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VIII International Symposium in Strength Training

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12. Strength training improves resting blood pressure in overweight and obese subjects.

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Background: High blood pressure, obesity and diabetes are the salient features of the cardiometabolic epidemic at the beginning of the 21st century (Collaboration, 2014). The concept of “prehypertension” (systolic blood pressure (SBP) $\geq 120 \leq 139$ or diastolic blood pressure (DBP) $\geq 80 \leq 89$ mmHg) has been introduced to stress the importance of reducing blood pressure on public health, and thus preventing hypertension via healthy lifestyle interventions for all people (Chobanian et al., 2003). Randomized controlled trials examining the effects of chronic concentric and eccentric strength training on resting blood pressure in adults have resulted in conflicting findings (Pescatello et al., 2004).

Objective: To analyze the response of resting blood pressure in overweight and obese normotensive subjects after strength training within a weight loss program.

Methods: Forty-three subjects (males $n=20$), aged 18-50 years, participated in a strength training program which consisted of a circuit with eight scheduled strength exercises during 24 weeks. Training frequency was 3 times/week; duration and intensity increased progressively (Zapico et al., 2012). Resting blood pressure was measured before (baseline) and after (post-intervention) the program. Three-way analysis of covariance (ANCOVA) with repeated measures was used to determine differences between gender and body mass index (BMI) category at time (baseline and post-intervention values). Weight loss percentage was used as covariate.

Results: There was a significant reduction in resting SBP and DBP values post-intervention [SBP: $F(1,42) = 23.897$, $p < 0.001$; DBP: $F(1,42) = 31.944$, $p < 0.001$]. Baseline and post-intervention values in resting SBP and DBP (mean \pm SD; mmHg) were, respectively: 122.9 ± 1.7 vs 115.2 ± 1.7 ($p < 0.001$); 80.8 ± 1.2 vs 71.6 ± 1.4 ($p < 0.001$). There was not interaction among sex, BMI and time for blood pressure.

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Conclusions: Strength training was effective to decrease resting SBP (-7.7 mmHg) and DBP (-9.2 mmHg) in normotensive overweight and obese subjects. Studies indicated that each additional increase of 20 mmHg in SBP and 10 mmHg in DBP doubles the risk of cardiovascular events (Harbaoui et al., 2015), and a reduction of 3 mmHg in SBP in average population can reduce coronary heart disease by 5–9%, stroke by 8–14%, and all-cause mortality by 4% (Whelton et al., 2002).

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