / Site visit start: University building, Foyer West / 8:45

10th annual meeting of HEPA Europe

Thursday, 28.08.2014

14:00 – 15:00 **Parallel sessions of HEPA Europe working groups (>> see pages 18-19 for details)**
Working group leaders, members and participants

Friday, 29.08.2014

09.00 - 09.15 **Opening and welcome**
Tommi Vasankari, Chairman HEPA Europe
Francesca Racioppi, WHO Regional Office for Europe
Brian Martin, Institute of Social and Preventive Medicine, University of Zurich

09.15 – 09.30 **New applications for membership**
Sonja Kahlmeier, University of Zurich, Switzerland

09.30 – 10.00 **Results of the Steering Committee elections and proposed changes to Terms of Reference**
Tommi Vasankari, Chairman HEPA Europe

10.00 – 10.30 **Activity report 2013-2014 and work programme 2014-2015: introduction and discussion**
Chairman HEPA Europe, Sonja Kahlmeier, University of Zurich, and working group leaders

10.30 – 11.00 *Coffee break*

11.00 – 11.45 **Activity report 2013-2014 and work programme 2014-2015 - continued**
Chairman HEPA Europe, Sonja Kahlmeier, University of Zurich, and working group leaders

11.45 – 11.50 **Formal approval of the work programme 2014-2015**

11.50 – 12.00 **Other business**

12.00 **Closure**

12.00 – 13.00 *Lunch*

Keynotes

1 Health promotion and prevention in health care settings

*Cornuz J*¹

¹ Department of ambulatory care and community medicine, University Hospital, Policlinique médicale universitaire, Lausanne, Switzerland

Preventive counseling services are available for several unhealthy behaviors, such as physical inactivity, tobacco use, unbalanced diet, and alcohol abuse. Despite well-controlled research showing that prevention and health promotion interventions are effective, very few of these interventions have been implemented in health care settings.

This conference will address the barriers explaining why most health care settings do not promote prevention interventions among their employees. These barriers include the single “curative” perspective by health care leaders and the inadequate infrastructure and systems organization. The conference will show some data demonstrating that prevention interventions might yet be effective, at least in short run.

The conference will also point out the proceeding to promote the “teachable moment perspective” among health care professionals when caring patients.

2 The role of physical activity in treatment and rehabilitation of chronic disease

*Troosters T*¹

¹ Department of Rehabilitation Sciences, KU Leuven

It has been recognized since a long time that lack of physical activity is causally related to the development of chronic diseases. Even when the causal relation between a chronic condition and physical activity is less certain, physical inactivity complicates the underlying disease by inducing ‘systemic’ consequences. This is for example the case in chronic lung diseases, where inhalation of noxious gases, or genetic causes are surely more important in the pathogenesis. The lack of physical activity leads to severe muscle weakness, deconditioning and comorbidity. In patients with respiratory diseases, inactivity is often one of the first – ignored – signs of the disease.

For many chronic diseases rehabilitation programs have been recognized as potent treatment options. Programs geared to enhance physical activity proved to be a successful therapy in the prevention of type II diabetes. Unfortunately access to such programs is poor. Nevertheless those patients who can participate in rehabilitation programs will perceive the immediate benefits. Exercise training programs have been designed and fine-tuned for chronic diseases and may include besides ‘conventional’ endurance training more sophisticated forms or exercise training (interval training, resistance training, etc). Rehabilitation programs are intuitively associated with an improved physical activity level, but for many chronic diseases – including respiratory – the benefits of conventional rehabilitation to enhance physical activity are disappointing. Improvements in exercise capacity and symptoms are observed with modest behavioral change. By consequence the effects of rehabilitation are short lived and the improvements in exercise tolerance and peripheral muscle function may disappear within months after the program.

In order to be successful, rehabilitation programs should introduce techniques that are geared at changing physical activity behavior. Recently this was explicitly mentioned in the guidelines for rehabilitation programs of patients with lung disease as the goal for the program. In order to be effective specific behavior change interventions should be blended into the successful exercise training strategies. In the past few years such strategies have been tried out. The use of ‘Nordic walking’ as a training strategy that could be maintained by patients after the formal training program, the use of pedometers to provide feedback to patients have been used successfully. More recently a study in Spain reached out to the community to provide patients with safe and attractive walking circuits. Such interventions which link the patient to their environment deserve more attention. More progress is expected from closer interaction between exercise physiologists, behavioral change experts and from a better understanding of physical activity as it is experienced by patients.

3 Genes, physical activity and obesity – Actions and interaction

*Loos RJF*¹

¹ Icahn School of Medicine at Mount Sinai, New York, USA

Despite the fact that daily physical activity is known to have beneficial effects on health and despite many efforts to promote physical activity in the population, a large proportion of adults are not regularly active; one in five adults is even completely sedentary. Similar to other non-volitional behaviors such as appetite, accumulating evidence from human and animal studies indicates that physical activity is critically regulated by intrinsic biological processes. Results from animal studies following experimentally induced lesions in the central nervous system as well as from transgenic experiments suggest that central control centers regulate daily physical activity. The interest in the biological and genetic basis of physical activity in humans is slowly growing. Twin and family studies have shown that genetic factors contribute to variation in daily physical activity levels. Up to 50% of the inter-individual variation in physical activity is due to the fact that people differ genetically, whereas the other 50% of the variation is due to environmental differences between people. The identification of the genes that influence physical activity levels has been a challenging task. While animal studies have identified several genes that control activity behavior, so far, variants in only a few of these candidate genes have also been associated with physical activity in humans. Large-scale genome-wide searches for genes associated with physical activity and sedentary behavior are ongoing. Such genome-wide screens are hypothesis-generating, as they identify associations with genetic variants for which there is no biological understanding yet of their role in activity. Experimental follow-up studies provide insight in the role of the identified genes in physical activity.

Physical activity is considered a mediating factor in the gene-obesity association; genes that affect obesity risk might do so through their effect on physical activity. Yet, while more than 150 genetic variants have been identified for obesity-related traits, none of these are associated with measures of physical activity. However, studies have shown repeatedly that the effects of these genes on obesity risk is up to 40% lower in physically active compared to inactive individuals. These findings emphasize the interaction between genes and physical activity and show that even though one might be genetically predisposed to gain weight,

living an active lifestyle can reduce this genetic susceptibility substantially.

4 Global research in physical activity and health

*Hallal PC*¹

¹ Federal University of Pelotas, Brazil

Physical inactivity is one of the main public health threats of modern societies. Every year, over 5 million people die around the world due to inactivity. One third of the adult and an alarming 4/5 of the adolescent world's populations do not reach WHO guidelines for physical activity practice. Changing this scenario is the main priority for physical activity research over the next 10 years. In order to achieve such a goal, an in-depth analysis of global research in physical activity and health was conducted. In terms of surveillance, over 100 countries have some data on inactivity, but few have continuous systems operating and very few have data on objectively-measured physical activity. In terms of the determinants of physical activity behaviors, most studies still focus on individual correlates of physical activity. In terms of health consequences, the main gap related to mental health and cognitive function. Intervention research has increased over the years, but very few interventions have been scaled up widely. Policy action is needed to tackle the pandemic of inactivity. A low and middle-income lens is urgent, as well as the integration with other public health priorities. More of the same is not enough.

5 Let's make Scotland more active – experiences after 10 years

*Mutrie N*¹

¹ Physical Activity for Health Research Centre, University of Edinburgh, Institute for Sport, Physical Education and Health Sciences, Scotland

Around the year 2000 The Scottish Executive [government] created a Task Force of invited experts to consider writing a strategy about increasing the population level of physical activity. The strategy was launched in 2003. The main features were that the strategy had a 20 year focus with an aim to have 50% of the adult population reaching the minimum recommended amount of physical activity [30 minutes on 5 days of the week] by 2022 (Scottish Executive, 2003).

Part of the strategy was to have a regular review of progress and with a small group of experts, including Professor Fiona Bull who is the principle author of the Toronto Charter for Physical Activity, the first review was completed in 2009 (NHS Health Scotland, 2009). This is the first review of a national physical activity strategy that has been conducted (Halliday, Mutrie, & Bull, 2013). The review concluded that the strategy was still viable but that there should be more focus on two groups, namely teenage girls and older adults.

This all sounds very positive but our major monitoring instrument, the Scottish Health Survey, shows that over the last 5 years population levels of physical activity have been static. It now seems unlikely that we could reach the 50% target by 2022. The survey can also calculate the newer minimum threshold of 150 minutes of moderate activity for health; this reveals a similar plateau but about 20% more of the population can achieve this level of activity the older 30 minutes on five days of the week message.

The presentation will reflect on why our population levels appear to be static while we have had more than 10 years of apparently good strategy in Scotland. These reflections include the need for: a government appointed coordinator for physical activity, an implementation plan, and resources that allow the plan to be enacted at scale. Reflections from key players in the development of the strategy will also be provided following video interviews that have been conducted. The presentation will conclude with a discussion on whether population targets are good or bad for physical activity strategies.

Halliday, E., Mutrie, N., & Bull, F. (2013). Getting Scotland on the move? Reflections on a 5-year review of Scotland's national physical activity strategy. *Br J Sports Med*, 47(17), 1130-1132. doi: 10.1136/bjsports-2013-092467

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Abstracts

Oral parallel sessions

6 Exercise in medicine in Russia

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Noncommunicable diseases, mainly cardiovascular diseases and cancers, and external causes account for more than 80% of mortality in Russia. The leading causes of death and disability are directly associated with behavioural risk factors, physical inactivity being one of them. Until a few years ago, a clear standard recommendation on physical activity (PA) counselling for general practitioners did not exist in Russia. In 2010, the guidelines on physical activity counselling for primary health care providers were developed. On the basis of these guidelines the national recommendations on PA were developed in 2011. They were included in the national recommendations on Cardiovascular Prevention of the Society of Cardiology of the Russian Federation. In 2012 the guidelines were adopted by the Ministry of Health of the Russian Federation and recommended to primary health care providers of all Russian regions. One of the reasons why primary health care providers are not involved enough in counselling their patient regarding a healthy lifestyle - PA as well as smoking, healthy nutrition or other habit - is that these consultations are not covered by health insurance companies. Other barriers are the absence of the topic of a healthy lifestyle in pre-graduate and post-graduate curricula of medical universities as well as limited counselling skills in physicians. In 2011 an educational training course for primary health providers based on these guidelines was established by the National Research Centre for Preventive Medicine. The further implementation of the PA recommendations depends on the one hand on their inclusion in the curricula of medical universities and on the other hand on the creation of ways for involving and motivating primary health care providers to counsel patients in this area.

7 Education of health professionals working on physical activity promotion in primary health care

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Introduction: In Slovenia, physical activity promotion in primary health care has a long tradition. It is taking place within the national program for primary prevention of cardiovascular diseases (NPPPCVD), which has been running since 2001. In this prevention program, first a screening and medical examination is performed to identify individuals at risk for cardiovascular diseases (CVD). In case of higher risk for CVD (>20%) the physician is giving advice on the particular risk factor and directs patients to health-education centers, where they can participate in healthy lifestyle workshops (2 km walk test, risk factors for CVD, healthy nutrition, physical activity, healthy weight loss and smoking cessation) led by health professionals.

Description: Workshops on physical activity are led by physiotherapists preferably. They need to complete an education program for health professionals working on health promotion in primary health care to be able to lead the workshop. Educational trainings are performed continuously by the National Institute of Public Health. For leading workshops on physical activity three trainings are needed. The educational program "basic education in health promotion and prevention of chronic non-communicable diseases in primary health care/ family medicine" consists of two parts. The first part of the training is open to all health professionals working within the program. Participants learn about risk factors for CVDs, health promotion, behavior change theory etc. After the training participants are able to counsel on healthy lifestyle and risk factor management and perform the introductory workshops. The second part is intended for health professionals who will lead the workshops. The focus on this training is on the content and structure of the particular workshop. The third training is about the 2 km walk test where participants learn to perform the test and use the computer program WinWalk to analyse the results.

Conclusion: The aim of the education program is to give comprehensive knowledge and skills for health professionals leading health education workshops. Experience shows us that new topics (reducing sedentary behaviour, additional tests for measuring physical fitness, etc.) need to be

included to assure quality counseling and treatment of individuals at risk for CVD.

8 Development of an « Exercise Prescription and Referral » tool to facilitate brief advice to adults in primary care – the Canadian perspective.

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Introduction: Physical activity (PA) is considered to be as powerful as most drugs in treating the majority of chronic illnesses, yet the implementation of PA behaviour change remains a challenge in Canada. Potential barriers are that many primary care providers may feel they don't have the knowledge or time to advise about PA. Brief advice in primary care can be a cost-effective intervention; therefore development of PA tools in this manner is important.

Methods: The «Exercise Prescription & Referral» (EPR) tool was designed by consultation and consensus with an Advisory Council of experts from clinical exercise sciences, behavioural science, nutrition, rehabilitation, sport and family medicine. It supports prescription of PA that is safe for healthy adults and those with one mild and stable chronic condition, and is designed to guide both clinician and patient through the prototypical FITT format (Frequency, Intensity, Type and Time). Development of the EPR tool included one face-to-face consensus session and subsequent consultation with samples of members (N=30) from the sponsoring organisations. Following final production, the EPR tool was tested in a qualitative fashion with a sample of 20 attendees at the 2013 Canadian Family Medicine Forum that registered to be surveyed following a two-month period of use.

Results: Consensus of the EPR tool was achieved after 5 iterations. The response rate was 25% of the surveyed physicians. Using the tool was reported to take between 1 and 3 minutes. All responders agreed or strongly agreed that “the tool is applicable to their patient population”, “the tool is easy to use in their practice”, “the tool is easy for their patients to understand”, “the tool is an effective use of their clinical time with patients” and that they “would recommend to their colleagues to use this tool”.

Discussion: This pilot study demonstrates that the EPR tool appears well-accepted by a selected group of professionals attending a family medicine conference. The tool can support both the clinician and the patient in a format that is achievable within the time constraints of a patient visit. However, its clinical utility should be further tested with a larger sample size. The current paper introduces a detailed and evidence-based tool, which future research should evaluate in order to validate the tool further in clinical practice.

The « Exercise prescription & referral » tool was developed with the financial support of (in alphabetic order): the Canadian Academy of Sport and Exercise Medicine (CASEM), the Canadian College of Family Practice (CCFP), the Canadian Physiotherapy Association (CPA), the Canadian Society of Exercise Physiology (CSEP), and the Royal College of Chiropractic Sports Sciences (RCCSS). We also acknowledge the following people for their contribution to the EPR tool development process: Ms. Vicki Wong, CPA, Dr. Chris deGraauw, RCCSS(C), Mr. Patrick Beriault (CKA), Ms. Susan Yungblut (EIMC) and Dr. Mark Tremblay (CSEP).

9 Physical Activity Promotion within the Healthcare Setting in Scotland

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In Scotland, the healthcare setting is formally recognised by the Scottish Government as a key delivery strand within the National Physical Activity Implementation Plan for Scotland *A More Active Scotland: Building a legacy from the Commonwealth Games*. The plan builds on the *Toronto Charter* and seeks to enhance the co-ordinated delivery of multiple co-dependent actions across a number of policy areas. The Health and Social Care section of the ‘plan’, builds on the Chief Medical Officer’s, Chief Executive Letter (CEL01) instructing NHS Chief Executives, Directors of Public Health and Medical Directors to increase opportunities for staff, visitors, patients and the wider community to be physically active. This involves:

Integrating the National Health Service (NHS) Physical Activity Pathway into healthcare services in primary and secondary care. The feasibility of implementing the pathway was tested in primary care via new patient consultations, condition specific clinics and opportunistic routine consultations and in secondary care through cardiology, pulmonary rehab, mental health, diabetes, paediatrics, oncology, orthopaedics, care

for the elderly, pre-assessment and outpatient clinics.

Creating an active workforce. As one of the largest employers in Scotland, NHS staff are encouraged to get active. Evidence suggests that physical activity can improve staff health, reduce absenteeism and enhance patient care. All NHS Boards in Scotland are encouraged to achieve the Scottish Centre for Health Working Lives Gold award by 2015.

Re-orientating NHS outdoor spaces firmly within the sphere of patient-centred care. Until the late 20th century, outdoor spaces around hospitals were valued as part of the healing environment. More recently this has been overlooked. In order to address this decline, a Green Exercise Partnership was established between Forestry Commission Scotland, Scottish Natural Heritage, Health Facilities Scotland and NHS Health Scotland to advocate a holistic approach to the design of the NHS estate, seeing both indoor and outdoor space as equally important for health and well-being. To date a number of new build and retro-fit demonstration projects have been completed in hospital and health centre grounds.

Facilitating and promoting active travel options for staff, patients and visitors through the development of active travel plans, promotional materials, initiatives and infrastructure.

10 Prevention through physical activity in primary health care; the BeweegKuur and beyond

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In 2007, the Dutch Minister of Health decided that a combined lifestyle intervention BeweegKuur (BK) with focus on increase of physical activity (PA) should be available for adults at risk of chronic diseases. The BK should be covered by basic health insurance and carried out in primary care. General practitioner, physical therapist, and dietician are involved. The main professional is the lifestyle coach (LSC), who guides the participant during one year, stimulates multidisciplinary collaboration, and leads a local network around the BK including also representatives from sport and local authorities.

NISB was asked to optimize and concurrently implement the BK nationwide. The number of locations rose from 8 in 2008 to 160 in 2011. Many

process and other evaluations surrounded the BK and led to multiple changes in contents and implementation.

In 2014, we see results at multiple levels. Participants significantly improve parameters of health, mobility, PA, and are significantly more intrinsically motivated to be physically active, based on motivational interviewing.

Flexibility in use of the protocol is needed for meeting local working practices and needs of participants. The LSC is highly valued by other professionals and participants.

Improved collaboration between health professionals was a major result. Health care workers perceived better accessibility of sport facilities for people with chronic diseases when local networks also included sport professionals. In 2011, the new Minister decided that the BK should not be covered by health insurance. Policy focus is now on health and PA in the neighborhood, supported by networks for which BK networks are set as an example. A new type of professional is born, part of his tasks also based on the LSC. A political landslide, giving municipalities much larger responsibilities for health and health-related facilities for citizens, stimulates the basis for prevention through increased PA. While the BK is not covered by basic health insurance, health insurance companies are investing more in financing prevention activities. Pilots are set up to evaluate effects of structural embedding and financing of the LSC in primary care. Contracts are signed between local authorities and health insurances to cover costs of the BK for people in lower SES categories.

In the presentation we will discuss milestones and major results of the BK and the timeline of prevention through PA related to primary care in The Netherlands.

11 Exercise is Medicine Global Health Initiative

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Exercise is a very powerful tool for both the treatment and prevention of chronic disease, for mitigating the harmful effects of obesity, and for lowering mortality rates. In fact, there is a linear relationship between activity level and health status. This association between disease and an inactive and unfit way of life exists in every age group: children, adults, and the elderly. The results of studies consistently show that those who are

active and fit are healthier. For this reason, many have suggested that physical inactivity is the major public health problem of our time.

This strong connection between physical activity and health was highlighted in a series of articles that the journal *Lancet* published in 2012. The series reached this conclusion: "In view of the prevalence, global reach, and health effect of physical inactivity, the issue should be appropriately described as pandemic, with far-reaching health, economic, environmental, and social consequences." Can you imagine the public outcry if such strong words had been used to describe a "pandemic" caused by an infectious disease or injury? You can bet there would have been numerous large-scale campaigns mounted and associated publicity to deal with such a pandemic. Unfortunately, the clear identification of the inactivity pandemic in *Lancet* barely generated any media response.

It was for the above reasons that the Exercises Is Medicine (EIM) initiative was established. The stated goal of the EIM initiative is "to make physical activity assessment and exercise prescription a standard part of the disease prevention and treatment paradigm for all patients." This initiative was started by the American College of Sports Medicine in conjunction with the American Medical Association in November 2007. A national launch was held in Washington, DC, that was attended by then US Surgeon General Steve Galson, along with the directors of the President's Council on Physical Fitness and Sports and the California Governor's Council on Physical Fitness and Sports.

In May 2008 the first World Congress on Exercise Is Medicine was held in conjunction with the American College of Sports Medicine's annual meeting to announce the global launch of this program. Since that time, EIM has spread to > 50 countries, including 6 regional centers in North America, Europe, Latin America, Asia, Africa, and Australia. It has been interesting to note the worldwide acceptance of the basic tenets of EIM, including recommendations for weekly physical activity to improve health. Most countries have established physical activity guidelines that are essentially the same, suggesting that adults should get 150 minutes of moderate to vigorous activity each week. It is amazing to have a major public health problem in which almost everyone worldwide agrees on the proper treatment.

1. Sallis RE. Exercise is medicine and physicians need to prescribe it! *Br J Sports Med.* 2009;43:3–4.

2. Joy EL, Blair SN, McBride P, Sallis RE. Physical activity counselling in sports medicine: a call to action. *Br J Sports Med.* 2013;47:49–53.

3. Sallis RE. Developing health care systems to support exercise: Exercise as the fifth vital sign. *Br J Sports Med.* 2011;45:473–474.

12 Integral Plan for Health Promotion through Physical Activity and Healthy Eating (PAAS)

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Introduction: To achieve the objectives of the Health Plan of Catalonia, physical activity promotion is a priority for the Ministry of Health of the Government of Catalonia. In 2004 an integrative approach to promote physical activity and healthy diet was developed: the Integral Plan for Health Promotion through Physical Activity and Healthy Eating (PAAS). It aims to (1) develop informative and educational activities and promote environmental changes leading to healthy lifestyles; (2) increase population's awareness on the feasibility of healthy choices, and (3) promote intersectoral agreements and commitments which will favor an efficient use of resources.

Activities: The projects in the field of physical activity include:

Stair climbing project: to promote incidental physical activity through the use of point-of-decision prompts to encourage stair climbing in health centers and other buildings.

Physical activity, Sport and Health Plan (PAFES): it is developed in collaboration with Sports and municipalities.

Healthy aging programme: actions to promote healthy and active aging for both general population and institutionalized elders.

Worksite interventions: actions to promote health. Guidelines to be a healthy company (jointly with the Chamber of Commerce).

PAAS meetings: venues were held to share experiences and good practices and to create connections between different sectors working in PA promotion. They are held every other year.

PAAS awards: they help to encourage and disseminate good practices. They are held every other year together with PAAS meetings.

PAAS expert meetings: they are held every other year.

Results: More than 65 activities have been carried out in four settings: education, community, health centers and worksites.

Stair climbing project: (1) Every year, more than 64% of the population > 14yos are being exposed

to messages at PHC centres; (2) Stair use in buildings evaluated increased by 28-74%.

PAFES is being implemented in 206 municipalities. Health professionals in primary care centers performed more than 500,000 advice / physical activity prescriptions and 677 routes were planned. PAAS meetings: more than 900 professionals participated.

PAAS awards: 10 awards have been granted.

In Catalonia, physical inactivity fell by 19% between 2006 and 2011 (from 23.9% to 19.4%). In the 65 to 74 yoa group, reduction was of 34%.

Conclusions: After 10 years, the methodology used to promote PA has proved to be acceptable and sustainable.

PAAS Team: C Cabezas, N de Lara, A González, N Romero, G Salvadó, J Serra and L Allueva

13 National Program on Nutrition and Physical Activity: the role of the Federal Office of Public Health

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In most European countries, five of the seven most important risk factors for non-communicable diseases (NCD) are related to diet and physical activity. Therefore, in 2008, the Federal Council decided to implement the National Program on Diet and Physical Activity 2008-2012 (NPDPA) and, after a successful start, extended it until 2016.

The NPDPA is designed to encourage people to adopt a healthy behavior in the area of diet and physical activity as an effective preventive measure of NCDs. This program has been drawn up in a participative process and is coordinated by the Federal Office of Public Health (FOPH). The Federal Office of Sports (FOSPO), the Federal Food Safety and Veterinary Office (FSVO), Health Promotion Switzerland, several representatives of the cantons and industry, an alliance of non-governmental organizations and numerous other actors were also involved in this process. The measures envisaged in the program have been designed to promote individual responsibility as well as to support voluntary measures by the economy, multisectoral collaboration and to guarantee food quality.

In this context, besides coordinating the program, the main activities of the FOPH consists in promoting actions that improve sustainable quality of life. For this purpose, the FOPH advocates a healthy food supply (through better information

for consumers and improved food composition) and regular physical activity (through a multisectoral approach). The FOPH also establishes and implements innovative actions on how to optimize counseling and treatment services provided by the health care system within the framework of NCD and recently also in the context of workplace health promotion. Since 2009, in order to involve the economic sector, the FOPH developed the initiative *actionsanté*. This initiative supports and connects companies and innovative institutions that commit themselves, on a voluntary basis, to the daily promotion of balanced diet or/and regular physical activity. To guarantee coordination and evaluation on a national level, the FOPH set up an unified monitoring system. This Nutrition and Physical Activity Monitoring System (MOSEB) is a continuous, systematic collection of comparable and representative data on indicators describing the situation with regard to nutrition and physical activity in Switzerland. It provides the essential, evidenced-based data to initiate or adapt preventive measures and, on the other hand, to ensure food safety.

14 Tailoring the Physical Activity Policy Audit Tool (PAT) for sub national use in Local Municipalities

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Introduction: We previously investigated the current context of national policies for physical activity promotion and their implementation status in Japan. The results revealed legislation related to physical activity had been established as well as national policies in the health sector (the Ministry of Health, Labour and Welfare) and the sports sector (the Ministry of Education, Culture, Sports, Science and Technology). Furthermore, both ministries have set recommended physical activity levels and national goals, and devised an action plan to achieve them. However, there were no policies or action plans specific to physical activity promotion in the transport sector or urban design sector (the Ministry of Land, Infrastructure and Transport).

A limitation of earlier work was the lack of adequate data from sectors on the implementation of policies at the sub national levels. This is because implementation is the responsibility of local municipalities and national authorities are not

well informed on current status of activities. This study aimed to modify PAT for sub national use in Japan (Policy Audit Tool for Prefecture; P-PAT) and assess the presence of policies and the implementation of action plans.

Methods: We developed the P-PAT by modifying the policy audit tool (PAT) developed by the working group of HEPA Europe¹. PAT comprises 27 items addressing political structure (Section A), policy content and developmental process (Section B), and the implementation of the policies (Section C). Items were modified and tailored to the local level.

Results: The final P-PAT consists of 13 items with six items addressing the formulation of local planning (developmental process of policies, evidence based, national goals, action plans, evaluation, and budget), and five items assessing local level implementation of plans (contents of implementation, multi-sectoral collaboration, political commitment, community-wide communication, and network supporting professionals).

Discussion: In Japan, the development of national policy on physical activity is still a new field. Yet implementation and delivery of programs is across 47 municipalities. Assessing the progress, capacity, and challenges of policy implementation at the local level is an essential component to national planning. Next steps involve implementing P-PAT in all prefectures to provide valuable feedback to the national planning process for the promotion of physical activity in Japan.

1) F. Bull, K. Milton, S. Kahlmeier. Health-enhancing physical activity (HEPA) policy audit tool. Copenhagen, WHO Regional Office for Europe, 2011.

centers, NGO's, municipalities etc. The vision of the strategy is that Finns will pursue more physical activity and sit less during the course of their lives. Different sectors and organizations must take measures aiming at the same target. The steering group has chosen four primary guidelines:

1. Reducing sitting in everyday life.
2. Increasing physical activity in the course of life.
3. Highlighting physical activity as a vital element in enhancing health and wellbeing, prevention and treatment of diseases and in rehabilitation.
4. Strengthening the status of physical activity in the Finnish society.

The guidelines are aimed at motivating in particular persons who take too little physical activity for their health and wellbeing and changing the operational culture of organizations so as to encourage people's physical activity in the different stages of their lifespan. Targeted actions will be aimed at those target groups whose physical inactivity we should be most concerned about.

For the implementation certain measures and coordinative actors are proposed at national and local levels, as well as key actions, which will be implemented first. The implementation will be financed mainly by different ministries, Finland's Slot Machine Association and the Finnish National Board of Education. Because the resources are limited it is important to find other ways to increase the effectiveness of HEPA promotion. For example, physical activity has to be integrated to a larger extent to societal health and wellbeing policies and structures.

The implementation of the strategy will be monitored in two parts: 1) core follow-up (overall picture of physical activity and sitting at the national level), and 2) extensive follow-up by the National Sports Council.

15 On the Move - Finnish Strategy for Physical Activity Promoting Health and Wellbeing 2020

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Too little physical activity among the population causes significant challenges to Finnish society. Although people pursue fairly much physical activity during their leisure time, the rest of the day largely consists of sitting for long periods. A steering group for HEPA - jointly appointed by the Ministry of Social Affairs and Health and the Ministry of Education and Culture - prepared a new, national strategy and an action plan for HEPA in 2013 together with other ministries, research

16 The role of the Care Sport Connector in connecting primary care, sport and physical activity: a qualitative study.

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Introduction: In the Netherlands policy is aimed to prevent illness and promote health in the neighbourhood. In 2012, Care Sport Connectors (CSCs) were introduced, to whom a broker role has been ascribed. CSCs are both funded by the state (40%) and by the municipality or other local organisations (60%). The defined outcome of CSCs is an increased number of residents participating in local sports facilities and being physically active in their own neighbourhood. Therefore, CSCs are employed to connect primary care, sport, and physical activity and to guide primary care patients towards local physical activity facilities. This study is part of a larger study to evaluate the impact of the role of CSCs, and focuses on the context in which CSCs work, on collaboration of CSCs with primary care and sport professionals and on activities initiated to promote physical activity.

