

Cardiorespiratory fitness in young adults associated with lower risk of cardiovascular disease death

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Cardiorespiratory fitness in young adults was associated with lower risk of cardiovascular disease and death but it was not associated with the development of coronary artery calcification in a long-term study of a large racially diverse group of U.S. adults, according to an article published online by *JAMA Internal Medicine*.

Cardiorespiratory [fitness](#) (CRF) has been associated with decreased risk for cardiovascular disease (CVD) in older adults but less is known about the role of CRF and its changes in young adulthood on long-term cardiovascular outcomes.

Joao A.C. Lima, M.D., of Johns Hopkins Medical School, Baltimore, Ravi V. Shah, Beth Israel Deaconess Medical Center, Boston, and Venkatesh L. Murthy, M.D., Ph.D., of the University of Michigan, Ann Arbor, and coauthors examined baseline CRF and changes in CRF in participants from the Coronary Artery Risk Development in Young Adults (CARDIA) study in relation to future CVD.

The study included 4,872 adults (ages 18 to 30) who underwent treadmill exercise testing at baseline from March 1985 to June 1986 and 2,472 individuals who had a second treadmill test seven years later. During a median follow-up of nearly 27 years, participant assessments included obesity, [left ventricular](#) heart mass and strain (a measure of the strength of heart muscle contraction), [coronary artery calcification](#) (CAC) and

incident CVD.

Among the 4,872 participants, 273 (5.6 percent) died and 193 (4 percent) experienced CVD events during follow-up. Among the deaths, 200 were noncardiovascular in origin and the greatest number of those (45 or 22.5 percent) were due to cancer. Also, 869 of 3,067 participants (28.3 percent) had any CAC by year 25, and 324 of 3,001 participants (10.8 percent) had left ventricular hypertrophy (a thickening of the heart muscle).

Exercise treadmill testing in the study consisted of as many as nine two-minute stages of gradually increasing difficulty. The study suggests each additional minute of baseline exercise test duration was associated with a 15 percent lower risk of death and a 12 percent lower risk of CVD. Each one-minute increase also was associated with reduced left ventricular mass and better strain. However, exercise test duration was not associated with CAC at year 15, 20 and 25.

A second treadmill assessment at seven years suggests that a one-minute reduction in fitness by year seven was associated with a 21 percent increased risk of death and a 20 percent increased risk of CVD. Each one-minute reduction was associated with worsening strain. No association between a change in fitness and CAC was found, according to the results.

"Efforts to evaluate and improve fitness in early adulthood may affect long-term health at the earliest stages in CVD pathogenesis," the authors conclude.

"The present report draws attention to the substantive and independent value of physical activity and CRF [[cardiorespiratory fitness](#)] in CVD [[cardiovascular disease](#)] prevention regardless of age, race or sex, highlighting its significance as a tool for individuals and population-

based intervention. Policies directed at promotion of physical activity in the population will have a significant effect on CVD morbidity and mortality," write David. E. Chiriboga, M.D., M.P.H., and Ira S. Ockene, M.D., of the University of Massachusetts Medical School, Worcester, in a related commentary.

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