

GNYACSM Abstract

Acute Effects of Blood Flow Restriction on Leg Muscular Peak Power Across Different Variables

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ABSTRACT

Blood Flow Restriction (BFR) has gained significant popularity in exercise training and rehabilitation. Several studies have been conducted to examine the effectiveness of training with BFR. However, the effect of BFR on muscular peak power was still unknown.

Purpose: This study examined the influence of Blood Flow Restriction (BFR) on muscular peak power, considering leg lean mass, gender, athletic status, and body composition.

Methods: Thirty-nine young male (N=20) and female (N=19) participants underwent two Wingate power tests, one with BFR and one without. Body composition was assessed using an InBody machine.

Results: There was no significant difference in muscular peak power with or without BFR. Time to reach maximal speed was longer, and total energy output was higher without BFR. After adjusting for leg lean mass, these findings persisted. Males displayed greater peak power than females, which, after adjusting for leg lean mass, was significant only with BFR. Without BFR, strength/power and high-intensity athletes surpassed endurance athletes in absolute peak power, a gap that reduced with BFR. When adjusting to leg lean mass, strength/power athletes showed higher peak power/Kg lean mass in both conditions. No significant power difference existed between non-athletes and endurance athletes, regardless of BFR or lean mass adjustments. Peak power was positively correlated with leg lean mass, regardless of BFR, and negatively correlated with body fat percentage, a correlation that weakened after adjusting for lean mass.

Conclusion: BFR doesn't directly alter muscular peak power but impacts performance factors like the time to maximum speed. Factors like body composition and gender significantly affect power metrics, emphasizing their consideration in BFR training and rehabilitation. These insights underline the importance of considering individual physiological factors in applying BFR in rehabilitation and training programs.