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## STUDENT'S CORNER

### The Prevalence and Effects of Sedentary Behaviour in Older Adults

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#### Abstract

Sedentary behaviour has been an emerging topic in current literature, with increased incidence of sitting time across the lifespan, causing a great concern for the associated increase of chronic disease and premature mortality commonly associated with sedentary behaviour. Older adults have the greatest rates of sedentary behaviour among the population, greatly impacting functional independence and the healthcare system. It is important to note that the majority of literature in older adults has focused on increasing physical activity levels in order to maintain functional fitness. Research for the use of interventions and strategies for decreasing rates of sedentary behaviour in older adults is lacking. It is important to recognize that older adults often face unique barriers, such as physical disability and chronic disease, prevent them from becoming less sedentary and increasing physical activity levels. **Health & Fitness Journal of Canada 2016;9(1):20-24.**

*Keywords:* Sedentary behaviour, Older adults, Physical Inactivity, Sitting time, Functional independence

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#### Introduction and Discussion

In today's society, sedentary behaviour is rapidly emerging as a worldwide public health concern. As sedentary time increases, activity levels decrease, creating notable health risks among the population (Dunstan et al., 2012; Ferreira et al., 2010; Owen et al., 2010; Schutzer and Graves, 2004). Sedentary behaviour can be defined as any waking activity that requires an energy expenditure  $\leq 1.5$  Metabolic Equivalents (METs) (Dunstan et al., 2012; Owen et al., 2010). It is critical to distinguish sedentary behaviour from physical inactivity. Within the physical activity continuum, the majority of individuals partake in some form of daily activity per day, therefore, sedentary behaviour is considered to be at the lower end of the continuum, while an individual who is considered to be physically inactive is not sedentary unless they are functionally dependent on others or restricted to bed rest (Physical Activity and Obesity-2nd Edition, 2000).

There has been an increased incidence of sedentary behaviour within the past several decades, with many sedentary activities now considered a part of daily living (Dunstan et al., 2012). Daily activities such as, watching television, computer use, playing video games, and desk work are now considered a common occurrence of daily living (Dunstan et al., 2012; Owen et al., 2010). Prolonged periods of sedentary behaviour can lead

to adverse health effects, including metabolic risks of increased blood glucose levels and blood lipid profile levels, physical disability, chronic disease, and premature mortality (Dunstan et al., 2012; Owen et al., 2010). Additionally, individuals who spend 8 or more hours sitting per day are at a greater risk for all cause mortality and chronic disease, compared to those who sit less than 8 hours per day (de Rezende et al., 2014). Furthermore, individuals who spend 8 or more hours sitting and are physically inactive, increase their risk for all cause mortality by 31% (de Rezende et al., 2014).

Recent evidence has shown the importance of diminishing sedentary time by distribution of activity breaks over short periods of time during bouts of sedentary activities (Dunstan et al., 2012; Owen et al., 2010). With the current increasing rates of individuals who engage in sedentary behaviour, it is necessary to educate the population on the risks associated with sedentary behaviours (Physical Activity and Obesity-2nd Edition, 2000). While research on sedentary behaviour throughout the lifespan has been examined, it is important to note that the majority of interventions for older adults, classified as anyone over the age of 60 yr (World Health Organization, 2016), concentrate on increasing physical activity levels, rather than reducing sedentary time (Dunlop et al., 2015). Although the benefits of physical activity are commonly understood, it can be challenging for older adults to participate in regular physical activity due to unique barriers, such as existing health conditions, as well as misconceptions that they may not be able to fully participate in

physical activity (Schutzer and Graves, 2004).

### **Sedentary Behaviour in Older Adults**

While sedentary behaviour has greatly increased throughout all ages of the lifespan, older adults have the highest rate of sedentary time among the population (Ferreira et al., 2010; Schutzer and Graves, 2004). Additionally, physical activity levels are also considered among the lowest in older adults (Ferreira et al., 2010; Schutzer and Graves, 2004). By the year 2050, the older adult population will account for 22% of the world's population, which will place a greater demand on public healthcare systems (de Rezende et al., 2014; Stamatakis et al., 2012). Within the older adult population worldwide, approximately 80% of their waking day, roughly 8-12 hours, is devoted to sedentary activities (de Rezende et al., 2014). Due to the increased costs of health care and nursing homes, as well as the need to be independent, older adults often express maintaining functional independence as their main concern (Paterson and Warburton, 2010). Functional independence can be defined as having the physical components necessary for independently carrying out daily activities without the occurrence of excessive fatigue (Santos et al., 2012). Physical components of functional independence include upper and lower body strength and flexibility, aerobic endurance, as well as agility and balance (Santos et al., 2012). Reducing sedentary behaviour can improve functional independence, greatly decreasing the likelihood of disability and hospitalization among older adults (Santos et al., 2012).

