

Abnormal heart function associated with reduced capacity for exercise

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Patients with abnormal diastolic function (when the heart is relaxed and expanded) in the left ventricle of the heart have a substantially lower maximum capacity for exercise, according to a study in the January 21 issue of JAMA.

Many factors, including age, female sex, body mass index and co-existing medical conditions are known to be associated with a decrease in exercise capacity. Identifying potentially reversible mechanisms underlying the decline in maximum exercise capacity could have important implications. Some research has suggested that assessing left ventricular (one of four chambers in the heart) function could be used to predict exercise capacity, according to background information in the article.

Jasmine Grewal, M.D., of Mayo Clinic, Rochester, Minn., and colleagues conducted a study to examine the relationship between left ventricular diastolic function and exercise capacity. The study included 2,867 patients undergoing exercise echocardiography (a noninvasive diagnostic procedure that uses ultrasound to study the structure and motions of the heart) with routine measurements of left ventricular systolic (contraction of the heart) and diastolic function. Analyses were conducted to determine the strongest correlates of exercise capacity and the age and sex interactions of these variables with exercise capacity.

The researchers found that diastolic dysfunction (impaired relaxation) was strongly and inversely associated with exercise capacity. Compared

with normal function, those with resting diastolic dysfunction had substantially lower exercise capacity. Variation of left ventricular systolic function within the normal range was not associated with exercise capacity.

Other independent correlates of exercise capacity were age, female sex, and body mass index greater than 30. Compared with those with normal diastolic function, patients with diastolic dysfunction had a progressive increase in the magnitude of reduction in exercise capacity with advancing age.

"In identifying diastolic function parameters as strong correlates of exercise capacity, we have identified potentially modifiable and preventable factors in the development of exercise intolerance. It is well known that exercise training improves diastolic function in healthy individuals ...," the authors write.

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