Method: To study the role of CSCs a multiple case study design is used. Nine municipalities spread all over the Netherlands have been selected. Policy reports and documents on health and sport have been analyzed to identify the context in which the CSCs are operating. Ten CSCs have been interviewed and two focus groups with the network of two CSCs have been conducted to evaluate collaboration with professionals and list activities.

Results: The context and role of CSCs varies in the different municipalities. Some CSCs focus on a specific neighbourhood, whereas other CSCs operate within a health centre. CSCs collaborate with other professionals when needed, for example with a physiotherapist to implement a physical activity program, or with a professional from home care services to organize fitness tests. Up to now, collaboration with GPs and sport professionals is limited. Most CSCs organize many different one-time activities like a walking tour. CSCs who already worked for a longer time in this function also organize long-term activities, for example an exercise program for people with a chronic disease.

Discussion: CSCs work in different contexts and have different roles. They are the linking pin in their network and collaborate with other professionals on a project basis. Structural collaboration with the sport sector, and long-term

physical activity promotion activities need time to be realised.

17 The social cost of physical inactivity in Switzerland in 2011

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Introduction: Physical inactivity is a common behavior in affluent societies and increases the risk for several non-communicable diseases. These diseases have a heavy burden in terms of healthy life years lost by the patients affected and lead to important social costs in two dimensions: The direct medical costs due to treatment of the diseases and the productivity losses due to absenteeism, disability and premature death. This study estimates the direct medical costs and productivity losses due to physical inactivity in Switzerland in 2011.

Methods: Prevalence of physical inactivity is estimated based on the Swiss Health Survey. Risk ratios for diseases are extracted from literature. Population attributable fractions (PAFs) are calculated based on the prevalence of physical inactivity and the risk ratios. PAFs are then applied to the disease costs in order to estimate the direct medical costs and productivity losses due to physical inactivity. The disease costs stem from a recent study on the costs of non-communicable diseases in Switzerland.

Results: Based on the Swiss Health Survey 27.5% of the population over the age of 15 is physically inactive. The direct medical costs due to physical inactivity are estimated at CHF 1.165 billion or 1.8% of total health care expenditures. 29% of these direct medical costs are due to cardiovascular diseases (ischemic heart disease, stroke and hypertension), 28% due to low back pain, 26% due to depression and the residual amount of 16% due to osteoporosis, diabetes type 2, adiposity, colon cancer and breast cancer. Productivity losses are estimated at CHF 1.368 billion and are mainly caused by back pain (47%), depression (28%) and cardiovascular diseases (14%).

Discussion: The results show the heavy impact of physical inactivity on the Swiss health care system and the society as a whole. Low back pain and depression, two diseases often not included in cost studies related to physical inactivity, significantly contribute to direct medical costs and productivity

losses. Future research should investigate cost-effectiveness of different interventions to reduce physical inactivity.

18 Are active transport users more physically and mentally healthy than car users? – Preliminary results of the AVENUE project

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Introduction: Stimulating active transport by encouraging replacement of short-distance car trips by active transport modes such as cycling or walking has become a popular policy strategy. The Toronto Charter for Physical activity states that transport policies and systems that prioritize active transport are one of the best investments for stimulating physical activity since active transport is the most practical and sustainable manner to increase physical activity on a daily basis [1]. A previous study showed that time spent on active commuting was associated with higher levels of physical wellbeing. No association was found between time spent on active commuting and mental wellbeing [2]. In this study we explored the association between transport choice and physical and mental health.

Methods: An online questionnaire (N=3,663) was used to collect data on transport choice for four primary purposes: shopping, going to public natural spaces, sports, and commuting. Based on the frequency of using the car, cycling or walking for all trip purposes respondents were classified as car user, cyclist or pedestrian. Respondents were asked to classify their physical health on a 5 point scale ranging from excellent to bad. Mental health was measured by using the Mental Health Inventory (MHI-5). Logistic regression analyses were used to model the odds of physical and mental health for both cycling and walking versus car use. Analysis were adjusted for gender, age, educational level and physical activity level.

Results: Preliminary results show that cyclists classified their physical health to be higher than car users (OR = 1.50, 95% CI: 1.21 – 1.87). No significant differences were found between cyclists and car users for mental health (OR = 1.19, 95% CI: 0.98 – 1.45). Comparison of pedestrians and car users showed no significant differences for both

physical (OR = 1.16, 95% CI: 0.86 – 1.55) and mental health (OR = 0.92, 95% CI: 0.72 – 1.19).

Discussion: Cycling is found to be associated with a better physical health. However, no associations were found between cycling and mental health and walking and physical and mental health. Further research should be performed on which factors cause this better physical health.

1. Global Advocacy for Physical Activity (GAPA) the Advocacy Council of the International Society for Physical Activity and Health (ISPAH). NCD Prevention: Investments that Work for Physical Activity. February 2011 [cited 2014 10 June]; Available from:

<http://www.globalpa.org.uk/pdf/investments-work.pdf>.

2. Humphreys, D.K., A. Goodman, and D. Ogilvie, Associations between active commuting and physical and mental wellbeing. *Prev Med*, 2013. 57(2): p. 135-9.

19 Calculating the independent effect on all-cause mortality from walking and cycling for the HEAT economic model

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Introduction: Walking and cycling make substantial contributions to overall physical activity levels across all ages and genders. They are also known to be amenable to change sedentary behaviour. This study presents the results of a meta-analysis on the reduction in relative risk for all-cause mortality from walking and cycling, adjusted for other physical activity.

Methods: Systematic review identified 14 studies for walking and 7 studies for cycling. For meta-analysis we calculated the average effect at a standardised exposure of 11.25 MET-hours per week (675 MET-minutes per week) based on physical activity guidelines. We assumed a linear dose-response relationship (DRR), and tested the sensitivity of the analysis to various transformations to the exposure dose.

Results: Walking demonstrated a risk-reduction (RR) of 10-11% depending on the DRR used; upper RR = 0.90 (95% CI = 0.85-0.95; log-linear DRR) and lower RR = 0.89 (95% CI = 0.83-0.96; linear DRR). Cycling demonstrated a risk-reduction of 10-16% depending on the DRR used; upper RR = 0.90 (95% CI = 0.87-0.94; linear DRR) and lower RR = 0.84 (95% CI = 0.79-0.90; 0.25 power DRR).

Discussion: Walking and cycling appear to offer similar reductions for an exposure of 11.25 MET-hours per week but this exposure could be reached

in less time for cycling as it is generally conducted at a higher intensity than walking. The risk reduction for walking can be taken with greater confidence than previous estimates; it is the largest meta-analyses to date in terms of included studies and person years. For cycling this is the first meta-analysis conducted for ACM. In both cases, this is the first result to report the effect adjusted for other physical activity. These updated risk-reductions were adopted for the World Health Organization's HEAT (Health Economic Assessment Tool) for Walking and Cycling models in April 2014 which model the economic benefits of walking and cycling at population levels.

We would like to thank WHO Regional Office for Europe and the HEAT Expert Working Group.

20 Transport-related physical activity across age groups in 29,614 French adults (ACTI-Cités project).

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Introduction: Increasing transport-related physical activity is a key element in physical activity promotion for health. A better understanding of the correlates of the different domains of active transport is however needed to improve the identification of target populations in public health interventions.

Methods: We assessed past-month transport-related physical activity (walking, cycling) in specific domains (errands, commuting or leisure) using an adapted version of the Recent Physical Activity Questionnaire (RPAQ) in 29,614 adult participants (76.8% women) of the on-going NutriNet Santé web-cohort study [1]. Analyses were performed according to 5-year age groups and tested socioeconomical and individual factors as potential correlates

Results: From 25 to 55 years of age, the overall practice of cycling remained stable (between 6.9% and 10.3% of subjects). Between 55 and 70 years, cycling for commuting (for working subjects) decreased while errands remained stable and leisure cycling increased. After 70 years all types of cycling decreased. Walking for commuting decreased from 18 to 35 years (43.4% to 27.0% of working subjects) and remained stable until 65 years. Walking for errands remained stable until 55 years (34.2% to 40.9% of subjects) and then increased. Walking for leisure increased continuously with age (24.1% to 61.0% of subjects). In multivariate analyses* performed in each age group, education level was positively associated with walking for errands (ORs ranged from 1.2 to 1.3), cycling for errands (ORs ranged from 1.4 to 1.6) and cycling for commuting (OR: 1.3) but was negatively associated with walking for commuting (OR: 0.9). Having young children at home or being married was negatively associated with adoptions of all types of cycling (ORs ranged from 0.6 to 0.9). Different domains of walking (errands, commuting or leisure) were positively associated with adoption of each other (ORs ranged from 1.1 to 1.3) as well as for cycling (ORs ranged from 1.1 to 2.4).

Discussion: These results show important differences in transport-related physical activity patterns across age groups in adults. Correlates of walking and cycling differ by age groups and by domain. These data should help design public health interventions that would be better adapted to the target population.

*All the Odd Ratios (OR) presented in this abstract are significant

[1]: Hercberg S, Castetbon K, Czernichow S, Malon A, Mejean C, Kesse E, Touvier M, Galan P. The Nutrinet-Santé Study: a web-based prospective study on the relationship between nutrition and health and determinants of dietary patterns and nutritional status. BMC Public Health. 2010 May 11;10:242. doi: 10.1186/1471-2458-10-242.

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21 Localization of physical activity in primary school children using an accelerometer and GPS

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Introduction: There is growing evidence that built environment is associated with levels of physical activity. Therefore, recent changes in urban structure could play a role regarding the increasing inactivity among children. However, data on children's activity patterns are still incomplete and little is known about where children are physically active. Using the combination of global positioning system (GPS) and accelerometers, the study aimed to identify locations where children spend time and engage in moderate-to-vigorous physical activity (MVPA).

Methods: During February-April 2013, 119 children (age = 12.5 ± 0.4) from the city of Winterthur (Switzerland) participated in the study. During the waking hours of a regular school week, participants wore an accelerometer (Actigraph GT3X) and a GPS sensor (Qstarz BT-Q1000XT) around their waist for seven consecutive days. Accelerometer and GPS data were matched by time and mapped with a geographical information system using ArcGIS software. Six different location categories were defined and each data point coded as either *home*, *school*, *street*, *recreational facility*, *other*, *out of area*. For each location, the amount and percentage of MVPA was calculated.

Results: Overall, 2'536'675 matched data points were collected, which corresponds to an average period of 59.2 ± 20.6 hours per week per child. Children spent 37.1% of the time at home, 28.8% at school and 14.5% on streets. During the week, children spent only about half an hour (0.9%) in recreational facilities such as parks or sports facilities. Children recorded 8.3% of the time as MVPA. In general, boys were more active than girls, spending an average of 353.2 minutes per week versus 286.6 minutes per week in MVPA ($p < 0.01$). Compared to boys, girls achieved most of their MVPA on streets (38.1% versus 26.1%, $p < 0.01$), whereas boys were most active on the schoolyard (34.5% vs. 31.8%, $p < 0.01$). Taking into account the total time spent in a location, the percentage children engaged in MVPA was highest on streets (17.8%) and recreational facilities (15.1%). The percentage spent as MVPA on the schoolyard was only 9.6%. However, the proportion at home was even smaller (3.0%).

Discussion: The results indicate that streets and schoolyards are important locations where children may achieve their recommended daily

level of MVPA. The high use of streets could be an indicator for active transportation which can contribute to a more active lifestyle.

22 Physical Activity through Sustainable Transport Approaches (PASTA) – an innovative cross-European longitudinal study on active travel and physical activity.

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The promotion of active travel (AT), i.e. walking and bicycling for day-to-day travel, is a promising approach to increase physical activity (PA) in a broad range of the general population. Health impact assessments (HIA) show substantial benefits of AT, however; these are limited by several research gaps. The PASTA project (www.pastaproject.eu) investigates predictors of AT and evaluates selected measures to promote AT. It also aims to develop improved HIA of AT.

PASTA is a 4-year project (2013-2017) involving 7 European cities (Antwerp, Barcelona, Orebro, Rome, Vienna, Zurich). The project includes a longitudinal web-based survey with a substantial baseline questionnaire and frequent (every 2 weeks) but short follow-ups. The survey combines items on PA (adapted GPAQ), mobility (travel diary, commute route) as well as psychological theories (Theory of Planned Behavior). Participants experiencing crashes will be asked to fill out an additional crash questionnaire. Participants are recruited opportunistically on a rolling basis (targeted sample size: 2000 per city). Subsamples will be used to evaluate a selected measure to promote AT in each city or to collect objective data as part of add-on modules (GPS tracking, accelerometry, air pollution exposure). Final results will be available by 2018.

PASTA pursues a multitude of scientific objectives in the research area of AT and PA. The longitudinal design of the empirical study and the use of innovative data collection approaches offer opportunities to tackle research questions that have not been addressed before, or have not been resolved by existing, predominantly cross-sectional studies. The investigation of predictors of AT and PA along a specifically developed conceptual

framework aims to combine and align approaches from transport, planning, health, psychology and geography. Some objectives, i.e. quantifying substitution behavior between AT and PA or injury risks are specifically aimed at current gaps in HIA and feeding improvements into WHO's Health Economic Assessment Tool (HEAT) for walking and cycling. Evaluations of key measures will benefit from PASTA's unique study design, because repeated measures of AT and PA reduce variation and improve statistical power – an issue many evaluation studies have struggled with. On the flip side of these opportunities are uncertainties about user burden and the challenge to successfully recruit the targeted size and composition of the study sample.

23 Creating a digital model of Liberec city for promotion of physical activity

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Physical activity is an essential part of human health. However, negative secular trends of realized physical activity are well documented internationally. Some research studies outlined that development of suitable neighborhood environments might slow down or even stop this decrease in physical activity. Objective assessment of built environments is in these studies realized using geodata analysis in geographic information systems (GIS). The main objective of the work was to create geodata model of Liberec city (Czech Republic) which might be used for research of physical activity in inhabitants. To meet the objective it was first necessary to update the underlying layers according to the current condition (field data collection was carried out). Then it was possible to create new map layers which could have the biggest impact on physical activity (residential density, intersection density, land use mix, elevation etc.). The result is a digital model of Liberec city specially designed for the physical activity research. Further research will focus on finding the level of impact of new map layers on physical activity in inhabitants. The creation of geodata models for the physical activity research in other major cities in the Czech Republic will provide more representative data which can be used as evidence-based information for local

authorities or in international comparative studies (e.g., IPEN project).

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24 Correlates of physical inactivity in community-dwelling older Irish adults

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Introduction: Ireland shares the prospect of rapid and sustained population ageing with other developed countries [1]. This public health challenge may be exacerbated by poor physical activity levels. The purpose of this study was to identify correlates of physical inactivity in a population-representative sample of older Irish adults.

Methods: Data collected in 2009-11 from 4892 adults aged 60+ as part of the Irish Longitudinal Study on Ageing (TILDA) were analysed. TILDA includes a detailed assessment of the mental and physical health, and social and financial circumstances of participants assessed in a home interview and self-completion questionnaire. Physical activity was assessed using the International Physical Activity Questionnaire. Chi squared statistics and forced entry logistic regression was used to identify factors associated with insufficient physical activity.

Results: Individuals who were female (odds ratio 1.68) and of older age (OR 1.96) were more likely to be classified as insufficiently active than their male and younger counterparts. Older adults who perceived their overall health as 'fair' or 'poor' were more likely to be insufficiently active (OR 1.59) compared to adults who reported their health as 'excellent/very good/good'. Participants who reported that they did not fall in the last year (OR 0.87), did not have a fear of falling (OR 0.62), did not have long-term health problems (OR 0.69) or whose activity was not limited by illness (OR 0.46) were less likely to be insufficiently active than their counterparts who answered positively for these items. Adults who reported that they did not look after grandchildren (OR 1.38), did not own a car (OR 1.96) or did not attend a course in the

last year (OR 1.71) were more likely to be insufficiently active than peers who responded positively to these statements.

Discussion: Our findings identify specific groups of the older Irish population who are at particular risk of physical inactivity and thereby the associated physiological and psychological hazards. These results can support the development and targeting of interventions to tackle inactivity in older adults and guide the creation of policy which aims to promote healthy ageing.

This project was funded by CARDI through a Data Mining 2013 grant.

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25 Altering the pattern of accumulation of sedentary time in older Scottish adults

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Introduction: Independent of total sedentary time and moderate-to-vigorous activity, increased breaks in sedentary time are beneficial for health [1]. Interventions are needed that target both total sedentary time and encourage breaking up of sedentary time. We have previously published findings from a pilot study that significantly reduced total sedentary time in older Scottish adults (mean difference 24.4 minutes/day, 24 hour data, $p < 0.05$) [2]. The purpose of this presentation is to explore the effect of the intervention on the accumulation patterns of sedentary time, focusing on daytime sedentary events.

Methods: Participants received an individualised consultation incorporating feedback on pre-intervention sedentary behaviour. Participants had a two week period to change sedentary behaviour. Sedentary behaviour was measured objectively pre and post intervention using the activPAL monitor. Analyses included exclusion of overnight data, hour by hour comparisons of sedentary time and fragmentation rate (number of sitting events/total sitting time measured in hours with a higher value indicating more fragmented sitting with shorter sitting events).

Results: Twenty two participants provided five complete days of activPAL data pre and post intervention (mean age 67 years (SD 6), mean BMI 26.4 kg/m² (SD 3.5)). Participants spent 75% (~18

hours) of their time sedentary (including overnight data). Excluding overnight data, sedentary time pre intervention was 9.6 hours (SD 1.4) and post intervention was 9.0 hours (SD 1.3), (mean reduction 35.6 minutes/day, $p < 0.05$). A more detailed comparison (each hour of the day) revealed the reduction in sedentary time was apparent in the late afternoon and evening (16:00-17:00, 6.4 minutes, $p < 0.05$; 17:00-18:00, 5.1 minutes, $p = 0.001$; 19:00-20:00, 4.2 minutes, $p < 0.05$). Weighted median event length reduced from 34.7 to 31.1 minutes ($p = 0.06$) and fragmentation rate increased from 5.26 to 5.83 events/sedentary hour (non-significant).

Discussion: This intervention has successfully altered patterns of accumulation of sedentary time in older adults with a significant reduction in sitting during waking hours, in particular late afternoon and evening. We are continuing to investigate which sedentary event descriptives are most appropriate and sensitive to intervention for use in a larger controlled trial.

1. Healy, G.N., et al., Breaks in Sedentary Time: Beneficial associations with metabolic risk. *Diabetes Care*, 2008. 31(4): p. 661-666.

2. Fitzsimons, C.F., et al., Using an individualised consultation and activPAL (TM) feedback to reduce sedentary time in older Scottish adults: Results of a feasibility and pilot study. *Preventive Medicine*, 2013. 57(Article): p. 718-720.

26 Active Ageing: The Green Solution

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Introduction: Even though previous research highlights potential benefits of gardening for physical health, there is a lack of detailed knowledge (Hawkings et al., 2011) about the nature and perceived health benefits of these gardening activities, particularly within the garden colony context. The purpose of this study is to investigate the perceived benefits of garden colony activities. A garden colony is a collection of adjacent plots of land primarily for the purpose of gardening.

Methods: The methodology of this research consists of observations, interviews, questionnaires, and focus group.

Results: As a result of this research we found that gardening is a natural and safe way to meet the lifelong demands for a healthy life. Second, having a space within the garden colony adds a sense of purpose, identity, and meaning to one's life. Third,

this area of nature is also an oasis for interaction with other gardeners and for personal entertainment with friends and family. Fourth, this place provides a source of restoration as a result of rest, escape, and quiet.

Discussion: The findings of this research have resulted in adding to the knowledge and details of gardening and especially gardening within the unique setting of a garden colony. This area of central Europe has undergone a striking amount of change in the last 20 years. This paper highlights garden colonies as a historical and ecological feature within the Czech Republic. Reflecting ideas of place and identity (Twigger et al, 1996; Smaldene et al, 2005; Williams & Patterson, 2008), we also saw how the gardeners were personally attached to these green urban places. In conclusion, we recommend gardening as a natural physical activity for lifelong health. We encourage communities to allow people to buy plots of land away from their homes to promote this healthy activity. The garden colony provides a place for individual renew and restoration; this urban oasis offers a way to maintain and promote lifelong healthy living, and they are an important contribution to one's life by adding a sense of meaning and purpose.

27 Effectiveness of a long-term fall prevention exercise program on the prevention of fall-related injuries in community-dwelling older women: the 'Ossébo' randomized controlled trial.

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Introduction: Physical exercise programs can prevent falls in community-dwelling older persons. However, the implementation of broad ranging fall prevention programs is rare, and the challenge remains to conceive and deliver programs that are both effective and acceptable on the long term, especially for older at-risk subgroups. Furthermore, the effectiveness of specific programs in reducing injuries due to falls needs to be demonstrated.

Methods: The Ossébo study is a multicentre randomized controlled trial assessing the effectiveness of a 2-year fall prevention exercise program in reducing injurious falls in at-risk older women. The program focuses on progressive

balance and strength training and includes weekly sessions in small groups, supplemented by individually prescribed home exercises. The target population includes women aged 75-85 years who live independently at home but have diminished physical capacities (slow gait speed or inability to do 4 tandem steps). In total, 706 women were recruited in 20 study centers and randomly assigned to either the intervention (I:352) or the control (usual care) group (C:354). Falls were recorded monthly for 2 years using pre-paid calendar postcards, and telephone interviews were conducted to investigate the circumstances and consequences of reported falls. The main outcome was the rate of all injurious falls (falls leading to physical symptoms, medical care or functional difficulties for >48h). Other outcomes include the rate of all falls and of serious injurious falls (fractures, head injuries, joint dislocations, severe sprains, lacerations requiring suturing, etc). We used shared frailty models to assess the effect of the intervention (Hazard ratio [HR], 95% CI) on the fall outcomes.

Results: In the exercise group, 58 women did not start the program. Among participating women, 205 (70%) were still in the program after 1 year and 174 (60%) after 18 months. A total of 305 injurious falls occurred in the intervention group, compared to 397 in the control group, corresponding to a HR of 0.81(0.67-0.99). There was also less total falls (I:533/C:640, HR: 0.88 (0.77 -1.00)), and a tendency towards less serious falls (I:68/C:87, HR: 0.83 (0.60 -1.16)) in the exercise group.

Discussion: A 2-year progressive balance and strength retraining exercise program combining weekly collective and individual sessions was feasible and effective in reducing injurious falls in at-risk older women.

28 Delivering strength and balance interventions in care homes - a partnership approach

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Paths for All is the Scottish charity promoting everyday walking. The Walk Your Way to Better Strength and Balance is a new programme developed by Paths for All that combines strength and balance exercises with advice on walking to help older adults stay active and independent. The development of this project was supported with the expert input and advice from Professor Dawn Skelton of Glasgow Caledonian University. This

programme consists of 10 simple exercises, taken from the Otago programme to perform at least twice a week, with walking activity. <http://www.pathsforall.org.uk/pfa/health-professionals/strength-and-balance.html>

A partnership was developed with NHS Tayside to introduce this exercise programme into care homes and train staff to deliver the strength and balance exercises, as well as promoting walking activity where appropriate. NHS Tayside have an established Care Home Activity Network with close links with local care homes. Funding was secured from the NHS Change fund to run the strength and balance workshops for care home staff.

Three workshops were delivered to 62 care home staff from 37 care homes during January and February 2014 by two experienced trainers who have an Otago/seated exercise background. After the training all of the participants understand the importance of active ageing 'Very Well', felt confident to deliver the exercises in their care home and understood the risks of sedentary behaviour.

Strength and balance sessions have since been incorporated by staff into routine activities in the care homes. Paths for All also manage the national Walking for Health programme and has facilitated the local Walking for Health project delivering walks for residents from the care home. A member of staff is quoted as saying 'residents went and had an absolute ball, their moods were lifted, they had a nose into people's gardens and houses and just loved the whole experience'. There are plans to open these walks up to other members of the local community to increase social integration. Paths for All also fund Living Streets Scotland who have agreed to carry out Community Street Audits in the areas around care homes to remove barriers to the residents walking and highlight ways in which the walking environment can be improved for those at risk of falls.

Paths for All believe that this is an effective and sustainable model that could be replicated with significant benefits for the health and wellbeing of care home residents.

29 Safety analysis of sport in Switzerland

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Introduction: Every year, 400 000 Swiss residents are injured in sports accidents. 170 people suffer fatal sports accidents in Switzerland. The bfu – Swiss Council for Accident Prevention – is legally mandated to prevent sport injuries and to coordinate prevention measures of all players. The bfu presents a safety analysis of sport in Switzerland. The scientific approach is intended to ensure that decision-makers in the sports sector have a basis available for accident prevention planning.

Methods: The bfu's business model, in other words a description of how the bfu addresses its remit, is similar to the Public Health Action Cycle. Accident research represents the first stage in the prevention cycle. The method used covers the three stages in accident research:

In the accident analysis, the extent of accidents (frequency, severity) is documented and focal points are detected.

The risk analysis weights the accident causes relating to the focal points that are of relevance for accidents in Switzerland.

The intervention analysis evaluates prevention possibilities in terms of their effectiveness, economic feasibility and the degree to which they can be implemented to meet Swiss conditions.

The result of this analysis is a list of prevention recommendations.

Results: The analysis of the frequency and severity of injuries in sports shows the focal points for accidents in snow sports, off-road biking, mountain sports, water sports and football. These types of sport form the main areas of activity in sports accident prevention.

The risk factors identified in the risk analysis are largely specific to each type of sport. They can be allocated to the individual person or the setting and the activity respectively.

The potential interventions for reducing the risk of accidents is a conclusive list of prevention recommendations which are also specific in nature to the type of sport. For all accident topics, the prevention recommendations are sub-divided into the five main areas of research, training, advice, communication and cooperation.

Discussion: The result of this safety analysis is the basis for an agenda setting for Switzerland that might enhance sport safety. Evidence-based recommendations for measures are not always possible given the major gaps in research. It was

frequently necessary to refer to assessments by bodies of experts.

Brügger O, et al. (2012). [Safety Dossier «Accident Research – Sport»: Accident, Risk and interventions analysis] (in German with extensive Summary in English, French, Italian). Bern: bfu – Swiss Council for Accident Prevention. online: <http://www.bfu.ch/en/order/everything?k=2.106>

30 Cumulative and bidirectional relationship between physical activity, sedentary behaviour and health-related quality of life in adolescents

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Introduction: The causality and directionality of the relationship between physical activity (PA), sedentary behavior (SB) and health-related quality of life (HRQoL) in adolescence remain unknown. This study aimed to investigate the longitudinal relationships between the 2-year cumulative level of recommended PA, SB and final HRQoL. We hypothesized a bidirectional and cumulative relationship, such a higher HRQoL would be associated with the cumulative level of recommended PA and/or low SB and the reverse.

Methods: A sample of 1,445 French adolescents from a 2-year (3 follow-up visits) cohort (PRALIMAP trial) was included. At each follow-up visit, adolescents completed the international physical activity questionnaire (IPAQ) for PA and SB and the DUKE Health Profile for HRQoL. The cumulative level was defined as the number of assessments achieving recommended PA level (adherence to PA guidelines), high SB (daily sitting time > 7 hours/day) or high HRQoL (greater or equal to French adolescents norms). Cumulative levels ranged from 0 (none) to 3 (all 3 times). We ran two sets of longitudinal analyses to examine the cumulative and bidirectional relationship between PA, SB and HRQoL. Firstly, we examined the cumulative level of recommended PA, high SB as predictors of HRQoL and secondly, the cumulative level of high HRQoL as predictor of PA and SB.

Results: The 2-year cumulative level of recommended PA predicted higher physical (+5.1 points), mental (+6.7 points), social (+11.6 points)

and general (+7.4 points) HRQoL scores (p-value of trend <0.0001). In opposite to recommended PA, cumulative level of high SB predicted lower HRQoL scores (-6.0 for physical, -4.5 for mental and -4.0 for general) excepted for social health dimension (p=0.12). Combining PA and SB, the impact of recommended PA was partly offset by high SB. In the reverse relationship, high HRQoL predicted PA (overall, vigorous, moderate and recommended PA level) but was not related to SB.

Discussion: The PA-HRQoL relationship was cumulative and bidirectional while a low HRQoL appeared to be predominantly a consequence of high SB, rather than a cause (cumulative but not bidirectional relationship). Promoting recommended PA and low SB could be an important way of improving adolescents' HRQoL with a possible virtuous cycle.

31 Socio-economic, family and school-related environments: Are they determinants of adolescents' physical activity and sedentary behaviors?

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PA is a multi-dimensional and complex concept – as is sedentarity. To better understand PA and sedentary behavior (SB) among adolescents, to support them and to develop and implement effective programmes to promote PA and reduce SB, it makes sense to examine what constitutes these behaviors as well as associated factors. The aim of the current study was to describe PA and SB among high school adolescents, and identify associated socio-economic, family and school-related factors.

A sample of 2,523 high school adolescents aged 14 to 18 recruited in the PRALIMAP (Promotion de l'Alimentation et de l'Activité Physique) trial was included between 2006 and 2009, in 24 state-run high schools north-eastern France. PA and SB were assessed using the international physical activity questionnaire (IPAQ). Socio-economic, family and school data were collected. Linear and logistic

regression models stratified by gender were used to explore the associated factors of PA and SB. Socio-economic, family and school factors were associated with PA and SB among boys and girls in different ways. Among girls, high school category (general or technological +29 min/day vs professional) and schooling (classic/advance placement at school +15 min/day vs late placement at school) were predictors of SB. Among boys, no explanatory factor was found for SB. One of the most remarkable results is that among girls and boys there was only one underlying factor for global PA - parental physical activity; whereas several factors were significant for global PA score component. Thus, boys from socially less privileged backgrounds participated in vigorous PA more than did boys with parents from socially and professionally privileged backgrounds ($P=0.0148$). Girls lagging behind their schoolmates reported that they participated more in moderate PA ($P<0.0001$). Girls enrolled in general or technical schools, and those lagging behind their schoolmates, reported they walked more (+191 MET-min/week; +148 MET-min/week). Results confirmed that participation in PA during adolescence depends on social and family conditions. But, the privileged or least privileged population groups have reported the same total amount of energetic expenditure. These results suggest that the use of a global expenditure score is not sufficient to assess participation of adolescents in PA. Variations in context and ways of practicing PA have several health consequences in adolescents, which could worsen social health inequalities.

