

## 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 ( $21.6 \pm 2.7$  y,  $23.9 \pm 3.1$  kg/m<sup>2</sup>, 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.