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Aerobic Exercise Training Affects Exercise Pressor Reflex in Older Adults

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Physiological responses to isometric handgrip exercise (IHG) are indicative of the ability to regulate the cardiovascular system during exercise. Aging augments the exercise pressor reflex, and exaggerated blood pressure responses to isometric exercise have been associated with an increased risk of adverse health effects due to cardiovascular disease. However, the impact of aerobic exercise training over the course of 6 months on mitigating the effects of aging on the exercise pressor reflex during IHG remains unknown. **PURPOSE:** To evaluate the impact of 6 months of aerobic exercise training on exercise pressor reflex during IHG in older individuals. **METHODS:** 23 older individuals (5M/18F; 71± 8y) completed IHG exercise before and after a 6-month period of aerobic exercise training. Beat-to-beat blood pressure (BP) was recorded by finger plethysmography for a 2-minute baseline and the last minute of IHG. The IHG exercise was performed at 30% of maximal voluntary contraction until volitional fatigue. To determine baseline and peak BP values, average mean arterial pressure (MAP), systolic blood pressure (SBP), and diastolic blood pressure (DBP) were calculated for a two-minute baseline and the last minute of IHG exercise, respectively. BP values are reported as the difference between baseline and peak (Δ MAP, Δ SBP, Δ DBP). **RESULTS:** Δ MAP, Δ SBP, and Δ DBP from resting baseline to the last minute of IHG exercise for older individuals before the 6 months of aerobic exercise training were 29.3 ± 13.8 mmHg, 35.4 ± 19.1 mmHg, and 20.2 ± 10.9 mmHg, respectively. Following aerobic exercise training, the delta values for Δ MAP, Δ SBP, and Δ DBP were 25.4 ± 16.9 mmHg, 37.1 ± 24.5 mmHg, and 15.0 ± 12.0 mmHg. There were no statistically significant differences in Δ MAP ($p=0.16$) and Δ SBP ($p=0.68$) following 6 months of aerobic exercise training. However, Δ DBP significantly decreased following 6 months of aerobic exercise training ($p=0.04$). **CONCLUSION:** 6 months of aerobic exercise attenuated the DBP response during exercise pressor reflex with IHG in older adults, suggesting that aerobic exercise does not improve systolic or mean arterial pressure but does have an effect on diastolic blood pressure during IHG.

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