

The Effects of Blow Flow Restriction (BFR) on Leg Electromyogram (EMG)

Casey Korman, Gabriele Balkius, Mathias Madersbacher, Joseph Sauchelli, Joseph Liberatore

Mentor: Dr. Vincent Chen

ABSTRACT

Purpose: Blood Flow Restriction (BFR) has gained significant popularity in exercise training and rehabilitation. The purpose of this study was to examine the effects of blow flow restriction (BFR) on the electromyogram (EMG) of leg muscles.

Methods: Thirty-three Participants underwent 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.

Results: EMG is lower with BFR (13.16 ± 0.65 mV) than without BFR (14.23 ± 0.55 mV) ($P=0.044$)

Conclusion: Our results indicate that myoelectric activity is lower when the blood flow is restricted.

PURPOSE

The purpose of this study was to examine the effects of blow flow restriction (BFR) on the electromyogram (EMG) of leg muscles.

METHODS

SUBJECTS

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

TESTING & MEASUREMENTS

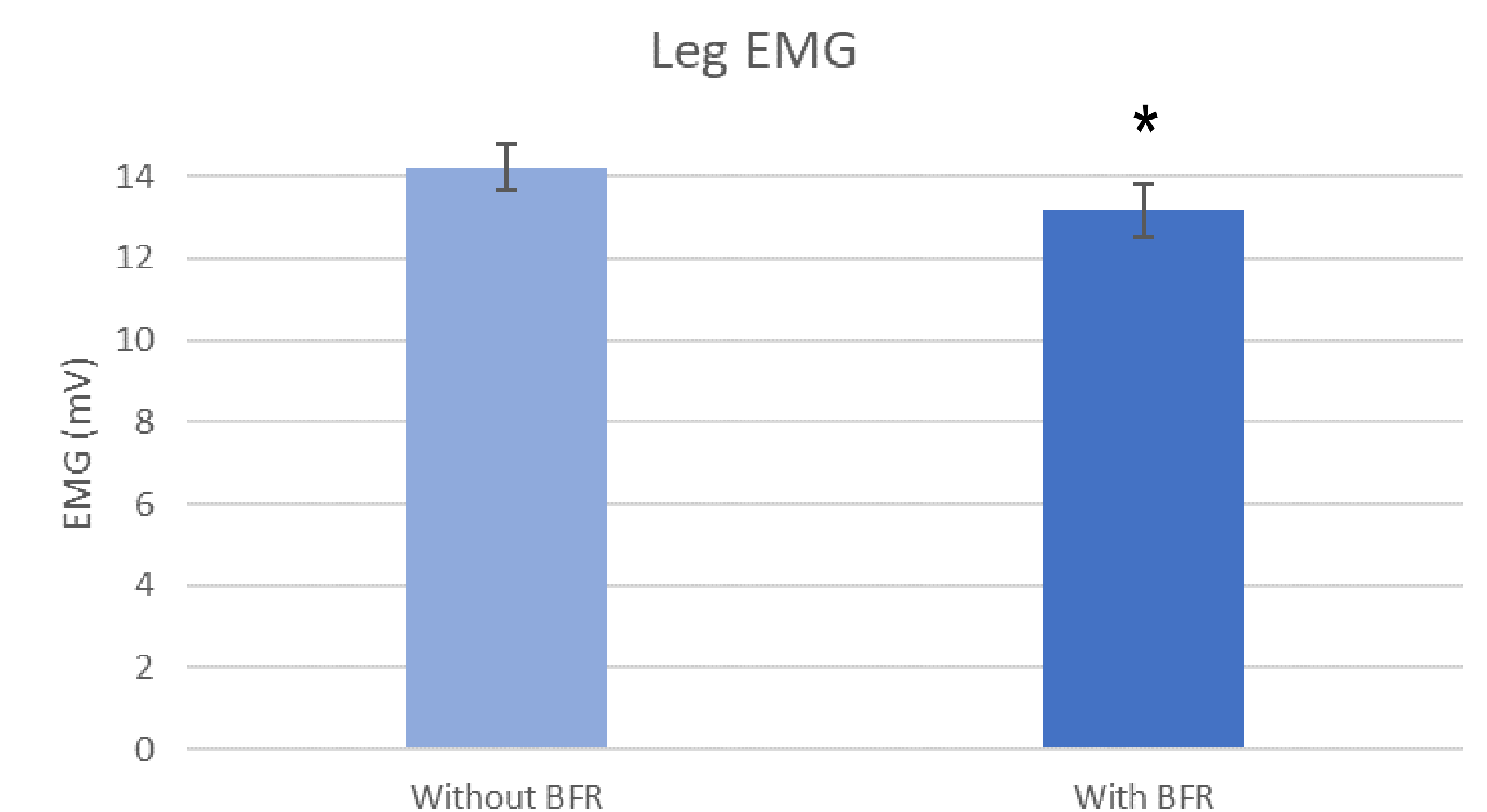
- **Wingate**
- Monark Cycle Ergometer
- Resistance: 7.5% Body Weight
- 30 seconds
- Maximal Effort
- **Electromyogram**
- iWox
- Vastus lateralis and the gastrocnemius of the right leg
- Obtained during the Wingate test
- **Blood Flow Restriction (BFR)**
- Smart Cuffs (SMART Tools Plus, LLC)
- An inflatable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

STATISTICS

- Paired Sample T-Test
- IBM SPSS 28

RESULTS

EMG is lower with BFR (13.16 ± 0.65 mV) than without BFR (14.23 ± 0.55 mV) ($P=0.044$) ($P=0.044$)



CONCLUSION

Our results indicate that myoelectric activity is lower when the blood flow is restricted.

