

Abstract

Acute and Training Effects of Exercise in Hypertensive Individuals [†]

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Abstract: **Aim:** Aerobic, resistance, or isometric exercise has been shown to reduce blood pressure (BP) in normotensive and hypertensive individuals. The aim of this study was to examine the acute effect of combining resistance and isometric exercise and the training effect of combining all 3 types (aerobic, resistance and isometric exercise) in hypertensive patients. **Material & Method:** Fourteen adults, six females and eight males (age, 55 ± 11 yrs; BMI, 31.0 ± 6.0 kg·m²; body fat, 34 ± 14 %; waist circumference, 102 ± 18 cm; mean ± SD), with stage 1 and 2 hypertension performed a combined resistance and isometric exercise bout to examine the acute effect of exercise. Afterwards, volunteers were randomly divided into two groups of 7 participants each. One group performed 3 exercise sessions per week for 8 weeks (T). Training consisted of aerobic (45 min at 60–80% of maximal heart rate), resistance (3 sets of 10–15 repetitions at 60–80% of 1RM) and isometric (4 sets at 30% maximum handgrip strength for 2 min) exercise. The other group acted as a control group (C) and performed only isometric exercise at 5% of maximum handgrip strength for 2 min. **Results:** After the resistance-isometric exercise bout the average systolic (SBP), diastolic (DBP) and mean arterial blood pressure (MBP) over one hour post-exercise were reduced by 11 ± 2 mm Hg, 6 ± 1 mm Hg and 8 ± 1 mm Hg, respectively, compared to pre-exercise levels ($p < 0.001$). After 8 weeks of training in the T group SBP, DBP and MBP were reduced by 16 ± 4 mm Hg, 10 ± 3 mm Hg and 12 ± 3 mm Hg, respectively, compared to pre-training ($p < 0.05$). These values were higher ($p < 0.05$) than the corresponding values in the C group, where no changes were observed (SBP, 2 ± 1 mm Hg; DBP, 0 ± 1 mm Hg; MBP, 1 ± 1 mm Hg; $p > 0.05$). **Conclusions:** One bout of resistance-isometric exercise acutely reduced SBP, DBP, and MBP over one hour post-exercise, while 8 weeks of training that combined aerobic, resistance, and isometric exercise also reduced SBP, DBP, and MBP in adult patients with stage 1 and 2 hypertension.

Keywords: blood pressure; exercise; hypertension



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