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Epidemiology, Biostatistics and Prevention Institute EBPI



Directorate of Economics and Health
Canton of Basel-Country
Liestal

Office of Public Health

Steps to health – walking and physical activity in an urban context

Brian Martin, MD MPH

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Epidemiology, Biostatistics and Prevention Institute EBPI, University of Zurich

Walk 21, 20 October 2015, Vienna

Handout at www.panh.ch (-> presentations)

Panel 2: From evolution

„From evolutionary biology to societal determinants“

An evolutionary perspective assumes that many components of our physiology are adapted to a range of expected behaviour. It is physically active out of necessity and then had to reduce energy expenditure and culturally and technologically induced decreases in the need for energy expenditure?

• „Physical activity level can be calculated as the ratio of total energy expenditure to basal metabolic rate.“

Physical activity level can be calculated as the ratio of total energy expenditure to basal metabolic rate. Foragers—of larger body size—had activity levels of roughly 1.7 (contemporary foragers—activity levels of roughly 1.2–1.5), suggesting that our species adapted to increased physical activity for foraging. Subsistence farmers have variable levels of activity, with a mean of about 1.9 in men and 1.8 in women, but ranging up to roughly 2.5. However, in urban populations, the most sedentary individuals have activity levels of about 1.5. Overall, people could be expected to have activity levels of about 1.75, as was recommended by WHO and the Food and Agriculture Organisation for health in 2004,¹⁸ but this value is much higher than is that of sedentary populations.¹⁹

• „Ancestral foragers (...) had estimated mean physical activity levels of roughly 1.7 (...)
• Non-human primates do less activity than do human beings (1.2–1.5), suggesting that our species adapted to increased physical activity for foraging
• Subsistence farmers have variable levels of activity, with a mean of about 1.9 in men and 1.8 in women, but ranging up to roughly 2.5.
• However, in urban populations, the most sedentary individuals do little activity (about 1.5).“

Bauman A, Reis R, Sallis JF, Wells J, Loos R, Martin BW, for the Lancet Physical Activity Series Working Group. Physical Activity 2 - Why are some people physically active and others not? Understanding the Correlates of Physical Activity. Lancet. 2012 Jul 21;380(9838):258-71.

Steps to health

- Why do we need to be physically active?
- What are the health effects of physical activity?
- How active should we be?
- What is the health potential of walking?
- What are population based approaches to physical activity promotion?

Basis of the 2008 US Guidelines and the 2010 WHO Recommendations

683 pages

Physical Activity Guidelines Advisory Committee. Physical Activity Guidelines Advisory Committee Report, 2008. Washington, DC: U.S. Department of Health and Human Services, 2008.

www.health.gov/paguidelines

Physical Activity Guidelines Advisory Committee Report, 2008

To the Secretary of Health and Human Services



Scientifically proven health effects of physical activity

Health impact of physical activity in children and adolescents		
Cardiovascular endurance	↑	Risk profile for cardiovascular diseases ↓
Muscle power	↑	Risk profile for metabolic disorders ↓
Healthy body weight	↑	Anxiety-related symptoms ↓
Bone health	↑	Depressive symptoms ↓
In adults		
Life expectancy	↑	Cardiovascular disease ↓
Fitness	↑	Stroke ↓
Healthy body weight	↑	High blood pressure ↓
Bone health	↑	Type 2 diabetes ↓
Psychological well-being	↑	Colon cancer ↓
Quality of sleep	↔	Breast cancer ↓
Health-related quality of life	↔	Depression ↓
Additionally in older adults		
Independence	↑	Falling accidents ↓
Mental acuity	↑	
Key		
Improvement in relation to this health-related aspect	↑	Decrease in risk in relation to this health problem ↓
Strong evidence ↑ Moderate evidence ↔		

Fig. 2: Overview of scientifically proven health impact of physical activity in different age groups.

FOSPO, FOPH, Health Promotion Switzerland, bfu, Suva, Health and Physical Activity Network Switzerland. Health-Enhancing Physical Activity. Core document for Switzerland. Magglingen, FOSPO 2013.

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2010

www.who.int/dietphysicalactivity

RECOMMENDED LEVELS OF PHYSICAL ACTIVITY FOR HEALTH

18–64 years old

For adults of this age group, physical activity includes recreational or leisure-time physical activity, transportation (e.g. walking or cycling), occupational (i.e. work), household chores, play, games, sports or planned exercise, in the context of daily, family, and community activities.

In order to improve cardiorespiratory and muscular fitness, bone health and reduce the risk of NCDs and depression the following are recommended:

1. Adults aged 18–64 years should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week, or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.
2. Aerobic activity should be performed in bouts of at least 10 minutes duration.
3. For additional health benefits, adults should increase their moderate-intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate- and vigorous-intensity activity.
4. Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.

