Swiss TPH
Swiss Tropical and Public Health Institute
Schweizerisches Tropen- und Public Health-Institut
Institut Tropical et de Santé Publique Suisse

Associated Institute of the University of Basel

Department of Epidemiology and Public Health
Household Economics and Health Systems Research Unit

Swiss TPH Winter Symposium 2017

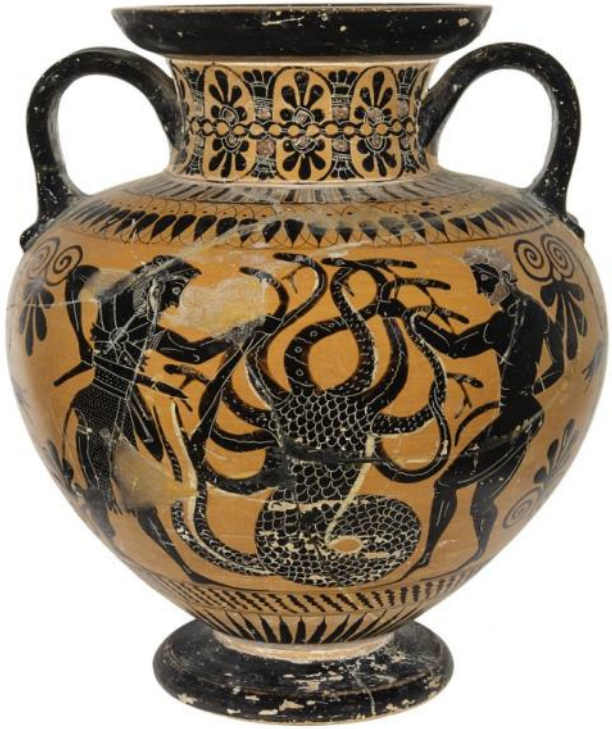
Helminth Infection – from Transmission to Control

Helminths, Disability, Functioning, and Health-Related Quality of Life

Thomas Fürst

November 8, 2017, Basel, Switzerland

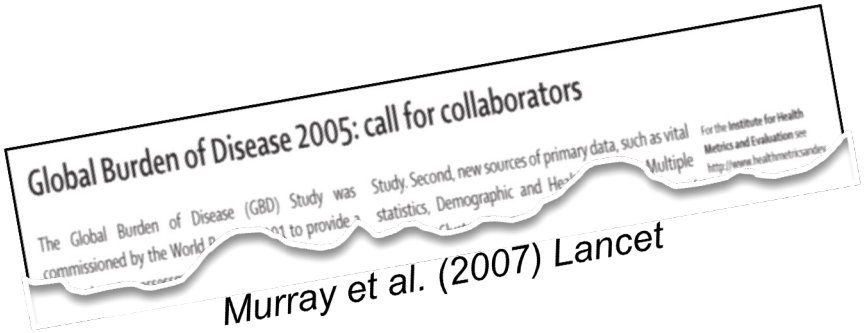
A dose of the “Hydra”… and potential adverse effects



Amphora with Hercules and the Hydra of Lerna (560-540 BC)

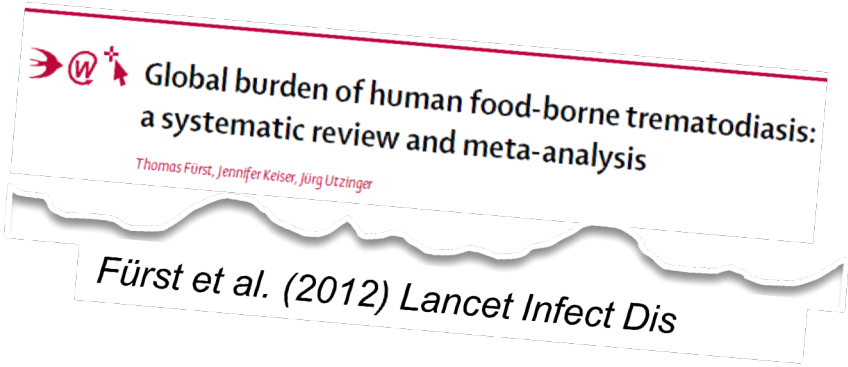
«Chribel», Ueli Berger, Kunst(Zeug)Haus Rapperswil-Jona