32 Health-related Fitness among 10-18 y Hungarian Students: Results of a nationally representative study with the Hungarian National Student Fitness Test (NETFIT®)

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Introduction: The Hungarian National Fitness Test (NETFIT®) will be the new, compulsory school fitness assessment battery for the 2014/2015 school-year. The NETFIT® is a health-related, criterion-reference test system developed by the Hungarian School Sport Federation (HSSF) and The Cooper Institute (TCI). For scientific purposes, our team designed a comprehensive study to evaluate the status of fitness in Hungarian youth, and to directly evaluate the utility of FITNESSGRAM® standards in this population. The aim of this presentation is to share the preliminary findings about the field evaluation of health-related physical fitness among Hungarian schoolchildren.

Methods: School aged children (11-18y, N=2602) were randomly selected from all regions and schools in Hungary. Trained specialists (N=35) in 7 different groups administered the tests during the Spring of 2013 using standardized test protocols. Physical fitness tests included the existing FITNESSGRAM® items, a standing broad jump, and a handgrip strength assessment. Fitness scores were classified using FITNESSGRAM® criterion-health referenced outcomes while standing broad jump and hand grip scores were used to develop new standards for the Hungarian population.

Results: There was variability in Healthy Fitness Zone achievement rates by age (11-18y) and gender for each of the tests [BMI: 66.7-75.8% (boys), 73.8-88.2% (girls); BF%: 33.3-80.2% (boys), 65.2%-72.5% (girls); Aerobic capacity 88.8-45.0% (boys), 86.1-31.8% (girls); Curl-up: 79.6-73.3% (boys), 77.1-70.6% (girls); Trunk extension: 50.7-52.7 (boys); 51.0-65.9 (girls); 90° Push-up: 66.4-61.3% (boys); 42.7-48.2% (girls); Back saver sit and reach: 45.4-60.0% (boys); 49.0-27.1% (girls)]; Grip strength scores increased consistently with age in boys and plateau at older ages and there were inconsistent age patterns in girls. Long jump performance increased with age in boys and did not have clear age differences in girls.

Discussion: This study provides evidence of age and gender trends on health-related fitness using a representative sample of Hungarian youth. Age trends show clear linear decline in aerobic capacity for both gender and with overall higher proportion of boys meeting the HFZ. HFZ rates seem to be higher in Hungary children than in recent USA fitness test results.

The Hungarian National Fitness Assessment Program (NETFIT) is implemented in the frame of a Priority Project (TÁMOP 3.1.13-12-2013-0001) of the Hungarian School Sport Federation with the financial support of the Hungarian Government and the EU.

33 Active or Inactive Aging? Sedentary Behavior and Physical Activity in U.S. White and Black Older Adults in the REGARDS Study

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Introduction: Objective measures of sedentary behavior (SB) and physical activity (PA) on large samples of U.S. older adults of varying race and geographic location are limited.

Purpose: To describe levels of SB and PA using data obtained with accelerometry among white and black older adults living in and outside the 8-state "stroke belt" in the U.S.

Methods: Data are presented for 8,096 participants (4,386 women, 3,710 men; 5,537 white, 2,559 black) from the REasons for Geographic and Racial Differences in Stroke (REGARDS) cohort who wore an ActicalTM ≥ 10 hr/day for ≥ 4 days. Time spent in SB, light intensity PA (LIPA), and moderate-vigorous intensity PA (MVPA) was compared by sex, age, race, and geographic location.

Results: Mean age was 69-71 yr across race/sex groups. Overall, mean daily SB comprised $77 \pm 9\%$ of wear time (689 ± 117 min/d); LIPA $21 \pm 9\%$ of wear time (188 ± 77 min/d), and MVPA only $1.4 \pm 2\%$ of wear time (13 ± 18 min/d). Participants averaged 92 ± 124 min/wk of unbouted MVPA, with 22% meeting the World Health Organization (WHO) PA guideline. Only 7% met the PA guideline using a 10-min bout criteria, and 36% had at least one 10-min MVPA bout/wk (mean = 1.5 ± 3.0 bouts/wk). Of those not meeting the PA guideline, 62% attained <75 min/wk of PA. Significantly higher ($P \leq .0001$) levels of mean daily MVPA were noted for men than women (16 ± 20 vs 11 ± 15 min/d), whites than blacks (15 ± 18 vs 10 ± 15 min/d), <65 yr than ≥ 65 yr (20 ± 20 vs 10 ± 16 min/d), and living outside than inside the stroke belt (14 ± 19 vs 12 ± 17 min/d). Proportion of time spent in MVPA varied by race and sex with black women displaying the least amount (0.9% of wear time), followed by white women and black men (both 1.3% of wear time), and then white men (1.9% of wear time). All groups demonstrated large amounts of SB (77-79% of wear time) with <65 yr exhibiting the least SB (73%).

Conclusions: In this representative sample of U.S. white and black older adults who wore an

accelerometer for one week, the vast majority: 1) were largely sedentary during the day, 2) attained miniscule amounts of MVPA, 3) did not meet the WHO PA guideline, and 4) seldom engaged in continuous bouts of MVPA. These data indicate the strong need for effective strategies to improve PA to overcome widespread inactive aging in the U.S.

Supported by U01 NS041588 and R01NS061846 from the National Institute of Neurological Disorders and Stroke (NIH), and unrestricted grant from The Coca-Cola Company.

34 Physical activity patterns in English older adults, analysis of accelerometer-measured physical activity data considering various cut-points and bout lengths.

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Introduction: While there is agreement about the overall benefits of physical activity (PA) and the reduction of sedentary behaviour (SB), reliable information about the patterns of PA in older adults is lacking on population level. The aim of this study was to describe PA patterns in older adults, using accelerometer data of the EPIC-Norfolk cohort, UK.

Methods: PA was measured by ActiGraph GT1M in 4052 participants at the cohort's 3rd health check. Differences in patterns of activity volume and time in moderate-to-vigorous PA (MVPA, cut points 809 and 2020 counts per minute (cpm)) were analysed, considering various bout lengths, including the 10-minute minimum mentioned in the current UK guidelines for PA. Comparisons will be made by several socio-demographic characteristics as well as self-rated health.

Results: While activity volume was not significantly different between men and women, men accumulated significantly more time in MVPA above 2020 cpm than women (men: 19 (7.4, 34.4) min, women 14.6 (5.9, 27.6) min; in bouts of >10 min: men: 1.9 (0, 10) min; women 1.6 (0, 8.3) min). No significant difference was observed for activity above 809 cpm (men: 73.5 (44.3, 107.4) min; women 71.9 (45.6, 103) min). Furthermore, 4.2% of all participants (57.4% men) adhere to the guideline recommended levels of more than 30 min/day of MPVA in bouts of at least 10 minutes. Generally, a decrease in MVPA with age (youngest: 23.7 (12, 37.1) min; oldest: 6.6 (1.7, 16.4) min), level of education (highest: 21.6 (10.2, 37.6);

lowest: 12.1 (4.1, 25.7)) as well as self-rated overall health (excellent health: 21.2 (10.3, 35.3) poor health: 7 (1.8, 18)) could be observed for both MVPA cut points.

Discussion: The hypothesis of this study was that there are differences in patterns of PA in older adults that go beyond the common intensity categories based on cut points. The results indicate that valuable information about PA in older adults can be won when considering the complete range of objectively measured PA as well as bout length.

Conclusions: PA is accumulated differently between genders with men spending more time in higher intensity activities. Only a small number of participants adhere to guideline recommended PA levels, using common cut points for MVPA in adults. In depth analysis of the full intensity spectrum of PA in older adults may offer important implications for research and policy regarding active ageing.

35 Physical activity behaviour among persons with chronic diseases or disabilities.

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Introduction: Physical activity (PA) is a good strategy to promote health, even among persons with a chronic disease or disabilities. It is assumed that persons with a chronic disease or disability have lower levels of PA compared to those without a chronic disease or disabilities. However, sound evidence is currently lacking to confirm such assumption. The aim of this study is to compare the PA level of Dutch adults with a chronic disease or disability (motor, vision and hearing) with 'healthy' persons.

Methods: Data were used from a survey among a large, representative sample of the Dutch adult population (i.e. the so-called Dutch 'Public Health monitor 2012') including 354,453 adults 19 years and older. Participants were classified as having a self-reported chronic disease (n= 215,867) or motor (n= 40,977), vision (n= 20,366) or hearing disability (n= 16,885). Persons with no chronic disease and no physical disability were classified as healthy (n= 99,876). PA was defined as adherence to the Dutch PA public health guideline (≤ 5 days/wk and ≤ 30 min/day of at least moderate intensity activities or ≤ 3 days/wk and ≤ 20 min/day of vigorous intensity activities) by using the "Short QQuestionnaire to ASsess Health-enhancing physical

activity" (SQUASH). The proportion of persons adhering to the guideline and comparisons between groups were calculated by means of Generalized Linear Models adjusted for age, sex, education and ethnicity.

Results: Preliminary results show that 62% of the healthy persons adhered to the PA public health guideline. Among those with a chronic disease and those with a physical disability, the adherence was significantly lower as compared to healthy persons independent of several individual covariates, i.e. chronic disease: 58% (p<0.01), motor disability 33% (p<0.01), visual disability 45% (p<0.01), and hearing disability 43% (p<0.01).

Discussion: It is important to specify the needs of persons with chronic diseases or disabilities in order to stimulate PA. Especially the group of motor disabilities needs attention, since the adherence to the PA public health guideline was the lowest. Despite the large dataset used, objective data of chronic disease and disabilities is recommended. During the process of this study, we aim to use objective data.

36 Physical activity promotion in primary health care among adults living in a low socioeconomic area in Brazil: effects of six-month non-randomized controlled intervention trial

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Introduction: The aim was to assess the results of the first six months of two interventions promoting physical activity (PA) in adults attending primary healthcare settings in a low socioeconomic area of Sao Paulo city, Brazil.

Methods: A non-randomized controlled intervention trial was conducted. One-hundred-fifty-seven individuals were selected and assigned to three groups: health education (n = 54), supervised exercise (n = 54) and control (n = 49). PA was assessed using the International Physical Activity Questionnaire long form (leisure and transport-related modules) and pedometers. The Kruskal-Wallis, McNemar, and chi-square tests and logistic regression models were used to compare the results after six months.

Results: No differences were found in the percentage of participants attaining the recommended weekly step-count of 10,000 or in

the number of minutes of total PA (leisure and transport) performed per week. However, both intervention groups showed statistically significant differences compared to the control group after six months (78.1 minutes for supervised exercise and 65.7 minutes for health education versus 14.8 minutes for control) in practicing leisure-time physical activity. After controlling for gender, age and schooling, participants in the supervised exercise (OR=10.5) and health education (OR=2.9) groups had a higher likelihood of practicing leisure-time physical activity than control subjects.

Discussion: After six months, both interventions were found to be effective for increasing leisure-time physical activity among adults attending primary healthcare settings in a low socioeconomic area. Both interventions may be implemented to promote PA in primary health care settings similar to those of Brazil.

37 Primary care professional's knowledge, confidence and physical activity promotion practices.

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Introduction: NICE public health guidance¹ recommends that primary care professionals should identify adults who are not currently meeting the UK physical activity guidelines and advise those adults who are identified as being inactive to do more physical activity, with the aim of achieving the physical activity guidelines. However, the same guidance acknowledges that some primary care professionals do not talk to patients about physical activity for a number of reasons, for example, a lack of knowledge of the benefits of the types of activity they should be recommending. This is unsurprising as evidence indicates that there is a paucity of exercise medicine or physical activity teaching in the UK undergraduate medical curricula.^{2,3} The purpose of this study was to explore whether a 1-hour training session on the benefits of physical activity for disease prevention and management improves the confidence of primary care professionals to promote physical activity.

Methods: A range of primary care professionals (GPs, Practice Nurses, Healthcare Assistants) were invited to the training session. Prior to the training attendees were asked to complete a 27-item questionnaire which assessed knowledge, confidence, role perception and practice with regards to physical activity promotion. Post-training attendees were asked to complete a short evaluation form about the usefulness of the training.

Results: Preliminary results show that only a quarter of primary care professionals in this study are aware of the UK physical activity guidelines. Whilst most professionals acknowledged that it is their role to promote physical activity the majority are not routinely screening patients unless it is linked to their condition. Current practice varied considerably across surgeries with a lack of time the most common reason for not discussing physical activity with patients. Following the training 91% felt more confident in advising patients about physical activity.

Discussion: Whilst there remains an absence of physical activity teaching in the undergraduate medical curricula, alternative and time-efficient training courses are needed to raise medical professionals' knowledge and confidence to promote physical activity. This research shows the promising impact a short 1-hour training session can have on a primary care professional's confidence to promote physical activity. Further research will evaluate whether this training has had a longer term impact on clinical practice.

The authors would like to thank Sport England for funding this project through the Lottery supported Get Healthy, Get into Sport portfolio and the medical professionals for agreeing to participate in the research.

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2. Richard Weiler R, Chew S, Coombs N, Hamer M, Stamatakis E. Br J Sports Med 2012;46:1024-1026

3. Jones PR, Brooks, JHM, Wylie, A. Br J Sports Med 2013;47:1090-1094

38 Confirmation that UK medical students 'tomorrow's doctors' under perceive the health risks of physical inactivity and are unaware of physical activity guidelines. Major reforms are needed

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Introduction: Evidence of the benefits of physical activity to an individual, the economy and society are indisputable. However, levels of physical activity across Europe remain low. It is recognised that promotion of physical activity/exercise by doctors as a preventative and therapeutic modality for many chronic diseases should occur.¹ A review of medical school curricula across Europe suggested medical students receive little education on the principles of physical activity medicine and physical activity guidelines.² No study to date has directly assessed medical students' knowledge of physical activity guidelines. The aim of the current study was to assess United Kingdom medical students' knowledge of the risk of physical inactivity and of the current UK physical activity guidelines.

Methods: A questionnaire was carried to an unselected cohort of final year medical students in ten UK medical schools. N=777, representing 42% of the total number of final year students in these universities. Ethical approval, Nottingham University Faculty of Medicine Sciences Research Ethics Committee.

Results:

71% stated they did receive some teaching regarding the benefits of physical activity on health.

However, almost 50% underestimated the risk of physical inactivity in comparison to other non-communicable disease risk factors.

Only 36% of students reported they were aware of the current UK physical activity guidelines while 94% knew UK alcohol guidelines.

Only 9% were able to adequately define 'moderate/vigorous exercise intensity', key aspects of the guidelines. A number of responses could be considered dangerous.

Only 42% perceived they had the ability to give physical activity advice to a general patient and only 27% to a patient with a stable chronic disease for example diabetes.

Discussion: The study confirms UK wide inadequacies in medical student knowledge of basic principles of physical activity medicine and

the UK physical activity guidelines. Major education reforms are needed to give 'tomorrow's doctors' the knowledge and skills necessary to be able to promote physical activity to their patients.

1. World Health Organisation. Interventions on diet and physical activity: what works: summary report. Geneva: WHO, 2009

2. Jaques R, & Loosemore M. Sports and exercise medicine in undergraduate training. *Lancet* 2012;380:4-5
This study was funded by the UKADIS Malcolm Read Scholarship in Sport and Exercise Medicine from The British Association of Sport and Exercise Medicine (BASEM)

39 Health Promotion and overweight children – whose responsibility? An insight into paediatric nurses' attitude towards health promotion

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Introduction: In England around one in five 4/5 year olds and one in three 10/11 year olds are classified as overweight or obese (NOO, 2014). Childhood obesity poses a significant risk to a psychological and physical health, both now and in the future (WHO, 2012). Health care professionals (HCP) across the board are being asked to take every opportunity to promote healthy living and 'Make every contact count' including asking questions regarding patient's diet and exercise behaviours (Royal College of Physicians 2010). Acute care paediatric nurses are in an ideal position to be able to offer counselling and advice to children and their parents when admitted to hospital, at a time when they may be most receptive to health promotion strategies (Mulgan 2010). The Nursing and Midwifery Council (NMC) (2008) place a duty of care with nurses to protect and promote the health of those in their care and Public Health England (PHE) calls upon all nurses and midwives to make a personal and professional impact to improve health by becoming health promoting practitioners (PHE, 2013). This study was designed to explore the attitudes of those at the front line being asked to deliver health promotion (including diet and physical activity advice)

Aims: to explore the attitudes of paediatric nurses on delivering health promotion to overweight children and their families during acute care admissions.

Method: A qualitative study, based on semi-structured interviews, involving six paediatric nurses from a UK based NHS funded hospital.

Results: The paediatric nurses, as found with other health care professions, perceived there were both institutional and personal barriers to promoting healthy lifestyles. Six themes emerged from the data i) responsibility for delivery of health promotion, ii) sensitivity of the issue, iii) benefits of health promotion iv) influence of parents, v) skills of the nurses and vi) institutional support.

Discussion: The paediatric nurses conceived their priority for the children in their care was treatment of the child's illness and that the acute care setting was not the appropriate environment to deliver health promotion. Childhood obesity is a serious issue demanding action from health care services and the professionals involved. Further research is required to facilitate the development of ethical policies on the delivery of health promotion strategies within the acute care setting.

Mulgan, G (2010) Influencing Public Behaviour to Improve Health and Wellbeing: An independent report. [http://base-uk.org/sites/base-uk.org/files/\[user-raw\]/11-06/gm.pdf](http://base-uk.org/sites/base-uk.org/files/[user-raw]/11-06/gm.pdf) National Obesity Observatory (2014) Statistics available from www.noo.org.uk Nursing and Midwifery Council (2008) The Code. London: Nursing and Midwifery Council. NMC: London
Public Health England (2013) Nursing and Midwifery contribution to public health. Available from: <https://www.gov.uk/government/publications/nursing-and-midwifery-contribution-to-public-health> Royal College of Physicians (2010) The Training of Health Professionals for the Prevention and Treatment of Overweight and Obesity. http://www.rcplondon.ac.uk/sites/default/files/press_releases/2010/12/obesity-report-2010.pdf
World Health Organisation (WHO) (2012). Global Strategy on Diet, Physical Activity and Health: Childhood Overweight and Obesity. <http://www.who.int/dietphysicalactivity/childhood/en/>

Connectors (CSCs), to whom a broker role has been ascribed. CSCs are employed to connect primary care and sport and to promote physical activity among patients with, or a high chance to develop, a chronic disease. The goal is that primary care patients become physically active in their own neighborhood or participate in local sports facilities. Adequate scientific research is needed to assess CSCs' impact in: 1) connecting primary care and sport, and 2) promoting the health of primary care patients. **Purpose:** The aim of this research was to develop a theoretical framework to study the role and impact of CSCs.

Methods: A literature study has been conducted to identify theories, frameworks and factors which are relevant in connecting primary care and physical activity. In addition, lifestyle programs in primary care settings have been analyzed to reveal success factors and barriers in stimulating physical activity and the transferral of patients to local sports activities.

Results: The theoretical model for this study is based on the expanded chronic care model (ECCM) (Barr et al., 2003), which is a combination of the chronic care model (Wagner et al., 2001) and the principles of the Ottawa Charter (WHO, 1986). Literature indicated that barriers in connecting primary care and sport are the different cultures and target groups of both sectors. A broker role might overcome these barriers by taking the lead to establish and maintain a network with professionals in the primary care and sports sector, collect and disseminate information and establish preconditions for a transferral of patients from primary care to local sports facilities. Therefore we added a broker role to the ECCM.

Discussion: The developed theoretical framework provides factors that are relevant to examine the connection between primary care and the sports sector. Innovative is the explicit broker role, which makes it possible to study the added value of a broker role.

40 A theoretical framework to connect health care and physical activity; opportunities for the Care Sport Connector.

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Introduction: In 2012, the Dutch Ministry of Health, Welfare and Sport introduced Care Sport

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41 The adventures of Joe Finn campaign promotes men's socio-economic equality

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Introduction: The life expectancy of Finnish working class men is six years shorter than of men in higher positions. Fit for Life Program (KKI) designed a successful, easy-going campaign called the Adventures of Joe Finn. The goal is to awaken and activate working-aged men towards regular physical activity and healthy eating habits. The 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 altogether for 8797 men. Inside the lorry was a test laboratory where men were tested: a grip strength, a body composition by Inbody 720 analyzer, a waist circumference and a cardiorespiratory fitness with Polar Own Index fitness test. The roadshow was marketed in targeted media locally and nationwide. The partners of the campaign recruited men from workplaces and vocational schools. During and after the lorry tour, TNS Gallup carried out the study of the awareness and necessity of the Adventures of Joe Finn campaign. Altogether 1400 men aged 30-60 years were interviewed by phone in nine towns. The research was carried out for the first time in 2011.

Results: Joe Finn fitness test results revealed that 63% of men should improve their physical activity and/or eating habits. The TNS Gallup survey revealed that the overall awareness of the Adventures of Joe Finn campaign has increased from 33% (2011) to 41% (2013) in two years among 30-60 year men. PA activity levels in then men had no impact on results of awareness. Nine of ten considered the 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.

Discussion: The test results and the great number of tested men show that the lorry tour reached physically unfit men. The high attention value (41 %) among men states that the campaign has succeeded in creating models reaching the target group. The most difficult group among men, the passive and less educated, has shown awakened interest in a healthy lifestyle.

42 'More of the same is not enough'-joining up efforts to promote physical activity in hard to reach groups

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Between 2010 and 2014 there was a considerable amount of activity in Europe directed towards understanding the promotion of physical activity amongst hard to reach, or disadvantaged, groups. Projects included the WHO Physical Activity Networking (PHAN) project, co-funded by the European Union (Health programme) and supported by the Health Enhancing Physical Activity (HEPA) Europe network, and five projects funded under DG Education and Culture in the field of sport (JoinIn, SPiN, Prisoners on the Move, MiMOSA, and Creating a level playing field), as well as the ISCA MOVE project, funded under European Commission's Executive Agency for Health and Consumers (now Consumers Health And Food Executive Agency (CHAFEA)).

Many of the funded projects promoted networking throughout Europe, collected good practice examples, and compiled useful documents outlining key principles for engaging with socially disadvantaged or other hard to reach groups. There are many examples of using physical activity and sport as an adjunct to education and training, as a means of fostering social connection or promoting healthy behaviours, or using sport as a platform for communication, and social mobilization. In these cases, physical activity is often not a primary outcome, and may not be measured.

However, while these projects identified many common issues and gaps, there have been limited attempts to collate the evidence generated and disseminate this in useable formats for grassroots organisations both within, and outside of, sport and physical activity domains.

This presentation highlights some of the common challenges and unexplored opportunities, and provides a review of some ongoing attempts to apply the lessons learned to practice. A possible framework for the HEPA Europe network to harness the work of disparate agencies is discussed.

43 HEPA or no HEPA by Austrian health insurances?

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The Austrian Federal Ministry of Health (BMG) claims health promotion as one of the most important responsibilities of its social insurance system (BMG, 2009). Health promotion and primary prevention were declared compulsory by Austrian legislation 20 years ago, however, the extent of time, financial support or professional workload attributed to it was (and still is) not specified yet.

In Austria, prevention is primarily focused on biomedical facets, though, in recent years social and environmental determinants are becoming more and more important. Austria's national health aims (BMG, 2012) emphasize a lot more the determinants for health, equal opportunities and the health-in-all-policies approach. Nevertheless, in practice, 98% of Austria's health expenditure flows into the treatment of acute or chronic diseases. The 19 Austrian social health insurance companies are legislatively independent; there is no national health insurance system. Therefore, health promotion and prevention activities are not always aligned and can vary extensively across the different companies.

Health promotion and primary prevention are challenging endeavours, marked by interplay of many protagonists from various professional backgrounds with multi-layered motivations. Despite best efforts, many health promotion measures still lack evidence for their effectiveness, which may be one reason why health insurances hesitate to invest more in that area.

Physical activity has been proven to have plentiful health enhancing effects and has been implemented in prevention guidelines for a number of morbidities in various European countries (e.g., in Germany, GKV-Spitzenverband & MDS, 2013); nevertheless, many Austrian health insurances do not (or only minimally) support physical activity measures on individual or programme levels.

This presentation will focus on results from a Master thesis investigating the degree of health insurance companies' engagement in physical activity measures for health promotion and primary prevention. Based on systematic reviews of literature, government documents and internet sources it will be illustrated and discussed to what extent evidence-based and attributed measures to maintain and increase health enhancing physical activity are initiated, supported and implemented by Austrian insurance companies.

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GKV-Spitzenverband, & MDS (Eds.). (2013). Präventionsbericht 2013. Leistungen der gesetzlichen Krankenversicherung: Primärprävention und betriebliche Gesundheitsförderung. Berichtsjahr 2012. Korschbroich: das druckhaus.

44 Swiss Association of Professionals in Adapted Physical Activities (ASP-APA): Presentation

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In today's society, regular and optimal physical activity relies not only on experiences but also on a strong scientific knowledge. The Adapted Physical Activities (APA), a recent science of human movement, was initially interested in people with motor, sensory and intellectual disabilities and has been quickly extended to people experiencing social ruptures or developing chronic diseases. As a science, the APA is also based on the most current scientific knowledge. In 2006, the European Federation of Adapted Physical Activity (EUFAPA) defined the APA as "a cross disciplinary body of knowledge directed towards the identification and solution of individual differences in physical activity. It is a service delivery profession and an academic field of study which supports an attitude of acceptance of individual differences, advocates enhancing access to active lifestyles and sport, and promotes innovation and cooperative service delivery and empowerment systems. Adapted Physical Activity includes, but is not limited to, physical education, sport, recreation, and rehabilitation". This definition of APA is always a subject of discussions and developments worldwide. In Switzerland, the Master of Sciences in Human Movement and Sports Sciences "Adapted Physical Activities and Health" has been recently introduced at the University of Lausanne. This Master combines the knowledge about a wide range of pathologies and skills in the field of Adapted Physical Activity, in health promotion and in the methodology of scientific research. The APA professional is a specialist in the adaptation of movement, physical activity and sport. Through

APA, he contributes to improve the quality of life and the physical, mental and social well-being of the populations he is involved with. His scientific knowledge in physical activity and movement, as well as in various pathologies, allow him to efficiently adapt physical activity and make it accessible for people with special needs (chronic diseases, intellectual, physical, sensorial or social disabilities). In 2011, the Swiss Association of Professionals in Adapted Physical Activities (ASP-APA) was created in order to consolidate and promote the APA professionals and to provide a platform of communication with the public and health professionals, both at a national and international level. In the near future, the objective of the association is to get a certification of the profession within the Swiss health care system.

45 Economic effects by doing sport and physical activity in voluntary sports clubs

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Introduction: Physical Activity plays an important role for health and physical inactivity is well connected to serious economic burdens for the society. The National Olympic Committee of Denmark has made a policy paper of the health economic gains by doing sport in voluntary sports clubs contrary to be physical active in commercial fitness centers or by yourself, running a couple of times in the week around the lake.

The health economic gains by doing sport in voluntary sports clubs are calculated by dividing different diseases into three categories or rings. Ring one is calculating the health economic gains from diseases, where there are a very strong scientific evidence of the positive effects that physical activity has on different diseases. Ring two is dealing with diseases, where there are some scientific proof for the positive effects of physical activity, but one is not sure of their exact benefits to the health economy. Furthermore ring two is also dealing with the influence from physical activity on the level of productivity in the society. Finally ring three is focusing on diseases as obesity, stress, back pains and depression, where there are strong evidences for the positive effects coming from physical activity, but where a scientific proof of the specific benefits from physical activity on these diseases are lacking.

Documentation for each disease is needed, when it comes to knowledge about how many in the population are affected by a specific disease. By

using the reduction rate one can calculate the number of persons, who will avoid the disease if their level of physical activity moves from low to high. Then a calculation will be made of which public expenses, that are connected to treatment at hospitals per patient for the specific treatment of the disease.

Conclusions: Organized sport in Denmark is having an annual health economic effect, which sums up to 230 million Euros just by looking at four specific diseases: Ischemic heart disease, type-2 diabetes, breast cancer and colon cancer. Additionally the calculations show a net health economic effect in the range from 190 million to 1.22 billion euro caused by prevention of prostate cancer and increased productivity in the work force.

Discussion: Should physical activity policy be concentrated on recruiting more members into the sports clubs due to the reason that the calculations in the policy paper of the NOC Denmark are showing more health economic benefits of doing just that.

The National Olympic Committee has not been able to find any other research projects, where economic health net-benefits of doing sport in sports clubs rather than in commercial fitness clubs or self organized are calculated.

46 Zurich invites for cycling - The new Bicycle Masterplan of Zurich

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Introduction: For almost 40 years the promotion of bicycling has been an integrated part of the transport policy of Zurich. Cycling is well supported by the public; over 70% approve of the promotion of bicycling. Still the city faced a stagnation of bicycle traffic since the year 2000. In the last years people stated in surveys that they feel insecure in traffic and judged the cycling-infrastructure as unsafe and uncomfortable. In addition, bicycle accidents increased by 50% since 2006.

Therefore the city council of Zurich decided in 2011 to work out a bicycle masterplan and enacted it in October 2012. The slogan and vision «Zurich invites for cycling» makes clear that the city wants to do more than just a technical bicycle promotion. To the public and also especially towards the administration the message is communicated that for all sorts of activities people should feel invited to use their bike in the city.

