



Heart Disease: Prevention & Intervention

Matthew E. Bonander, PT, DPT

It's not surprising to many of us in the health care field that coronary heart disease is the leading cause of death in the United States. The Center for Disease Control (CDC) reports the age-adjusted average (annual) deaths per 100,000 as being 504 in California (my home state) whereas it is 536 for the national rate. Interestingly, the CDC also reported heart disease death rates from 2000 to 2004 of adults aged 35 years and older by county. The highest heart disease rates (top quartile) were located in Appalachia, along the southeast coastal plains, inland through the southern regions of Georgia and Alabama, and up the Mississippi River Valley.¹

In educating patients on preventative measures for coronary artery disease (CAD), first it is important to recognize the risk factors for developing the disease. These include elevated blood lipids (increased levels of low-density lipoprotein-LDL or "bad" cholesterol) and decreased levels of high-intensity lipoprotein-HDL or "good" cholesterol), cigarette smoking, high blood pressure (hypertension), glucose intolerance and diabetes mellitus and obesity.

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Research on CAD

Dean Ornish, MD, has performed insightful research on the physiological changes associated with heart disease prevention and appropriate lifestyle modification. His study showed that those who engaged in intensive lifestyle changes showed an actual reversal of coronary heart disease. The participants in his study engaged in aerobic exercise, a 10 percent fat whole foods vegetarian diet, stress management training, smoking cessation as well as psychosocial support. Results revealed that the experimental group had a decrease in the amount of stenosis in the coronary arterial wall, reported as a 4.5 percent relative improvement after one year and a 7.9 percent improvement at five years. In contrast, the control group had a worsening or an increased amount of arterial stenosis by 5.4 percent at one year and 27.7 percent at five years.²

A meta-analysis of 15 reports on the effect of exercise in patients who were post-heart attacks showed significant reductions of total cholesterol, LDL cholesterol, and triglycerides as well as an increase in HDL ("good") cholesterol with training.³

The benefits of endurance or aerobic exercise has also shown efficacy in studies by demonstrating increased $\text{VO}_{2\text{max}}$ (some studies report an increase of up to >25 percent) and it reduced the risk of heart attack or other cardiac problems.⁴

Other benefits of exercise training also include psychological benefits (improved quality of life in many individuals) as well as decreased cardiovascular mortality. Studies conducted by O'Connor⁵ and Oldridge⁶ demonstrated that individuals who engaged in an exercise-based rehabilitation program experienced a 20 to 25 percent reduction in fatal cardiovascular events and total mortality, compared with their counterparts who remained inactive.

Establishing Exercise Guidelines

It's important for every patient to seek a skilled medical practitioner before beginning an exercise program, especially if they have a cardiac condition or if they have symptoms of cardiac disease. A doctor or therapist can help set an appropriate exercise prescription. Before the patient or client begins an exercise program, those with known coronary artery disease require a complete medical history, physical examination and a graded exercise test. These components allow clinicians to establish the four main components for an exercise program: mode, frequency, duration and intensity of exercise.

Transitioning from the screening or evaluation to intervention, it's important to set the proper mode of exercise for the patient engaging in cardiovascular exercise. Focus on exercising the large muscle groups (legs and/or arms) and using continuous exercise such as walking, jogging, bicycling, swimming and group aerobics.

Frequency, the second component of exercise, should involve an exercise regimen of several days (five or more) per week. Specific to aerobic activity, the CDC recommends two hours and 30 minutes (150 minutes) each week of moderate intensity (see below) or one hour and 15 minutes of vigorous activity (75 minutes) each week of aerobic exercise. Aerobic activity should be performed at least 10 minutes at a time, preferably spread throughout the week.⁷

Duration of exercise should also include a warm-up and cool-down period of at least 10 minutes, which involves stretching and flexibility exercises. This should precede and follow 20 to 40 minutes of cardiovascular exercise either continuously or through interval training.⁷

Exercise intensity, the final component, is defined as the level of effort to do an activity. A person doing moderate-intensity aerobic activity can talk, but not sing, during the activity. A person doing vigorous-intensity activity cannot say more than a few words without pausing for a breath. The intensity is often supervised closely in the clinical setting for patients or individuals who have known cardiac conditions. It is recommended by the American College of Sports Medicine (ACSM) to perform exercise intensity at a moderate, comfortable intensity.⁸

In summary, the benefits of engaging in cardiovascular exercise can help prevent, and in some cases, reduce cardiac disease. These benefits include enhanced functional capacity; reductions in symptoms of myocardial ischemia (angina), and subsequent coronary artery disease mortality; improvements in blood lipid (cholesterol) profiles, weight and hypertension control; and, in diabetic patients, glucose tolerance. In addition, improvements in perfusion of blood to the heart, cigarette smoking cessation and psychological functioning may also occur.

References

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