Background



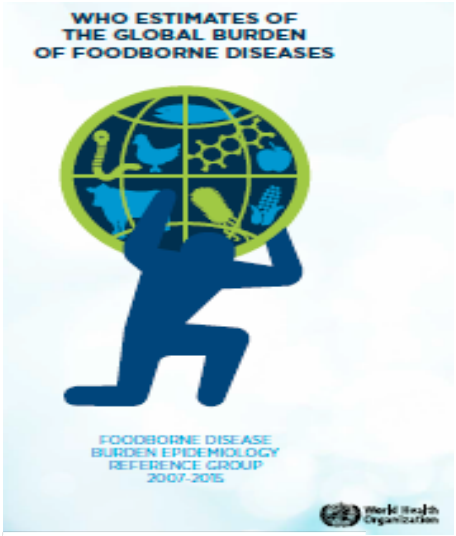
Murray et al. (2007) Lancet

GBD 2013 Collaborators (2015) Lancet



Fürst et al. (2012) Lancet Infect Dis

Murray et al. (2012) Lancet



WHO FERG (2015)

Background

Global, regional, and national disability-adjusted life-years (DALYs) for 315 diseases and injuries and healthy life expectancy (HALE), 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015

GBD 2015 DALYs and HALE Coll...

GBD Collaborators (2016) Lancet

Global, regional, and national disability-adjusted life-years (DALYs) for 333 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016

GBD 2016 DALYs and HALE Collaborators*

GBD Collaborators (2017) Lancet

RESEARCH Open Access

Self-rated quality of life and school performance in relation to helminth infections: case study from Yunnan, People's Republic of China

Kathrin Ziegelbauer[1,2], Peter Steinmann[1,2,3], Hui Zhou[3], Zun-Wei Du[4], Jin-Yong Jiang[4], Thomas Fürst[1,2], Tie-Wu Jia[3], ...-Nong Zhou[3], Jürg ...

Ziegelbauer et al. (2011) Parasit Vectors

Effect of Schistosomiasis and Soil-Transmitted Helminth Infections on Physical Fitness of School Children in Côte d'Ivoire

... Müller[1,2,3], Jean T... [1,3,4,5], Thomas Fürst[1,5], Stefanie Kn... Hattendorf[1,5], Stefanie J...

Müller et al. (2011) PLoS Negl Trop Dis

RESEARCH Open Access

Questionnaire-based approach to assess schoolchildren's physical fitness and its potential role in exploring the putative impact of helminth and Plasmodium spp. infections in Côte d'Ivoire

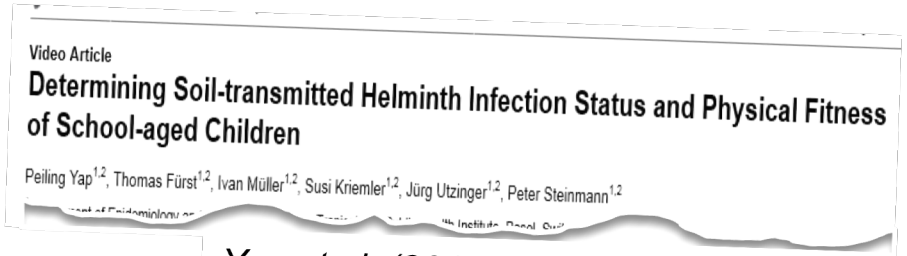
Fürst et al. (2011) Parasit Vectors

Schistosomiasis, Soil-Transmitted Helminthiasis, and Sociodemographic Factors Influence Quality of Life of Adults in Côte d'Ivoire

Thomas Fürst[1,2], Kigbafori D. Silué[3,4], Mamadou Ouattara[3], Dje N. N'G... [5], Lukas G. Adiossan[6],

Fürst et al. (2012) PLoS Negl Trop Dis

Background

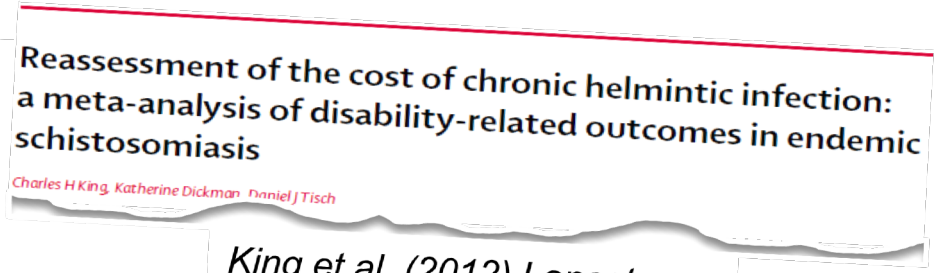


Video Article

Determining Soil-transmitted Helminth Infection Status and Physical Fitness of School-aged Children

