



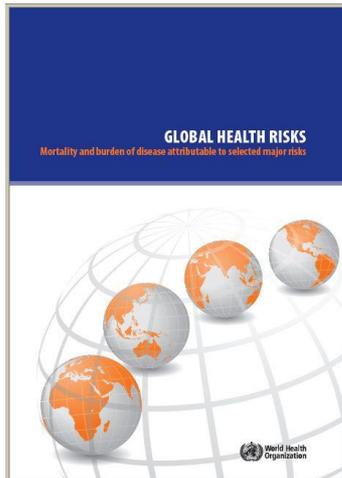
The role of cohort studies for NCD prevention and health promotion – the role of Physical Activity

Brian Martin, MD MPH
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Indo-Swiss Symposium on Cohorts and Biobanks with Special Reference to Chronic Non-Communicable Diseases, SCIMST, Trivandrum, Kerala, India, 27.01.2012

The role of cohort studies for NCD prevention and health promotion – the role of Physical Activity

- Why NCD and why Physical Activity?
- Why cohort studies?
- Why India and Switzerland?
- How can we make progress?

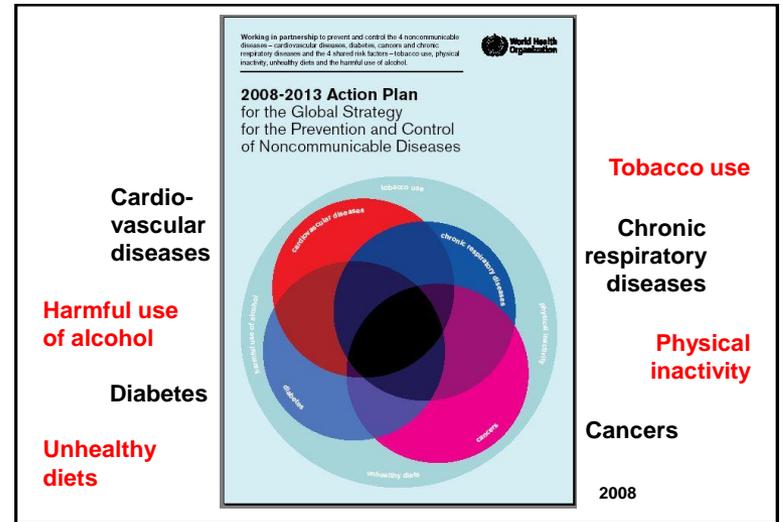
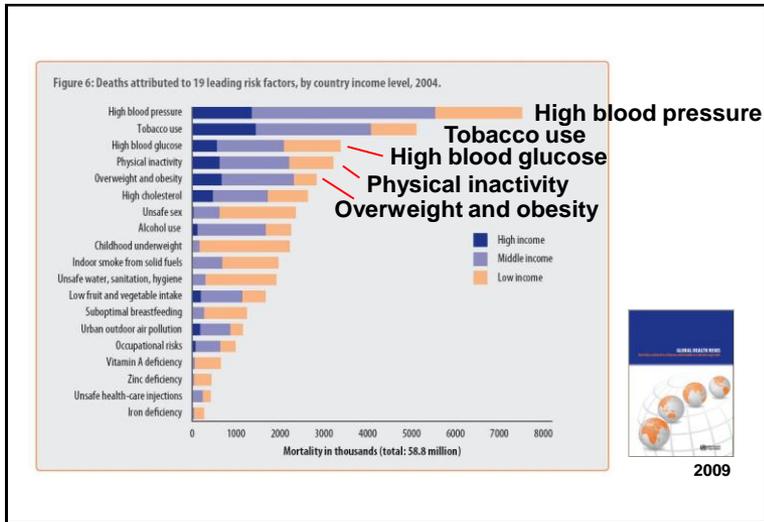


2009

Figure 2: The risk transition. Over time, major risks to health shift from traditional risks (e.g. inadequate nutrition or unsafe water and sanitation) to modern risks (e.g. overweight and obesity). Modern risks may take different trajectories in different countries, depending on the risk and the context.



2009



The NCD Alliance
Putting non-communicable diseases on the global agenda

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The NCD Alliance was founded by:

International Diabetes Federation | WORLD HEART FEDERATION | IACC | International Union Against Tuberculosis and Lung Disease

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Types of evidence for Public Health

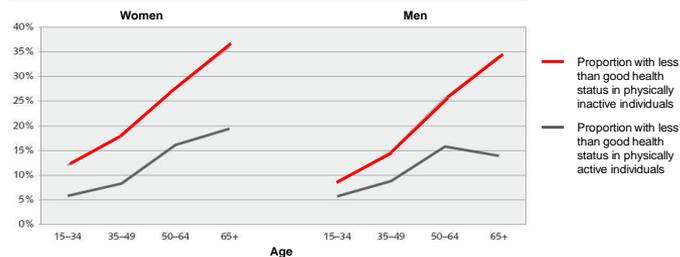
Type I evidence
Disease ← risk factor (e.g. physical inactivity)
“Why should something be done?”

