

Stressing harms of physical inactivity to promote exercise



Exercise has been called a miracle drug¹ that can benefit every part of the body² and substantially extend lifespan.³ Yet it receives little respect from doctors or society.⁴ Socially, being inactive is perceived as normal, and in fact doctors order patients to remain on bed rest far more often than they encourage exercise.⁵ This passive attitude towards inactivity, where exercise is viewed as a personal choice, is anachronistic, and is reminiscent of the battles still being fought over smoking.

Physical inactivity burdens society through the hidden and growing cost of medical care and loss of productivity. Getting the public to exercise is a public health priority because inactive people are contributing to a mortality burden as large as tobacco smoking. To individuals, the failure to spend 15–30 min a day in brisk walking increases the risk of cancer, heart disease, stroke, and diabetes by 20–30%,^{3,5} and shortens lifespan by 3–5 years.³ Although the benefits of exercise and the harms of inactivity might seem like two sides of a coin, the benefits message emphasised so far has not worked well for most of the population. In tobacco control, doctors did not emphasise the benefits of non-smoking, but the harms of smoking. Similarly, armed with credible global and national data, we should emphasise the harms of inactivity and not merely the benefits of exercise.

Smoking and physical inactivity are the two major risk factors for non-communicable diseases around the globe. Of the 36 million deaths each year from non-communicable diseases,⁶ physical inactivity⁵ and smoking each contribute about 5 million.⁷ Physical inactivity and smoking have similar population attributable risks, although their relative risks^{8,9} and prevalence are somewhat different (figure). For smoking, intensive and coordinated tobacco control efforts have been organised through WHO's Framework Convention on Tobacco Control (FCTC), a treaty already ratified by 175 countries.¹⁰ By contrast, we have few organised efforts to combat physical inactivity. Governmental programmes to move people from sedentary living to meeting recommended levels of exercise are very limited, in both developed and developing countries. Where available, these programmes are viewed as useful but not as essential as, say, anti-smoking programmes, partly owing to a failure to emphasise the colossal harms of inactivity. Furthermore, treatment of physical inactivity is not a reimbursable

item under most health insurance programmes, and few financial incentives exist for health-care providers to spend time discussing exercise during medical visits.

Estimates of the effect of inactivity on non-communicable diseases, such as a 6–10% contribution, are very conservative as reported by one of the papers⁵ in this Series. First, the minimally active population might not be separated from those who are completely inactive, with a 3-year gap in life expectancy reported between the two groups.³ The largest health gain occurs for the first 15–29 min per day of exercise by inactive people.^{3,11} Second, the prevalence of inactivity could be underestimated substantially, particularly in Asian countries where up to 80% national prevalence for inactivity has been reported.^{3,12} Third, if the life expectancy gap between active and inactive people were to be derived from summary risk estimates, underestimation would occur if adjusted rather than unadjusted relative risks were used, or if mortality risks were not constant across age groups.¹³ Finally, the small increase in the estimated life expectancy gap⁸ should be read with caution as it is relevant to the population as a whole, and is not limited to inactive people.

There is much to learn from tobacco control strategies to reduce the harms of inactivity. WHO introduced the MPOWER measures to assist in reducing smoking harms at the country level.¹⁴ MPOWER includes monitoring behaviour, protecting people from smoke, offering treatment, warning of harms, enforcing the law, and raising the price. Applying MPOWER to

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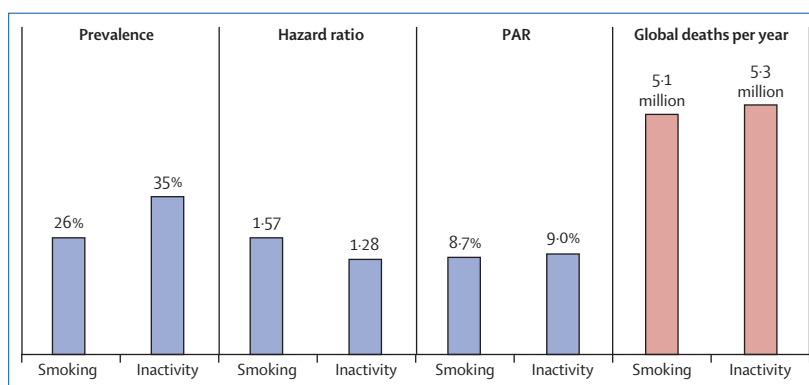


