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PO-13: ARTERIAL HEMODYNAMICS IN OVERWEIGHT YOUNG ADULT MALES FOLLOWING MAXIMAL EXERCISE

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Results: As Figure 1 shows, at control condition, there was no difference in the eNOS protein expression between AA and CA HUVECs. The incubation of CRP significantly reduced the expression levels of eNOS on both AA and CA HUVECs in a dose-dependent manner. The reductions of eNOS protein expression in AA HUVECs at all three different concentrations were significantly greater than those in CA HUVECs.

Conclusion: AA HUVECs respond differently to CRP compared to CA HUVECs. CRP incubation causes greater reduction of eNOS expression on AA than CA HUVECs. The results suggest a possible mechanism for the racial differences in endothelial dysfunction.

PO-13

ARTERIAL HEMODYNAMICS IN OVERWEIGHT YOUNG ADULT MALES FOLLOWING MAXIMAL EXERCISE

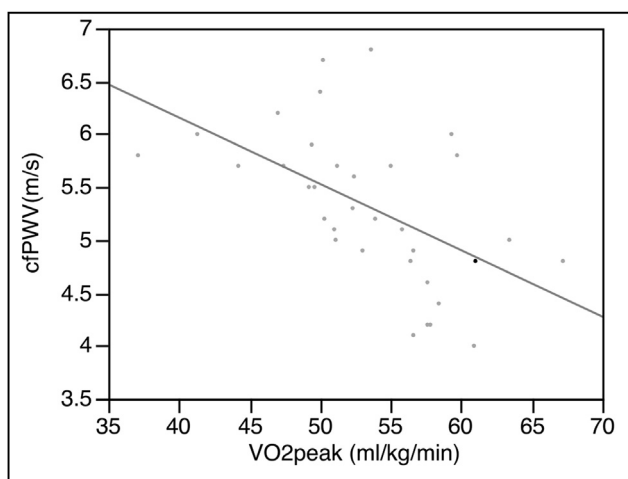
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Objective: Overweight (OV), defined by body mass index (BMI), is related to increased cardiovascular risk and greater aortic stiffening. In contrast, enhanced cardiorespiratory fitness (CRF) is associated with reduced cardiovascular risk, and lower aortic stiffness. It is unknown whether CRF is related to aortic stiffness in young OV adult males. We hypothesized CRF would be inversely associated with aortic stiffness, and the post-exercise hemodynamic response would be impaired in OV males.

Methods: Thirty-four apparently healthy, young adult males (22.12 ± 0.09 years) were categorized based on BMI as healthy weight (H, ≤ 24.9 kg/m²), or OV (24.9-29.9 kg/m²). Resting measures of arterial stiffness (carotid-femoral pulse wave velocity, cfPWV), heart rate (HR), blood pressure (BP), pulse pressure (PP), mean arterial pressure (MAP), percent body fat (BF%), waist (WC) and hip circumference (HC), and waist-to-hip ratio (W:H) were obtained. Peak oxygen consumption (VO_{2peak}), a measure of CRF, was assessed with a maximal exercise treadmill test (EX). cfPWV and BP were obtained at 2, 5, 10, 20, 30, 45 and 60 minutes following EX.