Structure of the bicycle masterplan:

Vision: Zurich invites for cycling

Aim: More and safer cycling for everyone

- More: Until 2025 the amount of bicycle trips within the city is to be doubled.
- Safer: Risk of accidents will be reduced and perception of safety increased.
- Everyone: Additional groups of cyclists will use their bike more often. Especially children and adolescents.

Fields of action: With a strong focus on behaviour and motivation of different target groups specific measures were defined to address different groups of cyclists.

- attractive and save infrastructure
- safety and behaviour
- cycling for everyone
- integration in administration
- communication and services
- evaluation and monitoring

Main- and comfort-routes: A key element of the masterplan is the design of a new route network. As a backbone main-routes with a grid width of 300 - 500 m were defined. A new quality level with bike lanes up to 1.80 m and bike paths up to 2.20 m wide should ensure to make cycling more attractive and comfortable for the every-day-cyclists. As a new idea so called comfort-routes will be implemented. Mostly separated from motorized traffic these «bicycle-carpets» allow to traverse the city in a relaxed and pleasant way, particularly attractive to families with children for example. The route network is meant to be implemented by 2025.

47 Is public transport a danger to transport-related physical activity? Thoughts for debate from a Swiss perspective.

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Introduction: Walking and cycling are still on the decline in many countries. This is particularly true for trips made by children and adolescents. The increase of motorised transport is often seen to be the reason behind this. Thus, measures for more walking and cycling go hand in hand with attempts to discourage the use of mama-taxis, motorbikes and automobiles. What is often overlooked – at least this is what the developments in Switzerland suggest – is that public transport increasingly “cannibalizes” some transport-related physical activity.

Methods: The input is based on two studies: (1) Swiss Transport Microcensus data from 1994 to 2010 was analysed regarding the development of travel behaviour of children and adolescents. (2) In the canton Basel-Stadt a multi-method pilot study about bicycle use among adolescents was undertaken.

Results: While there is a reduction in bicycle use among children and adolescents by nearly half since 1994 in Switzerland, surprisingly, young people also use the car much less often and again walk more. The urban adolescents in Basel like the fast, efficient and reliable public transport with which they can reach almost every destination in a short time. They also enjoy the possibility for social interaction while riding – talking to each other, access to the internet etc.; things that are difficult to do on a bike. The often still insufficient infrastructure for cycling pushes them in the direction of public transport as well.

Discussion: It looks like this change is a result of a basic paradigm shift in which public transport plays a leading role replacing bicycle and car trips and at the same time triggering more, although short walking trips, e.g. during lunch break or leisure time. The reasons for this are manifold: increasing distances to schools lead to more children and adolescents requiring and using public transport which is widely available thanks to the dense settlement structure, the good service and positive image the mode enjoys in Switzerland. What are the potential implications of this for transport-related physical activity policy and promotion. Do these developments require a change of views and actions? Is it possible to have a high cycling usage and a good public transport service at the same time?

The presentation mainly aims at a debate of the outcomes and covers a range of conference themes including policy, promotion (for children and adolescents) and transport-related physical activity.

(1) Sauter, D. (2014 in preparation): Mobility of children and adolescents: developments from 1994 to 2010. Analysis based on the national travel behaviour census (Mobility and Transport Microcensus)

(2) Sauter, D. und Wyss K. (2014): Bicycle-use of adolescents in the canton Basel-Stadt (pilot study), commissioned by the Civil Engineering and Transport Department of the canton Basel-Stadt, supported by the Federal Roads Office, FEDRO, section Human Powered Mobility

48 Harnessing the power of the trader lobby to increase active travel in urban centres

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Introduction: Ireland has been slow to embrace pedestrianisation and continues to prioritise car travel in urban centres outside Dublin. Any potential restriction of car accessibility in urban centres is a contentious issue in traffic management. Traders have successfully lobbied against the introduction of pedestrianisation and parking restraint policies in several Irish towns. The purpose of this study was to identify key lessons for introducing parking restraint policies and pedestrianisation in a country without a culture of active travel.

Methods: This was a qualitative study based on two local authorities that planned to remove car parking and introduce pedestrianisation under Ireland's 'Smarter Travel' (active travel) programme. 14 semi-structured interviews were undertaken. Interviewees were selected using purposive sampling from 3 pre-defined categories; local authority project leaders, community advocates and traders who were opposed to these measures. The data was analysed using NVivo10 and followed the procedures described by Strauss and Corbin (1998).

Results: The dissonance between traders and the local authority was the principal factor dictating the pace of the implementation process in both towns. The traders in both towns although supportive of the ethos of Smarter Travel would not be agreeable to any permanent pedestrianisation because they equate the presence of cars and car parking on the streets as being good for business even if it only creates an illusion of increased vibrancy. There is an absence of robust evidence on the potential impact on retail trade of reducing car accessibility. This problem is compounded by an inherent mistrust of the local authorities. The local authorities themselves did not consider low cost car parking provision to be counter-productive to their efforts to promote walking and cycling.

Discussion: Any future efforts to introduce active travel measures in either town centre will need to be achieved in an incremental manner where traders and the community alike can experience the benefits for themselves. This necessitates trialling new measures at times when retail footfall is expected to be high. A business case and

targetted campaign for introducing the measure should also be developed for retailers.

Strauss, A., & Corbin, J. (1998). Basics of qualitative research: Techniques and procedures for developing grounded theory (2nd ed.). Thousand Oaks, CA: Sage.

49 ECF Recommendations to Improve Fiscal Systems for Home-Work Travel in Europe

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Most commuting is done by car in Europe, thus accounting for an important share of traffic. This entails problems such as congestion or high CO₂ emissions, but also a negative impact on public health due to air pollution and low levels of physical activity. On the other hand, commuting by active modes of transport such as walking or cycling has major benefits including less use of public space, a much smaller impact on the environment, and a positive effect on health linked to habitual physical activity with associated lower risks of obesity, CHD, etc. Cycling to work is associated with less sickness absenteeism. Other studies show a plethora of physical and mental health benefits associated with physical activity comparable with the work commute.

Nevertheless, fiscal systems in Europe today still favour commuting by car. In most countries, the provision of a company car to employees for private use is taxed at very advantageous rates, incentivizing artificially high car use the disadvantage of other, more sustainable and healthy modes of transport. As a result, company cars have a very high share in new car registrations in Europe; approaching 50% in the EU as a whole and exceeding 60% in Germany. Favourable tax treatment for active modes of transport exists only in a few countries while others are exploring possibilities to introduce instruments like a cycling mileage allowance. Such initiatives often meet fierce resistance as only immediate budgetary costs are considered, and public health benefits are not taken into account. Clarifying these benefits and how they can be achieved is needed. Using input from the European Cyclists' Federation member organisations and the National Cycling Officer network, different fiscal regimes in 12 European countries are compared. Best practices, like the cycling mileage allowance for home-work travel as it exists in Belgium or tax exemptions for the provision of bikes to employees in the UK and

in the Netherlands are examined. General as well as country-specific policy advice is presented for decision-makers on how to level the playing field for all modes of transport throughout Europe. Levelling can be achieved by reducing subsidies in the tax system e.g. for company cars and creating incentives for active modes of transport. Incentivizing active travel modes with a positive impact on the environment and public health is recommended.

50 Sedentary behavior during work: Prevalence and correlates of sitting among office workers and homeworkers

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Introduction: Workplaces have become increasingly sedentary. Prolonged sitting time at work can be regarded as a modern occupational health risk. So far, prevalence data of sedentary behavior during work is limited and no studies have focused specifically on factors associated with sitting time at work. In addition, insight in the effect of working at home on sedentary behavior is studied.

Methods: An internet survey was held among Dutch employees with a sedentary occupation, working at least 24 hours a week. Half of them were office workers and the other half were homeworkers (working at home at least one full day a week). Participants were asked to estimate their sedentary time during work, transport and leisure time, on a regular working day and a non-working day. Additionally, several possible correlates of sedentary behavior were checked.

Results: Of the 990 participants, 39.5% were homeworkers, which were more often male, had a higher educational level and a larger part of them worked fulltime compared to office workers. On average, participants sit in total 734 minutes on a regular working day, of which 421 minutes (almost 60%) is spent during work. On a non-working day, the average sitting time in total is 440 minutes. There is no significant difference between office workers and homeworkers in total sitting time on a working day or on a non-working day. Homeworkers work about 32 minutes less during a home working day, but they sit 90.7% of their working hours at home versus 86.4% on an office day ($p < 0.01$). Multivariate regression analyses showed that, besides more working hours, younger age and higher BMI may be associated with more sedentary time during work on an office day. Also, offering exercise facilities at the office, a positive

attitude towards reducing sedentary behavior and the possibility to install short breaks during work are significantly associated with decreased sitting time during work on an office day.

Discussion: The high prevalence of sedentary behavior among the participants could partly be explained by the implemented inclusion criteria (sedentary occupation, working at least 24 hours/wk) and the specificity of the group studied (high age, high educational level). To detect high risk groups, subgroup analyses should be performed. Differences in sitting time among most correlates found significant are relatively small.

51 Sedentary at work: two case studies in the Netherlands

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Introduction: The recent Eurobarometer indicates the Netherlands is one of the nations with most sitting hours per adult. Dutch research by TNO shows that the average amount of sitting hours during a workday in the Netherlands for 18-64 year olds is 6.6 hours. More than half of these hours can be attributed to sitting at work. The Netherlands Institute for Sport and Physical Activity (NISB) uses case studies to support organisations during the implementation of interventions that address sedentary behaviour. This abstract summarizes the set-up and provisional results of two case studies.

Method: A case-study runs during 3 months and consists of: t0-survey (a.o. actual sedentary behaviour, perception of risks, intention to use specific furniture), workshop, rental of dynamic office furniture, communication interventions, t1-survey and focus group. The furniture used were sitting/standing desks, stand-up meeting tables, deskbikes, a swopper and a Stand4Work. The following communication interventions were used: presentations in department meetings, an article in an organisation newsletter, announcements on notice boards near coffee machines, posters on several central points, a monthly new management team ambassador and (voluntary) use of a smartphone app.

Results: The first t0-survey ($n=43$) indicated that intentions for usage of the stand-up meeting tables and the deskbikes were highest. Respondents expected to use mostly the deskbikes in their daily work. Respondents expected the following would support them: extra stimulus from management, ergonomic suggestions for standing-up right, positive approach (focus on advantages, not risks).

The second t0-survey (n=+/- 150) pointed out that 50% of the employees are willing to use stand-up desks and deskbikes. Almost 90% of the employees found extra attention of the organisation for this theme good to very good.

Discussion: The case studies show the importance of a combination of environmental and communicative interventions. Offering employees the option of changing the way they work (using different furniture) stimulates them to experiment. Doing by seeing and out of curiosity seems to be a key success factor. Organisations don't wait for research results to be totally concurrent. The theme is appealing: it's new, aspirational and recognizable. It's relatively easy to implement (it doesn't have to be very expensive) and interesting for organisations because standing up a few times a day is an achievable goal for inactive employees.

Bernie et al. The prevalence and correlates of sitting in European adults - a comparison of 32 Eurobarometer-participating countries. *International Journal of Behavioral Nutrition and Physical Activity* 2013, 10:107
Hildebrandt V.H., Benaards C.M., Stubbe J.H.,
Trendrapport Bewegen en Gezondheid 2010/2011, TNO 2013

The Netherlands Institute for Sport and Physical Activity (NISB) is the Dutch organisation, funded by the Dutch government, that converts evidence-based and practice-based information on the effects of sport and physical activity into applicable knowledge. Workplace health promotion (by sport and movement) is one of the themes NISB is working on.

The t1-survey is planned for the end of June. Results can be included in the presentation during the conference.

52 The Stand@Work study: The feasibility and effectiveness of sit-stand workstations for decreasing office workers' sitting time

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Introduction: Prolonged sitting time is detrimental for health. Individuals with desk-based occupations tend to sit a lot and sit-stand workstations have been identified as a potential strategy to reduce sitting time. The study objective was to examine the feasibility and effectiveness of sit-stand workstations on decreasing office workers' sitting time.

Methods: We conducted a randomized controlled trial with crossover design and waiting list control

in Sydney, Australia. Intervention participants used a sit-stand workstation (Ergotron Workfit S) for four weeks; controls received nothing and crossed over to the intervention condition in week five of the study. Sitting, standing and walking time were assessed before and after the intervention period with ActivPALs and questionnaires. Participants also shared their perceptions and experiences of using the sit-stand workstation in focus group interviews. Topics covered in the focus groups included patterns of workstation use, barriers and facilitators to standing while working, effects on work performance, physical impacts, and feasibility in the office.

Results: Intervention participants (n=42; 86% female; mean age 38±11 years) significantly reduced objectively assessed time spent sitting at work by 73 min/workday (95% CI: -106,-39) and increased standing time at work by 65 min/workday (95% CI: 47, 83); both changes were significant relative to controls (p=0.004 and p<0.001, respectively). Most participants used the sit-stand workstation and three common usage patterns were identified: task-based routine, time-based routine, and no particular routine. Common barriers to sit-stand workstation use were working in an open plan office, and issues with sit-stand workstation design. Common facilitators of sit-stand workstation use were a supportive work environment conducive to standing, perceived physical health benefits, and perceived work benefits. When prompted, most participants indicated they were interested in using a sit-stand workstation in the future.

Discussion: This study shows that introducing sit-stand workstations in the office is feasible and can reduce desk-based workers' sitting time at work in the short term. Larger scale studies on more representative samples are needed to determine the public health impact of sit-stand workstations.

53 Sedentary behaviour on a working day: exploring executives' and employees' opinions on potential intervention strategies through focus groups

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Introduction: Occupational sitting is likely to be the largest contributor to overall daily sedentary time in white-collar workers. With adverse health effects in adults, intervention strategies to influence sitting on a working day are needed.

Therefore, the present aim was to collect qualitative data of employees' and executives' opinions on occupational sitting and possible strategies to reduce and interrupt sitting on a working day.

Methods: Seven focus groups (four among employees, n=34; three among executives, n=21) were conducted in a convenience sample of three different companies in Flanders (Belgium), using a semi-structured questioning route in four themes [working hours, (lunch) breaks, commuting and intervention approach]. The audiotaped interviews were verbatim transcribed, followed by a qualitative inductive content analysis in NVivo 10.

Results: The majority of participants recognized they spend their working day mostly sitting and associated this mainly with musculoskeletal health problems. Participants suggested a variety of possible strategies, primarily for the working hours (standing during phone calls/meetings, PC reminders, increasing bathroom use by drinking more water, active sitting furniture, standing desks, rearranging the office) and (lunch) breaks (physical activity, movement breaks, standing tables). However, several barriers, including productivity concerns, impracticality, awkwardness of standing, and the habitual nature of sitting, seemed to counteract the implementation of the strategies. Facilitating factors were raising awareness, providing a reason to stand up for, obligating some strategies and taking responsibility.

Discussion: Intervention strategies targeting sitting time on a working day are considered useful. However resistance to change appeared high, so future interventions should take into account these barriers.

Flemish Government for Welfare, Health and Family

54 How top flight football clubs can engage men in effective lifestyle change

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Introduction: Sporting organisations are increasingly seen as vehicles for health promotion for fans but what makes club-based programme successful in both engaging men and supporting long-term change?

Methods: We conducted a randomised controlled trial and process evaluation of Football Fans in Training (FFIT), a group-based, weight-management and healthy-living programme delivered by community coaches in 13 Scottish professional football clubs. The process evaluation included focus group discussion with participants about their reasons for engagement and how they maintained changes.

Results: FFIT was effective¹. We observed highly significant differences between intervention and comparison groups on all measures in favour of the intervention. Reasons for engagement included both 'push' (being aware of weight gain) and 'pull' factors (the symbolic power of the club itself)². Interactions with coaches and other participants in a broad curriculum-based programme was reported as supporting long term change, including changes in the way men saw themselves.

Conclusions: Programmes seeking to attract men to lifestyle change should design recruitment materials which take account of cultural commitments to clubs as well as desires to live healthier lives. Programmes should provide supportive environments in which participants can interact to support one another in change. We will take these ideas forward in the development of the FP7-funded EuroFIT programme conducted in Portugal, UK, the Netherlands and Norway. EuroFIT aims to engage men in engage men through loyalty to their football club to sustainably improve their physical activity, sedentary and eating behaviours.

1. Hunt K, Wyke S, Gray CM, et al. A gender-sensitised weight loss and healthy living programme for overweight and obese men delivered by Scottish Premier League football clubs (FFIT): a pragmatic randomised controlled trial. *The Lancet* 2014; **383**(9924): 1211-21.

2. Hunt K, Gray C, Maclean A, Smillie S, Bunn C, Wyke S. Do weight management programmes delivered at professional football clubs attract and engage high risk men? A mixed-methods study. *BMC Public Health* 2014; **14**(1): 50.

55 Effectief Actief: a validation system as a quality incentive for sport- and physical activity interventions

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There are many interventions aiming to encourage physical activity and sports among the Dutch population. The 'Effectief Actief' program has been set up in order to improve the quality of local sports programs, to stimulate use of existing evidence-based interventions and to provide inspiration to local professionals. The 'Effectief Actief' program consists mainly of a certification system and a database. Existing sport- and physical activity interventions are collected and described, using a structured format. The description forms contain information about, amongst others, the problem the intervention is aiming at, intervention goal, target group, intervention approach and a process evaluation. These forms are being evaluated and validated by a committee of external experts. The interventions are labeled 'well described', 'probably effective, based on literature' or 'proven effective', depending on the level of evidence. All intervention descriptions and the label they received are being shown in a database. The database is a source of information and inspiration for everybody who is interested in interventions, e.g. local policy makers and professionals.

Besides the certification system and database, the organizations, that 'own' the validated interventions, are stimulated to further improve its quality. Therefore extra training is organized in the field of marketing, monitoring and evaluation, business plan development, development of implementation strategies and others. Also implementation and communication is an integral part of the program in order to stimulate the local use of validated interventions.

Results so far show that intervention 'owners' are very proud of the label they received as it is considered as an award for their expertise and professionalism. Local sports programs receive funding easier when they contain validated interventions.

56 Sport and health for all - Physical activity and sedentary behavior: The Danish case

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Introduction: At all policy levels, physical activity is put forward as an important tool in advancing the ideal of health for all. Building on Danish trends in population levels of reported physical activity and sedentary behavior, this presentation discusses the need for an even stronger view on and active intervention in the social and built environments that influences individuals and populations ability and interest in taking up Health Enhancing Physical Activity (HEPA).

Methods: The presentation builds on a review of published research and routinely available data in order to provide an overview of the topic sport and health for all – as a political, societal and scientific goal. The setting is a particular European country, namely Denmark.

Results: From the review the presentation moves on to make the point that while we do know quite a lot about why physical activity is important for health and how much exercise people need to improve health there is a continued demand to expand the evidence-base on global knowledge on efficacy and contextual insight about, for instance, applicability and implementation issues in relation to interventions on physical activity.

Discussion: The presentation concludes with pointing to some of the main challenges in furthering the use of physical activity as a tool to promote health for all.

57 Baseline Health Promotion Status of GAA Sports Clubs in Ireland

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Introduction: Sports clubs have been identified as a new and important setting for health promotion (Kokko et al., 2011). In Ireland, the Gaelic Athletic Association (GAA) and Health Service Executive (HSE) are piloting a healthy club initiative across 18 clubs to harness and support the current efforts of GAA clubs in promoting the health of individuals and communities.

Methods: A Healthy Club Questionnaire was administered to all clubs at baseline (n=18) to profile current health promotion activity. This instrument included a validated health promotion sports club index (Kokko et al., 2009) and permitted an assessment of the current health promotion characteristics, general workings and composition of each club.

Results: A relatively even distribution of small (31.3%), medium (43.7%) and large (25%) clubs were recruited to the project. Over 80% of club members are players at juvenile and adult level. Clubs performed poorest in the policy domain of the health promotion index and highest in relation to their respect and participation oriented ideology. Ratings for the coaching environment were low particularly for the provision of healthy food alternatives and engagement with coaches and parents. Overall, clubs were classified as moderately health promoting for the practice, environment and juvenile environment elements of the index. Partnership was identified as a key component of health promotion, mostly manifested in school and general community links, but was not consistently or clearly managed at club level, particularly with internal partners.

Discussion: This assessment confirmed that clubs are engaging in efforts to promote health in the club and community. To extend and maximise the impact of this initiative, it is important that health promotion becomes embedded in the philosophy and agenda of the sports club, the role of partnership is clarified, and that the potential health promoting element to core functions of the club in relation to playing and coaching are realised.

This research is funded by the GAA and HSE. Kokko S., Kannas L., & Villberg J (2009). Health promotion profile of youth sports clubs in Finland: club officials and coaches perceptions. *Health Promotion International*, 24(1); 26-35.

58 The relative importance of process evaluation indicators for the implementation of Sports Club for Health (SCforH) programmes

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Introduction: In 2011, an expert panel developed guidelines for the implementation of Sports Club for Health (SCforH) programmes. The guidelines were designed to encourage sports clubs to focus more on health promotion and assist them to implement HEPA activities in their programmes. The guidelines provided 20 specific indicators that could be used to evaluate the quality of the implementation of SCforH programmes in sports clubs. The aim of this study was to evaluate the relative importance of the process evaluation indicators.

Methods: The importance of each indicator was independently assessed by 10 HEPA experts, partners in the SCforH 2009-2011 project, on an 11-point response scale (from 0 [not important at all] to 10 [extremely important]). The ratings of one expert significantly lowered the inter-rater reliability, and were, therefore, excluded from the final analysis.

Results: Cronbach's alpha coefficient (95% confidence interval) for the inter-rater reliability was 0.70 (0.45, 0.86). The highest ratings (mean±SD) were given to the following indicators: [i] 'Programme instructors are licensed to run HEPA programmes in accordance with existing regulations, and the club ensures their continuous vocational education and training' (8.50±1.03); [ii] 'The club provides instructors with written instructions for conducting particular HEPA programmes' (8.25±1.04); [iii] 'The club periodically conducts surveys about the clients' satisfaction with the club and HEPA programmes' (7.67±2.18); [iv] 'The groups in HEPA programmes are formed according to the clients' initial level of fitness' (7.44±1.13); and [v] 'The clients are offered written information on the health effects of particular HEPA programmes' (7.33±1.70).

Discussion: Our results showed high reliability of the expert assessment of specific process evaluation indicators for the implementation of SCforH programmes. Two most highly rated indicators were related to education and training of programme instructors. Hence, building in quality standards for HEPA programmes delivery

may be the most important indicator of a successful implementation of SCforH guidelines in sports clubs. The expert ratings of specific indicators determined in this study can be used by HEPA promoters or sports club managers to define their priorities in the implementation of SCforH programmes, and to increase the validity of external or self-evaluation while monitoring the progress of the implementation.

Abstracts

Poster sessions

59 Primary Care Exercise Referral Schemes in Suffolk, England

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Physical inactivity is the 4th leading cause of global mortality. In England if everyone met current activity guidelines 37000 deaths a year could be prevented. Annual healthcare costs of inactivity in Suffolk with a population of 728000 have been estimated at more than £14m. Primary care is uniquely placed to promote physical activity. One available measure is Exercise Referral Schemes or referrals made for individual assessment and a tailored exercise programme by third party providers. There is a lack of robust evidence to support effectiveness of ERS. This study looks at ERS delivery in Suffolk.

This is an observational study. To be included ERSs should have operated in Suffolk, accepted referrals from primary care, and provided a period of tailored supervised exercise training. Data was collected by a standardised questionnaire aimed at identifying scheme characteristics, information about the clientele and costs over the past year.

9 schemes were identified with a total of 658 referrals over the past year. All had inclusion/exclusion criteria. The commonest referrals were obesity, musculoskeletal conditions, and diabetes with no numbers available. 8(88.8%) schemes had a 12 week and 1 a 10 week programme. All had individual gym sessions and 6(66.6%) offered opportunity to participate in group or water-based activities. 3(33.3%) received partial funding from local authority and others offered a discounted service to self-pay referrals. The average cost per session to individuals was £2.95 (£7.57 for general facility users). In 5 schemes with available data 51.2% of referrals completed the programme. The recurring themes for drop out were aggravating health, financial issues, and loss of motivation with no numbers available. 4 schemes had preferential arrangements for continued use of facilities. Except one that reported a 42% one-year retention rate there was no data available on longer term activity or formal referrer feedbacks.

Despite enthusiastic anecdotal feedback from providers and patients about the benefits of ERS, there is not sufficient evidence to support these claims. This study provides valuable information on the current state of ERS delivery and further supports the NICE recommendation for more evaluation. Whilst certain schemes may be more successful than others, unless standard data sets with clear outcome measures are introduced it will be very difficult to establish the facts and design an economically efficient model which effectively delivers the intended health benefits.

Acknowledgement: Suffolk Most Active County Advisory Group

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60 Intervention for physical activity promotion in primary health care settings and its relationship with perception of environment in Brazilian adults

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Introduction: Physical activity interventions in primary health care settings can influence the perception of the environment for physical activity, but there are few studies on this theme in developing countries. The objective of this study was to evaluate changes in the perception of the environment for physical activity in adults that received an intervention for physical activity promotion during home visits for community health workers.

Methods: This study was denominated "Active Environment" and is a non-randomized controlled trial for physical activity promotion in primary health care settings in Sao Paulo city, Brazil. We conducted an intervention with community health workers. These health professionals were trained for physical activity promotion in home visits and visited adults which were users of the health

system after training. We had a control group of adults without any intervention. In total we had n=90 people in the intervention group and n=86 people in the control group. The intervention was composed of at least one home visit for physical activity promotion during six months. The perception of the environment for physical activity was evaluated by a scale with 38 questions and seven scores (1. Facilities; 2. Traffic safety; 3. General safety; 4. Social support; 5. General pollution; 6. Sidewalks; 7. Green areas). These variables were evaluated before and after six months of intervention. Statistical analysis was done by comparing means of scores intra-group and inter-groups.

Results: In the first evaluation, the groups were different regarding facilities ($p=0.001$) and general safety scores ($p=0.007$), with the intervention group having higher scores. After six months of intervention, the results were maintained for facilities and safety scores, but the intervention group had higher scores for sidewalks in comparison with controls. The intra-group analysis showed that the intervention group increased their sidewalks score ($p=0.003$) and decreased their facilities scores ($p=0.003$), but the control group increased their pollution score ($p=0.001$).

Discussion: The adults which received an intervention for physical activity promotion changed their sidewalk score, and scores for facilities and general safety were different between intervention and control group. The variables of perception of the environment for physical activity may be important for interventions for physical activity promotion in primary health care settings in developing countries.

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61 Implementation of health educational workshops in the field of physical activity in Slovenia

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Introduction: Operation of health promotion centers (HPC) and Health educational programs (HEP) are a part of primary health care in Slovenia. Participants of HEP are all interested individuals, patients with health risk and chronic patients from

the age of 35 to 70 years (1). In a report on the HPC organization we have covered three different workshops: Walk test, Physical activity and movement and healthy weight loss. The purpose of the review is to investigate the quality of the workshops in the field of physical activity and to find the reasons for the difficulties in the practical implementation of the recommendations.

Methods: The study included all 66 HPC. Heads of HPC were e-mailed with questionnaires. We tried to get the reasons for the problematic organization of work. For data analysis we used descriptive statistics.

Results: We received 52 completed questionnaires (79%). HEP are in 46% lead by physiotherapists (24 of 52 HPC) in 23% (12 of 52 HPC) are lead by physiotherapists with the help of other staff (nurses, physical education prof. and other). Sufficient education have done 40% of staff, others are not sufficient at all. 46% of staff managed their work in regular workdays, 31% work in overtime, and 23% work under sub-contract. In all HPC workshops are carried out in the appropriate places. The workshop program of physical activity and movement is appropriate in 34 (65%) and partially appropriate in 11 HPC (21%). The healthy weight loss workshop is properly implemented in the 35 (67%), partially implemented in 12 (23%) and inadequate in 1 HPC. Others didn't comment on the workshop program. When asked about evaluating programs 36 HPC (69%) responded that the program is evaluated (50% by CINDI questionnaires, 27% with their own questionnaires and 23% with the combination of the two).

Discussion: The reasons for inadequacy of workshops in HPC are different. The heads of HPC stated that physiotherapists were not interested, therefore they hire outside staff. The reason for lacking interest of physiotherapists in health promotion can also be that students of physiotherapy are not encouraged to invest in health counseling. Another reason could be the work times, as workshops take place mainly in the afternoon. Due to limited financial resources heads of HPC do not employ physiotherapists who would be only responsible for conducting prevention programs in HPC. For comparisons between HCPs, a single evaluation questionnaire is needed.

1. CINDI Slovenija. Ciljna populacija »Programa temeljnega izobraževanja s področja promocije zdravja in preprečevanja kroničnih nenalezljivih bolezni (KNB) v osnovnem zdravstvenem varstvu/družinski medicini«. Access on: http://cindi-slovenija.net/images/stories/cindi/strokovna_javnost/izobrazevanja_cindi_ciljna_populacija.pdf

62 The physiotherapy and physical activity components within the antenatal classes in Slovenia

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Introduction: In Slovenia, all pregnant women as well as future fathers are provided with the opportunity to participate in the antenatal classes, which address pregnancy, childbirth, infant care, nutrition and breastfeeding; even physiotherapists teach in some. The purpose of the study was to determine if and which components of physiotherapy are included in the antenatal classes in Slovenia, how much time is dedicated to physiotherapy contents, and which physical activity recommendations during pregnancy are followed.