Peiling Yap[1,2], Thomas Fürst[1,2], Ivan Müller[1,2], Susi Kriemler[1,2], Jürg Utzinger[1,2], Peter Steinmann[1,2]

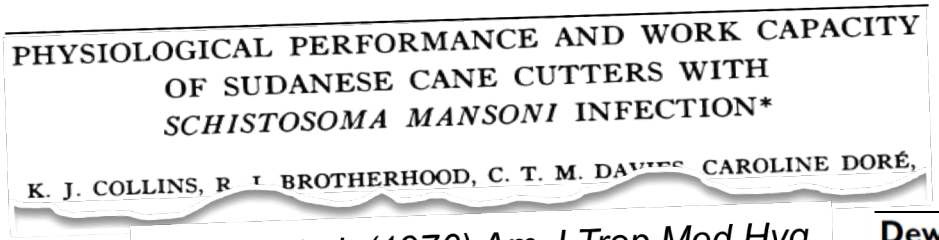
Yap et al. (2012) J Vis Exp



Reassessment of the cost of chronic helmintic infection: a meta-analysis of disability-related outcomes in endemic schistosomiasis

Charles H King, Katherine Dickman, Daniel J Tisch

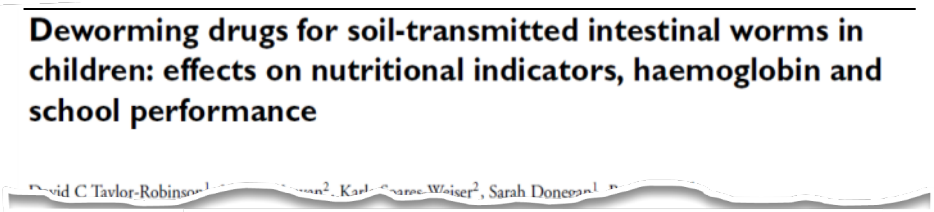
King et al. (2012) Lancet



PHYSIOLOGICAL PERFORMANCE AND WORK CAPACITY OF SUDANESE CANE CUTTERS WITH *SCHISTOSOMA MANSONI* INFECTION*

K. J. COLLINS, R. J. BROTHERHOOD, C. T. M. DAVIES, CAROLINE DORÉ,

Collins et al. (1976) Am J Trop Med Hyg



Deworming drugs for soil-transmitted intestinal worms in children: effects on nutritional indicators, haemoglobin and school performance

David C Taylor-Robinson[1], [illegible][2], Karl Soares-Weiser[2], Sarah Donegan[1], P[illegible]

