**Vascular Function Following a Mental Stressor Among Fit versus Non-fit Young Adults**

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Acute mental stress impairs cardiovascular function. The purpose of this study was to investigate if stress-induced vascular impairment is moderated by physical fitness in healthy young adults. **Methods:** 19 young, healthy adults (21.6±2.7 y, 23.9 ± 3.1 kg/m², 10 F) were classified as fit (n=11) or non-fit according to ACSM physical activity guidelines. Subjects underwent an experimental (stress) and control (non-stress) testing session. A five-minute mental arithmetic task was given to induce stress in the experimental session. In addition to baseline measures, measurements were taken throughout the 60 mins following the stress/control period. Measures included central blood pressure (cSBP), augmentation index (AIx), and brachial-radial pulse wave velocity (brPWV). Mixed linear models were used to perform statistical analyses, covarying for baseline measures. **Results:** There was a significant fitness x condition interaction for AIx ($p=0.038$). The greatest AIx of fit individuals following stress was 3.3 percent less than non-fit individuals (95% CI -1.29, -0.09, $d = -1.34$). There was a non-significant interaction of fitness and condition on PWV ($p=0.785$; 95% CI -0.18, 0.16), with an inconclusive main effect of fitness ($p=0.143$). Fit individuals had a PWV 0.37 m/s less than non-fit individuals (CI: -0.27, 0.04; $d=-0.43$). For cSBP, there was a main effect of condition ($p=0.045$). Regardless of fitness, stress elicited a 3.05 mmHg greater increase in cSBP after the stressor versus the non-stress condition (95% CI 0.01, 3.06; $d=0.69$). **Conclusion:** Fitness was associated with a healthier wave reflection profile following stress, and better overall vascular function. These adaptive effects of fitness occurred despite stress-induced increases in cSBP regardless of fitness status.