Safety of Blood Flow Restriction Training for Patients with Musculoskeletal Disorders: A Systematic Review
Melissa Minniti¹, SPT, Andrew Statkevich¹, SPT, Ryan Kelly¹, SPT, Victoria Rigsby¹ SPT, Meghan Exline¹, SPT, Dan Rhon²,³, PT, PhD, Derek Clewley¹, PT, DPT, PhD

Background

What is Blood Flow Restriction training (BFRT)?
- Training intervention that uses blood pressure cuff to occlude blood flow to targeted muscle groups during exercise
- Has comparable physiological effects to resistance training

What is known?
- Large variability in protocols
- No standard way to determine who is eligible and likely to benefit from BFRT
- Has been studied largely in non-clinical populations

What is unknown?
- Is BFRT safe in clinical populations?
- What adverse outcomes of BFRT are we seeing clinically?

Methods (Eligibility)

Inclusion
- BFRT was used as clinical intervention
- Study participants had a disorder of the musculoskeletal system
- Authors addressed adverse events

Exclusion
- Studies not published in English language
- Non-human subjects
- Systematic or narrative reviews

Systematic Search
- MEDLINE
- CINAHL
- Embase

Results

3304 articles screened → 87 full-text articles assessed for eligibility → 19 included for qualitative synthesis

Conclusions

- Clinical BFRT appears to be a safe exercise-based intervention for use with adult patients with orthopedic knee conditions
- Further research is needed to:
  ○ Define adverse events
  ○ Develop screening methods to determine risk for adverse events

Clinical Relevance

- Under appropriate conditions, BFRT is safe to use in clinical practice with minimal risk.
- Understanding the current evidence based guidelines and advocating for consistent BFRT application is essential to minimizing risk

Acknowledgements

We acknowledge Emily S Mazure, MSI, Research and Education Librarian at the Duke University Medical Center Library & Archives, for conducting the search and managing Rayyan