Methods: The questionnaire was distributed to 59 antenatal classes. The survey, consisting of 28 questions, was completed by professionals responsible for the physiotherapy part of the programme or the part associated with physical activity in antenatal class. Descriptive statistical methods were used for data analysis.

Results: 31 (52.5%) questionnaires were entered in the analysis. 24 (77,7%) respondents have a higher or a bachelor degree in physiotherapy. 9 (29.0%) devote two hours to physiotherapy components or physical activity within the antenatal education programme. 8 (25.8%) stated that physiotherapy contents are not included in the programme. Physiotherapy components most frequently stated include pelvic floor muscle training (26 respondents, 92.9%) and therapeutic exercises for lumbopelvic stabilization, and respiratory and relaxation therapeutic exercises (23 respondents, 82.1%). Other physiotherapy components refer to correct body mechanics, theoretical foundations of physical activity during pregnancy, practical physical activity during pregnancy, treatment of healthy pregnant women exclusively, treatment of healthy pregnant women and those with different pathologies. 3 (10.7%) include contents dealing with different types of pathologies in pregnancy. 17 (54.8%) stated that they do not have organized exercise classes in pregnancy. 16 (51.6%) are familiar with the current professional recommendations for physical activity in pregnancy. The same number of the respondents has not exercised choice for any of the current professional recommendations.

Discussion: The majority of Slovenian antenatal classes encompass physiotherapy components taught by qualified physiotherapists. Only few physiotherapists treat pregnant women with

different pathologies. Even though half of the respondents claim to be cognisant of the current professional physical activity recommendations during pregnancy, only a few follow the proposed recommendations.

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63 FIT Pharmacies

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Objectives: his intervention is aimed at increasing moderate physical activity by supporting elderly people to take up Nordic Walking in a group. It aims to encourage elderly people to reach the Austrian recommendation for health enhancing physical activities and building social capital. It also encourages participants to pass on their knowledge to friends, family members, and neighbours (Fitness, Fun and Friends).

Intervention description: The intervention is an easily-accessed programme for everybody who has previously hardly engaged in physical activity. Once a week, interested men and women will come together for an hour of Nordic Walking with professional guidance from exercise trainers. The group element of the intervention is strongly motivating. Participants can take part in training sessions and workshops, in which they learn to lead the Nordic Walking session without a professional trainer and to support the walking group for the whole year. The Pharmacy supports the group with drinks and small presents the whole year long. The intervention belongs to the Viennese Health Promotion organisation (Wiener Gesundheitsförderung, WiG) and is funded by the European CHANCE project (development), WiG and pharmacies (implementation and continuation).

Intervention development: The intervention was initiated in 2009 by WiG and developed in the same year as part of the European CHANCE project. The intervention is still on-going. Evaluation and continuation is a responsibility of the WiG. No needs assessment has been performed.

Intervention components: There are Nordic Walking group sessions available to participants, there is a low fee (1€) and activity level is easy so that everyone can join. There is Pharmacy Support,

it is possible to obtain a Walking pass on which participants can collect stamps as an incentive to carry on. There are trainings and workshops in which participants learn to lead the Nordic Walking sessions without a professional trainer. They learn how to teach Nordic walking and how to support the group in a healthy way. In addition to starting events in autumn and spring, the participants can be part of the largest women's run in continental Europe (Österreichischer Frauenlauf). There is also a forum for discussion (Austauschforum). This forum offers the possibility for the participants to exchange experiences and ideas and to talk to the project manager. Additional first aid courses are organized.

64 Commitment of primary care physicians to transfer sedentary adults to sport-club based exercise programmes. Results from the "SVA-Bewegt" programme in Vienna

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Introduction: Most patients see their primary care physicians (PCP) regularly due to different reasons and regard them as authorities concerning health issues. Therefore, primary care is considered an adequate setting for life style interventions like promoting regular exercise. "SVA-Bewegt" is a standardised exercise programme that is provided by an Austrian health insurance agency (SVA) in cooperation with regional sports clubs. The target group are sedentary adults, with or without risk-factors or chronic diseases. The fee for "SVA-Bewegt" courses is €350 per person/year and is covered by the participants themselves. 42 courses are offered in 7 Viennese's districts. Courses are performed twice a week. Each single session last for 90 minutes and consists of endurance-, strength- and flexibility training. PCPs are encouraged to offer "SVA-Bewegt" to their patients, and in case of the patients' interest, contact details are submitted to the sports clubs. The PCPs do not get financial compensation for informing their patients. Since the commitment of the PCPs is crucial for the success of such a programme, it was the aim of this study to

evaluate the commitment of PCPs in "SVA-Bewegt".

Methods: All Viennese physicians (n=1253) who had a contract with the health insurance to perform health examinations were informed by mail about "SVA-Bewegt". Those PCPs were mainly general physicians, but also a few specialists for internal medicine. This first contact was followed by, a standardised phone call to 822 PCPs with an office in a district, in which "SVA-Bewegt" was provided, with the aim to arrange a personal visit at the doctor's office by the "SVA-Bewegt" staff. There, the commitment for cooperation of the PCP was evaluated.

Result: Of the 822 PCPs contacted by phone, 350 could be visited in person. 31% (110 PCP) of those declined cooperation, 29% (101) expressed moderate interest, and 40% (139) were highly interested to cooperate. During the following 20 months, 42 PCP transferred a total of 262 patients to "SVA-Bewegt". These patients were mainly encouraged by the initially highly interested PCPs (88%). Thirteen PCPs transferred exactly 1 person, twenty six PCPs 2-15 persons, and three PCPs transferred 16 persons or more.

Discussion: The unexpected high number of initially interested PCPs did not deliver an adequate amount of participants. Further strategies to implement exercise programmes in primary health care are needed.

65 Participation of primary care patients in a standardised exercise programme in Vienna

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Introduction: SVA, a health insurance provider covering approximately 10% of all Austrian citizens, offers in cooperation with regional sports clubs a standardised exercise programme for sedentary adults: "SVA-Bewegt". In this programme, courses are provided through regional sport-clubs and performed twice a week. Each single session lasts for 90 minutes and consists of endurance-, strength- and flexibility training. In the offices of primary care physicians potential participants are informed about the programmes individually. If people are interested to participate, names and contact details are passed to the sports clubs, who organise the lessons. Since the expression of

interest in lifestyle optimisation during physician consultation does not necessarily lead to consecutive concrete behavior changes, it was the aim of this study to assess the actual readiness to participate in the exercise programme.

Methods: All subjects who expressed some interest in this program during doctor consultation and who's contact details were transformed to the sports club, were contacted via telephone. During these standardised phone calls people were informed in detail about the exercise programme, requirements, place where the exercise programme took place, time and member-ship fees. The reaction of the subjects were categorised in four categories:

enrollment in the programme (person was assigned to a regional sport club and the first exercise lesson was arranged)

uncertain participation (person was interested but due to personal conditions or health related problems participation was not possible at the moment)

no interest in participation

person cannot be included in the programme because they were not living in Vienna (in this case the subjects were referred to offers in other regions)

Results: A total of 137 subjects were included in the analysis and the sports club received their contact details. Of these, 16 subjects could not be reached by telephone. From the remaining 121 subjects, 51% were enrolled in regional sports clubs. 21% expressed interest, but not at the moment, and another 21% were not interested in the programme any more. 7% were transferred to sports clubs in other regions.

Discussion: More than 50% of subjects that initially expressed interest to participate in an exercise programme actually started the programme "SVA-Bewegt". In further research, long term participation rates will be evaluated.

66 HEPA Survey of Physical Activity in European Medical Curriculums

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The evidence for the impacts of physical activity on health are well documented and the arguments well rehearsed, yet there is still a widespread and persistent global problem of inactivity and associated chronic disease. Health professionals generally and doctors in particular are regularly identified as key sources of expert advice to patients on physical activity and health. However,

experience suggests that very few doctors including general practitioners provide such advice. A number of reasons have been cited in the literature including insufficient time, but lack of knowledge is also regularly cited. Recent studies in the UK suggest that there is little formal input to medical training on the relationship between physical activity and health and there was anecdotal evidence that this was a similar problem in other countries. To test this hypothesis, HEPA Europe initiated an online survey of European Medical Schools that initially elicited 35 responses. To further bolster the response WHO Europe have used their own networks to propagate the survey more widely. The results from this have been collated and analysed, supporting the anecdotal evidence and providing clearer insights into the limitations of physical activity education in medicine and the relationships with a variety of medical specialties.

67 Motivate2Move

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Objective: To improve the education of health professionals about the benefits of exercise.

Background: Non-communicable diseases (NCD) are the leading cause of death in all regions of the world except Africa.¹ The four main types of NCD's are - cardiovascular diseases, cancers, chronic respiratory diseases and diabetes. ¹ NCD's share four behavioural risk factors – tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol.¹

Relevance: How well equipped is the medical profession to promote physical activity? Currently there appears to be a gap in the education across the health sector.

At undergraduate level in 2011, only about 13% of 129 US medical schools provided any instruction on the benefits of PA.² In the UK in 2012 only 56% of medical schools made their medical students aware of the national PA guidelines.³ In post graduate practice there is a disparity amongst doctors agreeing about the importance of exercise, and the reality of delivering advice to the patient. One in 4 patients said they would be more active if they were advised by a GP or nurse, whilst 54% of patients said their GP gives no advice on either diet or exercise.

Douglas⁴ cited *lack of time and resources* as barriers for general practitioners to routinely advise about physical activity and a more recent review of primary care perceptions of physical

activity counselling, cited *lack of training and lack of knowledge as a primary barrier to counselling efforts*.

Clearly there are gaps in medical education in the UK at both under graduate and post graduate levels. The website Motivate2Move.co.uk has been developed as a comprehensive educational package designed to tackle the gap and barriers identified above. It aims to increase the health professional's ability to incorporate exercise advice routinely within patient consultations. With downloadable resources for both professionals and patients, short instructional videos and case studies, the website covers all aspects of exercise and health from general recommendations to disease specific information. It can be used at any level of medical education.

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68 An examination of factors associated with adherence to a community based chronic illness rehabilitation programme

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Introduction: Multi-morbidity and chronic conditions pose a large threat to population health with implications including decreased quality of life, decreased physical functioning, premature mortality, increased healthcare utilization and polypharmacy, and thereby increased costs. With Ireland's growing and aging population it can be expected that the burden of chronic conditions rise by 40% in 2020 [1]. Physical activity is considered to be a principal intervention to use in primary and secondary prevention of chronic diseases. MedEx is a unique and new model of community-based chronic illness rehabilitation that seeks to decrease the burden of chronic conditions using structured exercise. Developed in 2006, MedEx is a partnership between Dublin City University and the health care setting. It caters for 500 patient visits per week. The aim of this study is to test a hypothesis that individuals who perceive high

levels of social support and efficacy (both self efficacy and proxy efficacy) will attend MedEx more frequently and consequently be more physically active than those reporting low or decreasing levels of efficacy and social support.

Methods: A literature informed questionnaire was developed to collect information on primary outcome measures, namely social support (13 items), self efficacy for task and barriers (13 items), self efficacy for recovery (3 items), and proxy efficacy, the confidence an individual has in a proxy agency to assist reach goals (8 items). Additionally, a number of secondary measures including referral information, presence of chronic conditions, wellness (SF12), depression (PHQ8), and health service usage are also assessed. To assess physical activity objectively 7-day accelerometer assessments were performed at baseline, six and twelve months.

Results: To date, a preliminary analysis of attendance figures highlighted a 50% dropout rate within the first 6 months of initiating the MedEx programme, which is in accordance with Dishman's findings [2]. However, post the 6-month dropout the adherence is high. Data on participant characteristics, presence of chronic conditions, psychosocial determinants and patterns of adherence to MedEx will be presented.

Conclusion: Preliminary evidence suggests that the first 6 months are crucial in terms of intervention to prevent dropout from MedEx. Research into the factors that help MedEx participants adhere to the programme long-term is needed.

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69 Short and long term effects of physical activity coaching on health in diabetic persons

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Introduction: Being physically active on a regular base makes part of a healthy lifestyle in diabetic persons. However, many patients are not meeting the current physical activity (PA) recommendation of 150 minutes of moderate to vigorous PA per

week. Therefore, there is an urgent need for accessible PA programs. A PA coach can set up an individualized PA plan. Consistent with the Self Determination Theory, PA coaching can be offered in a need-supportive manner fulfilling the basic needs of autonomy, competence and relatedness in order to increase autonomous motivation towards PA and in turn PA behaviour. In this project, the health effects of need-supportive PA coaching in diabetics will be investigated. This project is in collaboration with a health insurance company in Flanders (Belgium).

Methods: This randomized controlled pilot trial consists of an intervention group (25 persons) and a control group (waiting group of 25 persons). First of all, all subjects will be informed about the project through information sessions. Subjects can participate when they suffer from diabetes type 2, with minimal 3 months of intake of oral antidiabetics, and are older than 18 years of age. Before starting the program, subjects will be screened by their GP. Measurements will take place before the start of the intervention, after 6 weeks (end intervention), after 6 and after 12 months (follow-up). The control group will start with the intervention at 6 months. Different health parameters will be measured: physical fitness (6 minutes walk-test), level of PA (SenseWear Pro Armband), psychological parameters (questionnaires measuring self-efficacy, motivation, social support and wellbeing), cholesterol and HbA_{1c} (blood sample), weight and blood pressure. The intervention consists of an intake (set up PA plan), weekly group sessions ((Nordic) walking or fitness) during 5 weeks, and a follow-up (refining PA plan). The results of the tests after 6 and 12 months will give more information about the long term effectiveness of the PA coaching.

Results: Results will be expected by September 2015.

70 Effect of physical activity on metabolic control, quality of life and aerobic endurance in youths with type 1 diabetes

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Introduction: Type 1 diabetes (T1D) is the most common chronic disease in childhood. Since there is no cure or prevention for the disease, life-long insulin replacement is required. The three main pillars of the T1D management for achieving good metabolic control are individualized insulin therapy, adjusted diet and regular exercise. Our study aimed to find any differences between metabolic control (expressed by HbA_{1c}), quality of life and aerobic endurance (expressed by VO_{2max}) in youths with T1D being physically active and inactive.

Methods: One hundred and six youths with T1D were investigated (53 boys and 53 girls aged 8-18 years). Mean HbA_{1c} was 69.9 ±11.77 mmol/mol and mean diabetes duration was 5.15 ±3.24 years. Youths, reporting at least 60 minutes moderate-to-vigorous exercise three times a week in addition to the regular physical education classes, were considered physically active. Quality of life (QoL) was measured with the Pediatric Quality of Life Inventory™ 3.0 Diabetes Module. Aerobic endurance was evaluated using 20 meter shuttle run test (Léger et al., 1988). Mean, standard deviation (±), F-probe, t-test and chi-square test were employed using SPSS 19.0 statistical software.

Results: There were 23 active (AB) and 30 inactive boys (IB) and 13 active (AG) and 40 inactive girls (IG), respectively. Boys were more active than girls ($\chi^2=0.032$). The investigated groups did not differ significantly in age and diabetes duration. No significant differences were observed between groups in QoL. Both the VO_{2max} (in ml/min/kg) (AB: 44.07 ±4.33 vs. IB: 39.85 ±5.55; p=.001, AG: 42.88 ± 5.42 vs. IG: 36.16 ±5.67; p<.001) and HbA_{1c} (in mmol/mol) (AB: 61.7 ±8.15 vs. IB: 72.7 ±14.45, p=.015; AG: 61.7 ±8.15 vs. IG: 74.9 ±11.32, p<.001) proved to be favourable in active groups. We found statistically significant correlation between HbA_{1c} and VO_{2max} ($r=-.343$; p<.001) and QoL and VO_{2max} ($r=.208$; p=.032). There was not significant correlation between HbA_{1c} and QoL. The effect of physical activity on HbA_{1c} ($F_{(1,104)}=17.016$, p<.001) and on VO_{2max} ($F_{(1,104)}=37.774$, p<.001) was statistically significant, but not on QoL.

Discussion: Physically active lifestyle can improve quality of metabolic control. Good aerobic endurance has benefits for both metabolic control and QoL. Implementation of physically active lifestyle including aerobic exercise is essential in complex management of pediatric type 1 diabetes.

The study was granted by the Hungarian Diabetes Association.

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73 Multidisciplinary rehabilitation with behavioural exercise therapy for adults with chronic non-specific low back pain: Short-term results from a randomised controlled trial

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Introduction: Short-term effectiveness of a behavioural medical rehabilitation (BMR) with standard exercise therapy (SET) in the management of chronic non-specific low back pain has been proven (Mangels et al. 2009). But, the impact of a behavioural exercise therapy (BET) to improve the long-term effectiveness of BMR is unclear. The major aim was to compare the effectiveness of BMR and SET with BMR and BET in adults with chronic non-specific low back pain.

Methods: A prospective randomised controlled trial in two rehabilitation centres with four measurement time points (baseline, 3 weeks, 6 and 12 months) was performed. 351 participants aged 18-65 with chronic non-specific low back pain were randomly assigned to the control group BMR with SET (n=175) or the intervention group BMR with BET (n=176). Both exercise programs had a mean duration of 26 hours in three weeks. They were delivered by a limited number of therapists in fixed groups who were masked regarding study group. The main differences of BET were its detailed manualisation with a theory-based combination of exercise, education and behavioural elements, as well as consideration of participant's individual preferences and previous

experiences with exercise. Primary outcome was functional ability assessed with the Hanover Functional Ability Questionnaire (FFbH-R) at the end of rehabilitation, as well as after 6 and 12 months. The trial registration number is NCT01666639.

Results: In total 329 participants received BMR with SET (n=164) or BMR with BET (n=165). The mean age was 51 years (SD=7.4); 79% were woman. From baseline to the end of rehabilitation, there were significant small within-group mean changes in the FFbH-R score in the control group (5.78; SES=0.2, KG, p<0.001), as well as in the intervention group (6.23; SES=0.3, p<0.001). The adjusted between-group difference in the FFbH-R score at the end of rehabilitation was 0.45 (95% CI -2.37 to 3.28) (p=0.75).

Discussion: Participants in both study groups improved in the functional ability score at the end of rehabilitation. We conclude that both treatment conditions are equally effective at short-term for improving function in adults with chronic non-specific low back pain. A final evaluation of the long-term effectiveness of BMR with BET will be made based on the follow-up data.

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74 Domain-specific physical activity and factors associated with leisure time activity in chronic low back pain patients

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Introduction: Physical activity (PA) is recognized to be essential in the management of low back pain. However, differentiation of workplace and leisure time PA as well as intensity of PA seem to be relevant in the context of assessing health enhancing effects of PA in chronic low back pain (CLBP) (Schneider 2007, Jacob 2004). The aim of the study was to examine domain and intensity specific PA in CLBP patients (leisure time; workplace; transport). Furthermore, the study

attempts to identify influencing factors associated with leisure time PA in CLBP patients.

Methods: The study was conducted as a cross-sectional study in a single inpatient rehabilitation center. The sample included 412 CLBP patients (men: $n = 286$). Domain specific PA was operationalised by the Global Physical Activity Questionnaire (Armstrong & Bull 2006). Outlier analysis and plausibility checks were performed. Additionally, information on socio-demographic and indication specific aspects was collected. Data were analysed descriptively to estimate the prevalence of PA. Multivariate logistic regression was applied to evaluate associations between socio-demographic and indication-specific influencing factors and leisure time PA. Subjects with leisure time activity ≥ 600 MET-min/week were classified as active.

Results: Although average vigorous (509 min/week; SD = 433; median = 0) as well as moderate workplace PA (384 min/week; SD = 689; median = 0) was much higher than leisure time PA (vigorous: 71 min/week; SD = 174; median = 0; moderate: 79 min/week; SD = 228; median = 0), 45 % of the subjects did not show vigorous and/or moderate workplace PA. Even 53 % did not show any leisure time PA. Mean transport PA was 189 min/week (SD = 426; median = 0). 139 subjects were classified as active. Multivariate analysis confirmed no significant associations of independent variables in the chosen model (sex, education, BMI, age, locus of control, workplace PA, duration of pain, employment risks).

Discussion: According to the low level of leisure time PA, inpatient rehabilitation may be a promising approach to promote health enhancing PA. The characteristics of the sample, i.e., heavily impaired health status and partly high workplace PA, have to be necessarily regarded in target group specific interventions for health enhancing PA promotion. In this context, further research also has to be performed in identifying predictors for being active in leisure time.

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75 A multilevel approach promoting physical activity among chronic low back pain patients: participation and acceptance

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Introduction: Physical activity (PA) is recognized to be essential in the management of chronic low back pain (CLBP). In consequence, leading patients to an active lifestyle is a superior aim of exercise therapy in rehabilitation (Sudeck & Pfeifer 2013; van Tulder et al. 2006). Within the scope of the study, an intervention was developed, aiming at coaching CLBP patients on health-enhancing PA. The intervention comprised different approaches: face-to-face, telephone and web 2.0. Aim of the present evaluation was to examine participation and acceptance of the intervention.

Methods: The sample included CLBP patients in an inpatient medical rehabilitation centre. Participation in the intervention was on a voluntary basis. In the first step, participants and non-participants were compared. In the second step, acceptance of the different approaches (face-to-face, telephone, web 2.0) was evaluated by a questionnaire six months after inpatient rehabilitation. At this point of time, results of participation can be presented as well as an interim analysis of acceptance.

Results: 412 patients (44%) participated in the intervention. Compared to non-participants, there were no significant differences regarding sex ($p = .18$), but regarding age ($p = .04$). 80,9% of the participants were overweight or obese. 85,8% had been suffering from CLBP more than one year. Acceptance of the face-to-face intervention showed that 50,6% of the patients agreed completely to *sympathetic behaviour of the coach* and 56% to *adequate amount of information*. 28,2% agreed to *everyday relevance of information* and 37,2% to *comprehensibility*. Telephone aftercare was evaluated “good” or “very good” by 23% of the participants. 21% of the participants answered that they benefited partly and 9% that telephone aftercare was very helpful to plan and conduct PA. Web-based aftercare was used by 35% of the subjects and considered helpful by 8%.

Discussion: Participation of 44% in a voluntary based intervention can be interpreted as an indication of interest of CLBP patients in health-enhancing PA. Characteristics of participants show that a relevant target group for promoting health-enhancing PA was reached and inpatient rehabilitation may be a promising approach. As acceptance of telephone and web 2.0 aftercare are

considered as helpful only by a minority of the patients, further research has to be performed in identifying target group specific approaches supporting sustainability of PA promotion.

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76 What Are Patients Told? Are Their Leisure Activity Expectations After Hip/Knee Arthroplasty Appropriate?

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Introduction: Half of patients (pts) after total hip/knee arthroplasty (THA/TKA) meet physical activity guidelines (≥ 150 mins of moderate-intensity activity/week, ≥ 10 mins/time).^{1,2} While studies report the types of leisure activities (LA) that pts should engage in after THA/TKA, none, to our knowledge, explored what surgeons tell pts, or if pts expect to engage in the proper frequency, intensity, and duration of LA. This exploratory study interviewed surgeons and pts, and results were used to design/test an intervention to help more pts meet activity guidelines after surgery.

Methods: Orthopaedic surgeons (≥ 5 yrs experience with THA/TKA) were purposively sampled from committee rosters of their professional association. Consecutive pts, aged ≥ 45 yrs, and scheduled for THA/TKA due to arthritis were included. All completed a telephone interview. Surgeons described their practice, recommendations they give pts about LA, and the evidence supporting the recommendations. The Historical Leisure Activity Questionnaire provided the type, frequency, intensity, and duration of patients' past-month and expected LA at 3 and 6 mos after surgery.³ Descriptive analyses were performed.

Results: Five of 11 surgeons participated (white males, aged 41-66 yrs). Four (80%) surgeons discussed LA expectations with pts. Most agreed on types of LA that pts should engage in. None discussed the activity guidelines or recommended frequency, intensity, and duration of LA with pts. Recommendations were based on experience,

anecdotal evidence, and published surveys. Nine of 44 (20%) pts participated (67% female, white, aged 48-66 yrs). Activity type was appropriate except in 5 (56%) pts who expected to begin new LA when previous experience was recommended.⁴ Pts expected to engage in 90 and 388 median mins of at least moderate LA 3 and 6 mos after surgery, respectively. Expected frequency and duration of LA ranged from once a week to daily, and from 10 to 480 mins, respectively. No pts expected to engage in LA for < 10 mins. Only 44% expected to meet guidelines at 3 mos; 89% expected to meet them at 6 mos.

Discussion: Surgeons need to be educated about the guidelines and importance of discussing all components of LA with pts. Pts expected to increase LA after surgery, but require education on LA selection and increasing LA mins to meet guidelines. Assisting pts with setting appropriate LA expectations could potentially improve the health activity levels of this population.

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77 Georgian drug addicts' perceptions of physical activity and substance use

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Introduction: Drug addiction is a chronic relapsing disorder that is one of the significant public health and social problems in Georgia and in the world. Young people use substances more than before and from a much earlier age on, putting their health at risk. The purpose of this qualitative study was to explore and understand the drug addicts' common experiences, in order to identify how physical activity (among other factors) supports the prevention or cessation of substance use among Georgian adults.

Methods: The methodology of this study was a qualitative inquiry. 20 participants in two groups (first group - 5 men and 5 women - who were in

remission more than 3 months, and second group - 5 men and 5 women - from Methadone Maintenance Therapy (MMT) who have experienced episodes of substance use and remission periods and know best the supportive factors against relapse, were selected through purposeful and snowball samplings and interviewed in depth, one-to-one with the researcher. All participants were aged 18 years and older. The semi-structured interview protocol with main questions and possible subquestions was guiding the interviews.

Results: The findings showed that the internal resources, such as willpower and commitment to be more physically active against the use of substances was one of the most important factors in the decision-making process for participants from the first group and appeared to be one of the strong relapse prevention factor helping to maintain remission. Participants from the second group had more claims to external factors. In their perceptions they need more care and support from outside and free of charge gyms to be more physically active. Moreover, the lack of a favourable physically active environment and rehabilitation centres for addicted people emerged from both groups.

Discussion: Physical activity has beneficial effects for the prevention and treatment of different chronic diseases, and evidence indicates that this assertion is probably true for drug addiction. The study has clearly shown the lack of favourable environment, gyms and rehabilitation centres for drug addicts, where people can make their healthy choice between physical activity and use of substances.

Appreciation is expressed to Professor Levan Baramidze, head of Tbilisi State Medical University, Health Policy, Economics and Management Department, mob.: +995 595 901 901; email: levan23@hotmail.com and to Prof Gela Lezhava, director of LEPL Rehabilitation Center for Drug Addict (Ministry of Labor, Health and Social Affairs of Georgia). The research was supported by Rehabilitation Center for Drug Addicts and Mental Health and Addiction Prevention Center.

79 The Inter-ministerial Public Health Plan (PINSAP): from inter-ministerial collaboration to 'Health in all Policies'

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Introduction: It is well known that a person's health depends on many factors, most of which are unrelated to the health system. 'Health in All Policies' is a systematic approach based in the fact that decisions made in any sector of politics, government and society in general, have an impact on health and health systems. This approach aims to prevent any possible harmful effects and promote beneficial synergies, both to improve population's health and to achieve equity and sustainability in healthcare systems. In Catalonia there are a number of experiences of inter-ministerial/inter-sector collaboration that represent benefits on specific outcomes for the ministries involved and also in health benefits. The Inter-ministerial Public Health Plan (PINSAP), developed in line with Health in All Policies and the ecological model of health determinants, should allow the rationalization of previous initiatives, and the coordination and capitalization of health contents of governmental action, with transparency/visualization of results.

Results: PINSAP has been designed by an Inter-ministerial Commission. The final product prioritizes and collects a series of inter-sector and inter-ministerial initiatives that act upon key health determinants and includes (1) defined objectives that can be assessed, (2) a set of concise indicators which allow to render an account / and transparency of results. Actions agreed upon are classified in two core areas: (1) increase the Catalan population's years of good health ; (2) incorporate the health vision in the design and assessment of public policies. Main physical activity interventions to be developed and implemented during 2014-2015 are included in core area 1:

Promote active mobility: walking (pavements, school paths); biking. Integrate the concepts of health and safety into mobility plans and design. Improve employed population's health through the creation of a health promotion corporate brand and its consideration in public sector procurement. Improve conditions that promote health in projects to restore buildings and in new buildings. Opening school playgrounds to the community (promoting

local education plans). Encourage the practice of sport to promote health in adolescents at risk.

Conclusions: PINSAP combines contributions from all Government ministries, and also involves local authorities and all sectors of society. PINSAP proposes interventions over health determinants situated outside and inside the health system.

80 Level of physical activity and other health-related dimensions in the Catalan population

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Introduction: The aim of the present study is to investigate the association between the level of physical activity and some health-related parameters in the Catalan population.

Methods: Subjects were 4,830 (2,402 women) in the Catalan Health Survey 2012 (*). We present descriptive results of the survey. In the secondary data analysis we will study the associations between the level of physical activity and other health-related dimensions; BMI, age, sex, level of studies, preventive measures (flu immunization, blood pressure measurement, cholesterol measurement), self-perceived health, other health-related behaviors (hours of sleep, daily portions of fruit and vegetables, smoking status, alcohol consumption), using multiple regression analysis.

Results: Descriptive statistics show that the level of physical activity of 70,5% among the population (72,1% of men and 68,8% of women) is classified as healthy; 28,5% of people older than 15 yoa (34,2% of men and 22,9% of women) smoke. 3,9% of those aged 15 or over (6,0% of men and 1,7% of women) reports at-risk alcohol drinking; 11,8% of the general population (10,1% of men and 13,5% of women) consumes 5 or more portions of fruit or vegetables daily. 52,6% and 60,0% of those aged 15 yoa or more check their blood pressure and cholesterol level periodically. 82,8% of the general population has good self-perceived health. 35,2% are overweight and 13,8% are obese. 37,2% of the general population suffer from a chronic condition or disease. The bivariate analysis shows significant differences between self-perceived health status, sex and some other health related parameters (BMI, daily consumption of fruits and vegetables, or alcohol consumption) by level of physical activity.