2010

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www.who.int/dietphysicalactivity

Mortality reduction dose-response curve in Taiwanese cohort study with n=416'175

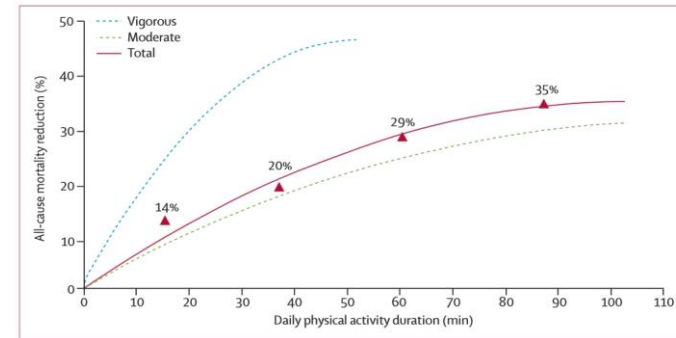


Figure 2: Daily physical activity duration and all-cause mortality reduction

Wen CP, Wai JP, Tsai MK, Yang YC, Cheng TY, Lee MC, Chan HT, Tsao CK, Tsai SP, Wu X. Minimum amount of physical activity for reduced mortality and extended life expectancy: a prospective cohort study. *Lancet*. 2011 Oct 1;378(9798):1244-53.

Basic recommendations as an orientation point in Taiwanese cohort study with n=416'175

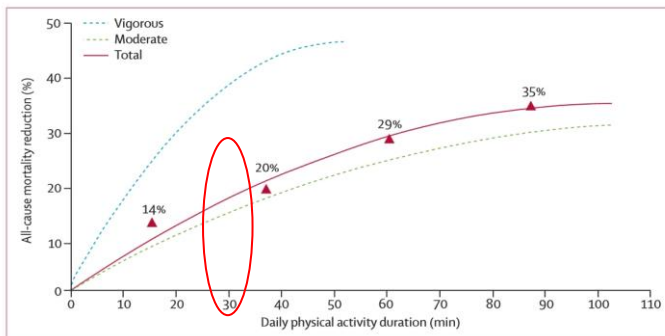


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Basic recommendations not as a threshold in Taiwanese cohort study with n=416'175

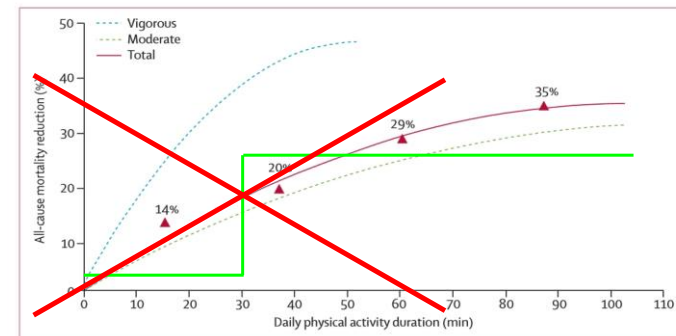


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30 minutes of moderate intensity activities per day ~ 10'000 steps/day (limited comparability of devices!)

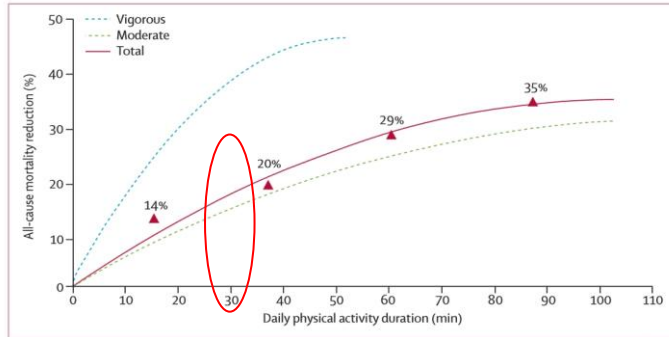


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Doubling of effects with high intensity activities in Taiwanese cohort study with n=416'175

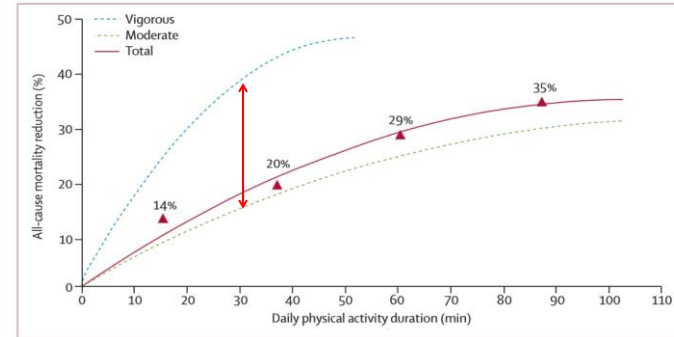
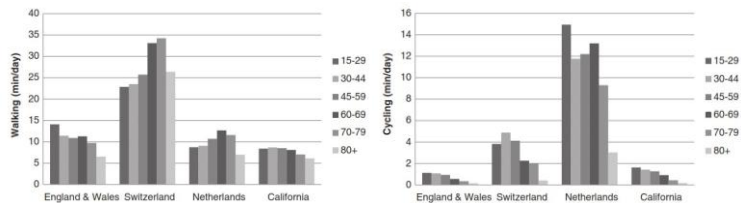


