

Results: Subject demographics were 21.08 +/-1.56 yrs of age, 66.75 +/- 4.148.33 +/-29.48 lbs. Average resting heart rate and blood pressure was 71 respectively.

The Acute Effects of Blood Flow Restriction Therapy with 100% Occlusion on Vastus Medialis Oblique Muscle Thickness and Insertion Angle

Acute Effects of BFRT Therapy with 100% Occlusion on VMO Muscle Thickness

VMO insertion angle increased significantly ($t(11) = -6.633, p=0.00$) from 4 pre-test to post-test. The one-way repeated measures ANOVA revealed a significant main effect of time ($F(5,50)=13.97, p=0.00$) for VMO thickness across time. Pairwise comparison revealed that VMO thickness increased significantly ($p=.011$) from pretest ($M=2.49, SD= +/- .422$) to (M=2.78, SD= +/- .422) following the first occlusive bout. VMO remained elevated throughout the test period.

and benefits of this study through the IRB approved procedures and informed consent stories obtained, subjects were measured for height, weight, and body mass index (BMI).

and after five, 5-minute bouts of 100% occlusion using a cuff around the knee, VMO thickness and insertion angle was measured before and after five 5-minute bouts of occlusion between inflation periods. VMO thickness and insertion angle was measured using a B-mode ultrasound unit.

Discussion: We believe this to be the first investigation involving the measurement of VMO insertion angle and thickness during blood flow restriction therapy using 100% occlusion. The results of this study indicate that both VMO insertion angle and muscle thickness were altered by this therapy. Several unanswered questions remain in this research line pertaining to the relationship between VMO thickness and insertion angle with pathology in reference to VMO thickness and insertion angle. Further research is needed to identify if these variables revert back to pre-exercise levels after an acute bout of BFRT, and to determine a role in affecting these variables acutely, or how chronic BFRT can affect these variables.

Clinical Relevance: Published data demonstrates clinical and functional benefits of BFRT. This study shows basic physiological changes such as muscle thickness and insertion angle, which are related to muscle quality and function.

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