TACSM Abstract

The Effects of Blood Flow Restriction Training on Strength, Body Composition, and Hormone Response in Resistance Trained Collegiate Females.

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Category: Doctoral

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ABSTRACT

INTRO: Blood Flow Restriction (BFR) training combined with resistance training is thought to be an effective modality in increasing muscular strength and hypertrophy, as well as growth hormone and cortisol levels in the blood. **PURPOSE:** The purpose of this study was to examine the effectiveness of BFR combined with resistance training on muscular strength, hypertrophy, growth hormone, and cortisol compared to resistance training alone. **METHODS:** Twenty-one female participants (9 omitted for non-compliance), ages ranging between 18-25, resistance trained, and BMI <30.0 kg/m^2, were recruited from the UMHB student body. Participants were randomly divided into two groups: Occluded (OC) and Non-occluded (NOC). Participants were given a training protocol that consisted of four workouts/week for a total of eight weeks. Measurements were taken at baseline and weeks 4 and 8 which consisted of measuring: weight, bilateral thigh girth, DEXA scan, In-Body® scan, doppler ultrasound of popliteal artery, and leg press 1 rep-max (1RM). In addition, at baseline and week 8, blood draws were taken pre- and post- leg press exercise (5x10 reps of 80% 1RM). All participants' occlusion pressure for training was determined using doppler ultrasound to determine 100% occlusion of the popliteal artery; the OC group's pressure was assigned as 50% of total occlusion and NOC group's pressure was assigned as 10% of total occlusion. All participants were required to wear occlusion cuffs during all lower extremity exercises. **RESULTS:** Data were considered significant if $p < 0.05$. A repeated measures ANOVA was used to analyze all comparisons. Our data showed statistically significant increase in strength (measured by 1 RM on the leg press) pre- and post-training in both the occluded group and the control group(OC = 88.0554 ± 22.81177 , NOC = 113.125 ± 4.65154, p = 0.00); however, there was no significant difference in strength between the two groups. We found no significant difference in time or interaction effects for the remaining criterion variables with the exception of a time effect for GH. Data = (left thigh circumference (OC = -0.6714 ± 0.77588 , NOC = 0.25 ± 0.16907, p = .296), right thigh circumference (OC = -0.2429 ± 0.46882 , NOC = 0.333 ± 0.46882, p = .340), weight (OC = -1.7857 ± 3.23405, NOC = -0.0837 ± 2.72045, p = .685), fat mass (OC = -1098.615 ± 1109.335, NOC = -220.800 ± 452.1459, p = .433), lean mass (OC = -4757.015 ± 10167.754, NOC = 96.867 ± 65.933, p = .457), and body fat % (OC = -0.957 ± 1.5047, NOC = -0.200 ± 0.31058, p = .664)), (human growth factor ((T1) OC = -1.4545 ± 2.49739, NOC = -0.0625 ± 1.42417, p = .467), ((T3) OC = 2.2223 ± 1.60309, NOC = 4.1625 ± 3.12448, p = .005), cortisol (T1, OC = 1.2182 ± 1.05389, NOC = -3.8625 ± 1.8893, p = .078, T3 OC = 2.4111 ± 1.29663, NOC = -1.6125 ± 1.62861, p = .222) **CONCLUSION:** Following an 8 week high-intensity training protocol using vascular restriction of 50% occlusion on bilateral thighs does not seem to have an impact on LE strength, body composition, weight, or circumference of the thigh.

TEXAS CHAPTER
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