

Female marathoners have less plaque than male counterparts, sedentary women

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While elite female marathon runners have fewer coronary plaques than their sedentary counterparts, they developed the same plaque volume and percent stenosis when it occurs, according to study findings presented Nov. 14 at the American Heart Association (AHA) scientific sessions in Orlando, Fla. This differs from their counterpart elite male runners who developed significantly more plaque volume than their sedentary counterparts.

Recent [coronary artery](#) studies suggest that elite male marathon runners may paradoxically have increased [plaque formation](#). However, little is known about elite female athletes, since comparable coronary artery studies in women have not been reported.

"We had previously studied male marathoners, and were unpleasantly surprised by finding paradoxically more plaque in runners. We wanted to if the same was true for highly trained women runners," says the study's senior author Robert S. Schwartz, MD, an interventional cardiologist at the Minneapolis Heart Institute® at Abbott Northwestern Hospital in Minneapolis and physician researcher with Minneapolis Heart Institute Foundation. "We were happy to discover that women who exercised extensively saw benefits in their cardiovascular health."

For the retrospective analysis, the researchers examined female long-distance runners for coronary artery plaque, on a risk-adjusted basis with age and risk-matched non-athletic female controls. The female athletes included had run a minimum of one marathon per year for 10

consecutive years. Using coronary computed tomography angiography (CCTA) scans, they characterized the location and volume of coronary atherosclerotic lesions.

Using state of the art CCTA with very low radiation doses, 25 female runners (all without cardiovascular symptoms) were compared with 28 matched, sedentary controls. The average body mass index of the control group was 32, compared with 21.9 for the marathoners.

Schwartz and his colleagues identified 28 lesions in 14 of the sedentary [females](#) and seven lesions in five of the marathoners. Overall, the mean plaque volume for the control group versus the marathon group was 169.8 versus 95.8, and the average percent [stenosis](#) was 28 versus 10.3, respectively.

Unlike in the male counterparts, female marathoners had statistically significant fewer lesions compared with the sedentary group. However, on a per lesion basis, plaque volume and percent stenosis were not significantly different between each group, suggesting to the researchers that when plaque is present, both groups exhibited similar [plaque](#) characteristics.

"These findings show a positive physical result for women choosing to be competitive [runners](#) because the marathoners had lower heart rates, lower blood pressure, better cholesterol profiles and lower incidence of diabetes," Schwartz said. "This was an opposite finding than in the men."

The researchers are currently building statistical models in hopes of understanding whether the fact the studied male athletes were so much older than the studied [female athletes](#) is causing this disparity. "We are now seeking to determine whether there is truly a gender difference, or was it confounded by age," Schwartz explained.

Provided by Minneapolis Heart Institute Foundation

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