

The Effects of BFR on Peak Power in Athletes of Different Sports

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PURPOSE

Blood Flow Restriction (BFR) has gained significant popularity in exercise training and rehabilitation. The purpose of this study was to investigate the differences in peak power under blood flow restriction (BFR) in athletes of different sports.

METHODS

Thirty-nine participants were separated into four groups according to their sports types: non-athlete, endurance athlete, strength/power athlete, and intermittent high intensity athlete. All participants performed two Wingate power test sessions - one with and one without BFR - at least one week apart. During the initial visit, participants' body composition was measured using an InBody machine. A Wingate Power Test without BFR was conducted to measure muscular peak power and EMG activity. During the second visit, participants performed a Wingate Power Test with BFR. Bonferroni Post-hoc test was used to detect the significant differences between groups.

SUBJECTS

- 33 Participants
 - 18 Males
 - 15 Females
- Age: 20.04 ± 0.32 yrs

TESTING & MEASUREMENTS

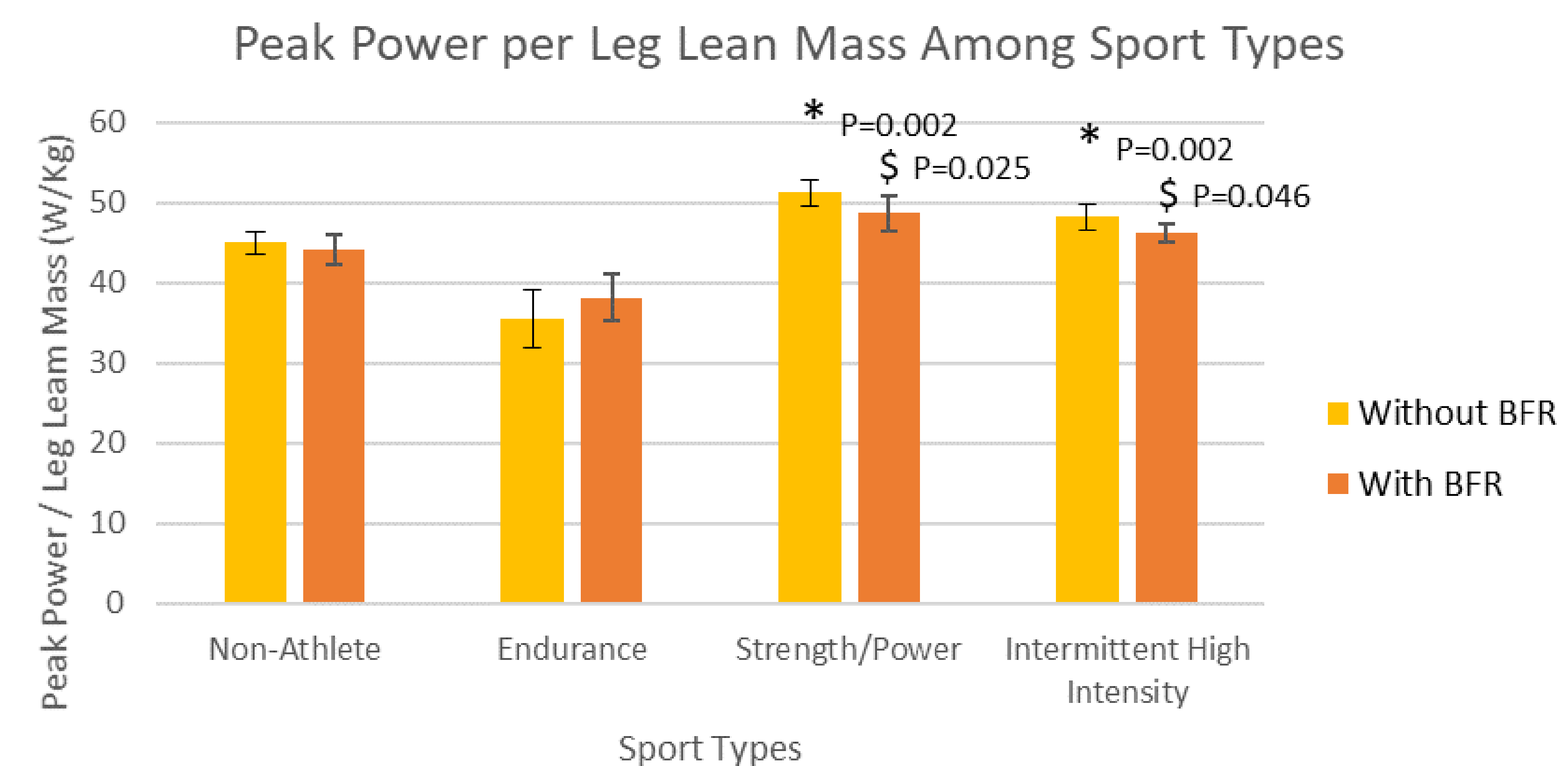
