Walking in the Fast Lane: High-Intensity Walking for Improved Fitness and Health Outcomes

The World Population Prospects 2019 report by the United Nations estimated that one in six people in the world would be 65 years or older (16%) by 2050, up from one in 11 in 2019 (9%).

Although, the increases in the life expectancy and number of older people are considered positive developments, a major concern is whether this greater longevity constitutes years of healthy living and healthy aging, and what impact it will have on health care systems. For example, a secondary analysis of 2017 Global Burden of Diseases identified 92 diseases as age-related, accounting for 51.3% of the entire global burden among adults. Moreover, total health care costs per capita are projected to increase by 20% because of aging in the United States from 2000 to 2030 with an annual increase of 0.6%. Among European Union countries, the projected increase in public health expenditure on elderly care in 2060, resulting purely from demographic changes, amounts to 1.2 percentage points of gross domestic product on average (from 1.6% in 2013 to 2.8% in 2060).

On the other hand, regular physical activity (PA) may serve as a nonpharmacological prevention and treatment strategy for various comorbid conditions such as hypertension, obesity, or overweightness; improves mental health and quality of life; delays dementia onset, and can be used to reduce public health care costs considerably. Previous studies suggest that exercise performed at high intensities, albeit fewer sessions, provide similar or larger health benefits compared with the frequent, low-intensity activity of longer duration. Emerging evidence also suggests that cardiopulmonary fitness (CRF) per se is superior to PA or exercise for predicting adverse health outcomes, and PA or exercise is associated with improvement in CRF in a dose-response manner.

The new PA guidelines for Americans recommend that older adults follow the key guidelines for adults, ie, 150 to 300 weekly minutes of moderate-intensity, or 75 to 150 weekly minutes of vigorous-intensity aerobic PA, or an equivalent combination of moderate and vigorous-intensity exercise. In addition, older adults should determine the intensity of PA relative to the level of their CRF, and engage in activities that include balance training. In the current issue of Mayo Clinic Proceedings, Masuki et al report the effects of interval walking training (IWT) for improvements in estimated CRF and lifestyle-related disease score, while focusing on exercise intensity and volume in middle aged and older people (mean age 65 years). During IWT program, participants performed five or more sets of fast (70% of estimated CRF) and slow (40% of estimated CRF) walking per day, each for 3 minutes for 4 or more days per week. After 5 months of the IWT program, the estimated CRF increased by 14%, and a composite lifestyle-related disease score decreased by 17% among men and women (n = 679). The results also showed that fast walking time per week was superior for CRF improvements to slow walking time or total walking time per week; an increase in fast walking time up to 50 min/wk was associated with improved CRF and a concurrent decrease in lifestyle-related disease score.

The study by Masuki et al contributes important information about the effect of high-intensity interval walking on CRF and disease score in middle age and elderly population. The intensity thresholds of PA or exercise have been debated during the last 2 decades without any scientific consensus to define the optimal and generalizable intensity cutpoints appropriately. However, the relative intensity thresholds (ie, as a proportion of CRF) are thought to be more suitable than absolute terms (metabolic...
equivalents of task) to increase the CRF, and are associated with a favorable cardiovascular profile. A strength of the study by Masuki et al is that it used a percentage of estimated CRF to define intensity. Other strengths of this study included monitoring exercise intensity at almost every training session during a 5-month period, and the availability of key electronically captured data as part of the training and monitoring system.

Of note, the study by Masuki et al observed no changes in CRF and lifestyle disease risk score associated with slow or total walking time. Their findings are consistent with the recommendations of the American Heart Association and the results of earlier studies showing superior beneficial health effects related to high intensity exercise that significantly increases the heart rates. In fact, we recently showed a positive association between a simple PA metric, personal activity intelligence, and objectively measured CRF across age groups and in both sexes. Interestingly, high levels of personal activity intelligence with PA at higher heart rates predicted both CRF and survival considerably better than following national PA guidelines.

However, data from epidemiologic studies also suggest that middle age and older adults can boost their longevity even with just light PA. In a recent meta-analysis of prospective cohort studies (n = 36,383; mean age, 62.6 years), higher levels of PA at any intensity were associated with a substantially reduced risk of premature mortality. The study from Masuki et al had different outcomes than mortality, and future studies with more extended intervention and follow-up times in various ethnicities are warranted to investigate the exact dose-response associations between different exercise intensities with health outcomes, as well as mortality.

The CRF assessments by treadmill speed and incline or by an accelerometer during the graded walking test as performed by Masuki et al is not the same as the precise measurements of oxygen consumption by gas exchange analysis. However, the objective measurements of CRF are often considered impractical in clinical settings, presumably because of the costly and time-consuming procedure of exercise testing. Therefore, estimation of CRF without precisely measuring it using treadmill or by nonexercise assessments has been proposed as a practical and cost-effective tool in risk prevention settings, and to include in electronic medical records to help clinicians further stratify risk of future disease in their patients.

At population level and especially in older adults, increasing PA and sustaining this change of behavior is challenging. A promising target for intervention in this regard could be walking, as it is simple, requires no training and equipment, and achievable even for older adults. Of particular note is that interval training, a strategy used by elite athletes to achieve success in competitions, may benefit average citizens seeking to improve their health. Although fast walking can be used as a practical way to secure high CRF levels, the message for policymakers, clinicians, public health professionals, and the general public must be to sit less and that even relatively small amounts of exercise are beneficial to reduce mortality and to improve quality-adjusted life years.

Javaid Nauman, PhD
Institute of Public Health
College of Medicine and Health Sciences
United Arab Emirates University
Al-Ain, United Arab Emirates
Department of Circulation and Medical Imaging
Faculty of Medicine and Health Sciences
Norwegian University of Science and Technology
Trondheim, Norway

Moien A.B. Khan, PhD
Department of Family Medicine
College of Medicine and Health Sciences
United Arab Emirates University
Al-Ain, United Arab Emirates

Michael J. Joyner, PhD
Department of Anaesthesiology and Perioperative Medicine
Mayo Clinic
Rochester, MN
Correspondence. Address to Javaid Nauman, PhD, Institute of Public Health, College of Medicine and Health Sciences, United Arab Emirates University, Al-Ain, Post Box 17666, United Arab Emirates (javadoc.nauman@uaeu.ac.ae; Twitter: @JavadocNauman).

REFERENCES


