# RAPID RESEARCH

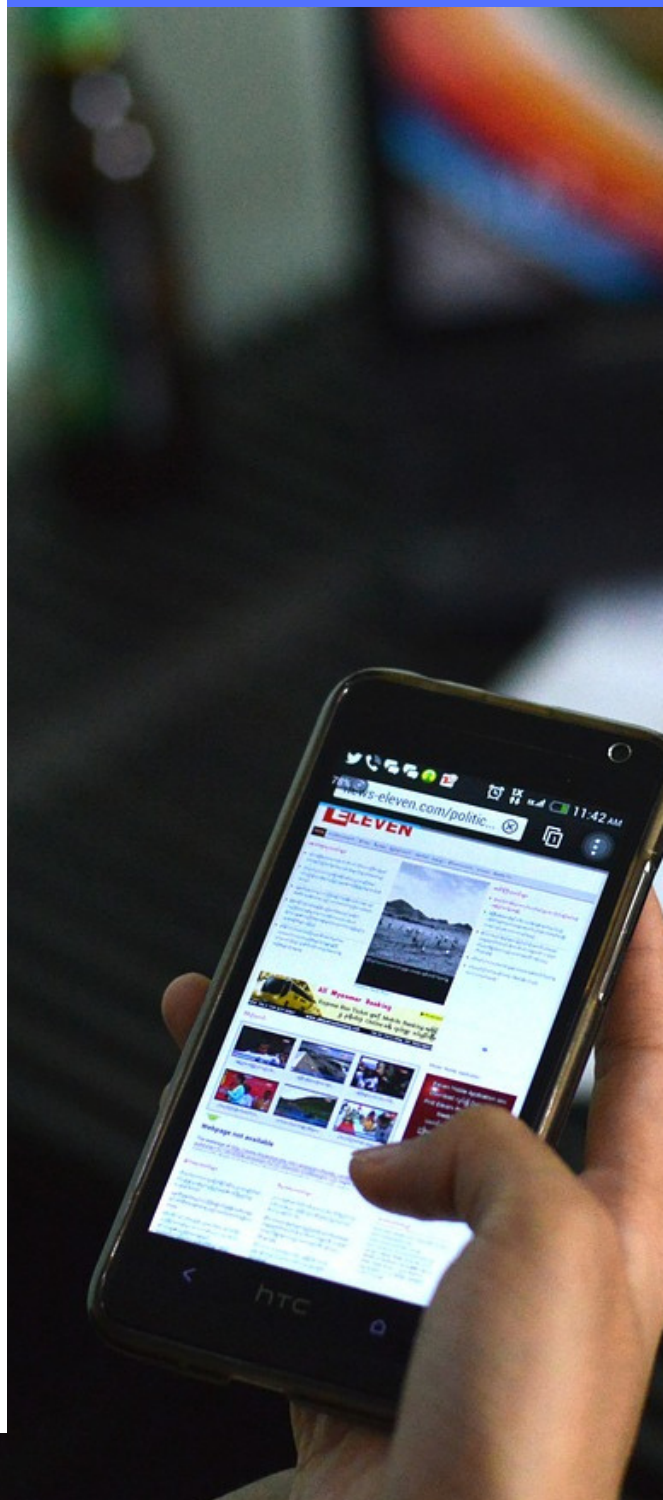

@physicaltherapyresearch

**May 2021**

## Inside This Week:

## Blood Flow Restriction Training

- Can BFR Reduce Anterior Knee Pain ?
- Blood Flow Restriction Training For Athletes
- How Safe is Blood Flow Restriction Training?



# CAN BFR REDUCE ANTERIOR KNEE PAIN ?

This study evaluated if a single acute BFR low-load-exercise bout would induce meaningful pain reduction in patients with Anterior Knee Pain, as anecdotal evidence has suggested BFRs ability to reduce pain.

