SWACSM Abstract

Body Composition and Performance Associations with Common Carotid Artery Hemodynamics and Stiffness Indices in Males and Females

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ABSTRACT

Sex differences in physiological parameters are being increasingly recognized as a robust prognostic factor in individuals at risk or suffering from cardiovascular disease. Body composition and physical performance measures of cardiorespiratory fitness and muscular strength are strongly associated with overall vascular health. **PURPOSE**: This study aimed to determine if body composition and physical performance measures were related to common carotid artery (CCA) hemodynamics and stiffness in males and females. **METHODS**: College-aged males and females who were free from cardiovascular risk factors performed a maximal oxygen consumption test (VO_{2max}) via indirect calorimetry and a maximal leg strength test (1RM) by seated leg press. CCA peak systolic velocity (PS), end-diastolic velocity (ED), time-averaged maximal velocity (TAMAX), time-averaged mean velocity (TAMEAN), pulsatility index (PI), and average diameter (DIAM) were captured in the supine position by Doppler ultrasound. Carotid stiffness index (β), Peterson's Elastic Modulus (Ep), distensibility, compliance, and average diameter were calculated. **RESULTS**: Significant associations were observed between VO_{2max} and β (r=-0.724, p=0.008) within the male sample. Within the female group, associations were evident between 1RM and CCA distensibility (r=-0.537, p=0.039). Total mass (kg) was associated with peak systolic velocity (PSV) (r=-0.524, p=0.037), end diastolic velocity (EDV) (r=-0.516, p=0.041), and CCA diameter (r=0.618, p=0.011). Fat free mass (kg) was associated with ED (r=-0.565, p=0.023) and diameter (r=0.533, p=0.033), in addition to FFM (%) presenting associations with pulsatility index (r=0.531, p=0.034). **CONCLUSION**: Associations between performance and body composition measures with CCA hemodynamic and stiffness parameters vary between males and females.