Type II evidence
Intervention → prevalence of risk factor
“What should be done?”

Cavill et al 2005, adapted from Brownson et al 1999

Physical Activity and Subjective Health Status in the Swiss Health Survey 2002

Anteile der Frauen und Männer mit höchstens mittelmässigem Gesundheitszustand unter den körperlich Aktiven und den Inaktiven, nach Alter G 13



Quelle: BFS, Schweizerische Gesundheitsbefragung 2002, n=18'715. Prozent der Antworten «mittelmässig», «schlecht» und «sehr schlecht» auf die Frage: «Wie geht es Ihnen zur Zeit gesundheitlich?».

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Lamprecht M, Stamm HP. Bewegung, Sport, Gesundheit. Fakten und Trends aus den Schweizerischen Gesundheitsbefragungen 1992, 1997, 2002. StatSanité, Resultate zu den Gesundheitsstatistiken in der Schweiz, 1/2006.

Cross-sectional study designs

Anteile der Frauen und Männer mit höchstens mittelmässigem Gesundheitszustand unter den körperlich Aktiven und den Inaktiven, nach Alter G 13



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The INTERHEART Study

Effect of potentially modifiable risk factors associated with myocardial infarction in 51 countries: case-control study (n=15'152+14'820)

Risk factor	Sex	Control (%)	Case (%)	Odds ratio (99% CI)
Exercise	F	16.5	9.3	0.48 (0.39-0.59)
	M	20.3	15.8	0.77 (0.69-0.85)

Lancet 2004; 364: 937-52

Case-control designs

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Important challenge: recall bias in retrospective exposure assessment !

Tuomilehto J et al. Prevention of Type 2 Diabetes Mellitus by Changes in Lifestyle among Subjects with Impaired Glucose Tolerance

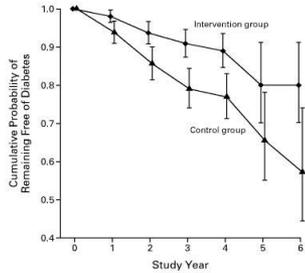
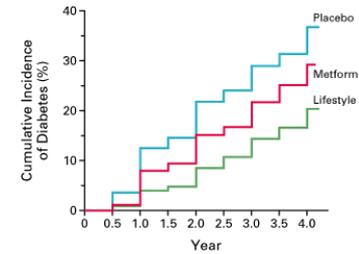


Figure 1. Proportion of Subjects without Diabetes during the Trial.
The vertical bars show the 95 percent confidence intervals for the cumulative probability of remaining free of diabetes. The relative risk of diabetes for subjects in the intervention group, as compared with those in the control group, was 0.4 (P<0.001 for the comparison between the groups).

SUBJECTS AT RISK		0	1	2	3	4	5	6
Total no.		507	471	374	167	53	27	27
Cumulative no. with diabetes:								
Intervention group		5	15	22	24	27	27	27
Control group		16	37	51	53	57	59	59

N Engl J Med 2001; 344 (18): 1343-1350

Diabetes Prevention Program Research Group. Reduction in the Incidence of Type 2 Diabetes with Lifestyle Intervention or Metformin

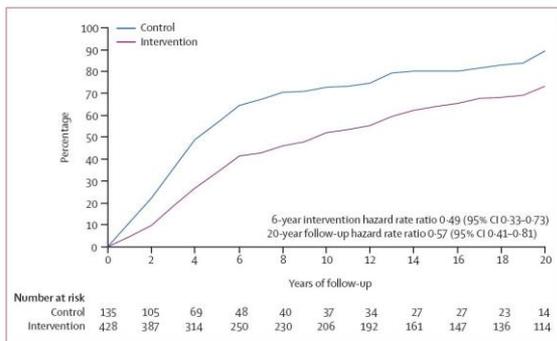


N Engl J Med 2002; 346 (6): 393-403

Figure 2. Cumulative Incidence of Diabetes According to Study Group.

The diagnosis of diabetes was based on the criteria of the American Diabetes Association.11 The incidence of diabetes differed significantly among the three groups (P<0.001 for each comparison).