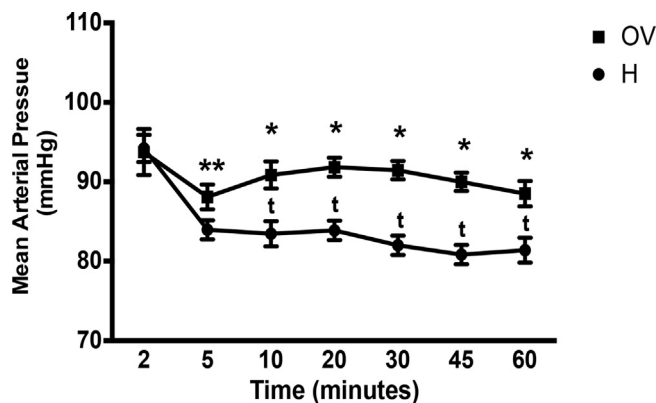
Results: Compared with H at rest, OV had greater cfPWV, BMI, BF%, systolic BP (SBP), PP, MAP, WC, HC, and W:H ($p < 0.05$, all). VO_{2peak} was greater in H compared with OV ($p < 0.05$). A positive association was observed between resting cfPWV and SBP, whereas cfPWV was inversely related to VO_{2peak} ($p < 0.05$, both). Compared with H, post EX MAP was increased in OV at 10, 20, 30, 45 and 60 minutes ($p < 0.05$). A main effect of weight was observed for cfPWV, SBP and DBP, and a main effect of time for PP, SBP and DBP ($p < 0.05$, all).

Conclusion: Increased resting aortic stiffness in young OV adult males is, in part, attributable to lower levels of CRF and increased SBP. In addition, post EX arterial hemodynamics is impaired in young adult OV males.



$r = 0.54$, $r^2 = 0.29$, $p < 0.05$.

Figure 1 Peak Volume of Oxygen Consumption (VO_2) vs. carotid-Femoral Pulse Wave Velocity (cfPWV) ($n = 34$).



* $P < 0.05$, H vs. OV at 10, 20, 30, 45, 60 minutes

** $P < 0.05$, H and OV at 5 vs. 2 minutes

t $P < 0.05$, H at 10, 20, 30, 45, 60 vs. 2 minutes

Figure 2 Post EX MAP.

PO-14

RELATIONSHIP BETWEEN CAROTID ARTERY STIFFNESS AND ALTERED CEREBROVASCULAR HEMODYNAMICS IN SOUTH ASIAN INDIAN OLDER ADULTS

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Objectives: To investigate whether differences exist in common carotid artery (CCA) stiffness between South Asian (SA) and white Caucasian (CA) older adults, and its association with cerebrovascular hemodynamic properties.

Methods: Carotid artery stiffness indicators, including pulse pressure (PP), distensibility coefficient (DC), and compliance coefficient (CC), were measured by applanation tonometry and ultrasound imaging. Continuous blood pressure (MAP), heart rate, and middle cerebral artery blood flow velocity (MFV) using non-invasive transcranial Doppler ultrasound, were monitored in 44 age- and gender-matched SA and CA community-dwelling older adults free of cardio- and cerebrovascular diseases (22 CAs/SAs: 11 M/F in each group, aged 64-82 years). Cerebrovascular resistance index (CVRI) and pulsatility index (PI) were also calculated for evaluation of cerebrovascular hemodynamics.

Results: Carotid artery stiffness was higher in SA compared to CA group, as evidenced by lower arterial compliance ($CC = 601 \pm 282$ vs. 789 ± 323 mm²/MPa, respectively, $p = 0.048$), and greater PP (59 ± 18 vs. 46 ± 10 mmHg, respectively, $p = 0.005$). A significant interaction effect between ethnic group and arterial compliance on PP was observed ($r^2 = 0.562$, $p < 0.001$), indicating that less compliant arteries resulted in higher PP amplitudes in SA compared to CA group. Furthermore, a moderate negative relationship between arterial compliance and CVRI was found only in the SA group ($r = -0.574$, $p = 0.025$). Correspondingly, CVRI was strongly associated with lower MFV ($r = -0.925$, $p < 0.001$).

Conclusions: SA group presented greater stiffness and less compliant arteries compared to CA group independent of age and gender. SA older adults appear to have impaired dampening capacity of central arteries to the changes in arterial pressure, thereby increasing the risk of hemodynamic pulsatility transmission into the brain. Consequently, an increase in CVRI might be a compensatory mechanism to protect the cerebral microcirculation, or reflect prior damage, resulting in lower CBF. These findings may aid in understanding the increased risk of cardio- and cerebrovascular diseases in people of SA origin.