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The Effects of a 12-Week Resistance Training Program on Arterial Stiffness in Females: A Pilot Study

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Arterial stiffness is a leading risk factor for cardiovascular disease and early detection is crucial in seeking appropriate treatment interventions. Current research studies have reported findings in positive correlations with chronic resistance and others did not find any correlations. This study was conducted to further examine the inconsistencies from previous investigations utilizing two resistance training models. **PURPOSE:** To examine the influences of two separate resistance training programs on arterial stiffness. **METHODS:** Subject characteristics included 16 female, untrained college students aged 18-22 years that were randomized into one of three groups: control (CON) group (n=6), high-intensity resistance exercise (HI) group (n=5), and high-volume resistance exercise (HV) group (n=5). Subjects randomized to the whole-body resistance training groups were required to perform strength training exercises three to five days a week for 12 weeks. The exercise regimen consisted of 2-3 sets of 3-8 repetitions (80-90% of 1-repetition maximum (1 RM)) for the HI group and 3-4 sets of 10-15 repetitions (50%-70% of 1 RM) for the HV group. Subjects randomized to the control group abstained from resistance training during study period. All subjects were instructed to continue their normal diet and avoid cardiovascular exercise during the study. **RESULTS:** Following the intervention, there was a significant time effect in the central systolic blood pressure (cSBP) (108±10 vs. 101±8 mmHg; P=0.042) in the HI group only. There were no other changes in arterial stiffness indices between the groups. Both HV and HI groups significantly increased in the squat (57.2±30.0 vs. 36.4±8.9 percent change; P=0.001), bench press (27.8±12.2 vs. 30.7±11.2 percent change; P=0.004), and seated row (27.4±6.5 vs. 18.7±12.7 percent change; P=0.012), respectively. **CONCLUSION:** The application of a randomly controlled trial with validated measurements of arterial stiffness, chronic resistance training does not impact central arterial stiffness regardless of training volume and load. Our findings support the use of resistance training exercise without undue impact on vascular compliance in otherwise healthy, female populations. .