Health & Fitness Journal
of Canada

Volume 9 **December 30, 2016** **Number 4**

STUDENTS' CORNER

Health Benefits of Physical Activity Across the Adult Lifespan: Knowledge Translation of "More Is Better, But Every Little Bit Counts"

Henry P. H. Lai[1] and Darren E. R. Warburton[1]

Abstract

Physical inactivity is a major risk factor of morbidity and all-cause mortality. Despite the dose-response relationship between physical activity and health status, evidence suggests that small doses of moderate-to-vigorous intensity of physical activity below the current recommendations under the Canadian physical activity guidelines are sufficient to improve the health status in older, inactive adults. This evidence-based review is a supplementary to a knowledge translation video designed to educate the general public with regards to the health benefits of physical activity: that "more is better, but every little bit of activity counts." **Health & Fitness Journal of Canada 2016;9(4):18-21.**

Keywords: Exercise, Physical Activity, Health Promotion, Cardiovascular Health, Chronic Disease Management, Risk Stratification, Knowledge Translation, Kinesiology

From [1]Physical Activity Promotion and Chronic Disease Prevention Unit, University of British Columbia, Vancouver BC, Canada Email: henryphlai@gmail.com

Introduction

The primary purpose of this narrative review and commentary is to supplement an evidence-based knowledge translation video designed to educate the general public on the health benefits of physical activity across the adult lifespan. It has been shown that active adults have approximately 50% reduction in their risk of chronic diseases including cancer, diabetes, and cardiovascular disease (Warburton et al., 2007). Since the elderly is the fastest growing segment of the population, physical activity promotion should accurately convey the health benefits of physical activity in a manner that encourages participation from all individuals (American College of Sports Medicine, 2013). The recommended dosage and intensity of physical activity under the current Canadian physical activity guidelines may discourage older, inactive and/or functionally limited adults in attempting to meet these recommendations. The message that "more is better, but every little bit counts" is supported by empirical evidence that highlights the dose-response relationship between physical activity and health status.

Key Findings

The health benefits of physical activity are well documented. Physical activity is a primary and secondary preventative strategy against more than 25 chronic medical conditions, including cancer, diabetes and cardiovascular disease (Warburton et al., 2006; Warburton et al., 2010). The dose-response relationship between physical activity and health status highlights the importance of adhering to the current Canadian guidelines for physical activity, which is the recommendation of 150 min of moderate-to-vigorous intensity physical activity per week or 1000 kcal/week (150 to 400 kcal/day) (Warburton and Bredin, 2016). An example of a moderate-to-

vigorous intensity physical activity is brisk walking, which is exercise at 40-59% heart rate reserve or approximately 4-6 metabolic equivalents (Paterson and Warburton, 2010). It has been suggested that an expenditure of 1000 kcal/week (or an increase of 1 metabolic equivalent) is associated with a 20-30% reduction in all-cause mortality (Myers et al., 2004). Collectively, the evidence suggests that the current recommendation under the Canadian guidelines for physical activity is sufficient to improve the health status in all individuals.

However, Paterson and Warburton (2010) suggested that in order for significant health and fitness outcomes to be accrued, a threshold of moderate-intensity physical activity above the current guidelines may need to be reached. In a population cohort study conducted by Arem et al. (2015), this beneficial threshold was observed when individuals engaged in approximately 3 to 5 times the recommended leisure time physical activity minimum. Additionally, no excess risk was observed at 10 or more times the minimum recommended time for physical activity (Arem et al., 2015). Hence, the evidence shows that a threshold of moderate-intensity physical activity may be a prerequisite to obtain significant health-related benefits. This conclusion, which conveys the message "more is better," is consistent with the dose-response model between physical activity and health status, such that further increases in physical activity beyond the recommended dosage and intensity can elicit greater enhancements in health-related benefits.

Although a further increase in the dose of physical activity has been shown to enhance exercise-related benefits in a curvilinear fashion (with an attenuation at the higher volumes of exercise) (Warburton et al., 2006), current literature reveals that health-related benefits can be accrued from adhering to the physical activity guidelines well below current recommendations. For instance, Hupin et al. (2015) showed that even a small dose of moderate-to-vigorous intensity physical activity below the current recommendations can reduce mortality in older adults by 22%. The notion that health benefits can be gained at lower volume and/or intensity of physical activity is consistent with the message "every little bit counts" (Warburton and Bredin, 2016).

The underlying message "more is better, but every little bit counts" is an effective communication tool to improve the health and fitness in older, inactive and/or functionally limited adults. Although the dose-response relationship between physical activity and health status highlights the need for older adults to participate in more moderate-to-vigorous intensity physical activity, meeting the recommended dosage and intensity may be challenging in adults living with mobility and/or functional challenges, such as obese individuals (McInnis, 2000). These challenges may discourage older adults from participating in any physical activity on a regular basis.

Participating in physical activities that are lower in volume and/or intensity are safer and more realistic options for older adults. For instance, 15 min/day of low-to-moderate intensity physical activity is suggested to be an effective starting point in older adults (Hupin et al., 2015; Warburton et al., 2007). A cost-effective physical activity, such as walking, has been shown to improve the health status, functional independence, and quality of

life in all individuals (Warburton et al., 2010). In fact, as little as 1 hour of walking per week has been shown to lead to reduced cardiovascular disease (Oguma and Shinoda-Tagwa, 2004). Thus, participating in walking-related activities for only 15 min/day (which is one-half the recommended daily dose of physical activity) can accrue health-related benefits in older adults. Using a progressive approach, older adults can increase the dosage and intensity of walking to meet and exceed the recommended physical activity guidelines to obtain optimal health benefits. Making gradual progressions is a noteworthy approach because it has been shown that small incremental increases in physical activity are associated with larger improvements in health status in previously inactive individuals (Warburton et al., 2007).

