

Researchers report on muscle as a heart-health predictor

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Britta Larsen leads a group that used computed tomography scans from the early 2000s to determine men with greater muscle area have greater risk of coronary heart disease. Credit: UC San Diego Health Sciences

Body composition—often expressed as the amount of fat in relation to muscle—is one of the standard predictors of cardiac health. Now, new research from the University of California San Diego indicates more muscle doesn't automatically mean lower risk of heart trouble.

The study, [published](#) in the *Journal of the American Heart Association*, has found that all [muscle](#) isn't the same. Britta Larsen, Ph.D., says men with a higher area of abdominal muscle have a greater risk of cardiac trouble. It's a completely different story for men with greater muscle density. The denser the muscle, the better: Men with the densest muscle in their [abdominal cavity](#) had about one quarter the risk of coronary heart disease later on.

"And the other really important thing to note is that we didn't find this with women. It was just in men," said Larsen, lead author and associate professor in the UC San Diego Herbert Wertheim School of Public Health and Human Longevity Science.

The data were taken from computed tomography of subjects in the National Institutes of Health Multi-Ethnic Study of Atherosclerosis, or MESA. Larsen explained that the subjects were in their mid-60s when the study—aimed at the understanding of the thickening of the arteries—began in the year 2000. Participants were recruited from numerous places around the U.S. and had follow-up visits for 20 years. Larsen noted that her group followed the subjects' medical records for 12 years.

The researchers found that the large-muscle group's heart-disease risk was as much as six times higher than the group of men with the smallest abdominal muscle area. Larsen said the team was surprised by the correlation of higher muscle area with higher coronary heart disease.

"Muscle has been overlooked in health for a long time," Larsen said. "Researchers have really just focused on fat. But muscle is a large, active metabolic tissue, and it's finally getting a little bit more attention."

Larsen explains the distinction between muscle area and muscle density boils down to quantity vs. quality. The computed tomography scans

render a two-dimensional image. Muscle area, she said, was determined simply by pixel count in the image.

"Density is a little bit trickier. It's sort of our proxy measure of muscle quality," Larsen said. "It's really a measure of how much fat has infiltrated the muscle cavity. Within the muscle itself, how much is pure muscle? And how much is fat content?"

The study also found no correlation between muscle and stroke, among men as well as women. The researchers drew a distinction between coronary heart disease and [cardiovascular disease](#), which includes stroke—a block in the artery outside the heart.

"What that tells me is that muscle density isn't just sort of a proxy measure of overall health or frailty or aging," she said. "Otherwise, we would see it with stroke and other outcomes, too."

Larsen said the work raises many more questions and possible avenues for future research. For instance: Why are women seemingly exempt from the muscle/coronary connection?

Larsen said a larger question concerns the biological mechanisms driving the muscle/coronary connection in men. Genetics could be involved, but she said her suspicions turn to diet and physical activity.

More information: Britta Larsen et al, Associations of Abdominal Muscle Density and Area and Incident Cardiovascular Disease, Coronary Heart Disease, and Stroke: The Multi-Ethnic Study of Atherosclerosis, *Journal of the American Heart Association* (2024). [DOI: 10.1161/JAHA.123.032014](#)

Provided by University of California - San Diego

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