

Simple fitness test could predict long-term risk for heart attack, stroke in middle-aged people

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How fast can you run a mile? If you're middle-aged, the answer could provide a strong predictor of your risk of heart attack or stroke over the next decade or more.

In two separate studies, UT Southwestern Medical Center researchers have found that how fast a middle-age person can run a mile can help predict the risk of dying of [heart attack](#) or [stroke](#) decades later for men and could be an early indicator of [cardiovascular disease](#) for women.

In one recent study in the *Journal of the American College of Cardiology*, researchers analyzed the [heart disease](#) risk of 45-, 55- and 65-year-old men based on their fitness level and traditional [risk factors](#), such as age, [systolic blood pressure](#), [diabetes](#), total cholesterol and smoking habits. The scientists found that low levels of midlife fitness are associated with marked differences in the lifetime risk for cardiovascular disease.

For example, a 55-year-old man who needs 15 minutes to run a mile has a 30 percent lifetime risk of developing heart disease. In contrast, a 55-year-old who can run a mile in eight minutes has a lifetime risk of less than 10 percent.

"Heart disease tends to cluster at older ages, but if you want to prevent it, our research suggests that the prescription for prevention needs to occur earlier – when a person is in his 40s and 50s," said Dr. Jarett Berry,

assistant professor of internal medicine and a corresponding author on both studies.

Researchers in this study found that a higher fitness level lowered the lifetime risk of heart disease even in people with other risk factors.

In a separate study in *Circulation*, UT Southwestern researchers found that the same treadmill test predicts how likely a person is to die of heart disease or stroke more accurately than assessing the risk using only typical prediction tools such as blood pressure and [cholesterol](#) levels.

Heart disease is a leading killer in industrialized nations and the No. 1 killer of women in the U.S. Women younger than 50 are particularly difficult to assess for long-term cardiovascular risk.

"Nearly all women under 50 years of age are at low risk for heart disease," Dr. Berry said. "However, as women get older, their risk increases dramatically. In our study, we found that low levels of fitness were particularly helpful in identifying women at risk for heart disease over the long term."

For decades, scientists have tried to improve their ability to determine which patients are at highest cardiovascular disease risk. Blood-based and imaging techniques have been used to try to improve risk prediction, but fitness has not been examined until now, Dr. Berry said.

For both studies, researchers collected information from thousands of participants who underwent a comprehensive clinical exam and a treadmill exercise test at the Cooper Clinic in Dallas between 1970 and 2006.

In the JACC study, researchers evaluated more than 11,000 men tested before 1990 – women were excluded because of the low number of

participants and cardiovascular death rates – and found 1,106 who died of heart attack or stroke during the study period. They measured participant fitness levels and traditional risk factors for heart disease. Within each age group, higher levels of fitness were associated with lower levels of traditional risk factors.

For the Circulation study, researchers examined more than 66,000 participants without cardiovascular disease, ages 20 to 90. They were then followed until death or the end of the study period; follow-up lasted up to 36 years. There were 1,621 cardiovascular deaths during the study. The researchers found that by adding [fitness](#) to the traditional risk factors, they significantly improved their ability to classify participants' short-term (10 years) and long-term (25 years) risk.

Researchers next will try to extend the JACC investigation parameters to women.

Provided by UT Southwestern Medical Center

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