Taylor-Robinson et al. (2012) Cochrane Database Syst Rev

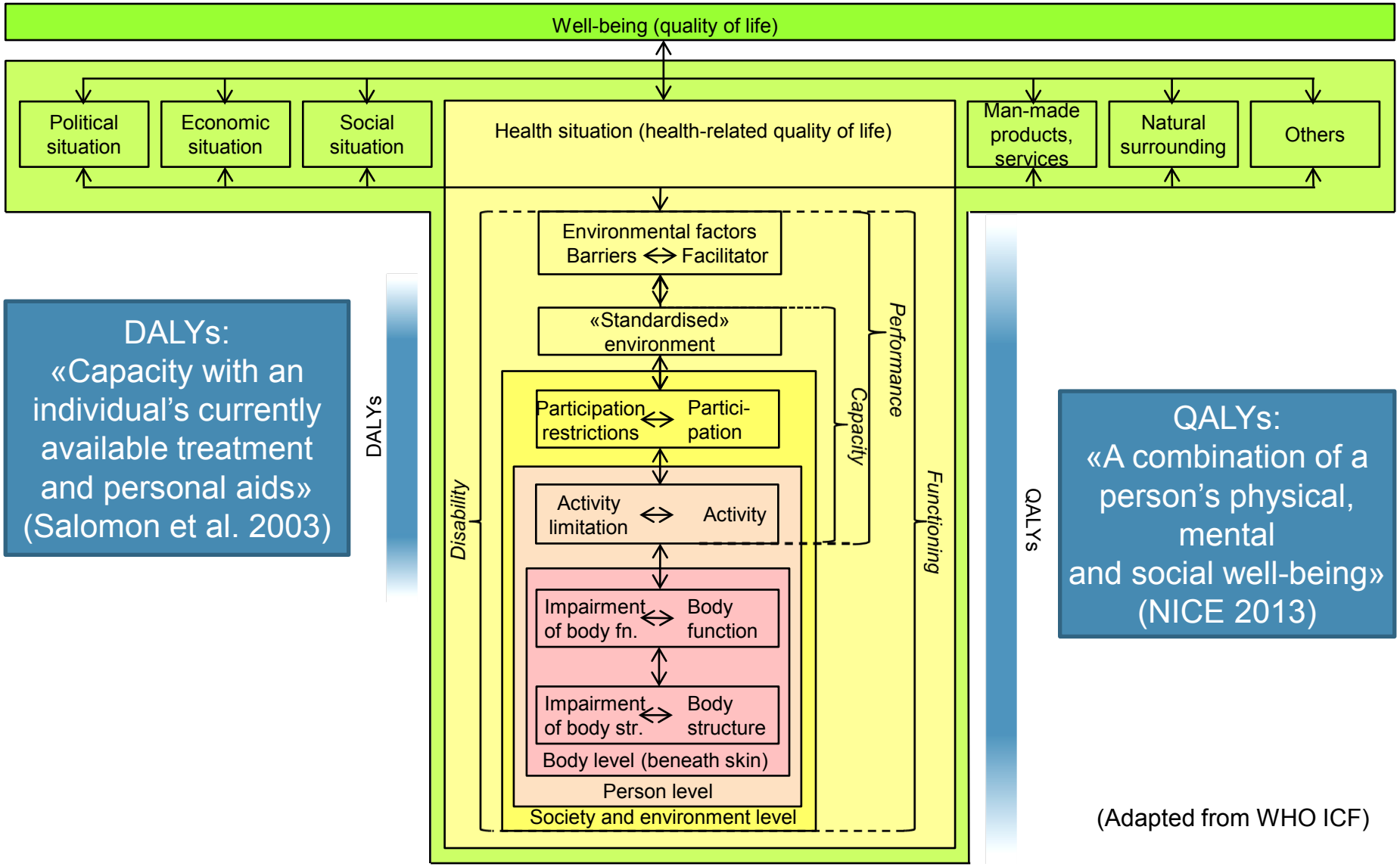
Important questions to prioritise conditions and interventions in public health:

- How many affected?
- How «good» or «bad» / «healthy» or «unhealthy» for affected?
- What can be done?

→ **What to measure?**

→ **How to measure?**

What to measure?

