TACSM Abstract

Different Orders of Combined Upper- and Lower-Body Resistance Exercise Induce Different Pulse Wave Reflection Responses induce in Resistance-Trained Young Women

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ABSTRACT

Varying the orders of UL and LU resistance exercise (RE) has been shown to induce different cardiovascular responses in active men. However, various orders of upper- and lower-body RE on pulse wave reflection in resistance-trained young women is unknown. **PURPOSE**: To evaluate the pulse wave reflection in resistance-trained young women based on the effects of different orders of upper- and lower-body RE. **METHODS:** Twelve resistance-trained young women (22±2 yrs) completed the study. Pulse wave reflection was assessed at rest, 10 (R1), and 20 (R2) minutes after either upper- and lower-body RE (UL) or lower- and upper-body RE (LU) for 3 sets of 10 repetitions at 75% 1-repetition maximum with 90-second and 2-minute rests between sets and exercises, respectively. The upper- and lower-body RE consisted of latissimus dorsi pulldown and incline chest press, and knee extension and knee flexion, respectively. **RESULTS:** Exercise volume between UL and LU was similar ($p=0.387$). LU significantly ($p<0.05$) elevated augmentation pressure (rest: 5.1±2.7 mmHg; R1: 7.9±4.7 mmHg; R2: 3.8±3.6 mmHg) and augmentation index (AIx) (rest: 15.2±7.6%; R1: 22.4±11.5%; R2: 10.9±10.2%) at R1 compared to rest and R2 while UL significantly ($p<0.05$) reduced AP (rest: 5.6±2.8 mmHg; R1: 5.3±3.4 mmHg; R2: 1.9±1.6 mmHg) and AIx (rest: 17.3±7.8%; R1: 15.4±8.3%; R2: 7.3±5.9%) at R2 compared to rest and R1 with significantly higher AIx at R1 in LU compared to UL. AIx normalized at 75 bpm significantly ($p<0.05$) increased (UL: rest: 8.7±10.6%; R1: 19.2±9.3%; R2: 10.2±7.4%; LU: rest: 8.7±8.7%; R1: 25.1±12.2%; R2: 12.1±10.6%) at R1 compared to rest and R2 in both UL and LU. Heart rate significantly ($p<0.05$) augmented (UL: rest: 59±7 bpm: R1: 82±13 bpm; R2: 81±11 bpm; LU: rest: 61±8 bpm; R1: 80±11 bpm; R2: 77±9 bpm) at R1 and R2 compared to rest in both UL and LU. **CONCLUSION:** These data suggest that different orders of combined upper- and lower-body RE induce different responses on pulse wave reflection. In addition, LU significantly elevated PWR than UL which might place greater workload to the heart in active men. Starting at upper-body RE then finishing at lower-body RE may be a more cardio-protective workout regime.