

# MEDICINE AND SURGERY

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## Effect of moderate intensity resistance training with blood flow restriction on muscle strength and muscle girth in young adults

Blood flow restriction training (Bfit) has been suggested to increase muscle size and strength in trained and untrained individuals when using high occlusion pressure at light load intensities 30% of 1 RM. However, there is little data to support its use when working with moderate load intensities above 50% of 1-RM with reduced pressure. This study primarily focuses on investigating the optimal compression pressure required to reduce muscle blood flow during resistance exercise to increase muscle strength and muscle girth where the subject will be able to perform the exercise without pain/discomfort.

**Methodology:** Total of 39 students was enrolled in this study. The subjects were divided into three groups that is group A (control group), group B and group C. Group A performed exercise training without restrictive pressure, group B & C performed exercise training with 50 mmHg and 75 mmHg respectively. Handgrip strength was assessed using Digital hand dynamometer. The average of 3 trials was taken as MVC. Then each participant was made to do exercise training involving gripping a digital hand dynamometer and contracting the muscle at a rate of an electronic metronome 15 times per minute and at a resistance of 60% of MVC. The subjects were trained for 20 min, 3 days per week for 4 weeks. For all of the subjects in group B and C, the pneumatic blood pressure cuff was placed on the upper arm, 4 cm proximal to the antecubital fossa in dominant limb. Subjects were allowed to take 1 min rest periods, after the completion of 4 minutes of training in all the sets in every session. Both the outcome measures were evaluated on day 1 and day 12.

**Results:** Repeated measure ANOVA with Post hoc analysis was done using SPSS software version 16.0. The result of the study showed significant ( $p \leq 0.05$ ) within subject improvement in muscle strength and muscle girth in all the three groups. However there was significant improvement in muscle strength was found in between group analysis ( $p \leq 0.05$ ). The Partial occlusion group (with 50 mmHg pressure) showed more improvement compared to no occlusion and partial occlusion with 75 mmHg pressure.

**Conclusion:** The results of the study can be concluded as the partial blood flow restriction (50 mmHg) with moderate intensity resistance training resulted in greater handgrip strength than the other two groups. No difference was found in forearm girth among the three groups, however within group difference was found.

**Keywords:** Blood Flow Restriction Training, Moderate Intensity Exercise, Handgrip, Forearm Girth.

