DISCUSSION / DISCUSSION

Letter to the Editor: Standardized use of the terms "sedentary" and "sedentary behaviours"

Sedentary Behaviour Research Network

There has recently been an increase in research related to the health impact of sedentary behaviour (e.g., sitting) (Tremblay et al. 2010). Numerous studies suggest that those who engage in high amounts of sedentary behaviour can be at increased risk of morbidity and mortality regardless of their level of moderate- to vigorous-intensity physical activity (MVPA) (Dunstan et al. 2010; Grøntved and Hu 2011; Katzmarzyk et al. 2009; Thorp et al. 2011; Wijndaele et al. 2011). Further, it has been noted that there is often little association between sedentary behaviour and MVPA (Biddle et al. 2004; Ekelund et al. 2006) and that it is possible for an individual to accumulate large amounts of both MVPA and sedentary behaviour in the course of a day (Healy et al. 2008; Katzmarzyk et al. 2009; Owen et al. 2010; Tremblay et al. 2010; Wong and Leatherdale 2008). Taken together, these findings suggest that too much sitting and too little MVPA represent separate and distinct risk factors for chronic, noncommunicable diseases (e.g., cardiovascular disease, diabetes, cancer).

While research into the biology and health impact of sedentary behaviour represents an exciting new field of study, current inconsistencies in terminology are confusing for students, researchers, policymakers, and the general public. In short, the term "sedentary" currently has two separate and contradictory operational definitions. In this emerging field of research, sedentary behaviours are typically defined by both low energy expenditure (e.g., resting metabolic rate, typically $\leq$1.5 metabolic equivalents (METs)) and a sitting or reclining posture (Owen et al. 2010; Pate et al. 2008; Tremblay et al. 2010). In this context, a person may be described as sedentary if they engage in a large amount of sedentary behaviour. In contrast, in the sport and exercise literature the term sedentary is frequently used to describe the absence of some threshold of MVPA (Church et al. 2009; Melanson et al. 2009; Mullen et al. 2011; Sims et al. 2012; Smith et al. 2010). Thus, it is common for researchers in this field to describe a participant as sedentary because they are not meeting physical activity guidelines. Hence, many exercise studies include a "sedentary control group" or refer to their participants as coming from a "sedentary population" because of their lack of physical activity without actually measuring or assessing their level of sedentary behaviour.

It is not difficult to see how these conflicting definitions of the term sedentary can easily lead to confusion. When reading the title or abstract of an article, it is often difficult to ascertain which definition of sedentary the authors have employed. If an article focuses on the health impact of a "sedentary lifestyle", are they concerned with excessive sitting–lying down, the lack of physical activity, or both? Further, it is surprisingly common for articles within a given academic journal to oscillate between one definition and the other.

To prevent further confusion, we propose that journal editors adopt a consistent definition of the term sedentary and require that all manuscripts published within their journal adhere to this common terminology. **We suggest that journals formally define sedentary behaviour as any waking behaviour characterized by an energy expenditure $\leq$1.5 METs while in a sitting or reclining posture. In contrast, we suggest that authors use the term "inactive" to describe those who are performing insufficient amounts of MVPA (i.e., not meeting specified physical activity guidelines).**

The formal adoption of the above definitions by journal editors and reviewers would greatly improve the clarity of research and discussion related to these important health behaviours and help researchers searching for studies specific to sedentary behaviour or physical inactivity. We hope the research community will support these definitions and we look forward to further improvements in our understanding of the health impacts of sedentary behaviour and physical activity.

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