Figure: Comparison of global burden between smoking and physical inactivity
Prevalence of smoking, population attributable risk (PAR), and global deaths for smoking were obtained from WHO.⁷ Hazard ratio for all-cause mortality of smoking was obtained from meta-analysis studies.^{8,9} All inactivity data were obtained from Lee and colleagues.⁵

physical inactivity, we will need to monitor inactivity prevalence and factors behind it; protect the safety of the exercisers and their built environment;¹⁵ offer services to the inactive to gain skills for sustainable and enjoyable exercise; warn the public of the hazards of inactivity through repeated campaigns; ensure that the medical community fulfils its responsibility to reduce inactivity; and, finally, raise money or provide funding to encourage physical activity and discourage inactivity.

In addition to doctors' traditional advocacy of the health benefits of exercise, stressing the harms of inactivity could strengthen our battle against inactivity. We need to view the inactive population as abnormal and consider them at high risk of disease. If we accept this view, governmental programmes modelled on MPOWER to diminish physical inactivity could be justified, with commensurate resources committed in each country to tackle the major threat to human health of non-communicable diseases.

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1 Pimlott N. The miracle drug. *Can Fam Physician* 2010; **56**: 407–09.

2 Centers for Disease Control and Prevention. Surgeon General's Report on Physical Activity and Health. 1996. <http://www.cdc.gov/nccdphp/sgr/index.htm> (accessed June 4, 2012).

3 Wen CP, Wai JP, Tsai MK, et al. Minimum amount of physical activity for reduced mortality and extended life expectancy: a prospective cohort study. *Lancet* 2011; **378**: 1244–53.

4 Walsh JM, Swangard DM, Davis T, McPhee SJ. Exercise counseling by primary care physicians in the era of managed care. *Am J Prev Med* 1999; **16**: 307–13.

5 Lee I-M, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT, for the Lancet Physical Activity Series Working Group. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet* 2012; published online July 18. [http://dx.doi.org/10.1016/S0140-6736\(12\)61031-9](http://dx.doi.org/10.1016/S0140-6736(12)61031-9).

6 WHO. United Nations high-level meeting on noncommunicable disease prevention and control: NCD summit to shape the international agenda 2011. http://www.who.int/nmh/events/un_ncd_summit2011/en (accessed June 4, 2012).

7 WHO. Global health risks: mortality and burden of disease attributable to selected major risks. Geneva: World Health Organization, 2009.

8 Shavelle RM, Paculdo DR, Strauss DJ, Kush SJ. Smoking habit and mortality: a meta-analysis. *J Insur Med* 2008; **40**: 170–78.

9 Wen CP, Tsai SP, Chen CJ, Cheng TY, Tsai MC, Levy DT. Smoking attributable mortality for Taiwan and its projection to 2020 under different smoking scenarios. *Tob Control* 2005; **14** (suppl 1): i76–80.

10 WHO. WHO Framework Convention on Tobacco Control 2012. <http://www.who.int/fctc/en> (accessed June 4, 2012).

11 Woodcock J, Franco OH, Orsini N, Roberts I. Non-vigorous physical activity and all-cause mortality: systematic review and meta-analysis of cohort studies. *Int J Epidemiol* 2011; **40**: 121–38.

12 Wai JP, Wen CP, Chan HT, et al. Assessing physical activity in an Asian country: low energy expenditure and exercise frequency among adults in Taiwan. *Asia Pac J Clin Nutr* 2008; **17**: 297–308.

13 Wen CP, Tsai MK, Tsai SP, et al. Exercise and life expectancy—Authors' reply. *Lancet* 2012; **379**: 800–01.

14 WHO. Research for International Tobacco Control. WHO report on the global tobacco epidemic, 2008: the MPOWER package. Geneva: World Health Organization, 2008.

15 National Research Council (US) Committee on Physical Activity Health Transportation and Land Use, National Research Council (US) Transportation Research Board, Institute of Medicine (US). Does the built environment influence physical activity?: examining the evidence. Washington, DC: Transportation Research Board, 2005.