

Effect of Sitting Time on Measures of Subclinical Atherosclerosis in Older Adults

Jacob P. DeBlois, Wesley K. Lefferts, Jacqueline A. Augustine, Kayla M. Nunemacher, Kevin S. Heffernan. Syracuse University, Syracuse, NY

Increased sitting time has been associated with increased risk of cardiovascular disease and cardiovascular mortality. In young adults, sitting time was found to correlate with arterial stiffness and wave reflection, two subclinical markers of early atherosclerotic progression.

PURPOSE: To determine if sitting time is associated with markers of subclinical atherosclerosis in older adults. **METHODS:** 99 adults between the ages of 60 and 85 yrs (mean: 68 ± 6 yrs; 46.5% female) completed the International Physical Activity Questionnaire to assess physical activity behavior, including sitting time. Markers of subclinical atherosclerosis included common carotid intima-media thickness (IMT), carotid β stiffness, and Young's elastic modulus (ϵ) as measures of carotid stiffness, carotid-femoral pulse wave velocity (c-fPWV) as a measure of aortic stiffness, and aortic augmentation index (AIx) as a measure of global wave reflections. IMT, β stiffness, and ϵ were assessed on the left common carotid artery using ultrasound, while c-fPWV and AIx were assessed on the right side via applanation tonometry. Pearson correlations were performed to determine the strength of the relationship between sitting time and subclinical atherosclerotic measures. **RESULTS:** Older adults sat for an average of 6.3 ± 2.8 hrs·d⁻¹ and sitting time was not different between the sexes (6.0 ± 2.5 vs. 6.6 ± 3.0 hrs·d⁻¹, $p = 0.279$, for women and men, respectively). Sitting time was not significantly correlated with IMT ($r = -0.089$, $p = 0.193$) β stiffness ($r = -0.047$, $p = 0.324$), ϵ ($r = -0.013$, $p = 0.449$), c-fPWV ($r = 0.038$, $p = 0.356$), or AIx ($r = -0.003$, $p = 0.488$). When exploring associations by sex, there were no associations between sitting time and any measure of arterial stiffness or wave reflection ($p \geq 0.073$). **CONCLUSIONS:** Sitting time is not associated with measures of subclinical atherosclerosis in older adults. These data suggest sitting time may not further impact the structure of the aged artery. Future studies using objective measures of sedentary behavior are needed to further explore the relationship between sitting time and subclinical atherosclerotic risk.

Supported by Dairy Research Institute/Dairy Management Inc.