

Health & Fitness Journal of Canada

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Volume 12

September 30, 2019

Number 3

STUDENTS' CORNER

Importance of Physical Activity for Successful Aging

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Abstract

Background: Despite being one of the fastest growing age cohorts in Canada, older adults experience greater levels of physical inactivity compared to the rest of the Canadian population. **Purpose:** The purpose of this student-driven narrative review is to supplement an evidence-based knowledge translation video designed to inform the general population on the benefits of physical activity for older adults. Further, the review discusses the implications of threshold-centered physical activity promotion on physical activity behaviour in adult populations. **Discussion:** Regular participation in physical activity is associated with several health benefits, including a lower risk of cardiovascular disease, mortality, and type 2 diabetes. Although many physical activity programs use a 'threshold-centered' approach by using international and national physical activity guidelines to promote physical activity, more recent evidence suggests that individuals can make significant health improvements through making small changes in physical activity behaviour. While meeting national and international physical activity guidelines can optimize one's health, it is not the minimum level of activity needed to improve health. **Conclusions:** Engaging in regular physical activity is crucial for successful aging and health in older adults. While it is recommended to meet the Canadian physical activity guidelines, older adults can still make notable health improvements with small changes in physical activity behaviour.

Health & Fitness Journal of Canada 2019;12(3):183-188.

<https://doi.org/10.14288/hfjc.v12i3.282>

Keywords: Health Promotion, Older Adult, Exercise and Aging, Knowledge Translation, Chronic Disease Management, Narrative Review

Introduction

Physical inactivity has been associated with chronic disease, and is a modifiable risk factor for illnesses such as obesity, hypertension, diabetes, osteoporosis, and depression (Warburton, Charlesworth, Ivey, Nettlefold, & Bredin, 2010; Warburton, Nicol, & Bredin, 2006). In 2012, Lee et al. (2012) determined that physical inactivity may have caused 6-10% of the world's occurrences of coronary artery disease, type 2 diabetes, and breast and colon cancer. Indeed, recent research has suggested that the

burden of heart disease is more highly attributable to physical inactivity than other risk factors such as smoking and high blood pressure (Brown, Pavey, & Bauman, 2015). Scholars have estimated that physical inactivity is linked to over two million premature deaths worldwide, and has resulted in an economic burden of \$6.8 billion in Canada (World Health Organization [WHO], 2002; Janssen, 2012).

Despite the risks associated with low physical activity levels, older adults (individuals aged 65 and older) continue

to have the greatest prevalence of physical inactivity in Canada (Warburton, Katzmarzyk, Rhodes, & Shephard, 2007). Given that older adults are also the fastest growing age cohort in the country, promoting physical activity engagement in older populations is imperative to encourage the development of healthy lifestyles and successful aging (Statistics Canada, 2011). Thus, the purpose of this narrative review is to support an evidence-based knowledge translation video created to inform the general population on the protective benefits of physical activity for health and for successful aging.

Key Findings

Benefits of Physical Activity for Older Adults

The positive relationship between physical activity and health has been well-established amongst scholars (Warburton & Bredin, 2016). Regular participation in physical activity has shown to be an effective primary and secondary preventative strategy for over 25 chronic conditions (Warburton et al., 2006). Indeed, a systematic review by Warburton et al. (2010) suggested that there was a moderate to strong inverse dose-response relationship between one's activity level and the risk for all-cause mortality, cardiovascular disease, ischaemic stroke, hypertension, and type 2 diabetes. Additionally, Myers et al. (2004) reported that adults considered physically active could have a 20-35% decreased risk for premature mortality compared to inactive individuals.

For older adults in particular, physical activity has been suggested to maintain functional independence, a crucial indicator that can assess an elderly person's ability to perform activities of

daily living and prevent disability (Warburton, Gledhill, & Quinney 2001). Improving musculoskeletal function through exercise engagement could prevent or delay the onset of dependence that older adults may experience (Warburton et al., 2006).

As an example, Paterson & Warburton (2010) found that regular engagement in moderate levels of aerobic activity could translate to a reduced risk of functional limitation and disability in older adults. Wolff, Van Croonenborg, Kemper, Kostense & Twisk (1999) and Liu-Ambrose et al. (2004) further found that engaging in physical activity training programs could improve bone density, prevent osteoporosis, and potentially reverse bone loss for both pre and post-menopausal women. Greater levels of physical activity have been linked to lower risks of muscle-related conditions, including arthritis and sarcopenia, as well as to better cognitive and mental health (Sparling, Howard, Dunstan, & Owen, 2015).

