Sedentary Behaviors

Sedentary behaviors, put simply, mean *too much sitting, as distinct from too little exercise*. We now understand such behavior to constitute a risk to health, beyond that attributable to lack of physical activity. While research on sedentary behavior puts a novel slant on ways to think about physical inactivity, it should not be taken to negate or downplay the importance of public health and clinical recommendations on improving health outcomes through regular exercising and taking every opportunity to include bouts of moderate-vigorous activity in your daily life.

Rather, this new focus helps to expand our perspective, providing further ways to think about the determinants of poor health within the overall texture of people's everyday lives. A great many of us are deskbound in the workplace, through time spent sitting in cars and spending long periods of time in front of computer screens at the office and TV screens in the domestic environment.

Against this background, we set out to examine – concurrently – the roles of moderate-vigorous physical activity and TV viewing time in determining the extent of increases in adults' waist circumference. The national AusDiab study provided us with a unique opportunity to do so, using unique prospective epidemiological data.

AusDiab originally examined more than 11,000 adults in 1999-2000 and, subsequently, conducted five-year and 12-year follow-ups. This landmark Australian study conducted a comprehensive assessment of risk factors for obesity and diabetes, with clinical assessments that included directly-measured waist circumference. We were fortunate, also, to be able to include from the very start of AusDiab not only the standard Active Australia questionnaire for characterizing moderate-vigorous physical activity, but also a simple self-report measure of daily TV viewing time.

In our study, as reported in the April 2016 issue of *MSSE*, we use data from the three observation points of the AusDiab prospective cohort to identify the extent of 12-year changes in waist circumference. We examined those changes in relation to the changes in moderate-vigorous physical activity and TV viewing time that took place over the five years between the first and second AusDiab observations. With the multiple clinical and behavioral measures that were available, we were able to control for several potential confounding factors (including total energy and alcohol intakes) in our analyses.

The logic of the comparisons described above gave our study some strong, but also challenging, scientific traction. Most previous studies on this topic have identified cross-sectional associations, or have used exposure measures taken at only one preceding time point. Our approach in our Australia-Japan collaboration resulted in us being able to identify stronger

relationships of waist circumference change with the moderate-vigorous activity changes – and then to examine how these compared to what we saw for changes in TV viewing time. Of some interest in the context of the "either-or" debates that have emerged about physical activity and sedentary behavior, there were compelling (and as we see things, expected) combined effects – *that is, we observed a 6.7 cm average increase in waist circumference for those who reduced their moderate-vigorous activity and increased their TV time.*

These findings add support to the case for addressing the two interrelated problems of too little exercise *and* too much sitting. Several countries – including Australia – have already adopted (or are considering) new sedentary behavior elements to be integrated into their physical activity guidelines. In practice, this can provide a commonsense and straightforward basis for advising patients and the public – we need to be emphasizing the importance of being physically active each day and, at the same time, taking every opportunity to reduce and break up sitting time.

Too little exercise *and* too much sitting characterize the daily lives of far too many adults in developed countries. This pattern also is now highly prevalent in the rapidly-urbanizing populations of low- and middle-income countries. Both elements of the activity equation – moving more and sitting less – are keys that can contribute to a healthier population. Together with those two behavior changes is the need for a healthy, less energy-dense and energy-replete diet. With these changes, we can more effectively address the "epidemic" of obesity, as well as type 2 diabetes, cardiovascular disease, and other serious adverse metabolic health outcomes.

The simple bottom line is: Sit Less, Move More and More Often!