

Too Much Sitting May Up Risk of Coronary Artery Calcification

Marlene Busko | March 11, 2015

SAN DIEGO, CA — Each added hour spent sitting was associated with a 14% increase in coronary artery calcium (CAC) score, independent of traditional risk factors, including physical activity, in a study of middle-aged subjects without cardiovascular disease^[1].

"Our study contributes to the growing body of evidence whereby health consequences of 'sitting too much' appear to be distinct from those of 'too little exercise,' and [it] suggests that increased subclinical atherosclerosis may be one of the mechanisms through which sedentary behavior increases CV risk," Dr Jacquelyn Kulinski (Medical College of Wisconsin, Milwaukee) told *heartwire* from Medscape.

"As [healthcare] providers, we really have to start thinking about 'lack of exercise' and 'too much sitting' as two distinct [cardiovascular] risk factors," she stressed. Further studies are needed to investigate potential interventions to discourage sedentary behavior and to see whether these interventions improve cardiovascular health, Kulinski said in a media briefing. The study is being presented at the American College of Cardiology (ACC) 2015 Scientific Sessions.

The researchers examined data from 2031 participants in the Dallas Heart Study who were aged 20 to 76, with a mean age of 50. Just over half (62%) were women, and about 50% were black.

Participants had a CT scan to measure CAC; a CAC score above 10 was deemed positive and a score below 10 was deemed negative. In addition, the participants wore a watch accelerometer for at least 4 days to measure body movements, which were classed as sedentary, light activity (nonexercise), or moderate to vigorous physical activity.

On average, participants were sedentary for 5.1 hours a day, but this ranged from 1.1 to 11.6 hours a day. Older people, those with a higher body-mass index (BMI), and those with diabetes or hypertension were more likely to spend more time sitting.

After adjustment for BMI, systolic blood pressure, total cholesterol, HDL cholesterol, statin use, type 2 diabetes, smoking, household income, education, marital status, employment, and moderate to vigorous physical activity, each hour of sedentary time was associated with a 10% higher odds of having CAC (adjusted odds ratio 1.10, 95% CI, 1.01–1.21; $P=0.035$).

Moderate to vigorous physical activity was modestly associated with CAC in models adjusted only for age, gender, and ethnicity, but the association disappeared after adjustment for traditional cardiovascular risk factors, including smoking, diabetes, BMI, cholesterol, and blood pressure, Kulinski added. Even though study participants exercised only an average of 6 minutes a day, other studies in marathon runners have also reported that exercise was not associated with CAC, she noted.

"What this suggests to me is that the cardioprotective effects of exercise act through alternative mechanisms [compared with physical activity]," Kulinski told *heartwire*. "Some of the suggested mechanisms include anti-inflammatory processes, increasing coronary artery diameter and collateral circulation, improving plaque stability (rather than burden), and of course, reducing cardiac risk factors."

On a positive note, "reducing daily sitting time by even 1 or 2 hours could have a significant and positive impact on future cardiovascular health, and this really should be investigated in future studies," she told the media.

This does not mean that regular exercise is not important for cardiovascular health. "I would caution the audience that regular exercise further reduces risk, and it may do so by a mechanism distinct from coronary artery

calcification," said media briefing moderator and ACC vice president Dr Richard Chazal (Lee Memorial Health System, Fort Myers, FL).

Kulinski reports she has no relevant financial relationships. Disclosures for the coauthors are linked in the abstract.

References

1. Kulinski J, Kozlitina J, Berry J, et al. Sedentary behavior is associated with coronary artery calcification in the Dallas Heart Study. American College of Cardiology 2015 Scientific Sessions, March 15, 2015, San Diego, CA. Abstract 1178-114.

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