

## 11. SWACSM Abstract

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### Maximum Aerobic Exercise Induces Common Carotid Vasoconstriction and Increased Vascular Resistance

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#### ABSTRACT

**PURPOSE:** Low-to-moderate intensity aerobic exercise has been reported to elicit changes in systemic hemodynamics. Recent evidence suggests that the cerebral circulation reacts independently to systemic circulations to the same physiological stimuli. The aim of this is to determine the influence of high-intensity aerobic exercise on common carotid artery (CCA) hemodynamics. **METHODS:** Hemodynamic measurements were recorded before and following the cessation of a maximum oxygen uptake test ( $VO_{2max}$ ). One minute video of the CCA by Doppler ultrasound were recorded and used to determine peak systolic velocity (PSV), end diastolic velocity (EDV), time averaged mean blood velocity (TAMEAN), timed average maximum velocity (TAMAX), pulsatility index (PI), and resistance index (RI). CCA diameters were calculated by commercially available vessel tracking software. **RESULTS:** A total of 29 individuals, 14 male and 15 females, participated in this study. Following the cessation of exercise, PSV ( $p<0.001$ ), TAMAX ( $p=0.0085$ ), RI ( $p<0.001$ ), and PI ( $p=0.0032$ ) significantly increased whilst the minimum diameter ( $p=0.005$ ), and maximum diameter ( $p=0.020$ ) decreased. **CONCLUSION:** The results show hemodynamic changes in the CCA following  $VO_{2max}$  exercise. Specifically, increases in vascular resistance are may be due to the reductions in arterial diameter, which may be evident downstream of the CCA.