### **Interventions to Reduce Sedentary Behaviour and Increase Functional Independence**

While interventions that have examined techniques to reduce sedentary behaviour among older adults are limited, evidence has suggested the use of counselling sessions in order to educate individuals on the importance of increasing the number breaks per day while engaging in sedentary behaviour (Dunlop et al., 2015). Additionally, it has been recommended that counselling sessions should occur during regular visits to a physician, in order to increase awareness during the older adult population (Dunlop et al., 2015). The use of goal setting has been demonstrated to be effective strategy in reducing sedentary behaviour (Dunlop et al., 2015; Gardiner et al., 2011). Interventions should focus on reducing common activities among older adults such as, watching television, reading, listening to the radio, and speaking on the phone for long periods of time (Dunlop et al., 2015). Implementing light physical activity classes before or after social gatherings will facilitate in reducing sedentary behaviour (Dunlop et al., 2015). Furthermore, wrist accelerometry could be used in examining the effectiveness of educating older adults on the importance of maintaining and improving functional independence and objectively measuring a possibly strong correlation between knowledge translation and activity levels (Huisinigh-Scheetz et al., 2016).

The majority of interventions for older adults focus on increasing physical activity levels, rather than reducing sedentary time (Dunlop et al., 2015). While physical activity in the past had been contraindicated for individuals with chronic disease, evidence has shown that

regular physical activity causes a diminishing of chronic diseases and conditions such as cardiovascular disease, cancer, diabetes mellitus, osteoporosis, and hypertension (Warburton et al., 2006). The benefits associated with physical activity are far greater than the risks often attributed to physical activity (Warburton et al., 2006). While it is beneficial for adults to have an energy expenditure of 1000 kcal per week or greater, it can be noted that even lower amounts of kcal expenditure for the week has been shown to have marked health benefits (Warburton et al., 2006). This can be extremely beneficial for older adults who may have other underlying health conditions, limiting their ability to perform greater amounts of physical activity (Warburton et al., 2006).

Weight-bearing exercises are particularly beneficial to older adults, for both the reduction of risk, as well as the improvement of osteoporosis, in order to increase bone mineral density (Warburton et al., 2006). Additionally, resistance training has great benefits in older adults, reducing the risk of falls and susceptibility to fractures (Warburton et al., 2006).

Increasing musculoskeletal fitness is especially effective in older adults. While some older adults may not be able to increase their aerobic physical activity levels due to underlying chronic conditions, a focus on improving musculoskeletal fitness can greatly increase functional independence (Warburton et al., 2006). Increasing musculoskeletal strength decreases the risk for physical disability and chronic disease, regulating glucose levels, improving mobility levels, and decreasing injuries related to falls (Warburton et al., 2006).

Recent evidence has shown that physical activity interventions have been more successful when creating multi-dimensional programs that promote physical activity education and provide ongoing support, as well as exercise prescription (Schutzer and Graves, 2004). However, further research is needed to address reducing sitting time in older adults, as sedentary behaviour is an attributing risk factor for chronic disease (Schutzer and Graves, 2004).

### Potential Barriers

Convincing sedentary older adults to participate in physical activity can be challenging (Schutzer and Graves, 2004). It has been shown that older adults often feel that physical activity may not be suitable for them, leading to high dropout rates at approximately 50% within six months of an exercise program initiation (Schutzer and Graves, 2004). Approximately 87% of the older adult population has at least one barrier that affects their physical activity levels. Health conditions and the incidence of pain are considered to be the most common barrier to physical activity among older adults (Schutzer and Graves, 2004). The environment can also serve as a potential barrier; a lack of accessibility can prevent potential physical activity (Schutzer and Graves, 2004). Additionally, many older adults consider participating in physical activity to be a great time commitment, especially if they rely on public transportation to travel to exercise facilities (Schutzer and Graves, 2004). Evidence suggests that clearly explaining the health benefits of physical activity to older adults who are less familiar about improving their health, can act as a motivator in helping an individual start a physical activity program and increase

adherence rates (Schutzer and Graves, 2004). While the positive effects of physical activity are widely known, some older adults believe the symptoms linked to physical activity, such as sweating or delayed onset muscle soreness, can have a negative impact on their health (Schutzer and Graves, 2004).

### Conclusions

Addressing barriers, such as previous medical conditions, health status, and lack of education, may require unique and creative solutions. Further research is needed to not only increase physical activity levels in older populations, but to also reduce sedentary behaviour. However, despite the barriers that older adults may endure, it is important to reduce sedentary behaviour in older adults to reduce risk for chronic disease, maintain health, and improve quality of life.

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### Authors' Qualifications

The authors' qualifications are as follows: Kai L. Kaufman BKin, MKin Candidate, HFFC-CEP, Darren E. R. Warburton MSc, PhD, HFFC-CEP.

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