Conclusions: Self-perceived health status of the Catalan population is good. Prevalence of health-

related parameters in this population is diverse. To complement the results obtained by the bivariate analysis, the results of the analytical cross-sectional study will be presented.

(*) Catalan Health Survey

http://www20.gencat.cat/docs/canalsalut/Minisite/ObservatoriSalut/osscc_Dades_estadistiques/Estat_salut_estils_vida/Informacio_general_enquestes_salut/Enquestes_salut/Fitxers_estatics/Enquesta_salut_2012_edicio_mai_g.pdf

81 Physical activity promotion in vulnerable groups in Bosnia and Herzegovina

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Bosnia and Herzegovina is nowadays paying great attention to physical activity promotion in people with disabilities, youth, elderly and socially disadvantaged groups. In accordance with our current mental health strategy, physical activity promotion in all these population groups is a priority. Apart from physiotherapists working each day with these vulnerable groups, sporting activities are more and more taking place each day regardless of age, helping people to build self-esteem and wellbeing. Physical activity is particularly important in reducing mental disorders as there are many people still influenced by the recent war. Our national men's sitting volleyball team made up of disabled athletes and war victims have won gold medals at international competitions for people with physical disabilities. As there are many mine victims in the country, the state opened many centers for physical rehabilitation for those people. Centers for healthy ageing recently established countrywide represent a very good example of physical activity promotion in elderly, as those have been equipped by sporting devices both indoors and outdoors. Sporting activities for elderly are being more common nowadays in Bosnia and Herzegovina. These centers and outdoor activities are fully supported by the Federal ministry of health. Physical activity promotion in youth in Bosnia and Herzegovina showed that those youth who participate in organized sports at school or in their communities are less likely to engage in risky behaviors, such as cigarette smoking and drug use, and their eating habits also get healthier. Our Federal ministry of health has supported this promotion through various campaigns and posters, linking physical activity promotion with healthy

eating. Both walking and cycling in our cities should be promoted more, as there are always youth and elderly willing to attend such activities, replacing car use with other modes of transport. Creating social and physical environments as well as values and lifestyles supportive of health-enhancing physical activity are essential for these groups and there has to be close collaboration among health, transport and environment sectors. Bosnia and Herzegovina have many sporting facilities, recreational centers and spas that could all serve the purposes of physical activity promotion for all the above mentioned groups.

82 Electrically assisted bicycle in 2014: what do we have to know ?

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Electrically assisted bicycles (EAB) are an emerging transportation modality, increasingly used in Switzerland (about 50 000 during 2013¹) and in the world² with different interesting characteristics. First it's ecological, without any CO₂ emission, poor consumption of energy, soundless and fighting against traffic jam. Secondly, human power is necessary to activate the electrical support and this effort represents a moderate intensity physical activity (> 3 MET – Metabolic equivalent task) until a vigorous one on hilly courses (> 6 MET), corresponding to the World Health Organization's recommendations concerning physical activity³. Then it's practical: three flexible levels of support (none, moderate or high) allow an easy adaptation to the urban or countryside road network. In Switzerland, two categories exist: one with a maximal power and speed respectively at 0.5 kW and 25 km/h, and one at 1 kW and 45 km/h, depending on the terrain and the fitness of the rider⁴. This is especially interesting in a hilly city like Lausanne where the traditional bicycle use is difficult. Finally, the main drawback is the cost (from 1000 CHF to more than 5000 CHF). Furthermore, recent studies indicate an increased risk of accidents in comparison with traditional bicycles²; so the EAB could be more dangerous and a period of adaptation with a responsible use is necessary.

In conclusion, EAB are an interesting transport modality with benefits for health through physical activity, but are potentially more dangerous than classical bicycles.

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http://www.velosuisse.ch/fr/statistiques_courant.html.

2) Yang J, Hu Y, Du W, Powis B, Ozanne-Smith J, Liao Y, Li N, Wu M. Unsafe riding practice among electric bikers in Suzhou, China: an observational study. *BMJ Open* 2014;4:e003902.

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83 Project "Hupfn.at - a face-to-face invitation on stair climbing in a shopping mall

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Introduction: Stair climbing provides an opportunity to increase the daily physical activity and to derive health benefits. The aim of the study was to examine the effects of a face-to-face invitation to use the stairs in a shopping mall.

Method: Observers recorded the number of people using the stairs and the escalator located next to each other before (3 days), during (16 days across 3 weeks) and after (2 days) the intervention from 15:00 PM to 16:45 PM. The intervention consisted of a man dressed as "superman" charmingly persuading people to use the stairs and a woman dressed as "devil" seducing people to use the escalator. Gender, age (<40 years vs. ≥40 years), up- and downwards movements, reaction to and opinions about the intervention of the stair and escalator users were recorded.

Results: All together 7334 stair and escalator use were observed, 47.4% from men. The rate of stair use increased from 16.9% at baseline to 31.9% (p<0,001) during the intervention. Stair users showed more often positive and less negative reactions and opinions, respectively to the intervention compared to people using the escalator. Six weeks after the intervention the rate of stair use at the same site declined to almost the baseline level, only the proportion of men ≥ 40 years walking downstairs remained high.

Discussion: Shoppers seem to be ready to immediately react to a short-term face-to-face physical activity intervention. This reaction can be interpreted as a positive attitude towards physical activity. The decline of stair use after the

intervention – which has been shown in many stair-studies – demonstrates that short-term interventions are a successful trigger but do not necessarily lead to sustained habits.

84 Quantitative Content Analysis of Recreational Walking Brochures: The Development and Testing of a Behavioural Theory Informed Coding Taxonomy

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Introduction: Behaviour change technique taxonomies and coding schemes have been used to evaluate the quality of information on health websites and in patient information leaflets (Abraham, Southby, Quandt, Krahé & van der Sluijs, 2007; Doshi, Patrick, Sallis & Calfas, 2003). However, the same rigour has not been applied in the analysis of information from non-health organisations who seek to promote physically active leisure.

Methods: We devised a hierarchical coding taxonomy to facilitate reliable quantitative content analysis of brochures that promote recreational walking. We used the theory of planned behaviour and a previous content analysis (Abraham et al, 2007) to generate theory-defined categories before adding data-driven categories through an iterative process. We collected 26 brochures from Devon, UK, using convenience sampling methods including searching relevant websites for electronic versions and visits to tourist sites (e.g. holiday parks).

Results: Inter-rater reliability testing revealed substantial agreement at the broadest level of the hierarchy and good agreement at the most specific level. We found that there was scarce normative information and a dearth of text promoting walking intentions or self-efficacy. However, by advertising specific walking routes, outcome expectancy strategies are utilised more frequently through referring to aspects of the outdoor environment as beneficial reasons to walk. Additionally, brochures were targeted at individuals who are already active rather than those who are yet to set intentions.

Discussion: Recreational walking leaflets lack theoretical content in a similar way to physical activity leaflets in the health sector (Gainforth, Barg, Latimer, Schmid, O'Malley & Salovey, 2011). This analysis was restricted to brochures in the English language from Devon and the methods may be prone to rater bias. Analysis of brochures from other countries with different landscapes and recreational opportunities may produce different results. Nevertheless, this is the first study of the presence of behavioural constructs in brochures from non-health organisations and the taxonomy could be applied in other health marketing contexts. Future research could investigate how individuals use recreational walking brochures. Researchers could also employ the present findings to create optimal, tailored recreational walking literature which may be useful to people contemplating taking up more walking.

85 Sport and health for all - Physical activity and sedentary behavior: The Danish case

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Introduction: At all policy levels, physical activity is put forward as an important tool in advancing the ideal of health for all. Building on Danish trends in population levels of reported physical activity and sedentary behavior, this presentation discusses the need for an even stronger view on and active intervention in the social and built environments that influences individuals and populations ability and interest in taking up Health Enhancing Physical Activity (HEPA).

Methods: The presentation builds on a review of published research and routinely available data in order to provide an overview of the topic sport and health for all – as a political, societal and scientific goal. The setting is a particular European country, namely Denmark.

Results: From the review the presentation moves on to make the point that while we do know quite a lot about why physical activity is important for health and how much exercise people need to improve health there is a continued demand to expand the evidence-base on global knowledge on efficacy and contextual insight about, for instance, applicability and implementation issues in relation to interventions on physical activity.

Discussion: The presentation concludes with pointing to some of the main challenges in furthering the use of physical activity as a tool to promote health for all.

86 Nordic Walking Campus

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Introduction: In the territory of Healthcare Unit ASL TO4 (520,000 inhabitants) physical inactivity is seen as an area of improvement: 40% of people do physical activity below the recommended levels and 29% are sedentary. Following the Gaining Health National Strategy the leadership of ASL TO4 established a multidisciplinary working group to promote physical activity. According to the principles of Toronto Charter this group launched in collaboration with Municipalities, Sport Promotion Organisations and Sports Clubs, several initiatives, such as for example the Walking Campus to practice Nordic walking.

Methods: The Sports Medicine Service, the City of Ivrea and the Sports Club Nordic Walking Andrate organized free Nordic walking lessons at the Polveriera Park one day every week. Nordic walking is recognized to be healthy, easy and safe. Starting from January 2013, for 2 years, every Friday afternoon the instructors of the Nordic Walking Andrate welcome interested people, record attendance, administer questionnaires, provide the sticks and impart lessons (Nordic walking course requires 3 lessons). Old and new participants are divided into groups according to their technical and physical level: among others, sedentary people, women undergoing surgery for breast cancer, multiple sclerosis, blind, nursing students and Rehabilitation Service operators. Nordic walking lessons have also been organized and deployed for the participants at the physical activity conference "Dalle parole alle azioni" (from words to actions).

Results: Since the beginning of the activity, up to May 2014, at the Walking Campus 86 Nordic walking sessions were carried out, which were attended by 218 people. With a total attendance of about 1400, each session was attended by an average of 16 people. During the conference "Dalle parole alle azioni" about 100 congressmen were also carried by bus to the Campus to follow lessons, and then came back to the conference venue walking with sticks 3 km. Measurements of physical activity with portable devices showed an average value of 4 METs.

Discussion: Having a stable facility for Nordic walking has been a key resource to promote physical activity to sedentary individuals or patients suffering from chronic diseases. A Nordic walking session of 90 minutes allows

participants to practice about half the recommended weekly physical activity.

<http://www.azioniperunavitaainsalute.it/ivrea2013>
http://www.azioniperunavitaainsalute.it/in_evidenza_ivrea2013Materiali
<http://www.smartsport.it/Home.asp?IDV=00>

87 A conference in sneakers

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Introduction: Representing the Piemonte Region, the Healthcare Unit ASL TO4 (520,000 inhabitants) participates in projects to promote physical activity funded by the Center for Diseases Control of the Italian Ministry of Health. Following the Gaining Health National Strategy and the principles of Toronto Charter, was established a multidisciplinary working group to manage health enhancing physical activity projects, including "Comunicazioni" (Communications). This group organized the final conference of the project and called it "Dalle parole alle azioni" (From Words to Actions) to emphasize the need for concrete actions following ideas and theories.

Methods: We selected an expert in community psychology to manage contacts and organizing the event. We planned various physical and interactive activities to make the conference more interesting and effective. We asked the cooperation of the University of Turin (Nursing Degree, Science of Communication, Physical Education Degree) to conduct physical activities during the conference. We offered to Nordic Walking Sports Clubs, which are located in our territory, the opportunity to organize Nordic Walking tests for the participants. We asked a group of participants wear portable instruments to measure their physical activity. A professional team filmed the reports and the activities of the conference.

Results: 113 people were enrolled in the conference. Social theater actors welcomed the participants, proposed interactive activities and executed lively performances. About 100 participants attended the sessions of Nordic walking at the Polveriera Park and then followed the instructors along a 3 km walk. We made tests to measure the physical activity of 38 people and we discussed the results in a parallel session. At the site of the conference were presented 10 reports and 18 posters. Physical education instructors taught stretching to keep active members between presentations. We showed a

original video that lists playfully the health benefits of proper physical activity.

Discussion: This new way to play a conference was highly appreciated by the congress, which took an active part in all the activities proposed. All materials have been published on the project website which has undergone numerous contacts. Try it for yourself physical activity proved to be a method of communication more effectively than words alone. For this reason we have not officially named the event: a conference in sneakers!

<http://www.azioniquotidiane.info/articoli/vivere-insieme-a-scuola-evidenze-scientifiche/la-sfida-della-valutazione>

http://www.azioniperunavitaainsalute.it/in_evidenza_lvr_ea2013Materiali

<http://www.smartsport.it/Home.asp?IDV=00>

88 Health promotion for employees in hospital catering

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A government funded Fit for Life Program (KKI) promotes physically active lifestyle among sedentary adults in Finland. One of the program's aims is to promote actions in workplace health promotion by providing financial support and mentoring for projects.

As an example, in hospital catering, which includes 13 units and 400 employees, a workplace health promotion project was established in 2013. Work in catering is mainly shift work and consists of a lot of laborious work and repetition. The main reason for sick leaves are musculoskeletal diseases. For economic reasons, substitutes are not being recruited and workers become often overwhelmed.

The project's main target was to increase workers' awareness and knowledge of physical activity and healthy eating habits and their impact on working ability. Also, the aim was to increase employees' physical activity and healthier lifestyle in the long term. Furthermore, the target was to increase workers' know-how in ICT so that in the future they are able to utilize the wellness sites of the organization. The aim was also to increase co-operation between employer and workers.

There were many actions available during the project, for example nutrition and ICT counselling, physical activity measurements, fitness tests, sport

trial and wellness lessons. Each participant had the opportunity to choose a program, the aims of which were either to improve nutrition or physical activity. The project produced a guideline for nutrition and physical activity for shift workers. Also some exercise break posters were produced by workers in a few units.

There were many benefits to organizations and for employees in the project. For example the sick leaves were reduced, employees reported improved recovery and the sense of community improved in many units. Also most of the workers are nowadays more able to use computer and to utilize organization's wellness services. Although individuals are responsible for their own physical activity and eating habits, the workplace can support and offer opportunities to incorporate physical activity into daily life and provide an environment which supports physical activity and healthy lifestyle.

89 Moving To Business - physical activity promotion in small and middle-sized organizations

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Introduction: The health benefits of regular physical activity (PA) are well-documented. Conversely, inactivity and prolonged sedentary behavior (SB) cause serious health risks. Alarming, Finnish working-aged population spends 65% of the day in SB and less than 10% of the day in moderate-to-vigorous-intensity PA (MVPA). The 1-year Move To Business (MTB) project supports small and middle-sized worksites to develop sustainable multilevel strategies to increase employees' PA and to reduce their SB. MTB is implemented in collaboration with sports and research organizations.

Methods: Three regional sports federations recruited the worksites for MTB in spring 2013. At baseline the employees completed a self-administered questionnaire covering information e.g. on their background, work, work ability, work engagement and recovery, PA, SB, perceived health, smoking, sleep and alcohol consumption. PA and SB were objectively assessed with a tri-axial Hookie-accelerometer for seven days. A representative of each worksite completed a questionnaire on current practices to promote employees' PA. The baseline information was

utilized for setting the goals at each worksite. Multilevel actions for each goal were determined by using a socio-ecological model. At each worksite a team was nominated to plan and carry out MTB. The team consisted of different stakeholders (HR, management, occupational health, personnel, etc.). To support the teams the sports federations and researchers arranged meetings and workshops.

Results: 12 worksites initiated MTB. The number of employees per worksite varied from 11 to 107. Altogether 296 employees (75%) completed the questionnaire and 289 (73%) had valid accelerometer data. 66 % of the respondents did sedentary work and 16 % had strenuous work tasks. Employees' mean daily duration of SB and MVPA were 9 hours and 47 minutes, respectively. Understandably, nearly all worksites aimed primarily at reducing SB. Activity breaks, Sit-Stand workstations and opportunity to experiment different modes of exercise were the most common actions selected.

Discussion: The follow-up assessments will be conducted in November 2014 to examine the results of the development process. The aim is to repeat the assessments also in November 2015 to see the maintenance of the strategies. The findings of MTB will be used for producing a toolkit for worksites to initiate, implement and evaluate projects aiming at promoting employees' PA.

90 Does increasing the daily step count improve the quantity and quality of physical activity for meeting physical activity guidelines in young adult women?

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Introduction: The daily step count (SC) is often promoted as an alternative indicator for achieving a target level of physical activity (PA) with a certain exercise intensity. Several cross-sectional studies found correlation between the volume of moderate-to-vigorous PA (MVPA) (MET-hrs) and the SC. However, information on whether a target level of MET-hrs estimated by the relationships is met during intervention to increase the SC in practice remains scarce. The purpose of the present study was to explore variability in the association between quantity and quality of PA when habitual PA was increased with various PA indicators.

Methods: Twenty-eight healthy young adult Japanese women participated in a randomized, crossover study. These subjects completed a 1-day protocol under three different conditions. Prior to the trials, each subject's average baseline weekday PA and the individual lactate threshold (LT), which is recommended as the minimum intensity to improve cardiorespiratory fitness, were assessed. For the LT trial, subjects were instructed to increase their duration of PA at the LT intensity or above (duration at LT) for at least baseline plus 30 minutes, during the daytime period using an activity monitor. For the STEP trial, subjects were instructed to increase their daily SC by at least baseline plus an equivalent amount of steps compared with estimated SC in the LT trial. For the MVPA trial, subjects were instructed to increase their MVPA for at least baseline plus 30 minutes.

Results: SC, duration of MVPA, and duration at LT were significantly increased in all three trials compared with the baseline values. However, no significant difference was observed between the SC in the LT trial and that in the STEP trial. The duration at LT in the LT trial was significantly longer than that in the STEP and MVPA trials. Furthermore, a significant correlation was found between the daily SC and MET-hrs/wk at baseline and in all trials (baseline: $r=0.91$, LT: $r=0.92$, STEP: $r=0.71$, MVPA: $r=0.76$). Significant differences were observed in the intercept of the regression equation in the LT trial and the MVPA trial compared with that observed at baseline.

Discussion: These results indicated that the relationship between the SC and MVPA fluctuates depending on the PA indicator used when individuals increased their PA. Thus, increasing the SC is inadequate as the sole indicator for improving the quantity and quality of PA for meeting PA guidelines.

91 Effectiveness of a 12-week workplace physical activity intervention based on self-determination theory

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Introduction: The present study aimed to evaluate the short-term effects of a self-determination theory (SDT) based worksite physical activity (PA) intervention on changes in body composition, aerobic fitness, autonomous motivation towards PA and PA behaviour among physically inactive employees.

Methods: A quasi-experimental controlled study was used. Participants were recruited from a large pharmaceutical company in Flanders (Belgium). The study population consists of 206 employees (mean age = 41 years, 79.1% women) not meeting the current PA recommendation of 150 minutes of moderate to vigorous PA per week. Participants were assigned to a control (N = 50) or intervention (N = 156) group. Participants in the intervention group received a 12-week behavioural support intervention consisting of two face-to-face counselling sessions (intake + personalised PA plan) at the start of the intervention, 3 short contacts by e-mail, telephone or Skype at weeks 3, 6 and 9 and two face-to-face counselling sessions at the end of the intervention (outtake). The PA counselling sessions were delivered by qualified PA coaches. Consistent with SDT, all PA coaches were trained to provide guidance in a need-supportive manner. This approach aimed at fulfilling the basic needs of autonomy, competence and relatedness in order to increase autonomous motivation towards PA and in turn PA behaviour. Outcome measures included Body-Mass-Index (BMI), aerobic fitness (3 minutes YMCA step test), autonomous motivation towards PA (BREQ-2) and objectively assessed PA (Sensewear Pro Armband). Data were collected at baseline and post-intervention (12 weeks).

Results: At post-test, significant time by group interaction effects were found for BMI ($F=5.01$, $p<.05$), autonomous motivation towards PA ($F=5.01$, $p<.05$) and PA behaviour expressed as steps per day ($F=14.32$, $p<.01$). After 12 weeks, no significant changes in BMI, PA motivation and steps per day were found in the control group. In the intervention group, a significant decrease in BMI (-0.3 kg/m^2), increase in autonomous motivation towards PA and increase in the average number of steps per day (+1576 steps per day) were found after 12 weeks. No intervention effect was found for aerobic fitness ($F=0.04$, $p=0.83$).

Discussion: This worksite PA intervention study showed that need-supportive PA counselling is a promising strategy to decrease BMI, to improve the quality of PA motivation and to increase PA behaviour in physically inactive working adults.

This study was conducted within the framework of the Move@Janssen project funded by Janssen Pharmaceutica, part of Johnson & Johnson Pharmaceutical Research and Development.

92 Are cycle ergometers effective to promote physical activity and physical function among older adults? Short-term effects of a 10-week structured versus need-supportive physical activity program in assisted living facilities.

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Introduction: The population of adults over the age of 70 is rapidly growing. A large percentage of this population is not regularly involved in physical activity (PA), even though PA can attenuate the impact of aging. The current study examined the short-term effectiveness of two cycle ergometer programs on PA and physical function in older adults (age ≥ 70 yr).

Methods: Flemish older adults living in an assisted living facility were motivated to use a cycle ergometer by assigning them either to (1) a structured PA program (STRUC, $n=35$), which consisted of three times weekly supervised PA sessions, or to (2) a need-supportive PA program (NEED, $n=36$), including four 1-hour individual contact moments. NEED received individually tailored PA coaching based on the Self-Determination Theory. Participants of both STRUC and NEED received an individualized cycle ergometer program. Results were compared with (3) a control group (CON, $n=24$) before (pretest) and immediately after (posttest) the 10-week intervention period with respect to self-reported PA, functional performance (modified Physical Performance Test), exercise capacity (6-minute walk test) and lower body strength (knee-extension test).

Results: The study sample consisted of 22 men and 73 women, with a mean age of 82 ± 6 years. Repeated measurement ANOVA showed a significant time-by-group interaction effect with respect to self-reported moderate-intensity PA (min/week). More specifically, moderate-intensity PA significantly increased in both intervention groups from pre- to posttest (STRUC: +41 min/week, NEED: +44 min/week), whereas no changes occurred in CON. At posttest, participants in STRUC had significantly increased their functional performance (+6%) and their 6-minute walk distance (+12%) whereas NEED and CON remained stable. The knee-extension strength significantly decreased (-6%) from pre- to posttest in participants in CON.

Discussion: STRUC was more effective in improving functional performance and exercise capacity. However, this study provides evidence for the short-term effectiveness of a need-supportive PA

program on moderate-intensity PA. Considering cost-effectiveness, the limited number of contact moments in NEED might be more efficient for large scale PA promotion in assisted living facilities. Moreover, need-supportive coaching is hypothesized to enhance autonomous motivation, possibly resulting in more long-term engagement in PA.

This study was conducted under the authority of the Policy Research Centre on Sports, supported by the Flemish Government.

93 Physical Activity of German Children during the Segmented School Day

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Introduction: Benefits of a physically active lifestyle for childhood health are well documented. In spite of this, many children are not sufficiently active. In order to promote physical activity (PA), it is important to gain an understanding of which parts of the day may promote an increased engagement in moderate to vigorous PA (MVPA). During the school morning, break times and physical education (PE) lessons are often the only opportunity for children to accumulate time spent in PA. The aim of this study is therefore to objectively investigate the amount and intensity of German primary school children's PA during different segments of the school day and to explore the percentage of PE lessons and break times spent in daily MVPA.

Methods: In a sub-sample of a large school-based intervention programme, for six days PA of 294 children (7.1±0.7 yrs, 16.0±2.2 BMI, 48% male) was objectively measured using Actiheart® (CamNTEch, Cambridge, UK). Based on children's timetables, break times and 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 was determined during a school visit.

Results: On a daily average, children spent 132.7±61.1 min in MVPA; on weekdays, this amount increased significantly (140.7±65.8 min, p≤0.01). 45.9% of children reached PA guidelines of 60 min of MVPA daily, with boys achieving this goal significantly more often than girls (65.6% vs. 28.7%, respectively; p≤0.01). PE lessons and daily break times accounted for 14.8±12.7 min and 6.8±5.7 min of MVPA, respectively; equating to 12.7±11.3 % and 5.8±4.9 % of total daily MVPA,

respectively. On days with PE, children spent 144.4±68.0 min in MVPA, whereas during days without PE, this time decreased significantly to 122.2±63.3 min (p≤0.01).

Discussion: The results of this study extend the current literature by providing a detailed analysis of children's time spent in MVPA during specific segments of the school day. Current PA guidelines recommend children should engage in at least 60 min of MVPA daily. Although children engage in PA after school, this study's results suggest that segments such as PE lessons and morning breaks are important sources for MVPA engagement in boys and girls. This should therefore be considered for policies, timetables and curriculums in order to offer sufficient opportunities for children to be physically active during their school day.

94 Changes in time-segment specific physical activity between ages 10 and 14 years: a longitudinal observational study

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Introduction: Physical activity (PA) is important for health in youth, but levels are often low and decline throughout adolescence. To date, PA interventions have had limited success; targeting interventions at specific periods of the day could enhance effectiveness. We aimed to describe 1) time-segment specific changes in PA from childhood to adolescence, 2) differences in change in PA between time-segments (weekdays vs. weekends, in-school vs. out-of-school, out-of-school vs. weekends, and lesson-time vs. lunch-time), and 3) associations between change in time-segment specific and overall PA.

Methods: Children from the SPEEDY study (n=769, 42% boys) had PA measured by accelerometer for seven days at ages 10.2±0.3, 11.2±0.3 and 14.3±0.3 years. Changes in moderate-to-vigorous intensity PA (ΔMVPA, minutes ≥2000 counts/minute [cpm]) and total PA (ΔTPA, average cpm) during weekdays, weekend days, in-school, out-of-school, lesson-times and lunch-times, were tested using three level (age, individual, school) mixed-effects linear regression models. Differences in ΔMVPA/ΔTPA between time-segments were tested using time-segment*age interaction terms. Associations of four-year time-segment specific

Δ MVPA/ Δ TPA with four-year overall Δ MVPA/ Δ TPA were tested using two level (time-segment specific Δ MVPA/ Δ TPA, school) mixed-effects linear regression.

Results: MVPA and TPA declined in all time-segments (all $p < 0.019$), except lesson-time MVPA (boys $p = 0.989$, girls $p = 0.052$). There was greater annual Δ MVPA on weekend days than weekdays (Beta \pm SE for interaction term: boys; -3.53 ± 0.83 mins, girls; -2.20 ± 0.64 mins) and out-of-school (boys; -4.36 ± 0.79 mins, girls; -2.44 ± 0.63 mins); this was also found for boy's Δ TPA (-29.64 ± 7.64 cpm and -19.36 ± 8.46 cpm). Δ MVPA and Δ TPA during lunch-time was greater than during lesson-time (boys MVPA -0.96 ± 0.20 mins, TPA -36.43 ± 6.55 cpm; girls MVPA -0.90 ± 0.13 mins, TPA -38.72 ± 4.40 cpm). There was no difference between in-school and out-of-school Δ MVPA (boys, -0.85 ± 0.44 mins; girls, -0.36 ± 0.35 mins) but Δ TPA was greater out-of-school than in-school (boys, -19.89 ± 6.71 cpm; girls, -18.46 ± 6.51 cpm). For all time-segments, four-year Δ MVPA/ Δ TPA was positively associated with four-year overall Δ MVPA/ Δ TPA (all $p < 0.042$), except for girl's in-school ($p = 0.114$) and lunch-time ($p = 0.595$) Δ TPA.

Discussion: Interventions to promote PA in youth could target all time-segments, but focussing on weekends and out-of-school may be particularly advantageous.

95 Assessment of the daily physical activity in adolescents (15-19 years) at school in European German speaking countries, 2000-2014.

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Introduction: Physical inactivity in adolescents is increasing (ÖBS, 2014). The demand of daily sports lessons is often discussed by the media and politics. The aim of this study was 1) to identify the number of schools for 15-19 year old pupils in German speaking countries, which have already implemented the daily sports lesson and 2) to identify the published scientific evidence regarding the impact of daily sports lesson on all the dimensions of health, of the 15-19 year old pupils in German speaking countries between 2000 and 2014.

Method: E-mail survey targeted at national and regional school authorities and selective internet research added to a semi-systematic review of

peer reviewed literature from PubMed, Science direct and Emerald published from 2000-2014.

Results: The Principality of Liechtenstein does not have any schools with daily sports lesson. Germany, Austria and Switzerland do not assess this kind of data or did not reply to the e-mail. 39 schools with daily sports lesson have been identified within the selective internet research. 28/39 (71,79%) in Germany, 4/39 (10,26%) in Austria and 7/39 (17,95%) in Switzerland. Only 3/39 (7,69%) were schools for 15-19 year old pupils. 2/3 (66,67%) were Austrian schools and 1/3 (33,33%) was a German school. The other schools 36/39 (92,31%) were primary schools. The published evidence regarding the impact of the daily sports lesson showed positive effects on the pupils' health dimensions. Half of the included schools which evaluated their daily sports lesson program report positive influence on the physical health. All schools observe positive changes in social competence and consequently also in the school community. Additionally, the level of concentration and the performance in school is positively influenced by the daily sports lesson.

Discussion: More effort for implementing daily sport lesson added by systematic documentation and research is required in all German speaking countries.

