

24. SWACSM Abstract

Cardiorespiratory Fitness Level Alters Blood Pressure Responses Induced by Histamine H1- and H2-receptor Blockade During Dynamic Exercise

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ABSTRACT

Epidemiological studies have reported that greater cardiorespiratory fitness (CRF) is associated with lower blood pressure (BP). Histamine receptor-mediated peripheral vasodilation contributes to postexercise hypotension and lowering exercising BP responses. Previously, our laboratory found that overactive BP responses to exercise were induced by the inability of histamine receptors in individuals with prehypertension. However, it is still unknown that CRF can impact BP responses elicited by the inability of the receptors. **PURPOSE:** This study was to assess whether aerobic fitness is effective in lowering excessive BP responses induced by the blockade of histamine receptors. **METHODS:** In twelve male and female subjects (6 high CRF and 6 low CRF), we examined the effects of histamine H₁- and H₂- receptor blockades on heart rate (HR), stroke volume (SV), cardiac output (CO), systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP), and total peripheral resistance (TPR) at workloads corresponding to 40% and 60% workloads of VO_{2peak} during cycling exercise. **RESULTS:** Our study indicated that compared to the high CRF group, changes in MAP from the baselines were higher in the low CRF group before the blockade at each workload (40%: D14±2 vs. 8±1 mmHg; 60%: D21±3 vs. 15±2 mmHg). The changes in MAP in response to the blockade during exercise were substantially lower in the high CRF group (40%: D18±2 vs. 11±1 mmHg; 60%: D29±3 vs. 19±2 mmHg). **CONCLUSION:** Our study suggests that an improvement in CRF likely reduces exaggerated BP responses elicited due to the inability of histamine receptors in pathological conditions such as prehypertension and hypertension.