Introduction

- Every year in the United States, up to 60 per 100,000 people sustain an anterior cruciate ligament (ACL) tear.¹
- Medial meniscus tears have been reported in roughly 60% of the ACL tear population, while lateral meniscus tears have been reported in approximately 30%.²
- Blood flow restriction therapy (BFRT) has shown improved strength and muscle hypertrophy with low load exercises by occluding blood flow at the proximal thigh.³
- A minimally structured physical therapy (PT) program with a home exercise program (HEP) has been shown to be more effective at 3 months after ACL reconstruction (ACLR) compared to standard PT sessions alone.⁴
- Currently, there is a lack of research on the combined effects of a comprehensive HEP and BFRT for patients who have had an ACL and meniscal repair.

Purpose

The purpose of this case report was to investigate the effects of BFRT and a comprehensive lower extremity (LE) strengthening HEP for a patient following an ACL and meniscal repair.

Patient Description

- The patient was a 43-year-old woman who sustained a left ACL and meniscal tear while playing tennis.
- Surgical interventions included an ACLR and meniscal repair using an ACL allograft.
- Past medical history includes a right ACLR four years prior to current injury.
- The patient’s goals were to increase LE strength, regain function, and return to tennis.
- At initial evaluation, the patient demonstrated decreased left knee range of motion, edema, gait impairments, strength, and hypertrophy deficits.

Plan of Care

- Injurious activity: Left ACL tear, full medial meniscus tear, partial lateral meniscus tear
- Referred for surgery
- ACLR with allograft ACL, medial and lateral meniscal repair
- Referred to outpatient PT
- Initial Examination
- Plan of care established
- Deficits in range of motion, strength, gait mechanics, and activities of daily living
- Initial Evaluation
- Initiation of BFRT protocol
- Lower extremity strengthening HEP initiated
- Outcome Measures

- Tests and Measures
- Initial Examination
- Final Examination
- Numeric Pain Rating Scale (0/10)
  - Best: 1/10
  - Worst: 6/10
  - Current: 3/10
- Range of Motion (degrees)
  - Extension: -4
  - Flexion: 60
  - Extension: 0
  - Flexion: 125
- LEFS (0-80/80)
  - 42.2 cm @ 10 cm above joint line
  - 52.0 cm @ 20 cm above joint line
  - 54.5 cm @ 20 cm above joint line
- Manual Muscle Testing (0-5/5)
  - Left LE
  - Right LE
  - Quadriceps
    - 2/5
    - 4/5
  - Hamstrings
    - Not tested
    - 4/5
  - Gluteus maximus
    - 4/5
  - Gluteus medius
    - 4/5

Conclusion

- The use of BFRT and a comprehensive LE strengthening HEP was effective in the treatment of a 43-year-old female following an ACL and meniscal repair.
- Further studies may want to consider researching the most effective combination of BFRT and HEP to be used together, in a larger population of surgical patients.

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References


Figure 1: Knee Anatomy

Figure 2: Distribution of Interventions

Figure 3: Example of HEP

Figure 4: Placement of BFRT cuff

Figure 5: Example of In Clinic PT Session

Figure 6: Home Exercise Program

Figure 7: Blood Flow Restriction Therapy