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Walking and Cycling by age groups in minutes/day across four countries



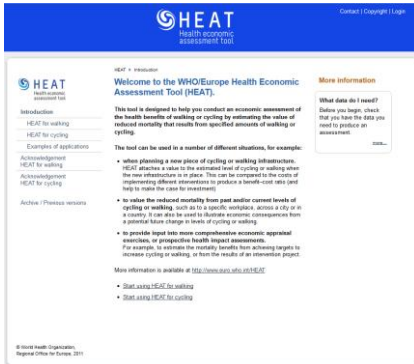
Götschi T, Tainio M, Maizlish N, Schwanen T, Goodman A, Woodcock J. Contrasts in active transport behaviour across four countries: how do they translate into public health benefits? Prev Med. 2015; 74: 42-8.

What if England and Wales adopted other countries' active transport patterns...

Adoption of	Change in annual deaths	% of deaths by inactivity	% of all deaths
Swiss travel times	-16'800	-10%	-4%
Dutch travel times	-10'640	-6%	-3%
Californian travel times	+1'732	+1%	0%

Götschi T, Tainio M, Maizlish N, Schwanen T, Goodman A, Woodcock J. Contrasts in active transport behaviour across four countries: how do they translate into public health benefits? Prev Med. 2015; 74: 42-8.

HEAT Health Economic Assessment Tool for Cycling and for Walking



www.euro.who.int/HEAT



4. Primary health care systems

3. Urban design regulations and infrastructure

2. Transport policies and systems

1. „Whole-of-school“ programmes

5. Public education


6. Integrated community-wide programmes

7. „Sport for all“ systems and programmes



GAPA, a council of the International Society for Physical Activity and Health ISPAH
www.globalpa.org.uk


Review




Effect of school-based interventions on physical activity and fitness in children and adolescents: a review of reviews and systematic update

S Kriemler,^{1,2} U Meyer,¹ E Martin,² E M F van Suijs,³ L B Andersen,^{4,5} B W Martin²

Br J Sports Med 2011;**45**:923–930. doi:10.1136/bjsports-2011-090186





Schweizerische Gesellschaft für Sportmedizin
Società Svizzera di Medicina dello Sport
Società Svizzera di Medicina dello Sport
2/2014

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Sportmedizin und Sporttraumatologie
Revue suisse de
Médecine et traumatologie du sport
Rivista svizzera di
Medicina e traumatologia dello sport



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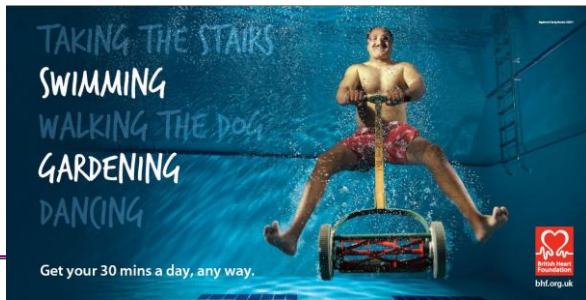
**10th Annual Meeting and
5th Conference of HEPA Europe**

Physical activity promotion in health care settings



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

www.panh.ch/hepaeurope2014



**Dr. Luci Fehrs
Krankheits-Tipp Nr. 2:**
Vermeiden Sie sorgfältig jede sportliche Betätigung. Gehen Sie nie zu Fuss. Fahren Sie nie Velo. Grundsätzlich verboten ist tiefes Durchatmen – es sei denn, Sie ziehen Rauch ein.

**„Dr. Luci Fehrs's
Illness Tip No 2:**
Carefully avoid all forms of sports and physical activity. Never walk. Never use your bicycle. Never ever breathe harder – unless you are inhaling tobacco smoke.“



www.agitasp.org.br



ALLEZ HOP

Allez Hop bewegt die Schweiz

Allez Hop, a nationwide programme for the promotion of physical activity in Switzerland: what is the evidence for a population impact after one decade of implementation?

Miriam Wanner,^{1,2} Eva Martin-Diener,^{1,3} Georg F Bauer,^{2,3} Hanspeter Stamm,⁴ Brian W Martin^{1,2}



Br J Sports Med. 2011 Dec;45(15):1202-7.

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Thank you for your attention!

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