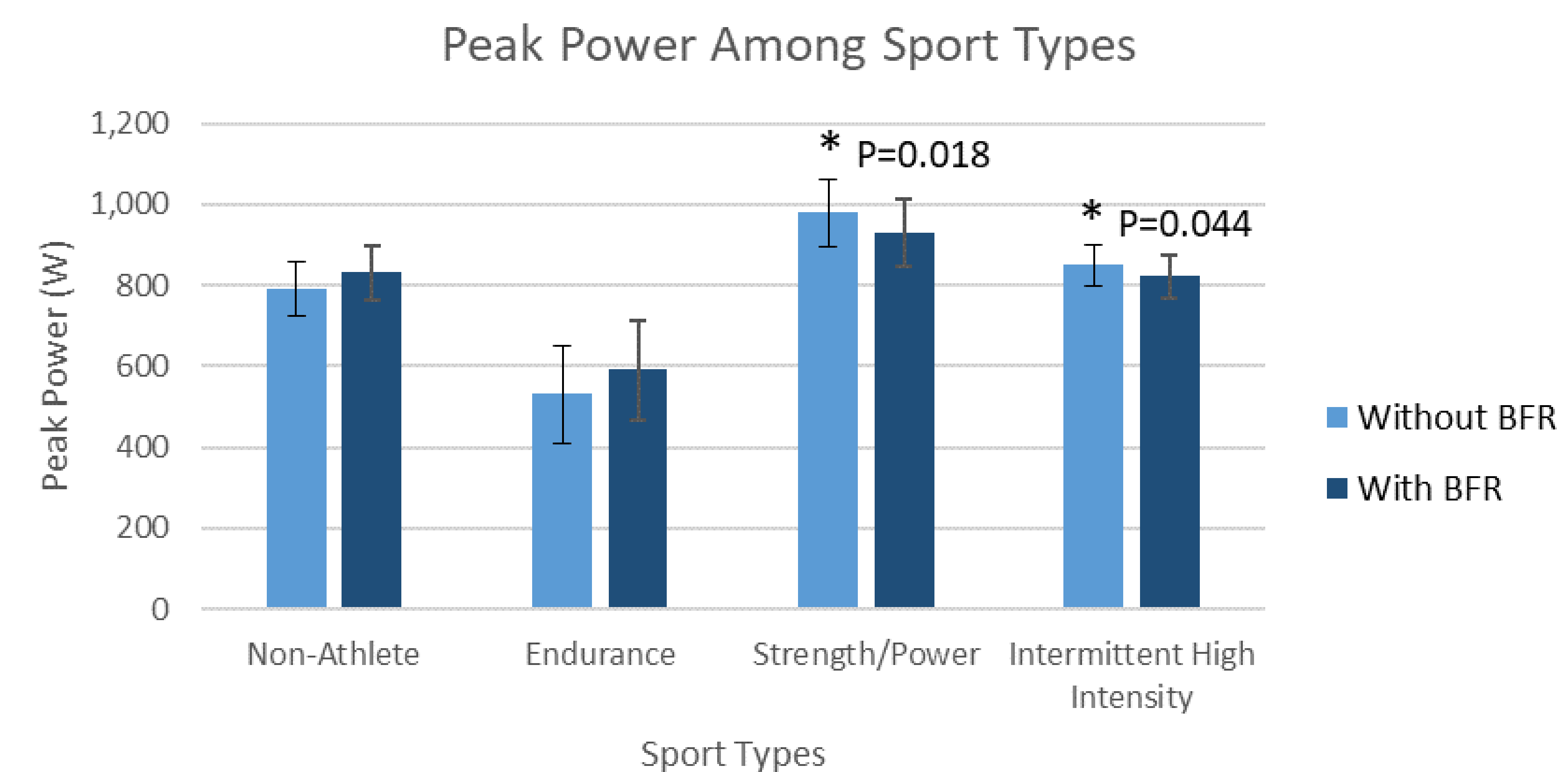
- **Wingate**
 - Monark Cycle Ergometer
 - Resistance: 7.5% Body Weight
 - 30 seconds
 - Maximal Effort
- **Blood Flow Restriction (BFR)**
 - Smart Cuffs (SMART Tools Plus, LLC)
 - An inflatable cuff placed on the upper thigh to moderately restrict blood flow
 - 65% of the Upper Operational Pressure

STATISTICS

- ANOVA
- Bonferroni Post-hoc
- IBM SPSS 28

RESULTS

Without BFR, the peak power was significantly higher in strength/power and intermittent high intensity athletes than endurance athletes ($P=0.018$) while the differences diminished with BFR ($P=0.148$). When adjusted to leg lean mass, the peak power was higher in strength/power and intermittent high-intensity athletes than endurance athletes ($P=0.001$). Contrary to the absolute peak power, the peak power per leg lean mass was higher in strength/power and intermittent high-intensity athletes than endurance athletes ($P=0.022$).



CONCLUSION

While our results show that strength/power athletes and intermittent high intensity athletes have higher peak power than endurance athletes as expected, BFR doesn't seem to have effects on the peak power among these athletes.