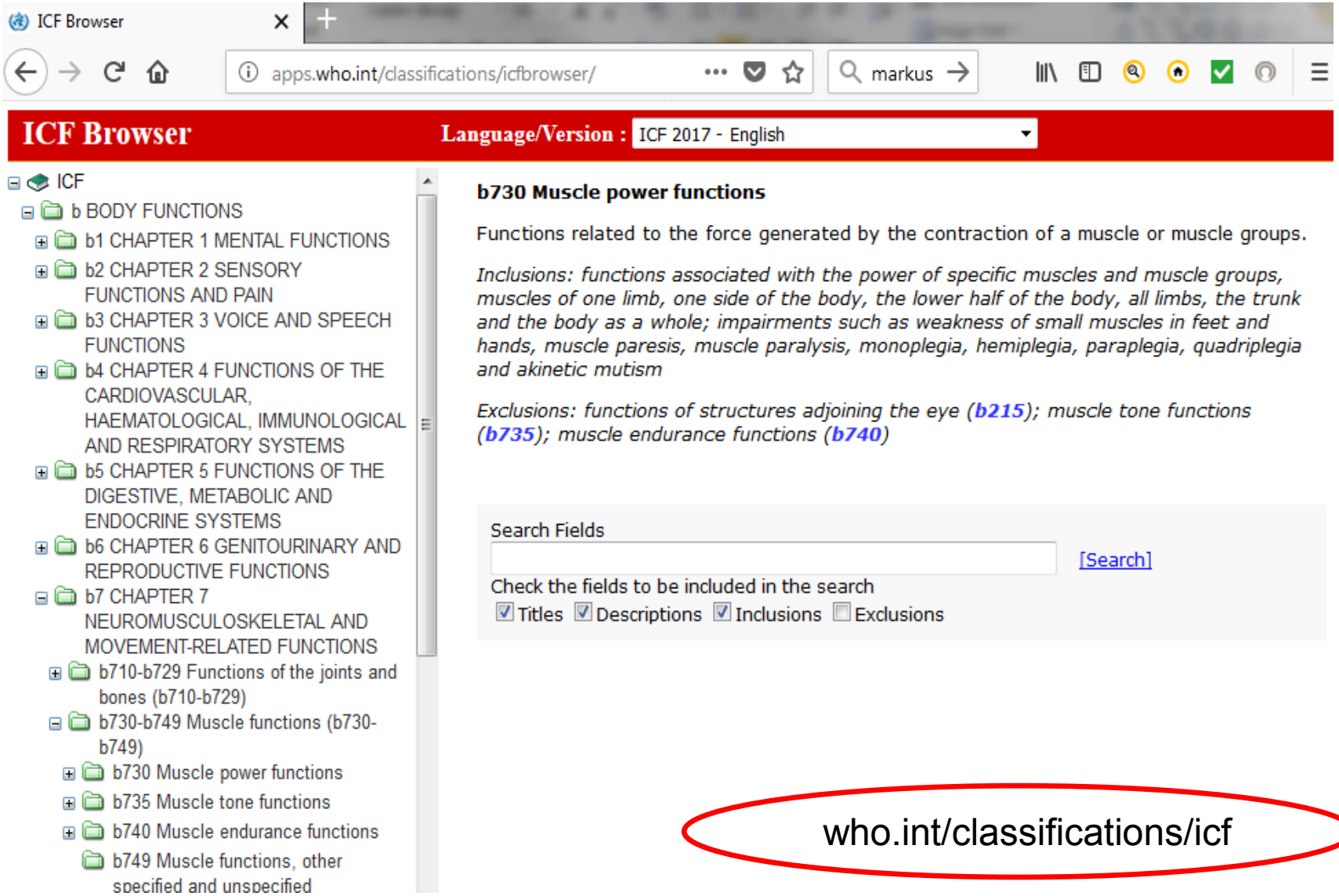


DALYs:
«Capacity with an individual's currently available treatment and personal aids» (Salomon et al. 2003)

QALYs:
«A combination of a person's physical, mental and social well-being» (NICE 2013)

(Adapted from WHO ICF)

What to measure?



who.int/classifications/icf

What to measure?

- ICF (who.int/classifications/icf) x ICD (who.int/classifications/icd) matrix for health state profiles

		ICD										
		...	...	B68	B69	B70	B71	B72	B73	B74	...	...
ICF	...											
	...											
	b730											
	b731											
	b732											
	b733											
	b734											
	b735											
	b736											
	...											
	...											

How to measure?

- ICF (who.int/classifications/icf) x ICD (who.int/classifications/icd) matrix for health state profiles

		ICD										
		...	...	B68	B69	B70	B71	B72	B73	B74	...	...
ICF	...											
	...											
	b730											
	b731											
	b732											
	b733											
	b734											
	b735											
	b736											
	...											
	...											

- Direct vs. indirect measurement?
- Objective vs. subjective measurement?
- «Descriptivist» vs. «normativist» interpretation?
- Possible study designs?
- Ethics?

Put meat on the bones: an “old” example


Effect of Schistosomiasis and Soil-Transmitted Helminth Infections on Physical Fitness of School Children in Côte d'Ivoire

Müller et al. (2011) PLoS Negl Trop Dis

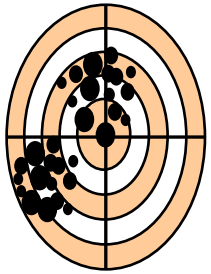

RESEARCH Open Access

Questionnaire-based approach to assess schoolchildren's physical fitness and its potential role in exploring the putative impact of helminth and Plasmodium spp. infections in Côte d'Ivoire

