

Acute resistance exercise on forearm blood flow and vasodilatory capacity in resistance-trained individuals.

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PROBLEM: An acute bout of resistance exercise may have a negative effect on vascular function. **METHODS:** Ten young, healthy, resistance-trained individuals (8 males, 2 females; aged 23 ± 3 yrs) volunteered. One-repetition maximum (1RM) was assessed on the squat (144 ± 32 kg), bench press (109 ± 33 kg), and deadlift (160 ± 40 kg). Forearm blood flow (FBF) was assessed by strain gauge plethysmography at rest and followed by 5 minutes of circulatory occlusion (220 mmHg) to induce reactive hyperemia (RH) and to measure vasodilatory capacity before and 25 minutes after an acute bout of resistance exercise. Each participant also completed a quiet control session of the same duration. Area under the curve for FBF-RH was also utilized to determine differences in blood flow. Data were analyzed by an ANOVA to examine the effects of condition (acute resistance exercise, control) by time (rest, recovery). **RESULTS:** Resting FBF (4.2 ± 1.5 ml//min/100ml) and vasodilatory capacity (20.4 ± 13.62 ml//min/100ml) were similar at rest between conditions. There was a significant interaction for FBF after the free-weight resistance exercises (10.9 ± 6.2 ml//min/100ml, $p \leq 0.05$) as well as for vasodilatory capacity (32.7 ± 23.2 ml//min/100ml, $p \leq 0.001$) such that they were different during rest and recovery from the control (Control: FBF: 3.9 ± 1.6 ml//min/100ml; vasodilatory capacity: 20.4 ± 12.3 ml//min/100ml, $p > 0.05$). Area under the curve for FBF-RH significantly ($p \leq 0.05$) increased after the acute bout of free-weight resistance exercises by 128% and did not change after the control (5.6%). **CONCLUSION:** These data demonstrate that free-weight resistance exercises significantly alter microvascular endothelial function in young, healthy resistance-trained individuals.