Blood Flow Restriction Therapy Post Anterior Cruciate Ligament Reconstruction: A Pilot Study

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Introduction. Recent literature suggests that blood flow restriction (BFR) therapy may benefit patients recovering from anterior cruciate ligament (ACL) reconstruction. This study aimed to determine if adding BFR to a standard ACL rehabilitation protocol influences postoperative pain, quadriceps strength, or functional outcome.

Methods. This was a prospective nonrandomized comparative cohort study of patients who underwent ACL reconstruction by one of two sports medicine orthopaedists from 2019 to 2022. Patients between ages 14 and 40 with documented ACL tears were eligible to participate; those with previous knee injuries on either side were excluded. After informed consent, some patients self-selected the addition of BFR therapy to a standard ACL rehabilitation protocol, while others enrolled in the standard postoperative program (control group). Outcome measures included agility and quadriceps strength testing, the Lysholm Knee Scoring Scale assessment, and the 2000 International Knee Documentation Committee (IKDC) score.

Results. Of 130 enrolled patients, 16 chose BFR therapy. The average age was 16, with no differences in gender, injured leg, or injury type. BFR patients reported less pain at all follow-ups, with a significant difference at six months ($p = 0.013$). There were no significant differences in agility or quadriceps strength, but the BFR group showed trends toward improved IKDC 10 and Lysholm scores, with the Lysholm reaching significance at six months ($p = 0.007$).

Conclusions. Our limited data suggest that BFR therapy may be a useful addition to the standard rehabilitation protocol after ACL reconstruction. Larger cohort studies will help elucidate the full effects of BFR in ACL rehabilitation.