Fürst et al. (2011) Parasit Vectors

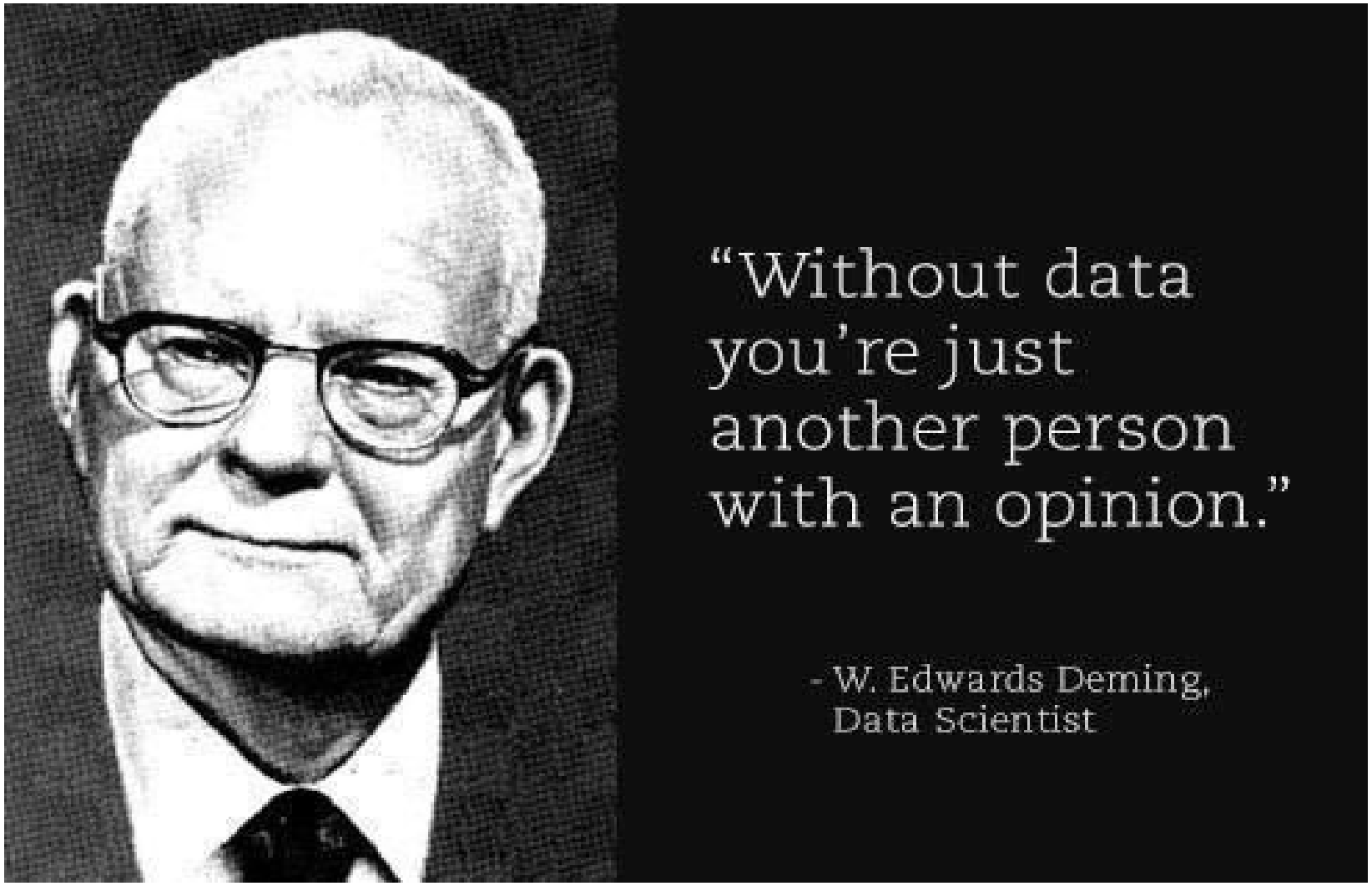
- 20m shuttle run test to assess max. oxygen uptake as proxy for physical fitness
- Questionnaire on physical fitness
- Parasitological examination
- Counfounders (temperature, humidity, clinical examination, heart rate monitoring)
- Both approaches (shuttle run test and questionnaire): no significant effect of helminth infections and infection intensities on children’s physical fitness
- Issues: cross-sectional study design, comparatively small sample size
- OF NOTE: Significant correlation, i.e. good agreement, between shuttle run test and questionnaire results in the assessment of physical fitness
- OF NOTE: Questionnaire allowed inclusion of children who were excluded from shuttle run test due to medical concerns

Conclusion



- Clearly define the «morbidity» target
- Consider validity and reliability
- Combine various measurement methods and perspectives in the absence of a «gold standard»
- More holistic understanding of disability to better understand the «pain and gain» of conditions and interventions

Conclusion


"Without data you're just another person with an opinion."
- W. Edwards Deming, Data Scientist