

**Differential Contribution of Cardiac and Peripheral Blood Flow to Metaboreceptor-Mediated Pressor Responses in Autism Spectrum Disorder**

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**ABSTRACT**

Young adults with Autism Spectrum Disorder (ASD) experience a higher prevalence of hypertension than the general population. Abnormal blood pressure (BP) response to acute exercise is seen in hypertension. BP response evoked during exercise is the outcome of a central interaction between neural inputs such as the exercise pressor reflex. However, it is unclear if this neurocardiovascular interaction is altered differently to regulate BP during exercise in ASD. **PURPOSE:** To determine whether contributions of cardiac and peripheral blood flow to metaboreceptor-mediated pressor responses are different during exercise in ASD. **METHODS:** 21 young adults with and without ASD completed the study. Heart rate (HR) from ECG, beat to beat arterial BP from Finapres, and stroke volume from Modelflow, were continuously measured during baseline, 2 min of handgrip exercise at 35% of maximal contraction, 2 min of occlusion on exercising arm (postexercise ischemia; PEI), and recovery. Diameter, velocity, and flow of the femoral artery (FBF) were measured using Doppler ultrasound. **RESULTS:** While both groups increased HR and BP from rest to exercise, ASD had attenuated pressor response ( $\Delta 11 \pm 1$  control vs  $\Delta 6 \pm 1$  ASD mmHg). Mean BP stayed elevated during PEI compared to exercise in both groups ( $\Delta -1.5 \pm 0.7$  control vs  $\Delta 1.5 \pm 1.6$  ASD mmHg). While HR decreased significantly to PEI from exercise in control ( $\Delta -5.8 \pm 1.1$  bpm), it did not decrease dramatically in ASD ( $\Delta -2.6 \pm 2.0$  bpm). ASD had significantly higher resting FBF compared to control, ( $367 \pm 64$  control vs  $656 \pm 92$  ASD mL/min) with no differences in diameter. FBF had a tendency to be reduced during exercise in both groups. HR and FBF stayed significantly elevated in recovery only for ASD, while both came back to baseline in control. **CONCLUSION:** The attenuated pressor response mediated by metaboreceptors appeared to be due to peripheral contribution in ASD. Greater tachycardic response in ASD did not contribute to the pressor effect. Such tachycardic response stayed elevated during recovery, while BP was reduced to baseline.

This work is supported by National Institute of Health, National Institute of General Medical Sciences Grant (SC2GM144165 to A.K. Jensen)