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### **The Inverse Association Between Muscular Strength and Carotid Intima-Media and Extra-Media Thickness in Young Women**

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Cardiovascular Disease (CVD) is the leading cause of death among women in the United States, accounting for 1 of every 5 deaths each year. Muscular strength is important for cardiovascular health and has been associated with reductions in CVD risk. However, many studies on muscular strength and CVD risk have been conducted exclusively in men, leaving the relationship between muscular strength and CVD risk in women poorly defined. **PURPOSE:** The purpose of this study was to determine the relationship between strength and CVD risk in young women.

Carotid intima-media thickness (cIMT) and extra-media thickness (EMT) were used as measures of subclinical atherosclerosis and CVD risk. **METHODS:** Muscular strength, cIMT, and EMT were measured in 70 young women (mean age =  $21 \pm 4$  years). Strength was determined using a handgrip dynamometer consisting of 3 trials. The maximum value of the 3 trials was obtained and expressed relative to body mass. cIMT and EMT were measured using ultrasonography of the left common carotid artery in the supine position. **RESULTS:** Higher relative handgrip strength was associated with lower cIMT ( $r = -0.25$ ;  $p < 0.05$ ) and lower EMT ( $r = -0.29$ ;  $p < 0.05$ ). Associations between relative handgrip strength and cIMT ( $r = -0.24$ ) as well as EMT ( $r = -0.28$ ) remained significant after adjusting for potential confounders which included age, body fat, blood lipids, glucose, and blood pressure ( $p < 0.05$ ). **CONCLUSION:** These results show that there is an inverse association between strength, cIMT, and EMT in young women.

Muscular strength may reduce CVD risk in women via favorable effects on subclinical carotid atherosclerosis.

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