Österreichische Bundes-Sportorganisation. (2014). Unterschriftenaktion für die „Tägliche Turnstunde“ der Österreichischen Bundes-Sportorganisation– Rückblick. Download vom 23. März 2014, von <http://www.turnstunde.at/>

96 Changes in general living conditions and their impact on physical activity in kindergartners

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Introduction: This research focuses on the problem of the increasing number of physical inactive kindergartners. The aim of the study was to find out if a setting, which offers good opportunities for physical activity can promote the physical activity of the kindergartners and therefore reduce their lack of physical activity.

Method: Semi-systematic literature research in PubMed and Science direct added by a critical analysis of a case study from the aks gesundheit GmbH in Bregenz.

Results: The results show that the living conditions of the children have changed a lot and therefore also their settings. These changes may influence the level of physical activity of kindergartners (Breuer, 2002; Zahner, 2004). Children who feel safe and secure in their family and grow up in a stable social network are less likely to be physical inactive (Bachl et al., 2012; Arredondo et al., 2006). Even if the living situation and the leisure time changed (Breuer, 2002) there is no significant influence on the level of physical activity (Craggs et al., 2011). The relation between media consumption and physical inactivity is also inconsistent (de Jong et al., 2013; Burke et al., 2006).

Discussion: Evidence regarding the causes of physical inactivity in kindergartners is inconsistent. More research is needed to evaluate physical activity as a health in all policies topic.

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97 Relationship between physical activity level, motor performances and health-related quality of life in school-aged children

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Introduction: The beneficial effects of physical activity (PA) during childhood are widely accepted, but there is inconsistent evidence about the association of PA level with health-related quality of life (HRQoL) outcomes. This study aimed to find any relationships between PA level, motor performances (balance, flexibility, speed of limb movement, running speed, static and dynamic strength, upper limb and abdominal muscular endurance, cardiorespiratory endurance) and HRQoL in school-aged children.

Methods: Two hundred forty five children (119 girls and 126 boys, aged 10-12 y/o) took part in this

cross-sectional study. PA was measured with the Physical Activity Questionnaire for Older Children (Kowalski, 1997), motor performances were assessed with the EUROFIT Physical Fitness Test Battery (Strasbourg, 2003). HRQoL was measured with the Pediatric Quality of Life Inventory 4.0 General Core Scale (Varni, 1999) culturally adapted in Hungary. T-test and chi-square test was employed using SPSS 19.0 statistical software. We used stepwise multiple regression analysis to find predictors of HRQoL among different motor performances and PA level.

Results: We found that 53.1% of the children had low physical activity level (low, very low), 26.9% moderate, whereas only 20% of children meet the required level of physical activity (high, very high). Boys were more active than girls ($\chi^2=.028$). There was no significant difference between boys and girls in HRQoL ($p=.668$). Regression analysis revealed that better cardiorespiratory endurance proved to be the single significant predictor of favourable HRQoL ($B=.138$, $SE(B)=.047$, $t=2.945$, $p=.005$; $R^2=.378$). Gender, physical activity level, balance, flexibility, speed of limb movement, running speed, static strength, dynamic strength and muscular endurance (independent variables) were not significant in the model.

Discussion: Although the boys are more active than girls, the physical activity level of school-aged children is insufficient. Children need all types of movements for improving different physical abilities and strengthen muscle groups, but the HRQoL seems to be influenced primarily by the cardiorespiratory endurance. This underlines the importance of the aerobic fitness in childhood that can be improved by increasing physical activity level. There is a need to provide more opportunities for physical activity in children focusing primarily on aerobic exercises in order to achieve good HRQoL.

98 Keys to Success project

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Keys to Success (K2S) is a five year (2012-2016) innovative project initiated and run by Finland YMCA. The project was born out of the need to provide more reasons for young people to continue their physical activities, as well as inculcate a learning and growth path, individually and within their sport teams or groups. This growth is supported by the parents, as well as instructors/ coaches who all have roles to play. K2S is currently in its third year and has already

received very interesting results, especially with the external evaluation by the university of Jyväskylä.

The purpose of this paper is to briefly explain the innovative process developed by the project, its implementation methods, and the potential influence on the adolescent dropout rate.

The process is based on working directly with the youths thereby eliminating the need for coaches to gain expertise in other fields. We also work with coaches and parents, to brief them on the results from our youth surveys and sessions, while providing tools for further development. These are done through multiple and separate sessions (1,700 people in 2013) throughout the club/ group's calendar year, using four important pillars: Healthy lifestyles (nutrition, rest / sleep, exercise & injuries), Social skills (group/team work, peer pressure, drugs), Education & time management (importance, balance between studies & hobby, time management & goals), and Mental wellbeing (emotional control, motivation, self-knowledge & self-confidence, goal Setting).

The dropout rate continues to be a hot topic in sport, especially in Nordic countries. An in depth study spanning 25 years was done by (Enoksen 2011), which also included an overview of the literature focusing on early dropout rates, suggesting five singular causes, which are closely linked to K2S pillars: Training and performance factors; Education & work obligations; Motivational aspects; The social environment; Choice of other sport activities and interests.

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99 Physical activity promotion in schools of the Canton of Zurich

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In 2013 the Department of Sport of the Canton of Zurich started a physical activity promotion program in schools. Its main goal is to create a sports-friendly culture in all schools in the Canton and to enhance the number of extracurricular sports courses and activities offered by schools.

By law all Swiss school children are getting three lessons of physical education per week. In addition to that, some schools offer extracurricular sport lessons either in a specific sport or with focus on basic motor skills. The range of extracurricular sports activities a school offers depends on the

school itself and in many cases on the local authorities responsible for school politics.

The school setting is seen as one of the best settings to reach children from a lower socioeconomic background as well as migrants. Both groups generally show low physical activity levels [1]. Especially girls from families with a migration background tend to be inactive and show low participation levels in sport clubs [2].

The strategy of the Department of Sport for the promotion of extracurricular sports activities in schools includes the formation of a program that supports the schools with financial resources from the cantonal sports fund. The program *schulsport.zh* guarantees a fixed sum out of national and cantonal grants. This enables the schools to pay a decent wage for the teacher or sports trainer. Currently schools from 55 communities out of 170 benefit from this program. As in Switzerland schools most often don't offer day-care. Extracurricular sport courses are ideal to extend the care time offered by schools.

To support and promote a sport friendly school culture in schools in the Canton of Zurich in 2014 the Department of Sport launched a label for sports-friendly schools. At the end of August 2014 the first 26 schools will be awarded with the label.

The Department of Sport will focus on promoting the program *schulsport.zh* and the label for sports-friendly schools by marketing and communication activities. With the goal to establish attractive extracurricular sports activities in all schools throughout the Canton of Zurich and thereby to increase the activity level of children and adolescents.

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100 A longitudinal analysis of uptake and drop out of physical activities during post primary education in Ireland.

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Introduction: There is a clear decline in physical activity (PA) with increasing age in adolescence. In 2009, it was reported that only 6% of Irish students aged 16-18 years met the minimum PA

recommendations for youth of at least 60 minutes of moderate to vigorous physical activity (MVPA) daily. The purpose of this study is to assess: (1) PA levels in Irish 6th year post-primary students, (2) the adoption and drop out of physical activities from 1st to 6th year in post-primary education.

Methods: Participants from The Children's Sport Participation and Physical Activity study (2010) were followed up and recruited from 17 post primary schools across Ireland. A survey was administered to 6th year students (aged 18.2 ± 1.2 years; 27.2% male, 72.8% female) in school. Habitual PA was assessed using a two-item screening tool for PA. Participants were asked to retrospectively recall PA taken up and dropped out of in the previous 5 years.

Results: Cross-sectional preliminary results reported here are for 371 participants. Data presented at the conference will include a larger sample (n=418) and longitudinal analysis from data collected in 2009 and 2014 from these participants. The mean number of days meeting 60 minutes of MVPA was 3.26±1.69. Only 3.5% met the PA recommendations for youth on all days. In the last 5 years, 66.3% reported taking up a new PA. Of all of the new activities reported, participants are still involved in 52.9% (73.2% of males, 44% of females; $\chi^2 = 16.676$, $p \leq 0.01$) of them. In contrast, 70.6% of respondents stated that they have stopped participating in a PA. The main reasons reported were other commitments - school/work (53.82%), lack of interest (39.3%) and took up too much time (37.8%). Of the top three activities (dance 11.9%, gym 9.4%, basketball 8.3%) taken up by girls in the previous five years, two of these were also reported in the top three for drop out (dance 13.4%, basketball 11.6%, football 10.4%). In contrast, the activities which boys reported dropping out of (rugby 16.3%, football 10.2%, hockey 8.2%) differed to those taken up (gym 16.2%, football 9.6%, weights 9.6%) in adolescence.

Discussion: Rates of PA remain low in Irish older adolescents. Young people appear open to taking up new physical activities but the issue lies with keeping them involved. There is a gender difference in PA maintenance and activities. Longitudinal analysis will assess trends in PA participation over time.

Data collected as part of the Children's Sport Participation and Physical Activity study (2010) was funded by the Irish Sports Council.

101 Intervention to promote physical activity among high-school students in Brazil: effectiveness on active commuting, muscle-strengthening exercise, and the stages of behavior change

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Introduction: High schools represent a favorable environment for the development of interventions to increase physical activity because they reach a large number of teenagers. Research on physical activity has devoted special attention to aerobic activities, particularly when practiced during leisure time. Other forms of physical activity practices that are equally important to adolescent health, such as active commuting and muscle-strengthening exercises, have been less explored in the literature. The goal of the present study was to determine the effectiveness of an intervention to promote physical activity among high school students (the 'Saúde na Boa' project), assessing the stages of behavior change and the practices of muscle-strengthening exercise and active commuting.

Methods: The present study comprised a randomized and controlled intervention conducted in the Cities of Recife and Florianópolis, Brazil. The intervention occurred during the school period (March to December) of 2006. Active commuting (with cutoff values of ≥ 1 and ≥ 5 days per week), the practice of muscle-strengthening exercises (with cutoff values of ≥ 1 day per week and the recommended level of physical activity), and behavioral changes regarding physical activity were investigated by means of a questionnaire.

Results: Of the 2,155 students included in the baseline data, 989 were evaluated in the post-intervention period (45.9%). In comparison with the control group, the intervention group significantly increased the practice of active commuting to school on ≥ 1 day per week (80.5% vs. 86.8%, $p < 0.001$) and ≥ 5 days per week (64.3% vs. 71.9%, $p < 0.001$); the practice of muscle-strengthening exercises on ≥ 1 day per week (41.4% vs. 46.0%, $p = 0.017$), and the achievement of the recommended levels of exercise (28.9% vs. 35.0%, $p = 0.002$). In addition, the intervention group reached higher stages of change in physical activity behavior compared with controls ($p = 0.004$).

Conclusions: The 'Saúde na Boa' project effectively enhanced the practices of active commuting to school and muscle-strengthening exercises. and resulted in an increased physical activity status.

The study is part of an intervention designed to promote physical activity and healthy nutrition among high-school students in two Cities in Brazil (Florianopolis and Recife). Support was granted by the ILSI-Brazil and CNPq/Ministry of Science and Technology.

102 A vocational school-based intervention to promote physical activity: accelerometer-measured baseline data

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Introduction: Low levels of physical activity (PA) and high levels of sedentary behavior (SB) in young people are detrimental for health and can also track into later life. There is a lack of information about PA and SB among pupils from vocational schools during an important period of behavior change due to a transition from school and work life. The aim of this contribution was to describe levels of accelerometer-measured PA and SB in young adults attending vocational school.

Methods: The baseline sample of an intervention study to enhance PA and reduce SB was 69 pupils (mean age = 20.45; boys = 47.8%). PA and SB were measured by wearing the ActiGraph GT3X+ for 7 consecutive days. Valid accelerometer data in terms of 10 hrs/day wearing time on at least 2 days were obtained from 84% (n=58). The sampling interval epoch was set at 30 seconds. Mean daily steps, minutes of sedentary, light, or moderate-to-vigorous PA were analyzed. The accelerometer output was derived as counts per minute (cpm) and thresholds for sedentary (<100 cpm), light (100 - 1951 cpm), moderate (1952 - 5724 cpm), and vigorous (> 5725 cpm) activity were used to determine time spent at each activity intensity.

Results: Pupils spent 47.5 (SD = 19.1) minutes per day or less than 6% of their waking hours in MVPA. 93.3% of MVPA was accumulated at moderate intensity. Total sedentary time was on average 606 minutes a day, or 72.1% of their waking hours. 180 minutes a day (SD = 48.2) were spent in light intensity PA. The average steps were 7804 (SD = 2569) per day. There are no significant differences in PA and SB between boys and girls.

Discussion: According to the WHO recommendations young adults should accumulate 150 minutes of MVPA per week that equals at least 30 minutes of MVPA on 5 days per week. Our findings showed that the majority of the vocational school students meet the recommendation. However, pupils did not achieve the recommendations of 10.000 steps a day and 75% of the young adults did not spend more than 5 minutes of vigorous activity on at least one day of the week. Additionally, our study showed a high prevalence of SB. Regarding the fact that PA and SB are independently associated with a range of health outcomes it is important to promote PA and reduce SB. The findings should be interpreted as preliminary for this target group since our sample was small and inclusion criteria of 2 valid measurement days makes it difficult to draw more solid conclusions.

103 Using intelligent video analytics to detect and measure physical activity and the nature of interactions between children in playgrounds: a research idea.

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Playgrounds at primary schools can be improved in numerous ways: for example by adding new play equipment or by redesigning the playground. Changes are mainly aimed to stimulate physical activity, prevent bullying and improve the quality of interactions between children. In order to quantify and assess implications of changes in playgrounds, physical activity and the nature of interactions between children need to be measured objectively. Physical activity is most often measured using wearable sensors like pedometers or accelerometers. A problem frequently encountered by researchers is non-compliance with the monitoring protocol to wear these motion sensors for a number of consecutive days. Besides, negative interactions, such as physical aggression and alienating, are difficult to measure objectively. Currently it can only be assessed by time-consuming observations by humans.

At TNO we develop technologies that automatically analyse video data to track persons and recognise their behaviour. So far, video analytics technologies are mainly developed and applied for security and defence applications. We believe however that by applying these technologies to

automatically analyse video data from playgrounds we will also be able to measure physical activity and interactions between children objectively and non-invasively. We aim to perform a pilot to determine what can be measured automatically using intelligent video analytics and to develop algorithms to determine levels of physical activity and the nature of interactions on playgrounds. During the conference we would like to present this research idea and to have a short discussion about future possibilities and adaptations of this kind technologies, as well as barriers of its use, relating to privacy.

104 Healthy Children in Sound Communities in the Netherlands

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In The Netherlands health professionals, PE teachers, and PA trainers and parents have a key role in developing strategies to combat problems related to a sedentary lifestyle of children and youth. The Dutch-German project "Healthy Children in Sound Communities" implements best practices in health promotion and is a multi-component approach at elementary schools. Six Dutch municipalities with a total of 19 elementary schools participated in this intervention project including children six years of age and older. These practices are evaluated and investigated by 1. measuring the motoric improvements by the use of validated tests. 2. aggregating the test results (in the future by the use of an i-pad), 3. giving feedback to parents by showing them a chart of their child with the motoric results on one side, and a BMI chart on the other side. 4. giving lectures for parents organised in school about authoritative parenting (considered to be the most optimal parenting style), sleep duration, appropriate food and portion size and healthy childrearing. 5. involving teachers, mayors, officials of the municipality; their function as a role model is an important element of a multi-component approach.

Three evaluation modules for the pupils consider their BMI and basic motor development (1), their different lifestyle factors for physical activity, nutrition behavior and modern media consumption including assessment of quality of life

(2), assessment of their self-concept and social climate as a member of the PE class and PA groups (3).

On 5 tests the children significantly improved their test results compared to the norm group. On "standing broad jump" the children did not improve and on the "6 minute run" their results decreased. In one third of the children with overweight the BMI was reduced to normal weight and in one third of the children with obesity, the weight decreased to the category "overweight". Primary and targeted prevention by a school-wide intervention with individually tailored courses for children seem effective to further progress physical fitness. Sleep, nutrition and parenting advice are also addressed to achieve a sound development of the BMI and overall health. This evidence based approach could be implemented anywhere around the world.

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3. Schönbeck, Y., Talma, H., van Dommelen, P., Bakker, B., Buitendijk, S. E., HiraSing, R. A., & Buuren, S. (2011). Increase in prevalence of overweight in Dutch children and adolescents: A comparison of nationwide growth studies in 1980, 1997 and 2009. *PLoS ONE*, 6(11), e27608. doi:10.1371/journal.pone.0027608.

105 Healthy children in sound communities – the influence of a multi-component intervention on German overweight and obese children

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Introduction: The aim of this intervention study is to implement a strategy to prevent and promote a healthy lifestyle in order to counteract current developments which show an increase of motor deficits and obesity in elementary school children. A weekly schedule including curricular and non-curricular physical and health education lessons is established to target an age-appropriate BMI as well as the integration of daily physical activities (Naul et. al, 2012).

Method: In the first and second cohort 535 (male=53.3%) elementary school children from the

German-Dutch-border are tested longitudinally for four years performing a motor ability test once a year (results are differentiated by age and sex). The BMI is measured and reorganized in eight BMI-percentiles (Kromeyer-Hauschild et al., 2001). Additionally, questionnaires focusing on sedentary screen time, physical activity time load, physical self-concept, class-climate and life quality are applied.

Results: The presented results focus on a sub-sample of 85 (15.9%) overweight and obese children (BMI-percentile-groups 7 and 8, $P > 90\%$). 36.5% of the sub-sample have lowered their BMI-percentile at the end of the intervention. 25.9% changed to BMI-percentile 6 of normal weight. The sub-sample significantly improves in coordination items and push-ups during the tested period ($p \leq .001$; $\eta^2 \geq .129$). The performances of all motor tests are significantly lower ($p \leq .0.13$) for the sub-sample group but there is no significant difference in the developmental process from t1 to t4 - the overweight children develop and improve their motor abilities in parallel to their normal weight counterparts. The questionnaires reveal that mothers' and fathers' BMI as well as the fathers' education has a significant influence on the children's BMI ($p \leq .0.17$). Sedentary screen time significantly decreases and physical activity time increases, both not influenced by different BMI-percentil groups. The physical self-concept of obese and overweight children is significantly lower ($p \leq .0.27$) but still at a high level.

Discussion: The results disclose the possibility to enhance motor performance in obese and overweight children and counteract obesity with a community-based multi-component approach. The project 'healthy children in sound communities' seems to work not only for children with good motor abilities and normal weight but also for children with overweight problems and related deficits in their motor development.

Kromeyer-Hauschild, K., Wabitsch, M., Kunze, D. et al. (2001). Perzentile für den Body-mass-Index für das Kinder- und Jugendalter unter Heranziehung verschiedener deutscher Stichproben. *Monatsschrift Kinderheilkunde* 149(8), pp. 808-817.

Naul, R., Schmelt, D., Dreiskämper, D., Hoffmann, D & L'Hoir, M. (2012). Healthy children in sound communities (HCSC/gkgk) – a Dutch-German community-based network project to counteract obesity and physical inactivity. *Family Practice*, 29(1), pp. 110-116.

106 'Healthy Children in Sound Communities' – a longitudinal intervention and control study about BMI and physical fitness development of primary school children in the Dutch municipality of Cuijk

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Introduction: Recently published reviews (van der Horst et al., 2012; Niederer et al., 2012; Wang et al., 2013) on reduction of overweight and physical inactivity of younger children show the importance of integral approaches including schools, communities, sport clubs, and parents. The intervention project healthy children in sound communities (hcsc; Naul et al., 2012) has the aim, that by an integrated model of communities, schools, sport-clubs and scientific support motor ability and life quality of primary school children can be sustainably improved. Intervention time is four years, in which motor ability and BMI as well as psychological and social factors are analyzed.

Methods: In this paper results of intervention group in HCSC-community Cuijk (NL) are compared with the results of a control group of children from the same city. Results of t1 (at the beginning of the intervention) and t3 (after two years) for motor abilities (Situps, Pushups, Standing Broad Jump, Jumping Sideways, Balancing Backwards, 6min Run and 20m Run) and for BMI are analyzed. The sample of the groups included 80 children ($M_{aget1} = 6.89$, $SD = 0.49$, $M_{BMI\ t1} = 15.70$, $SD = 2.21$) of the intervention and another 45 children of the control group ($M_{aget1} = 7.58$, $SD = 0.39$, $M_{BMI\ t1} = 15.35$, $SD = 2.40$). Children of the control group attended intervention and non-intervention schools of the HCSC-project.

Results: Results show significant higher increase for Situps ($F(1,123) = 4.27$, $p = .04$, $n^2 = .03$), Push Ups ($F(1,123) = 39.37$, $p < .001$, $n^2 = .24$), Jumping Sideways ($F(1, 123) = 20.75$, $p < .001$, $n^2 = .14$) and 20m Run ($F(1,123) = 6.0$, $p = .02$, $n^2 = .05$) for the intervention group. There is a tendency that BMI increases slower in intervention group than in control group ($F(1,122) = 2.41$, $p = .12$)

Discussion: The results underline the impact of structured community-based intervention programs to support an active and healthy lifestyle of young children. Especially the fact that children in the intervention program develop better than children from control group show that community-based programs in primary schools can be a successful opportunity to counteract obesity and physical inactivity.

Naul, R., Schmelt, D., Dreiskämper, D., Hoffmann, D. & L'Hoir, M. (2012). Healthy children in sound communities (HCSC/ gkgk) – a Dutch-German community-based network project to counteract obesity and physical inactivity. *Family Practice*, 29 (1), pp. 110-116.

Niederer, I., Kriemler, S., Zahner, L., Bürgi, F., Vincent, E., Marques-Vidal, P., & Puder, J. J. (2012). BMI Group-Related Differences in Physical Fitness and Physical Activity in Preschool-Age Children: A Cross-Sectional Analysis. *Research Quarterly for Exercise & Sport*, 83(1), 12-19.

Van Der Horst, K., Chin A. Paw, M. J., Twisk, J. W. R., & Van Mechelen, W. (2007). A Brief Review on Cor-relates of Physical Activity and Sedentariness in Youth. *Medicine & Science in Sports & Exercise*, 39(8), 1241-1250.

107 Healthy Children in Sound Communities (HCSC CN-DE): a German and Chinese Obesity Intervention Programme for Primary School Children

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Introduction: Recently published reviews on effectiveness of childhood obesity prevention programmes document the importance of multi-components concepts (PA, nutrition, media) and the necessity of cross-sectoral approaches with relevant stakeholders (schools, community offices of education and public health, sport clubs, parents). The intervention project HCSC with 60-90 minutes of daily PA follows this paradigm. In this paper the physical results of Chinese and German primary school children after one year of intervention are compared.

Methods: German and Chinese primary school children take part annually in BMI and motor test measuring with additional surveys on quality of life, media consumption, physical activity, physical self-concept and class-climate. Presented results show motor and BMI development of the German cohort (n = 813, Mean_{Aget1} = 6.95, SD = 0.51) and the Chinese cohort 1 (n = 309, Mean_{Aget1} = 7.61, SD = 0.31).

Results: At the start (t 1) Chinese children do have better values for sit-ups (Mean Chinese = 20.52, SD = 5.74, Mean German = 13.43, SD = 5.56), standing broad jump (Mean Chinese = 130.36 cm, SD = 15.70, Mean German = 100.44 cm, SD = 18.82) and sit & reach test (Mean Chinese = 12.54 cm, SD = 4.31, Mean German = 3.47 cm, SD = 4.99). Baseline-Results of 6min-run and 20m run are comparably good. After one year of intervention (t

2) the Chinese and German cohorts show a significantly higher level of performance in motor items. The DE-cohort increases significantly better in the 6min-run and the 20m run than the CN-cohort, the CN-cohort progresses better in sit & reach than the German children. The mean for the BMI reference value was reduced significantly for the Chinese cohort (from 4.83 down to 4.70) after one year of intervention of daily PA.

Discussion: The results support the impact of structured community-based intervention programs of the HCSC multi-component concept also in China. A specific focus must be laid on culture-specific physical activity patterns (e.g. sit & reach and 6min run) to improve children's motor abilities.

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Naul, R., Schmelt, D., Dreiskämper, D., Hoffmann, D & L'Hoir, M. (2012). Healthy children in sound communities (HCSC/gkgk) – a Dutch-German community-based network project to counteract obesity and physical inactivity. *Family Practice*, 29(1), pp. 110-116.

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108 Reliability and validity of the International Physical Activity Questionnaire: Lithuanian version (IPAQ-LT) long (LF) and short (SF) forms

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Introduction: Standardized and validated instruments of physical activity (PA) measurement are essential for public health surveillance and further policy-making. The IPAQ has been recommended as a standardized instrument for cross-national assessment and for research purposes. Their measurement properties have been assessed by several studies. Nevertheless,

there is still a need for validation studies of the IPAQ from Eastern European nations, and studies that are able to investigate the potential over-reporting of IPAQ respondents. Thus, the inter-country variability in the validity of IPAQ calls for its further testing in different nations.

Given the need of harmonization of PA instruments in the European context, the use of IPAQ for surveillance across and within EU nations, the lack of its validation in EU developing countries, and the narrow use of leisure-time as PA indicator in Lithuanian national surveys, examining the metric properties of IPAQ in this population sample are required. This study aims (1) to examine the criterion validity and test-retest reliability of the IPAQ-LT SF and LF and (2) to assess its potential over-reporting and energy expenditure (EE) over-estimation.

Methods: A convenience sample of 130 participants, aged 18 - 69, was asked to wear the Actigraph GT3X accelerometer (ACC) on all waking hours over 7 consecutive days. On the eighth day they completed both versions of the back-translated IPAQ-LT. 92 participants were included for the reliability test and 81 for validity. Spearman's rho correlation coefficients were calculated as the measurement of agreement. The distribution of participants across activity categories was computed following the IPAQ scoring protocol.

Results: Compared with ACC data IPAQ-LT SF and LF reported more weekly minutes of PA (1600%, 2343%) as well as MET-min/week (958%, 1558%). The classification of participants as active was 87.6% SF, 90.1% LF, and 8.7% ACC. The Spearman correlation coefficients for the reliability analysis ranged from .46 to -.67 for the SF and .49 to -.70 for the LF. Only the walking category (SF .28, LF .17) significantly ($p < .05$) correlated with the ACC.

Discussion: The validity and reliability of both versions of the IPAQ-LT are comparable to other studies. Substantial PA over-reporting and EE over-estimation had been observed. Despite its implications for PA surveillance, evaluation of intervention efficacy and further policy making most studies do not address this.

109 Improving the quality of monitoring physical activity with pedometers

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Introduction: The investigation of the status and trends in physical activity (PA) of the population requires the simplest but also the most objective methods of monitoring with PA. The aim of the study is to present a verified method of monitoring PA by pedometers, to establish essential requirements for recording and interpreting the results of monitoring and to support their effective use in research and practice.

Methods: The analysis of PA monitoring was carried out on the sample of 620 adolescents (201 boys, 419 girls, aged 15 - 18. PA was monitored using (a) accelerometer ActiTrainer, (b) pedometer Yamax SW- 701, (c) PA record in the log, (4) PA record in the Internet program INDARES.

Results: The theoretical part presents the background for enhancing the objective monitoring PA with pedometers and their application in the Internet program INDARES. The research shows that boys in the school days performed on average 929 steps•day⁻¹•hour⁻¹ measured by pedometer (accelerometer 692 steps•day⁻¹•hour⁻¹) and girls 911 steps•day⁻¹•hour⁻¹ (accelerometer 703 steps•day⁻¹•hour⁻¹). The daily active energy expenditure was in boys 0.682 (accelerometer 0.529) and girls 0.665 kcal•day⁻¹•hour⁻¹ (accelerometer 0.473 kcal•kg⁻¹•hour⁻¹). The records of PA in logs (min•day⁻¹) have a low but significant correlation with the steps•hour⁻¹ ($p=0.302$) and kcal•kg⁻¹•hour⁻¹ ($p=0.296$) (according to the pedometer) or PA-min•day⁻¹ ($p=0.237$), steps•day⁻¹ ($p=0.262$) and kcal•kg⁻¹•hour⁻¹ ($p=0.235$) (according to the accelerometer).

Discussion and conclusions: PA monitoring is the issue of common usage for many years, but reached the point where we try to get the most objective data which would be comparable. We specify the essential processes to reach this aim. Among these processes are: (a) triangulation (PA monitoring, heart rate monitoring, PA log and other techniques, (b) periodization, (c) segmentation (weekdays and weekends, before/after school, at school/work, school breaks/lessons), (d) structuring (FITT) and (e) operationalization (concretization of the PA attributes). Based on the analysis, we recommend: (a) recalculating the number of daily steps in the one-hour wearing of pedometer and the main

segments of the day, (b) establishing the target cut points 1000 steps•hour⁻¹ according to the pedometer and minimum active energy expenditure of 0.5 kcal•kg⁻¹•hour⁻¹, regardless of gender of the adolescent, (c) using the Internet program to record, analyze and obtain of feedback.

The main initiative for this support came from the grant “The objectification of comprehensive monitoring of school mental and physical strain in adolescents in the context of physical and mental condition”; project ID#: 13-32935S.

110 Meeting the Guidelines: Measurement of Activity Levels in Adolescents using Self Report

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Introduction: The Department of Health and Children (2009) in Ireland recommend that children and young people should be active, at a moderate to vigorous level, for at least 60 minutes every day. Active transport in the form of walking or cycling has been identified as a method of increasing daily levels of physical activity among adolescents (Van Dyck et al 2010). The objective of this study is to measure physical activity behaviour including active transport in second level students.

Methods: Data were collected in September and October 2012 from four post primary schools in County Carlow, Ireland. The study involved the collection of self-report data (using the IPAQ-A) on PA levels both in school and during leisure time, and active commuting habits.