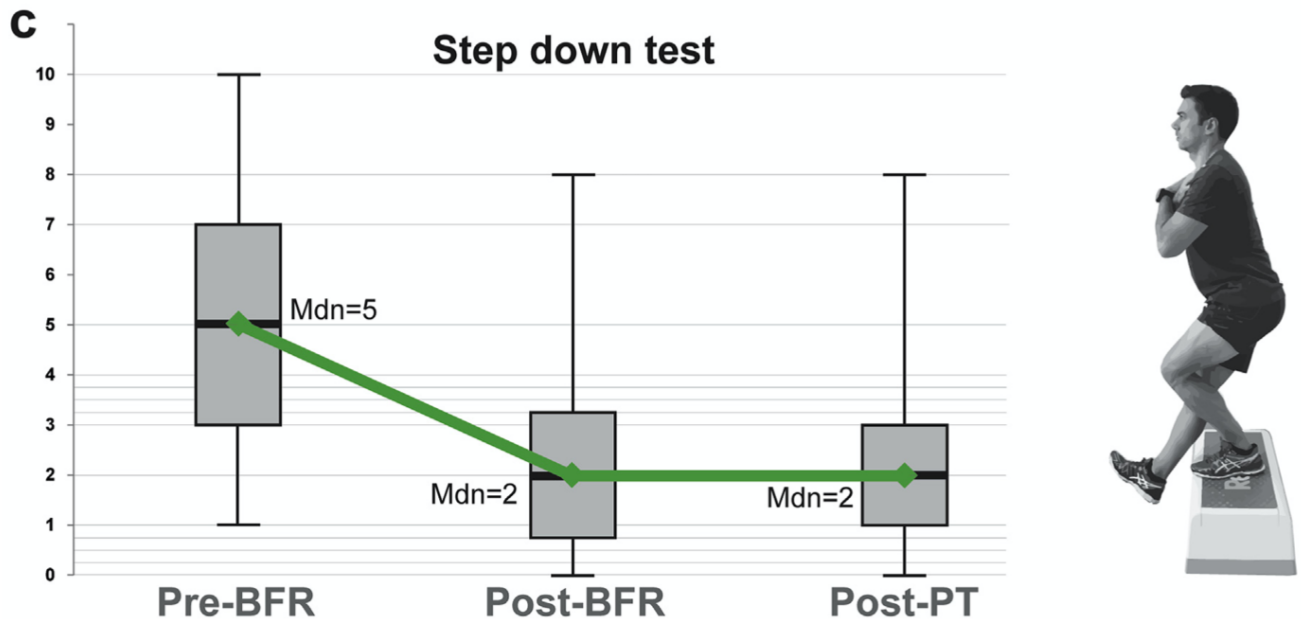



**Fig. 3.** Pain scores depicted by box plots (median, IQR, and range) for a) single-leg squat (shallow), b) single-leg squat (deep), and c) step-down test.

# KEY FINDINGS

BFR was applied & 4 sets of high reps low-load knee extensions were performed.

Pain was assessed before, immediately and 45 min after BFR during Shallow and deep single-leg squat & Step-down test.

Significant effects were found with **greater pain relief immediate after BFR for all tests.**

Pain reduction was sustained for the **full 45 min measured after.**

The reduction in pain effect size was found to be **clinically significant** in both post-BFR assessments.

# MAIN TAKEAWAYS

A single BFR-exercise bout **immediately reduced anterior knee pain** with the effect sustained for at least 45 min.

This pain reduction can **open a window of opportunity to further therapeutically load the knee** without pain.

MAY 2021

# BLOOD FLOW RESTRICTION TRAINING FOR ATHLETES

This systematic review analyzed the available literature regarding the use of BFR to supplement resistance training in healthy athletes.

# KEY FINDINGS

237 articles found, 10 studies were included, 250 athletes across various sports.

7/9 (78%) found a significant increase in strength associated with use of BFR training as compared with control.

4/8 (50%) noted significant increases in muscle size associated with BFR training.

3/4 (75%) reported significant improvements in sport-specific measurements in the groups that used BFR training.

Occlusive cuff pressure varied across studies, from 110 to 240 mm HG.

# MAIN TAKEAWAYS

BFR training has the potential to **increase strength and performance for healthy athletes.**

Whether BFR leads to increased muscle size is still questionable.

Combining traditional resistance training with BFR can help to **maximize athletic performance and remain in good health.**

MAY 2021

# HOW SAFE IS BLOOD FLOW RESTRICTION TRAINING?

This review assessed the potential adverse events associated with BFRT when used clinically in the treatment of patients with musculoskeletal disorders

# KEY FINDINGS

19 studies, 322 individuals, Various Injuries.

9 studies reported **no adverse events.**

3 reported **rare adverse events**, including:
Upper extremity deep vein thrombosis and rhabdomyolysis.

3 case studies reported **common adverse events**, including:
Acute muscle pain and acute muscle fatigue.

Individuals exposed to BFRT were **not more likely** to have an adverse event than individuals exposed to exercise alone.

# MAIN TAKEAWAYS

BFRT appears to be a **safe intervention** and even more so when used according to **evidence-based guidelines.**

However, these results need to be interpreted with caution given the limited number of studies, small pooled sample size, and lack of heterogeneity for patient populations studied.

Further research is needed to make definitive conclusions about the absolute safety in all patient populations.

This interpretation is assuming use of BFRT with cuffs which allow for the control of pressure.

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