

POSTEXERCISE HYPOTENSION DUE TO RESISTANCE EXERCISE IS NOT MEDIATED BY AUTONOMIC CONTROL: A SYSTEMATIC REVIEW AND META-ANALYSIS

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RESUMO

Changes in autonomic control have been suggested to mediate postexercise hypotension (PEH). We investigated through meta-analysis the after-effects of acute resistance exercise (RE) on blood pressure (BP) and autonomic activity in individuals with normal and elevated BP. Electronic databases were searched for trials including: adults; exclusive RE interventions; and BP and autonomic outcomes measured pre- and postintervention for at least 30 min. Analyses incorporated random-effects assumptions. Thirty trials yielded 62 interventions ($N = 480$). Subjects were young (33.6 ± 15.6 yr), with systolic BP (SBP)/diastolic BP (DBP) of $124.2 \pm 8.9/71.5 \pm 6.6$ mm Hg. Overall, RE moderately reduced SBP (normal BP: ~ 1 to 4 mm Hg, $p < 0.01$; elevated BP: ~ 1 to 12 mm Hg, $p < 0.01$) and DBP (normal BP: ~ 1 to 4 mm Hg, $p < 0.03$; elevated BP: ~ 0.5 to 7 mm Hg, $p < 0.01$), which was in general parallel to sympathetic increase (normal BP: $g = 0.49$ to 0.51 , $p < 0.01$; elevated BP: $g = 0.41$ to 0.63 , $p < 0.01$) and parasympathetic decrease (normal BP: $g = -0.52$ to -0.53 , $p < 0.01$; elevated BP: $g = -0.46$ to -0.71 , $p < 0.01$). The meta-regression showed inverse associations between the effect sizes of BP vs. sympathetic (SBP: *slope* -0.19 to -3.45 , $p < 0.01$; DBP: *slope* -0.30 to -1.60 , $p < 0.01$), and direct associations vs. parasympathetic outcomes (SBP: *slope* 0.17 to 2.59 , $p < 0.01$; DBP: *slope* 0.21 to 1.38 , $p < 0.01$). In conclusion, changes in BP were concomitant to sympathetic increase and parasympathetic decrease, which questions the role of autonomic fluctuations as potential mechanisms of PEH after RE.

Keywords: Postexercise hypotension; Autonomic nervous system; Heart rate variability; Hypertension; Meta-regression; Health.

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