

Editorial

The benefit of physical activity for old and young

Richard Tjan

Editor

There is now ample scientific evidence that elderly persons, will benefit from physical activity in a similar manner as the younger generations. Regular physical activity of at least moderate intensity reduces the risk of cardiovascular major events, leading to the conclusion that physical inactivity is a major cardiovascular risk factor. The underlying molecular mechanism may be that moderate physical activity leads to a reduction of oxidative stress.⁽¹⁾ In a prospective cohort of 21,094 men (mean age, 53 years) without known coronary heart disease at baseline in the Physicians' Health Study, it was shown that vigorous physical activity (defined as 'exercise to the point of breaking a sweat') was associated with a decreased risk of heart failure, whereas elevated BMI (even in the pre-obese range) was associated with an increased risk.⁽²⁾ Numerous studies have also demonstrated the benefits of daily physical activity for the elderly in maintaining functional independence, defined as 'the capacity to carry out activities of daily living'. Paterson and Warburton in 2010 conducted a systematic review of the relationship between physical activity of healthy community-dwelling elderly (age range 66 - 84 years) and functional limitations, disability, or loss of independence by analysis of prospective cohort studies reported in the literature. Among 2,309 citations from electronic bibliographical databases (MEDLINE, EMBASE, CINAHL, PsycINFO, Cochrane Library, SportDiscus) the investigators analyzed 66 prospective studies and concluded that "regular aerobic activity and short-term exercise programmes confer a reduced risk of functional limitations and disability in older age".⁽³⁾

Not only relatively healthy elderly, but also those who are frail or severely deconditioned may benefit from exercise. In a 12-month exercise program, 65 old Japanese elderly (median age 85 years) with minor disabilities, including those who had to be assisted in their activities of daily living, showed significant improvements in lower limb strength.⁽⁴⁾ Similarly, a study of frail institutionalized nonagenarians up to 96 years of age demonstrated increased muscle strength, size and functional mobility after 8 weeks of training.⁽⁵⁾

On the other hand, physical activity in the elderly may occasionally result in arrhythmias. The elderly therefore should use equipment that promotes safety, such as treadmills with handrails and cycle ergometers. Although the risk of fatalities is indeed minimal (2 fatalities per 1.5 million patient-hours of exercise in cardiac rehabilitation programs), it should still be borne in mind by the elderly when conducting physical activity.⁽¹⁾ The general rule is to conduct exercise according to ones capability and to increase it gradually. If a person is not yet ready for a given activity, she or he should not perform it. Conducting daily physical activity should not overload the organ systems of the body. The elderly should also refrain from climbing activities without adequate precautions, as advanced age is associated with deterioration of balance and increased risk of

falls. Elderly with conditions that can be exacerbated by exercise, such as active fever, unstable angina, uncontrolled diabetes, and congestive heart failure, should undergo appropriate tests before participating in an exercise program.⁽⁶⁾

The current physical activity recommendation for healthy elderly as well as for younger age groups is at least 30 minutes of moderate physical activities, such as brisk walking, which may be augmented by vigorous physical activity, such as jogging. The recommendation should be interpreted as being a minimum prescription for the general population.⁽¹⁾ In the year 2007, the American College of Sports Medicine and the American Heart Association recommended that “The promotion of physical activity in older adults should emphasize moderate-intensity aerobic activity, muscle-strengthening activity, reducing sedentary behavior, and risk management”.⁽⁷⁾ In the same year the National Heart Foundation of Australia advocated 30 minutes or more of moderate-intensity daily physical activity for persons with cardiovascular disease.⁽⁸⁾

In summary, the elderly of all ages should engage in at least moderate daily physical activity in order to maintain functional independence and quality of life as long as possible, within the lifespan determined by their genetic makeup. In addition, they should consume nutritionally adequate diets and have adequate sleep, as nutritional status and circadian rhythms are known to affect physical fitness. If daily physical activity can prolong the useful life of an elderly, the young should also take note and conduct as a minimum the recommended levels of daily physical activity and hopefully may all of us become healthy nonagenarians and centenarians.

REFERENCES

1. Ignarro LJ, Balestrieri ML, Napoli C. Nutrition, physical activity, and cardiovascular disease: an update. *Cardiovasc Res* 2007;73:326–40.
2. Kenchaiah S, Sesso HD, Gaziano JM. Body-mass index and vigorous physical activity and the risk of heart failure among men. *Circulation* 2009;119:44–52.
3. Paterson DH, Warburton DER. Physical activity and functional limitations in older adults: a systematic review related to Canada’s Physical Activity Guidelines. *Int J Behav Nutr Phys Act* 2010;7:38.
4. Taguchi N, Higaki Y, Inoue S, Kimura H, Tanaka K. Effects of a 12-month multicomponent exercise program on physical performance, daily physical activity, and quality of life in very elderly people with minor disabilities: an intervention study. *J Epidemiol* 2010;20:21-9.
5. Fahlman MM, Topp R. Increasing physical activity in the deconditioned person: the role of resistance training. *Ethn Dis* 2004;14:S25-7.
6. Nelson ME, Rejeski WJ, Blair SN, Duncan PW, Judge JO, King AC, et al. Physical activity and public health in older adults: Recommendation from the American College of Sports Medicine and the American Heart Association. *Med Sci Sports Exerc* 2007;39:1435–45.
7. Briffa T, Maiorana A, Allan R. On behalf of the Executive Working Group and National Forum Participants. National Heart Foundation of Australia physical activity recommendations for people with cardiovascular disease. Sydney: National Heart Foundation of Australia; 2007.