Results: Of all adolescents who participated in the study (61.9% girls, 38.1% boys, mean (SD) age 14.23 (±1.16) years), a median of 745 mins/week of physical activity was reported. Boys reported significantly more physical activity than girls (median 940 and 673 min/week respectively, P = .001). Adolescents reported spending most of their time in moderate PA (273 min/week or 43% of all intensities), less in walking (248 min/week or 39% of total PA) and the least amount doing vigorous PA (120 min/week or 19% of total activity). Almost half of participants (49.7%) accumulated at least 60 minutes per day of MVPA. Almost one fifth of respondents walked or cycled to school with a higher proportion of boys than girls commuting actively (27.5 v 15.4%, P=.006).

Conclusion: Many adolescents are not meeting the daily recommendations for physical activity. Boys are significantly more active than girls across all types of PA including active transport.

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111 Factors for Physical Activity Maintenance in socially disadvantaged groups in the Netherlands

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Introduction: Community-based physical activity programs often target ethnic minority groups, because these are relatively less active. Factors influencing physical activity initiation are widely studied. Less is known about factors influencing physical activity maintenance. More knowledge of these factors may increase effectiveness of community-based physical activity programs. The aim of this study was to gain insight into factors that influence physical activity maintenance in women of non-Western origin.

Methods: Based on literature a framework was developed for an exploratory study of factors influencing physical activity maintenance. An ecological perspective of community-based physical activity programs was chosen as a basis for classification of those factors at individual, group, program, and environmental level [1]. In three municipalities group leaders and exercise trainers (n=6) participated in a semi-structured interview. Three focus group discussions were conducted with women active in community-based physical activity programs for at least one year, at least once a week (n=25).

Results: Factors affecting physical activity maintenance at individual level are perceived (health) benefits, self-regulation and learning outcomes regarding physical activity and social participation. At group level mutual support, security, trust, and sharing stories are important factors. At program level, next to program quality,

accessibility and continuity, responsive guidance is an important factor.

Discussion: Our results indicate that a mix of individual, group and program-related factors contribute to sustainable physical activity in women of non-Western origin. The interaction between individual perceived benefits and shared learning experiences on the one hand, and responsiveness and group management on the other hand is important. Potential risks for sustainable physical activity lie in budget cuts in welfare and health sectors, resulting in closure of local facilities or limitations in professional guidance.

Future research identifying factors for sustainable physical activity should therefore not only focus on how individuals act, but also how individuals, groups, and environments interact. This focus may contribute to further theory development and understanding of relevant mechanisms in sustainable physical activity.

The study by the chair group Health and Society of Wageningen University was conducted in collaboration with TNO Innovation for Life and ERC Research.

1. Herens, M. et al.: Evaluation design for community-based physical activity programs for socially disadvantaged groups – the case of Communities on the Move. *JMIR Res Protoc*, 2013.

Questions: How well do pregnant women adhere to the PA recommendations? Are there differences in PA by maternal age and origin, BMI before pregnancy and parity?

Results: 944 pregnant women were included in the study. 60.9% did reach only a low level of PA, 31.0% a moderate level and 8.1% a high level of PA. The average age was 30.7 years and 65% of women had a foreign origin. Two thirds of women expected their first child and 63% had a normal BMI. None of these factors had an influence on the PA level in the univariate analysis. In the multivariate logistic regression analysis BMI > 30 showed an OR 0.52 (CI 0.29 – 0.96) and first time pregnant an OR 1.39 (CI 0.99 – 1.95) for enough PA.

Discussion: Most pregnant women do not reach the recommended moderate PA level. A BMI > 30 increases the risk for low PA level, whereas first time mothers are more physically active. Therefore it should be focused to develop a fitness offer for obese pregnant women expecting their second child to help this group to reach the recommended PA level.

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2. METs = multiples of the resting metabolic rate

112 Physical activity during pregnancy

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Introduction: During pregnancy 150 minutes per week of moderate physical activity (PA) is recommended as for the general population. Walking, cycling and swimming are ideal physical activities whereas team and contact sports should be avoided. Other studies show that regular aerobic exercise during pregnancy appears to improve (or maintain) physical fitness (1). We have studied PA in pregnant women to evaluate the adherence to the current recommendations and possible factors influencing this behavior.

Methods: During a nutrition and physical activity counselling pregnant women answered the IPAQ questionnaire. The IPAQ collects data on how long and on how many days the person is physically active. The categories are given as low PA with less than 600 METs(2), moderate PA with 600 – 1500 METs and high PA with >1500 METs. Additionally data on maternal age and origin, BMI before pregnancy and parity were collected.

113 The impact of movement at the workplace on leisure activity

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Introduction: The examination of social changes over the last years has shown an increase in sitting times at work and in leisure time (Huber, 2013). People sit on their way to work, during their meals, in their leisure time and at work. The latter has a high priority because every employed person spends a major part of his time at work. However, there are also work places that involve a great amount of movement. The purpose of our study was to explore the impact of various activity levels at work on health related factors.

Methods: 78 volunteers in eight different professions between the age of 22 and 64 years participated in our study. They were asked to wear a pedometer for the period of one week and they had to keep an activity protocol and to fill in a questionnaire (Heidelberg Health Score) to rate their leisure activity. Concerning the leisure activity we were especially interested in the total amount

of hours per week and the estimated average intensity. The variables, objective activity at work and subjective activity in leisure time, had been correlated.

Results: The data showed a sudden slump of leisure activity with 8000 steps daily at work. A difference verification which compared the group under the threshold to the one over it confirmed this cut-off at a medium effect ($r=0,364$) ($p<0,001$). This effect appears to be due to the activity intensity which differed significantly between the two groups ($p=0,008$) at a medium effect of $r=0,30$. Furthermore, a linear negative coherence of a medium extent ($p= -0,388$; $p< 0,001$) between leisure activity and steps at work could be shown.

Discussion: It seems that there is an inverse relation between the amount of activity at work and the intensity of leisure activity. At the same time it is important to note that many health factors only become noticeable at higher intensities (Booth, Roberts & Layne 2012), which get lost for the most active employees. This is a pilot project. Our hypotheses are regularly reviewed and refined continually on the basis of our growing data.

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Booth, F.W., Roberts, C.K. & Laye, M.J. (2012). Lack of exercise is a major cause of chronic Diseases. *Comprehensive Physiology*, 2, 1143-1211.

114 Is the exercise practice always associated to health chances? Cross-sectional survey in Italian sport club attenders

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Background. The scientific literature over the past 30 years highlighted the health benefits of regular physical activity (PA) and guidelines translate those evidences into recommendations for different population groups. However, participating in PA, particularly in sports activities, also carries significant risks: biomechanical, cardiovascular, respiratory, behavioural (performance-enhancing drugs use), psychosocial (body image disorders and exercise addiction), and combinations of risks (female athlete triad). In these perspectives, sport clubs could play a strategic role in the prevention of exercise-associated risks and in a setting-based health promotion. Our study is aimed at evaluating

the prevalence of physical and psychosocial health conditions and health-related behaviours in people attending sport-clubs.

Methods. In 2013 and 2014, a cross-sectional survey has been carried out in six sport clubs, located in Central Italy, collecting data on 212 subjects 18-82 ys of age (49.1% males) by means of a self-report questionnaire including an Italian version of the Exercise Dependence Scale (EDS) [1].

Results. Most athletes are involved in fitness activities (51.0%), followed by gymnastics (13.2%), martial arts (8.5 %), running and body building (6.6%). The proportion of people with overweight in the sample is lower than in general population, while the proportion of underweight is higher, particularly in females (7.6 vs 3.0%).. More than one third of the sample doesn't have a correct perception of his/her body weight: women distort it significantly more than males towards excess weight (34.3 vs 9.0%) and less towards weight deficiency (3.9 vs 26.0%, $p<0.001$). Moreover 25.0% of women and 17.3 % of men are unsatisfied with their own body image. The smoking habits are less frequent than in general population (19.8 vs 28.0%), however the proportions of those drinking alcohol at least monthly are similar (53.8 vs 54.5%) [2]. Only 9.0% declare the use of performance-enhancing substances. Five people (2.5%) were 'at-risk for exercise dependence' and 21.4% were 'physiologically dependent' (i.e. evidence of tolerance or withdrawal), which is less than in other studies [3]. Unsurprisingly, dependent subjects spent more time (3 or more days/week) in exercising (79.5 vs 59.0%, $p<0.05$) than 'non-dependents', but the prevalences of other unhealthy behaviours or body image disorders are similar, so it could be a dependence related to the exercise 'as an end in itself' and not a consequence e.g. of eating disorders.

Conclusion. The needs assessment is an essential action in health promoting sports clubs.

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115 Expected reduction in overweight prevalence by increasing physical activity in Italian adult population: contribution of national surveillance data in public prevention planning.

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Background. Since 2007, in Italy, a national surveillance system on NCDs and related risk factors in the adult population, named 'PASSI' (*Progressi nelle Aziende Sanitarie per la Salute in Italia*), collects data by means of computer assisted telephone interviews, monthly distributed, on a sample weighted by age, sex and area of residence, representative at regional level. For each health issue the protocol defines a pattern of indicators similar to other national surveillance systems [1]. The study is aimed at assessing the value of the ongoing surveillance system in providing evidence for health promoters and health planners, by analysing a subset of PASSI data referring to the Abruzzo Region. Physical activity (PA) and weight status (WS) have been selected as appropriate examples.

Methods. 5003 records on subjects 18-69 ys aged (49.2% males) were collected from 2008 to 2012. The temporal trends of PA and WS indicators have been described by gender. Moreover, by means of a longitudinal panel regression, the expected reduction in overweight/obesity prevalence associated to a hypothetical increase of active people proportion has been estimated, considering socio-demographic confounders and the 'time' as critical dimension in the surveillance.

Results. The overweight prevalence in the overall 2008-2012 pooled data was higher in males (41.4% vs 26.6% in females, $p < 0.001$), and the same was true for obesity prevalence (11.5% vs 9.7%, $p < 0.001$). In both gender groups, the obesity proportion decreased during the observation period (of 5.3% in males, $p < 0.001$; and of 2.9% in females, $p < 0.001$), revealing a sort of leveling off already noted in children's obesity [2]. Only 31.8% of males reached the minimum of recommended daily PA level and 25.3% of females ($p < 0.001$). Only a quarter of the sample declared that some health care operators counselled them an active daily lifestyle. With a regression analysis we estimated that, in females, the proportion of weight excess should decrease by 1% if around 25% of them 'simply' increases their activity up to minimum recommended level (150 min/week of at least moderate PA), (about 4500 females). This

reduction, even if little, represents the effect of PA increase alone, not considering diet habits. Moreover, for weight gain prevention, the volume of recommended PA is higher (300 min/week) [3].

Conclusion. In the fight vs weight excess at population level, PA increase appears an appropriate goal, particularly for females.

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116 Investigating stress at work using biometric measurement devices for measuring indicators of allostatic load

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Introduction: Stress at work is correlated with far-reaching negative consequences such as burnout or depression. However, stress at work is also suggested to be positive as it helps the organism to remain adaptive to challenges. Due to this dual nature of stress, there is a need to find ways to detect unhealthy burdens of stress. Mobile devices for the real time assessment of bodily functions may be a way to achieve this goal. One measurable indicator of stress at work is the heart rate variability as a measure of the allostatic load of a person. Allostasis is defined as the ability to adapt to challenges of daily life, while allostatic load is commonly understood as the inability to do so due to severe stress.

We hypothesize that changes in heart rate variability during routine activities indicate increases (lower heart rate variability) or decreases (higher heart rate variability) of general allostatic load.

Methods: We are now in a first phase of the project and test the accuracy of the measurement devices. To measure heart rate variability in routine activities we use metabolic equivalents of task (MET) as a common metric. MET can be approximated for each activity through vital signs gathered via biometric measurement devices, in our case we use the bioHarness2, a device which is

typically used for physical training. In a data mining process, data is segmented into time intervals with similar activation levels. In addition, we developed an online diary tool, in which persons indicate their current activities. Reoccurring activities can be compared over time concerning changes in heart rate variability.

Results: For phase one, we currently analyze test data, collected from the authors. This activity took approximately one hour. It can be segmented into four main regions: Adaption to the task, two action phases separated by a short break, and a recovery period.

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117 Vulnerability to Mental Health Problems, Chronic Stress, and Regular Exercises

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Introduction: Chronic stress can lead to serious health problems and can affect nearly every system of the human body, as suggested by physical, cognitive, affective and behavioral symptoms. Indeed, for a certain percentage of the general population, chronic stress raises blood pressure, increases the risk of heart attack and stroke, suppresses the immune system, and increases the vulnerability to psychiatric disorders, such as anxiety, depression, or schizophrenia.

Methods: Based on a sample of 2,517 students from the US, Europe, and Argentina, we investigated the interrelations between insufficient coping skills under chronic stress and impaired physical and mental health. Specifically, we addressed the following questions: (1) inter-relationship between coping behavior and the factors "regular exercises", "consumption behavior", "impaired physical health", "psychosomatic disturbances", and "impaired mental health"; (2) how to draw a line between risk and non-risk cases; and (3) extent to which coping skills are influenced by socio-cultural factors. All students completed 2 self-report questionnaires: the Coping Strategies Inventory

"COPE" and the Zurich Health Questionnaire "ZHQ" which assesses "regular exercises", "consumption behavior", "impaired physical health", "psychosomatic disturbances", and "impaired mental health". The data were subjected to structure analyses by means of Neural Network techniques.

Results: We found 2 highly stable COPE scales that quantified basic coping behavior in terms of "activity-passivity" and "defeatism-resilience". Excellent reproducibility across study sites suggested that the new scales represent socio-culturally independent personality traits. The ZGF factors were used to externally validate the newly constructed scales. The relationship between insufficient coping skills on the one hand, and the state of physical and mental health on the other was highly significant: The higher a person's defeatism score the higher his/her impairment in terms of physical and mental health, combined with a higher consumption of illegal drugs and a significant lack of physical activity.

Discussion: Our results suggested that (1) the proposed method provides powerful screening tools in the field of early detection and prevention of psychiatric disorders; and (2) physical activity (regular exercises) plays a significant role not only in the prevention of health problems but also in early intervention programs.

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118 Insufficient mineral and vitamin intake because of low energy turnover in physically inactive subjects

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Introduction: Sub-optimal intake of certain minerals and vitamins is frequent. The minimal needs for minerals and vitamins do not scale linearly with energy expenditure. Physically inactive subjects may therefore have a daily intake of minerals and vitamins below recommendations simply because of low energy turnover.

Methods: We extracted NHANES data (2003-2006) on 4016 adults >21 yr (1946 women) with valid physical activity (accelerometry) and food intake (dietary recall) measures (53±18 yr (mean±SD), 81±20 kg, 29±6 kg.m²). Total energy expenditure (TEE) was estimated summing resting metabolic rate (RMR, Harrison-Benedict), daily physical activity energy expenditure and 10% for the thermic effect of food, to calculate physical activity levels (PAL=TEE/RMR). Food intake was analysed for energy, mineral and vitamin content and compared to dietary intake recommendations, taking into account any mineral and vitamin supplements.

Results: The adult NHANES population is on average physically insufficiently active. There were 3342 inactive (PAL<1.5), 107 active (PAL>1.7) and 13 very active subjects (PAL>2). Inactive vs. active individuals had significantly lower intake for Vit B1, B3, B9, calcium, iron, copper, phosphorus, and selenium (P<0.05). Inactive individuals had insufficient intake for 8/19 compounds, active ones for 6/19 (p<0.05). Multiple linear regression indicated a decreased risk for insufficient mineral and vitamin intake for younger men with higher PAL and lower BMI. Inactive would on average have to walk an additional 11±1 km/day to reach a PAL >1.7 or 17±2 km/day for a PAL >2. Symmetrical up-scaling of energy intake without changing dietary composition yielded significantly reduced frequency of insufficient vitamin and mineral intake.

Discussion: The prevalence of insufficient mineral and vitamin intake is partly determined by low energy turnover from insufficient physical activity levels. An increase in population physical activity levels would lead to increased energy intake to cover the increased expenditure and at the same time increased intake of non-energy compounds of food like minerals and vitamins reducing the prevalence of insufficient mineral and vitamin intake.

120 Risk of chronicity of low back pain, physical activity and health-related quality of life in workers: CODEPA study

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Low Back Pain (LBP) is the leading health-related cause of the occupational compensatory economic burden because of claims and absenteeism in Spain. Eighty percent of economic costs attributable to the patients LBP are attributable to the 10% of these patients who developed chronic symptoms. Despite of its relevance there is a lack of knowledge about the chronicity of LBP and its relationship to physical activity and health-related quality of life. Therefore, the purposes of the current study were: a) to determine the prevalence of the risk of LBP chronicity in Spanish workers, and b) to explore the relation of the risk of LBP chronicity with the level of physical activity and health-related quality of life.

In the framework of a Spanish epidemiological study entitled CODEPA (Work Productivity, Quality of Life and Physical Activity), we conducted a cross-sectional study in Spanish workers. We obtained the data from a stratified sample of workers by geographical region of Spain and occupation. Participants responded to a core set of standardized and validated instruments regarding basic socio-demographic information, Start-Back-Screening Tool (SBST), physical activity using the IPAQ questionnaire, health status, health-related quality of life (HRQOL) using the questionnaire EQ-5D-3L and the risk of chronicity was evaluated using the SBST. Descriptive analysis was done using mean (SD) and frequencies. We analysed data from workers with LBP. We performed one-way Analysis of Variance with Bonferroni posthoc test and chi squared analysis to test the differences of LBP chronicity and work performance between the patients with different physical activity levels (low, moderate, high) and the five health-related dimensions (mobility, self-care, daily living activities, pain/discomfort, and anxiety/depression). We compared the results obtained by the patients with different LBP risk of chronicity (low, medium, high).

Thirty-five percent (n=683) of the workers analysed (n=2003) reported LBP. The 25% of workers with LBP reported a moderate risk of chronicity and the 38% of LBP patients reported a high risk. Patients with higher risk of chronicity showed lower health-related quality of life (p<0.001) and physical activity level (p < 0.008) than their counterparts.

More than one third of Spanish workers reported a high risk of LBP chronicity. The increase of the risk of LBP chronicity was linearly associated with a decrease of the level of physical activity and health-related quality of life in Spanish workers.

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121 Impact of different domains of physical activity on cause-specific mortality

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Introduction: Physical activity is inversely associated with mortality. However, the strength of evidence differs by cause of death and by sex. Furthermore, only few studies have included information on domain-specific physical activity. The aim was to analyse the association between different domains of physical activity and all-cause, cardiovascular disease (CVD) and cancer mortality in a general population sample from Switzerland with a follow-up time of up to 32 years.

Methods: The sample (aged 16-92 years at baseline) included participants of two studies aimed at assessing and preventing CVD conducted between 1977 and 1993: The National Research Program 1A (NRP 1A) and the Swiss MONICA (MONItoring of trends and determinants in CARDiovascular disease) study. Self-reported physical activity was assessed at baseline in the domains of commuting to work, work-related physical activity, and leisure-time physical activity (including leisure-time activity level and sport activity). Mortality follow-up data were obtained up to 2008 by anonymous record linkage with data from the Swiss National Cohort (median follow-up time 20.2 years). The final dataset included 17'663 individuals, 378'795 person-years of follow-up and 3878 deaths (1357 due to CVD, 1351 due to cancer). Adjusted Cox proportional hazard models were calculated.

Results: There were no significant associations between commuting and work-related physical activities, respectively, and mortality. Leisure-time activity level was associated with all-cause mortality in men [adjusted hazard ratio (HR) 0.75, 95% confidence intervals (CI) 0.63-0.89] and

women [HR 0.82 (0.74-0.91)], with CVD mortality in women only [HR 0.79 (0.67-0.94)] and with cancer mortality in men only [HR 0.63 (0.47-0.86)]. Sport activity was associated with all-cause, CVD and cancer mortality in men [HR ranged between 0.76 (0.63-0.92) and 0.85 (0.76-0.95)], but not in women.

Discussion: These results underline the public health relevance of physical activity for the prevention of CVD and cancer, especially regarding leisure-time physical activity. In contrast to other studies, there were no effects of work-related and commuting activities on mortality. Future studies using more accurate measurement instruments may better disentangle the effects of commuting and work-related activity also for Switzerland.

122 Associations of parental social support and educational level with children's physical activity during different times of the week

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Introduction: Little is known about how parental educational level and social support are associated with children's physical activity (PA) in different times of the week. In addition, more information is needed on whether mothers' educational level and social support have a different impact than those of fathers. This study examines the associations of parental social support and educational level with children's objectively measured PA.

Methods: Children (N=155, 11 years) wore accelerometers (Actigraph GTX3) for seven consecutive days, completed diaries, and filled in a questionnaire. In the questionnaire, children reported their mothers' and fathers' PA and encouragement for PA on a five-point scale. Parents reported their educational level. Children's objectively measured PA was classified into school-hours, out-of-school-hours during weekdays and weekends. Several linear regression analyses adjusted for gender and accelerometer wear time were conducted. In model 1, the individual associations of mothers' and fathers' perceived PA, encouragement, and education level with different children's PA measures were analyzed. In model 2, the simultaneous associations of mothers' and fathers' perceived PA, encouragement, and educational level with different children's PA measures were analyzed.

Results: In models 1, mothers' PA and education were individually associated with children's weekdays and weekend PA. In models 2, the association of mother's PA with weekdays PA and also the association of mother's education with weekends PA remained significant. In models 1, the father's PA and education were individually associated with weekends PA, and the association of father's education with weekend PA remained significant in model 2. Parental encouragement for PA was not associated with children's PA. In addition, no significant associations between parental social support, education and school-hours PA were found.

Discussion: This study increases the knowledge about the associations of parental education and social support on children's objectively measured PA in different times of the week. Future interventions should take into account the different mother's and father's influence on children's weekday and weekend PA. To increase children's PA, a focus should be on children of lower educated parents.

123 DAGIS – Determinants of Group Inequalities in Healthy Lifestyle among Preschool Children

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Introduction: Socioeconomic inequalities in physical activity, sedentary behaviors and eating habits, jointly called energy-balance related behaviors (EBRBs), can already be seen in early childhood. Preschool might be an environment that offers the possibility to balance children's EBRBs regardless of their socioeconomic backgrounds. However, little is known about social and physical environmental factors in preschool settings that influence children's EBRBs. Specially, the factors intervening between the socioeconomic backgrounds and children's EBRBs are necessary to develop the implementation of effective interventions. A possible factor in these associations might be children's stress, which has a special focus in this study.

Methods: The DAGIS study is divided into three phases. In the year 2014, focus group interviews for parents and early educators (phase 1) are conducted in low socioeconomic neighborhoods. In the year 2015, comprehensive research for children, parents and early educators will be conducted (phase 2). A total of 600 children equally from low and high socioeconomic backgrounds will be recruited. Children's saliva and

hair samples will be assessed. Their weight and height will be measured. Over 7 consecutive days, each child will wear an accelerometer on his/her waist. Parents will fill in children's food record for three days and complete a questionnaire about the social and physical environment of the family. Early educators will fill in children's food record for two days and complete a questionnaire about the social environment of the preschool. The physical environment of the preschool will be observed. In phase 3, two multi-level interventions will be conducted in the years 2016 and 2017. The interventions will be based on the results of phases 1 and 2. The interventions will be targeted to both children and early educators. The 'Healthy balance in EBRBs' intervention will improve the EBRBs. The 'Stress-free' intervention will reduce stress, which in turn improves EBRBs. In both interventions, diminishing the socio-economic inequalities in EBRBs is also an aim. The effectiveness of interventions will be tested in randomized controlled trials.

Results: The first results are expected in the year 2015 and continuously after that.

Discussion: The DAGIS study addresses significant factors influencing EBRBs. Our findings will have a potential to shape public health practices for healthy EBRBs during the early years.

124 Childhood obesity prevention: developing learning environments in elementary school

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Introduction: Obesity has substantially increased over the past 20 years. Children are not immune, because more than 22 million of the world's children under 5 years of age are overweight or obese. In child and adolescent obesity prevention multi-faceted models, such as the socioecological framework is generally used. Schools have been a popular setting for the implementation of such interventions. In spite of this multiplicity of approaches, systematic reviews indicate that, at best, physical activity and nutrition interventions in schools have limited success in preventing weight gain in children. Therefore, this pilot study aims to evaluate two school-based interventions, one theoretical (TA) and one practical (PA) (using tasks that support the concepts knowledge), concerning

the caloric balance. This exploratory study is based on knowledge management and learning theories which state that in order to change attitudes, habits, patterns and behavior, the individual must not only have a theoretical knowledge, but also the capacity to act, to integrate knowledge and to change his way of action.

Methods: 114 children (age 7 – 9) from elementary school level, were exposed two different learning strategies, group A to a theoretical explanation of the concepts (TA) and group B to problem solving situations (PA). At the end a survey was applied with 3 main questions, focusing on concept, knowledge and integration. Descriptive statistics with two-by-two contingency tables (for which the Pearson chi-square was calculated) were used.

Results: For the concept questions (focusing on caloric balance), the TA group had a higher percentage of correct answers than the PA group, with the exception of 3rd grade. Regarding the knowledge questions, the TA group showed a higher percentage of correct answers in most of the questions. For the integration questions, the PA group had a better performance than the TA group.

Discussion: The theoretical approach is a superior strategy for acquiring concepts and knowledge information. However, the practical approach is better when we intend to integrate knowledge. When children participate in an active way, they are more motivated, involved with problem situations and they construct their knowledge about obesity problems and prevention.

SRH peers. Likewise obese boys but neither obese nor overweight girls were more likely to report negative SRH (OR: 1.30; CI: 1.14-4.62; p<0.05) compared to their normal-weight counterparts.

Discussion: Sports participation was positively associated with higher health perception status (SRH) and non-obese weight status although such an association was only found in boys.

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125 Organized Sports Participation, Self-Rated Health and obesity status among adolescents.

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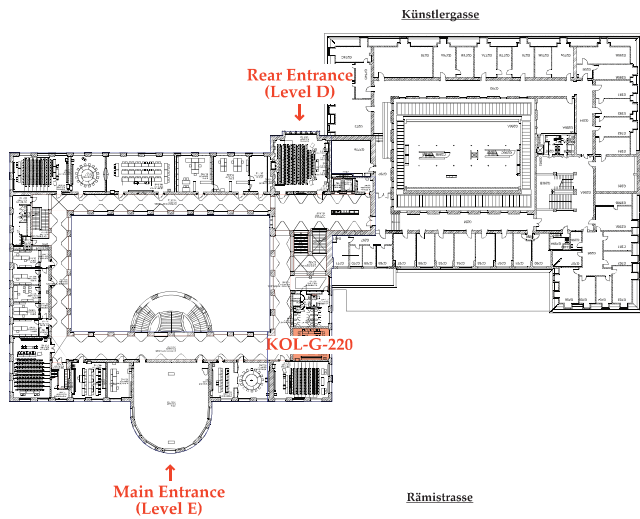
Introduction: This study aimed to analyze the associations of sport participation (SP) and self-rated health (SRH) with obesity status (BMI) in adolescents.

Methods: This cross-sectional study comprised 1221 adolescents, aged from 10-18 years old. SP and SRH were obtained by questionnaire. Obesity status was obtained through BMI.

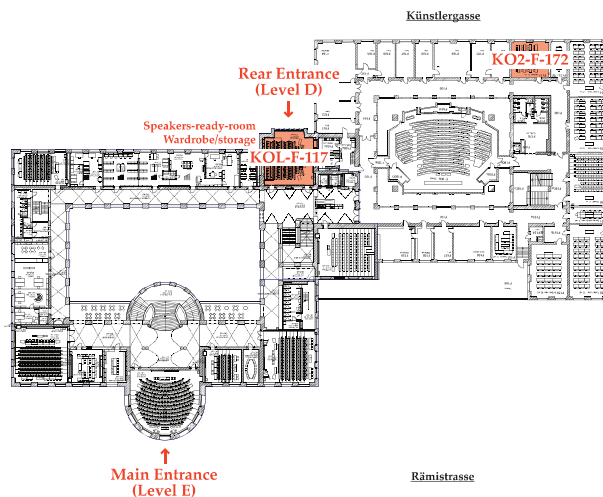
Results: Boys and girls who reported positive SRH were more likely to be engaged in SP (OR: 3.05; CI: 1.91-4.87; p<0.05 for boys and OR: 3.31; CI: 1.00-2.84; p<0.05 for girls) compared to their negative

Floor plans of the University of Zurich

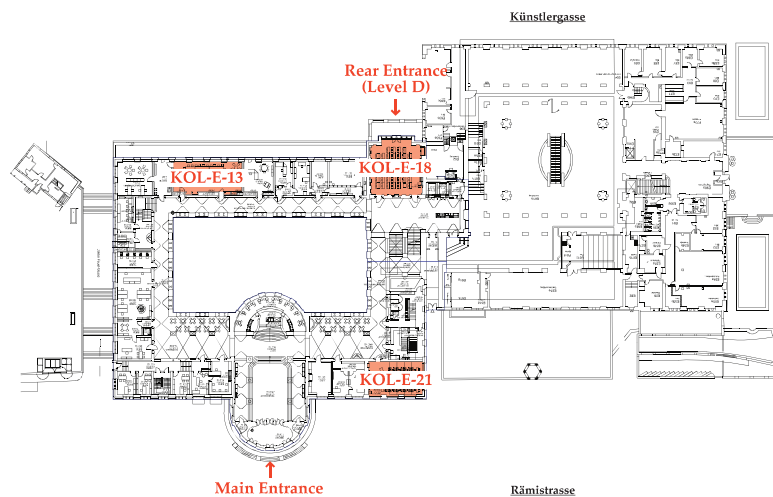
Level G



Level F



Level E



Level D