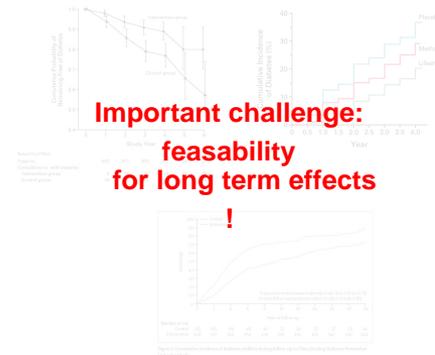
The long-term effect of lifestyle interventions to prevent diabetes: a 20-year follow-up study



Guangwei L et al. Lancet 2008; 371: 1783-89

Figure 2: Cumulative incidence of diabetes mellitus during follow-up in China Da Qing Diabetes Prevention Outcome Study

Randomised controlled trials



Cohort studies

- Ideal for study of long term effects on NCD outcomes
- Allow to study temporal sequence of exposure and potential outcomes
- Allow to study changes in exposure
- May allow nested case-control studies with prospective exposure assessment

4. Primary health care systems

5. Public education

6. Integrated community-wide programmes

7. „Sport for all“ systems and programmes

3. Urban design regulations and infrastructure

2. Transport policies and systems

1. „Whole-of-school“ programmes

NON COMMUNICABLE DISEASE PREVENTION:
Investments that Work for Physical Activity
A complementary document to
The Toronto Charter for Physical Activity: A Global Call to Action

Whole-of-community approaches where people live, work and recreate have the opportunity to mobilize large numbers of people.

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

Type II evidence for physical activity and health

- Derived from intervention studies
- Possibility for nested intervention studies in cohorts
- Development and improvement of interventions based on studies of determinants of physical activity
- Cross-sectional study designs only provide information on correlates, longitudinal study designs on true determinants of physical activity behaviour

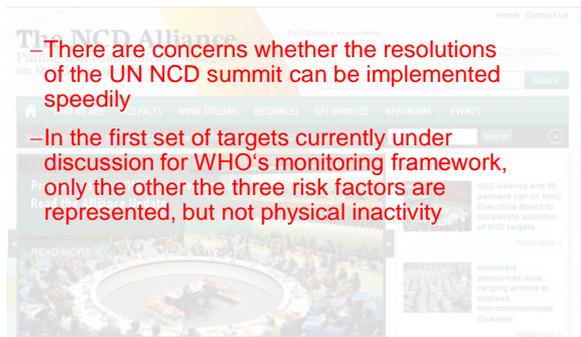
“Why are some people physically active and others not? Understanding the Correlates of Physical Activity”

“The major limitation of the correlates literature is that the majority of studies used a cross-sectional design (...)”

Manuscript under development. Authors: Adrian E Bauman, Rodrigo Reis, James F Sallis, Jonathan Wells, Ruth Loos, Brian W Martin.

Current developments in physical activity and health

–Despite first successes,
more evidence-based advocacy is necessary



Current developments in physical activity and health

–Despite first successes,
more evidence-based advocacy is necessary

–Better methods for quantification of levels of physical activity and for assessment of different domains of physical activity* are now available

- *SLOTH: –Sleep
–Leisure time activity
–Occupational activity
–Transport
–Home-based activities

Pratt et al. American Journal of Preventive Medicine 2004

Current developments in physical activity and health

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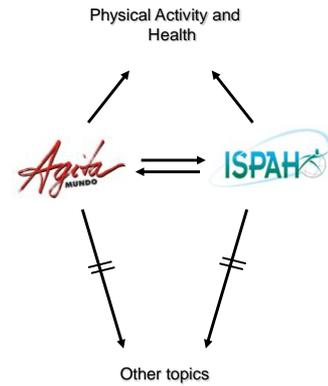
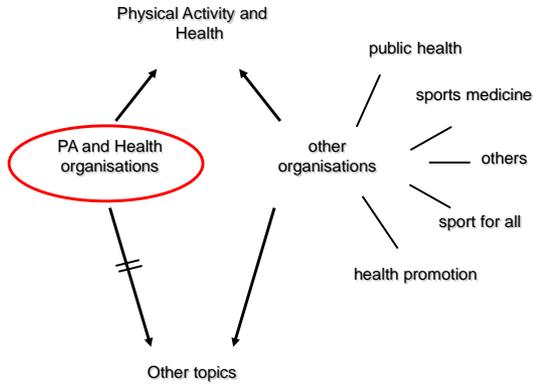
–More trans-cultural research in physical activity and health is necessary

“Why are some people physically active and others not? Understanding the Correlates of Physical Activity”

	Reviews	Studies
– Demographic, psycho-social and behavioural correlates	18	772
– Environmental correlates in adults	42	?
– Environmental correlates in youth	1 (new)	103
– All correlate studies from LMIC	1 (new)	68

Manuscript under development. Authors: Adrian E Bauman, Rodrigo Reis, James F Sallis, Jonathan Wells, Ruth Loos, Brian W Martin.

Specificity of actors in physical activity and health



www.agitamundo.org
www.panh.ch/agitamundo

www.ispah.org

Scientific Society on Physical Activity and Health

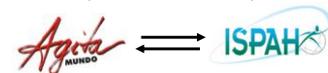


Other Councils



www.ispah.org

Physical Activity and Health



- PA promotion Network
- Institutional membership
- Multilingual
- Scientific society
- Individual membership
- English

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www.ispah.org

