

Move. Now.

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Sitting comfortably? Great. I hope that after you've read this editorial you'll be moving, even if only to fidget uncomfortably, and will resolve to think and talk differently about physical activity.

A study published by *CMAJ* highlights the association between ownership of modern conveniences and increased rates of diabetes and overweight in low- and middle-income countries.¹ Seemingly, expanding global consumerism brings not only benefits such as cars, televisions and computers, but also their unfortunate adverse effects. Increasing evidence shows that, through the use of modern conveniences, we have reduced dramatically our time spent moving.² Now, we sit in travel. We sit in play and in relaxation, while our electronic devices and good Internet connectivity enable us to stream movies, enjoy interactive gaming, see friends and shop without ever having to leave the sofa. Many office workers, an increasing proportion of the workforce in most countries, sit for most of the working day. Add a car commute and a couple of hours in front of a television or personal computer, and many of us are sedentary for well over eight hours a day — even on days when we make the effort to exercise.

An accumulating body of evidence suggests that too much time spent sitting is a determinant of ill health and a risk factor for early death, alongside and independent of all the other well-known determinants.²

An analysis of data on about 17 000 adult respondents from the Canada Fitness Survey, begun in 1981, found a stark relation between daily sitting time and risk of death, particularly from cardiovascular disease, which remained significant after adjustment for known confounders, including physical activity levels in leisure time.³ Similarly, a recent large prospective study involving 222 497 Australians aged 45 years and older explored the relation between daily sitting time and all-cause mortality, adjusting for confounders that included physical activity. When compared with those who sat for 4 hours or less per day, those who sat for 8 to 11 hours per day were found to have a 15% increased risk of all-cause mortality, and those who sat for more than 11 hours per day had a 40% increased risk. The association was consistent across age groups, sexes and body mass index categories — regardless of participants' engagement in physical activity.⁴

Recent studies of the impact of sedentary behaviour have called for national guidelines on minimum physical activity to be revised to include specific advice on reducing sitting time.³⁻⁵ However, the Public Health Agency of Canada's guidelines on physical activity for adults and children still focus squarely on how to achieve a minimum

daily dose of moderate-to-vigorous physical activity;⁶ however, the agency's "tips to get active" for children do suggest reducing children's screen time. The US Department of Health and Human Services has yet to revise its *2008 Physical Activity Guidelines for Americans*⁷ to mention specifically the dangers of too much sitting. The American Heart Association continues to recommend 30 minutes of moderate physical activity, five days a week, but does not mention the independent dangers of sitting for the rest of the day.⁸ The Heart and Stroke Foundation of Canada's guidelines mention the importance of reducing sitting time for children only.⁹

Of course, the evidence supporting the benefits of not-sitting-around-quite-as-much is less robust than that supporting the benefits of 150 minutes of moderate physical activity or 75 minutes of vigorous physical activity per week (or an hour a day of vigorous physical activity for children).⁶⁻⁹ Observational evidence on the dangers of sitting is heavy on self-reported data.⁵ Few studies have directly measured physical activity and sitting time. More robust observational studies and well-designed trials of interventions to reduce daily sitting would be nice.

But let's not wait for proof from a randomized trial to tell us that "parachutes save lives." Let's start a loud conversation *now* about too much sitting and what we need to do about this risk factor for early death. Being sedentary for most waking hours has become a default setting for many of us. Reshaping workplaces so that we don't have to spend all day sitting to get our work done, and solving the problem of sitting while we commute for an hour or more per day will require creative initiatives. We need to do a lot more than shake our heads at modern children who can't grasp the idea that their legs are made for walking. Much may be learned from the International Society for Physical Activity & Health's "Seven Investments that Work for Physical Activity,"¹⁰ which focuses chiefly on environmental and whole-of-community approaches that will mobilize large numbers of people. And let's be sure we sell these ideas as aggressively as we market televisions and computers.

For references, see Appendix 1 at www.cmaj.ca/lookup/suppldoi:10.1503/cmaj.140113/-DC1

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