Despite these evidence-based recommendations, it is important for all individuals to complete the Physical Activity Readiness Questionnaire for Everyone (PAR-Q+) and (if necessary) the related electronic Physical Activity Readiness Medical Examination (ePARmed-X+; www.eparmedx.com) to assess one's risks for exercise-related adverse events (Bredin et al., 2013). Additionally, it is important to recognize that there is growing evidence to suggest that "extremely" high volumes of physical activity in highly trained individuals may attenuate the health benefits seen with physical activity (Warburton and Bredin, 2016).

Conclusion

The findings provide strong evidence in support of the dose-response relationship between physical activity and health status. The message "more is better, but every little bit counts" is an evidence-based knowledge translation tool that can communicate the importance of physical activity across the adult lifespan to the general public. To improve physical activity participation in older, inactive adults, safe and realistic goals are recommended in the initial stages of physical activity. Progressions in dosage and intensity of walking can be made to meet and exceed the 150 min/week of moderate-to-vigorous intensity physical activity as recommended by the current Canadian guidelines.

Authors' Qualifications

The authors' qualifications are as follows: Henry Lai, BSc, BKIN; Darren Warburton, MSc, PhD, HFFC-CEP.

References

American College of Sports Medicine. (2013). ACSM's guidelines for exercise testing and prescription. Philadelphia, PA: Wolters Luwer Health.

Arem, H., Moore, S. C., Patel, A., Hartge, P., Berrington de Gonzalez, A., Visvanathan, K., Campbell, P. T., Freedman, M., Weiderpass, E., Adami, H. O., Linet, M. S., Lee, I. M., and Matthews, C. E. (2015). Leisure time physical activity and mortality: A detailed pooled analysis of the dose-response relationship. *JAMA Intern Med, 175*(6), 959-967. DOI:10.1001/jamainternmed.2015.0533. URL: https://www.ncbi.nlm.nih.gov/pubmed/25844730.

Bredin, S. S. D., Gledhill, N., Jamnik, V. K., and Warburton, D. E. R. (2013). PAR-Q+ and ePARmed-X+, new risk stratification and physical activity clearance strategy for physicians and patients alike. *Can Fam Physician, 59*(3), 273-277. URL: https://www.ncbi.nlm.nih.gov/pubmed/23486800.

Hupin, D., Roche, F., Gremeaux, V., Chatard, J. C., Oriol, M., Gaspoz, J. M., Barthélémy, J. C., and Edouard, P. (2015). Even a low-dose of

moderate-to-vigorous physical activity reduces mortality by 22% in adults aged 60 years: A systematic review and meta-analysis. *Br J Sports Med, 49*(19), 126-1267. DOI:10.1136/bjsports-2014-094306. URL: https://www.ncbi.nlm.nih.gov/pubmed/26238869.

McInnis, K. J. (2000). Exercise for obese clients. Benefits, limitations, guidelines. *ACSM's Health and Fitness Journal, 4*(1), 25-31. URL: http://journals.lww.com/acsm-healthfitness/Abstract/2000/04010/Exercise_for_Obese_Clients.7.aspx.

Myers, J., Kaykha, A., George, S., Abella, J., Zaheer, N., Lear, S., Yamazaki, T., and Froelicher, V. (2004). Fitness versus physical activity patterns in predicting mortality in men. *Am J Med, 117*(12), 912-918. URL: https://www.ncbi.nlm.nih.gov/pubmed/15629729.

Oguma, Y., and Shinoda-Tagwa, T. (2004). Physical activity decreases cardiovascular disease risk in women: Review and meta-analysis. *Am J Prev Med, 26*(5), 407-418. URL: https://www.ncbi.nlm.nih.gov/pubmed/15165657.

Paterson, D. H., and Warburton, D. E. R. (2010). Physical activity and functional limitations in older adults: A systematic review related to Canada's physical activity guidelines. *Int J Behav Nutr Phys Act, 7*(38), 1-22. DOI: 10.1186/1479-5868-7-38. URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2882898/.

Warburton, D. E. R., and Bredin, S. S. D. (2016). Reflections on physical activity and health: What should we recommend?. *Can J Cardiol, 32*(4), 495-504. DOI:10.1016/j.cjca.2016.01.024. URL: https://www.ncbi.nlm.nih.gov/pubmed/26995692.

Warburton, D. E. R., Charlesworth, S., Ivey, A., Nettlefold, L., and Bredin, S. S. D. (2010). A systematic review of the evidence for Canada's physical activity guidelines for adults. *Int J Behav Nutr Phys Act, 7*(39), 1-220. DOI: 10.1186/1479-5868-7-39. URL: https://www.ncbi.nlm.nih.gov/pubmed/20459783.

Warburton, D. E. R., Katzmarzyk, P. T., Rhodes, R. E., and Shephard, R. J. (2007). Evidence-informed physical activity guidelines for Canadian adults. *Can J Public Health, 98*, 16-18. URL: https://www.ncbi.nlm.nih.gov/pubmed/18213940.

Warburton, D. E. R., Nicol, C. W., and Bredin, S. S. D. (2006). Health benefits of physical activity: The evidence. *CMAJ, 174*(6), 801-809. DOI:10.1503/cmaj.051351. URL: http://www.cmaj.ca/content/174/6/801.full.