

EXERCISE AND CARDIOVASCULAR HEALTH

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ABSTRACT

This review aims to summarize the latest developments with regard to physical fitness and several health outcomes in young people. The literature reviewed suggests that (1) cardiorespiratory fitness levels are associated with total and abdominal adiposity; (2) both cardiorespiratory and muscular fitness are shown to be associated with established and emerging cardiovascular disease risk factors; (3) improvements in muscular fitness and speed/agility, rather than cardiorespiratory fitness, seem to have a positive effect on skeletal health; (4) both cardiorespiratory and muscular fitness enhancements are recommended in pediatric cancer patients/survivors in order to attenuate fatigue and improve their quality of life; and (5) improvements in cardiorespiratory fitness have positive effects on depression, anxiety, mood status and self-esteem, and seem also to be associated with a higher academic performance. In conclusion, health promotion policies and physical activity programs should be designed to improve cardiorespiratory fitness, but also two other physical fitness components such as muscular fitness and speed/agility. Schools may play an important role by identifying children with low physical fitness and by promoting positive health behaviors such as encouraging children to be active, with special emphasis on the intensity of the activity.

Keywords: fitness, health, adiposity, cardiovascular disease risk factors, bone, children.

INTRODUCTION:

Over the past 4 decades, numerous scientific reports have examined the relationships between physical activity, physical fitness, and cardiovascular health. Expert panels, convened by organizations such as the Centers for Disease Control and Prevention (CDC), the American College of Sports Medicine (ACSM), and the American Heart Association (AHA),^{1–3} along with the 1996 US Surgeon General's Report on Physical Activity and Health,⁴ reinforced scientific evidence linking regular physical activity to various measures of cardiovascular health. The prevailing view in these reports is that more active or fit individuals tend to develop less coronary heart disease (CHD) than their sedentary counterparts. If CHD develops in active or fit individuals, it occurs at a later age and tends to be less severe. As many as 2,50,000 deaths per year in the United States are attributable to a lack of regular physical activity. In addition, studies that followed large groups of individuals for many years have documented the protective effects of physical activity for a number of noncardiovascular chronic diseases, such as non-insulin-

dependent diabetes, hypertension, osteoporosis, and colon cancer.⁴ In contrast, we see a higher rate of cardiovascular events and a higher death rate in those individuals with low levels of physical fitness.^{1,4} Even midlife increases in physical activity, through change in occupation or recreational activities, are associated with a decrease in mortality.⁵ Despite this evidence, however, the vast majority of adults in the United States remains effectively sedentary; less than one-third of Americans meets the minimal recommendations for activity as outlined by the CDC, ACSM, and AHA expert panels.

What Are the Benefits of Exercise?

A sedentary lifestyle is one of the 5 major risk factors (along with high blood pressure, abnormal values for blood lipids, smoking, and obesity) for cardiovascular disease, as outlined by the AHA. Evidence from many scientific studies shows that reducing these risk factors decreases the chance of having a heart attack or experiencing another cardiac event, such as a stroke, and reduces the possibility of needing a coronary revascularization procedure (bypass surgery or coronary angioplasty). Regular exercise has a favorable effect on many of the established risk factors for cardiovascular disease. For example, exercise promotes weight reduction and can help reduce blood pressure. Exercise can reduce “bad” cholesterol levels in the blood (the low-density lipoprotein [LDL] level), as well as total cholesterol, and can raise the “good” cholesterol (the high-density lipoprotein level [HDL]). In diabetic patients, regular activity favorably affects the body’s ability to use insulin to control glucose levels in the blood. Although the effect of an exercise program on any single risk factor may generally be small, the effect of continued, moderate exercise on overall cardiovascular risk, when combined with other lifestyle modifications (such as proper nutrition, smoking cessation, and medication use), can be dramatic.

Benefits of Regular Exercise on Cardiovascular Risk Factors

Increase in exercise tolerance, Reduction in body weight, Reduction in blood pressure, Reduction in bad (LDL and total) cholesterol, Increase in good (HDL) cholesterol, Increase in insulin sensitivity. There are a number of physiological benefits of exercise; 2 examples are improvements in muscular function and strength and improvement in the body’s ability to take in and use oxygen (maximal oxygen consumption or aerobic capacity). As one’s ability to transport

and use oxygen improves, regular daily activities can be performed with less fatigue. This is particularly important for patients with cardiovascular disease, whose exercise capacity is typically lower than that of healthy individuals. There is also evidence that exercise training improves the capacity of the blood vessels to dilate in response to exercise or hormones, consistent with better vascular wall function and an improved ability to provide oxygen to the muscles during exercise. Studies measuring muscular strength and flexibility before and after exercise programs suggest that there are improvements in bone health and ability to perform daily activities, as well as a lower likelihood of developing back pain and of disability, particularly in older age groups. Patients with newly diagnosed heart disease who participate in an exercise program report an earlier return to work and improvements in other measures of quality of life, such as more self-confidence, lower stress, and less anxiety. Importantly, by combining controlled studies, researchers have found that for heart attack patients who participated in a formal exercise program, the death rate is reduced by 20% to 25%. This is strong evidence in support of physical activity for patients with heart disease. Although the benefits of exercise are unquestionable, it should be noted that exercise programs alone for patients with heart disease have not convincingly shown improvement in the heart's pumping ability or the diameter of the coronary vessels that supply oxygen to the heart muscle.

References

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