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The Effect of Blood Flow Restriction Training on Quadriceps Strength Recovery in Postsurgical Rehabilitation after Knee Joint Surgeries: A Systematic Review Protocol

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ABSTRACT

Introduction: Blood Flow Restriction Training (BFRT) and exercises are a training method that is characterised by the use of specialised tourniquets and cuffs to restrict venous blood flow during the exercise in the working limb to increase metabolic stress. Traditional high-load resistance training may not be appropriate in the early phases of recovery because of joint stress, although it is beneficial in regaining muscle strength. This problem is addressed by BFRT, which enables patients to develop their muscles significantly at lower loads, lowering the mechanical stress on healing tissues and accelerating recovery.

Need for this study: This review will synthesise current literature to provide evidence-based recommendations for integrating BFRT into clinical rehabilitation protocols, ultimately enhancing recovery outcomes for knee surgery patents.

Aim: This review aims to consolidate existing evidence on the effectiveness of BFR training in post-knee joint surgery rehabilitation.

Materials and Methods: This systematic review is formally registered within the PROSPERO Database (PROSPERO ID CRD42024621803) and aims to consolidate existing evidence on the effectiveness of BFR training in post-knee joint surgery rehabilitation. Observing PRISMA guidelines, a structured search will be conducted across databases like PubMed to identify randomised controlled trials comparing BFRT to standard rehabilitation protocols in knee surgery patients.The data extraction will primarily focus on strength improvements assessed through functional tests, such as terminal knee extension and sit-to-stand performance and also considering secondary outcomes, including thigh circumference, range of motion, and pain levels while evaluating the impact of BFRT by specifically examining quadriceps strength, pain management, functional performance, and quality of life, postoperatively.

Keywords: Hypertrophy, Knee joint rehabilitation, Knee joint surgeries, Quadriceps muscle strength.