Regarding changes in cognitive function, Liu-Ambrose et al. (2008) found that older women reduced falls risk through improved executive functioning using a home-based resistance and balance program. Indeed, previous evidence suggested that physical activity could enhance cognitive abilities across the lifespan and protect adults from deteriorations in the brain (Erickson et al., 2011; Erickson et al., 2010; Liu-Ambrose et al., 2008). Aerobic exercise has been linked to greater brain matter, which in turn has been associated with a reduced risk of cognitive impairment, including conditions such as mild cognitive impairment (MCI) and dementia (Erickson et al., 2010). Additionally, participating in resistance training for as little as once a

week could improve the executive cognitive abilities of senior women (Liu-Ambrose et al., 2010).

Current Physical Activity Recommendations

Current evidence-based recommendations in Canada suggest that older adults should participate in at least 150 minutes of moderate-to-vigorous aerobic physical activity/week in bouts of 10 minutes or more to achieve health benefits and improve functional abilities (Tremblay et al., 2011). Tremblay et al. (2011) have recommended that individuals older than 65 years of age should engage in muscle and bone strengthening activities twice/week, along with a focus on balance activities for those with poorer mobility. These suggestions have been endorsed by the World Health Organization, and are included as part of the most recent international physical activity guidelines (WHO, 2011).

Physical Activity Promotion and Messaging

To gain health benefits, current narratives within health promotion have suggested that individuals must meet the international physical activity guidelines. However, scholars have more recently emphasized that lower levels of physical activity (even those below guideline levels) can lead to large health benefits, especially for those who were initially inactive (Warburton & Bredin, 2016).

In a review conducted by Powell, Paluch & Blair (2011), it was revealed that the greatest functional health benefits occurred when adults with low activity levels engaged in any increment of physical activity above their normal levels. Wen et al. (2011) determined that significant health benefits could still be

experienced with small changes in daily physical activity, and that these benefits could be attained by participating in as little as 15 more minutes/day of physical activity. As noted by Warburton & Bredin (2016), completing less than half of the current physical activity recommendations could lead to notable health improvements.

In essence, following the Canadian physical activity guidelines appears to optimize health benefits, although it is by no means the minimum level of activity needed to improve one's health (Warburton & Bredin, 2016). Engaging in smaller amounts of physical activity can still generate health improvements. Indeed, while many health promotion campaigns have emphasized threshold-centered physical activity messaging, scholars have stressed that it is not evidence-based, and could discourage inactive individuals from improving their physical activity behaviour (Hupin, Edouard, Gremaux, Roche, & Barthélémy, 2016; Warburton & Bredin, 2016).

This is especially relevant as meeting the international guidelines would result in a 100-400% increase in physical activity for the average adult in the UK and US — an increase in activity which could be perceived as unattainable for the average adult (Knox, Webb, Esliger, Biddle, & Sherar, 2014).

Nonetheless, some health promotion campaigns have already begun to move towards more accurate physical activity messages (U.S. Department of Health and Human Services [HHS], 2018). Recently, the U.S. Department of Health and Human Services began a campaign titled *Move Your Way*, which was designed to encourage a 'more is better' physical activity message, and move away from traditional threshold-centered ideas. In

the most recent edition of the American physical activity guidelines, it was suggested that rather than focusing on meeting particular activity thresholds, individuals should instead focus on reducing the amount of time spent sitting (HHS, 2018). Additionally, it was noted that individuals would benefit by increasing the amount of time spent engaging in physical activity, regardless of their regular activity levels (HHS, 2018).

It should be noted that previous Canadian and international physical activity guidelines were developed with the research that was available at the time (Kraus et al., 2019). However, with the advent and accessibility of new technology such as accelerometers, researchers have now developed the means to more completely explore the relationship between physical activity level and health benefits. Notably, Kraus et al. (2019) suggested that using accelerometers to measure step-count has now allowed researchers to fully support the evidence that in general, moving more (taking more steps), is associated with health benefits. Additionally, Jakicic et al. (2019) found in their systematic literature review that individuals no longer need to engage in physical activity bouts of over 10 minutes to experience better health outcomes. Their study further supported the evidence that developing a more active lifestyle, regardless of one's activity level, would in most cases produce health benefits. Even very brief episodes of exercise, such as climbing a flight of stairs, contribute to one's health.

In light of these results, health campaigns must promote messaging that better reflects the evidence available for the relationship between physical activity and health. In general, becoming more active and minimizing sedentary

behaviour will result in greater health outcomes (Warburton & Bredin, 2016).

Conclusions

By including physical activity and exercise as part of a lifestyle, older adults can improve their health and live a better quality of life. While it is ideal to meet the recommended physical activity guidelines, engaging in any level of physical activity that is greater than one's normal activity levels could lead to significant health improvements and successful aging.

Author's Qualifications

The author's qualifications are as follows: Jasmine Kwan, BKin Student

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