

Research UPDATE

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Sitting Less: An Important Ingredient in our Recipe for Health

Summary

This article examines research from Australia that suggests we may be sitting our way to poor health. The research shows that prolonged sitting time is a significant health risk independent of too little exercise.

Key Terms

Accelerometer is a matchbox-sized electronic device worn on the hip. It measures movement and allows researchers to examine patterns of physical activity and sedentary behaviour.

Type 2 diabetes involves insulin resistance. This means muscles have an impaired capacity to take up glucose (sugar), and thus blood glucose levels become elevated.

Metabolic syndrome is a clustering of metabolic risk factors including abdominal obesity (a large waist circumference), high levels of blood fats and sugar, and high blood pressure.

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As practitioners and advocates for physical activity, we routinely refer to our national governments' physical activity guidelines.

These guidelines are based on solid scientific evidence. Their main focus is on regular participation in moderate to vigorous physical activity (typically walking), which is recognized as a major contributor to disease prevention and better health. We no longer have to justify the importance of physical activity, and we feel confident in making the case for programs that help people to be more active.

However, we should not be complacent, nor too confident that we have all the data we need on the health benefits of physical activity. Research findings in our field should constantly prompt us to reflect upon what we might take to be certainties and to consider how we might do things differently in the light of new evidence.

Here we provide an overview of recent evidence that identifies *too much sitting* as an important ingredient of the physical activity and health equation.

In this article, we present a brief overview of new research on the health impacts of prolonged sitting. We argue that the impacts of *too much sitting* need to be considered in addition to our established concerns about *too little exercise*.

What We Found out from the AusDiab Study: Too Much Sitting is a Health Risk

In the mid-1990s, professor Paul Zimmet from the International Diabetes Institute in Melbourne initiated the first national Australian study on the prevalence of diabetes and its risk factors: AusDiab, the Australian Diabetes, Obesity and Lifestyle study.

Included in AusDiab's detailed biomedical, behavioural and lifestyle assessment protocol was a question regarding television viewing time.

A team led by associate professor David Dunstan used the data from this question to explore whether people's television viewing time was related to their metabolic health.

It turned out that prolonged television viewing time, particularly more than four hours a day, was associated with higher blood sugar levels, higher blood fat levels, larger waist circumference, and higher risk of metabolic syndrome. (Continued on page 2)



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Importantly, the strong relationship of these biomarkers of metabolic health with television viewing time remained significant regardless of how much moderate to vigorous physical activity people did. Indeed, these detrimental associations between television viewing time and metabolic health were observed even in adults who met the criteria for Australia's physical activity guidelines.

A subsample of the AusDiab participants also wore accelerometers. Accelerometer data provide objective measures of both physical activity and sedentary time. Using the accelerometer data, we confirmed what we had previously found in regards to television viewing time—those who spent long periods of time moving very little were more likely to have poor metabolic health.

Additionally, we showed that people who interrupted their sedentary time more frequently (e.g., got up to get a drink, stood up to answer the phone) were better off in their metabolic health compared to those whose sitting time was mostly uninterrupted.

The accelerometer data also suggested that the average person spends more than half of their waking hours (about nine hours) in sedentary behaviours, primarily prolonged sitting. The remainder of the day is mostly spent doing light physical activity, with only 4-5% of the day spent in moderate to vigorous physical activity.

Importantly, participation in light activities (e.g., housework, shopping, standing and moving about in office environments) was associated with lower (healthier) blood sugar levels and smaller waist circumferences.

What are the Implications?

Prolonged sitting has been engineered into our daily lives. Cars, computers and television are some of the main culprits. Unfortunately, our research in Australia suggests that we may be sitting our way to poor health.

What Can We Do?

An important step is starting to recognize that prolonged sitting can be a health risk. Just as we promote regular participation in moderate physical activity, we can also recommend that people reduce their sitting time.

We still need evidence from future studies, particularly from controlled intervention trials regarding just how much or how little time we should be sitting. But, based on this new evidence, we argue that future editions of physical activity and health guidelines should consider sitting time. Potentially, there could be specific recommendations on reducing and breaking up the prolonged sitting time that now characterizes the lifestyles of many people. 

References for this article are available at: <http://www.centre4activeliving.ca/publications/research.html>

About the Authors and the Organizations

Dr. **Neville Owen** and Dr. **Geneviève Healy** conduct research on the unique health consequences of sedentary behaviours (*too much sitting*, which is distinct from *too little exercise*).

Their research is part of a collaborative program in Australia between the School of Population Health's **Cancer Prevention Research Centre (CPRC)** and the School of Human Movement Studies at the **University of Queensland** in Brisbane; the Baker IDI Heart and Diabetes Institute in Melbourne; and the Prevention Research Collaboration in the School of Public Health at the University of Sydney.

Neville is director of the CPRC and a professor of health behaviour within the School of Population Health at the University of Queensland. He is also a research affiliate of the Alberta Centre for Active Living. Geneviève is a National Health and Medical Research Council/Heart Foundation research fellow with the Baker IDI Heart and Diabetes Institute and CPRC.

CPRC's research program focuses on understanding the health consequences and determinants of physical activity and sedentary behaviour. This includes studies on how the walkability of neighbourhoods may influence adults' walking habits as well as the time they spend sitting in cars and in front of televisions and computers.

Some of CPRC's most exciting studies are on interventions to increase physical activity and reduce sedentary sitting time. Led by CPRC deputy director and associate professor Elizabeth Eakin, these studies examine the effects of telephone-delivered advice about physical activity, sitting time and healthier eating on weight control and metabolic health for adults with Type 2 diabetes and breast cancer survivors.

