Don't Just Sit There: Stand Up and Move More, More Often

In their article, van der Ploeg and colleagues report important new findings from a large population-based study of Australian adults. They show total sitting time to be associated prospectively with all-cause mortality after accounting for many likely confounding variables, including leisure-time physical activity.

Increasing physical activity in adult populations is central to the prevention of obesity and the major chronic diseases. Traditionally, the focus has been on encouraging individuals to participate in moderate-to-vigorous physical activity (“health-enhancing exercise”) during their discretionary time, with a more recent emphasis on physically active transportation. For example, an indi-
individual who does 30 minutes of brisk walking on most days of the week will have met the public health guideline on the minimum amount of activity required for health benefits. However, this still leaves some 15½ hours of nonexercise awake time each day during which, for many adults, sitting is the predominant stance. This is a consequence of the plethora of ways in which the physical, economic, and social environments have changed, particularly since the middle of the past century. These changes—in personal transportation, communication, workplace productivity, and domestic entertainment technologies—have been associated not only with decreased physical activity but also with increased time spent sitting.3

The findings from van der Ploeg and colleagues provide a substantial contribution to the rapidly accumulating body of evidence from observational studies identifying sedentary behavior (time spent sitting) as an important risk factor for chronic disease.4 The authors conclude that reducing total time spent sitting as a population health risk may be at least as important as increasing participation in physical activity. To put this in perspective, 30 minutes of physical activity is as protective as an exposure as 10 hours of sitting is a harmful one.4

The observation that prolonged sitting is hazardous to one’s health is not new. A relationship between sedentary behavior and deleterious health consequences in workers was noted as early as the 17th century by occupational physician Ramazzini.5 In the 1960s, Morris and colleagues6 reported that workers in occupations requiring much sitting (London bus drivers and mail sorters) had higher incidences of cardiovascular disease than did workers who were required to stand and ambulate (bus conductors and postal workers). In the preceding decade, Homans7 reported clinical cases of venous thrombosis in the legs following prolonged sitting while attending a theater performance and watching television. This led him to recommend that “such matters are important enough to suggest the advisability of making movements of the toes, feet, and lower legs when one is sitting for long periods and of getting up and exercising when opportunity offers.”7(p149)

A possible weakness of the study by van der Ploeg and colleagues and similar cohort studies is that the main exposure variable (sitting time) is based on self-report. Newer objective-measurement capacities made possible by accelerometers—small electronic devices worn on the hip during waking hours—provide further insights. For example, examining 7 days of accelerometer data from a nationally representative sample of 1714 white adults aged 20 to 59 years from the US National Health and Nutrition Examination Survey,5 it is striking that the vast majority of daily nonsleeping time is spent in either sedentary behavior (58%) or light-intensity activity (eg, strolling, washing dishes, and gardening) (39%) and only 3% in health-enhancing physical activity time.

Moreover, because time spent in moderate-to-vigorous physical activity is such a small component of the overall waking day, almost all the variance in sedentary time across the population is related to the extent to which the sedentary time displaces light-intensity activity.3 Indeed, one such study8 has reported an almost-perfect inverse correlation (−0.98) of the time spent in light-intensity activity with sedentary time. Therefore, in addition to the benefits of moderate-to-vigorous activity, health gains should accrue through redressing the imbalance between sitting time and light-intensity activity.

Besides the decreased energy metabolism of sitting compared with light-intensity activity,9 sitting may also be harmful because of the prolonged absence of muscle contractile activity in the lower limbs. Efforts to reduce sedentary behavior will require attention to workplace regulations, occupational health and safety policy and practice, transportation planning, and innovations in the design of communication technologies, as well as public education campaigns.

With this new study, evidence is sufficiently strong that physicians should be advising patients to reduce daily sitting time. The good news is that increasing light-intensity activity may be a feasible goal for many and offers great health benefits.

David W. Dunstan, PhD
Neville Owen, PhD

Author Affiliations: Physical Activity Laboratory (Dr Dunstan) and Behavioural Epidemiology Laboratory (Dr Owen), Baker IDI Heart and Diabetes Institute, Melbourne, Australia.

Correspondence: Dr Dunstan, Physical Activity Laboratory, Baker IDI Heart and Diabetes Institute, 99 Commercial Rd, Melbourne 3003, Victoria, Australia (david.dunstan@bakeridi.edu.au).

Financial Disclosure: None reported.