

31. SWACSM Abstract

No Sex Differences in Common Carotid Artery Stiffness Response Following Maximal Oxygen Consumption Test

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ABSTRACT

PURPOSE: Previous investigations have reported sex differences in the time course of age-related arterial stiffness, with postmenopausal women presenting increased risk of cardiovascular diseases. Using sex as a biological variable has identified differences between males and females in physiological responses to equivalent doses of exercise. The purpose of this study was to determine if sex differences exist in arterial stiffness response to a maximum oxygen consumption (VO_{2max}) exercise test. **METHODS:** VO_{2max} was measured by indirect calorimetry. Body composition was measured by air displacement plethysmography (BODPOD). Indices of common carotid artery (CCA) stiffness (Peterson's elastic modulus [Ep], Beta stiffness [B1], distensibility [DIST], and diameter compliance [DC]) were calculated before and within 5 minutes following VO_{2max} . CCA's were imaged for 1 minute by duplex Doppler ultrasound approximately 2-3cm below bifurcation and stored for offline analysis of velocities and diameters. Brachial blood pressures were captured by automated cuff. **RESULTS:** Males (n=14) and females (n=15) were matched for age ($p=0.549$), fat mass ($p=0.775$), body fat percentage ($p=0.08$), fat free mass percentage ($p=0.087$), and VO_{2max} ($p=0.349$). Males had higher body mass ($p<0.001$) and fat free mass ($p<0.001$). No sex differences were observed before or after exercise for Ep, B1, DIST, and DC ($p>0.05$ for all). No sex differences were identified for delta changes in any CCA stiffness indices ($p>0.05$). **CONCLUSION:** The CCA response to VO_{2max} test is equivalent in males and females who are matched for baseline VO_{2max} , despite males presenting high fat free masses. Previously reported sex differences in response to equivalent exercise dose may not be evident in the CCA stiffness characteristics.