

Post Isometric Inhibition Technique to Improve Initial Range and Quadriceps Strength among ACL Repair Patients: A Literature Review

JAYESH JOSHI¹, JOYDIP SAHA²

ABSTRACT

Introduction: Rehabilitation following Anterior Cruciate Ligament Reconstruction (ACLR) is frequently complicated by Atherogenic Muscle Inhibition (AMI), pain, and restricted Range of Motion (ROM).

Aim: Our literature review aimed to find out the effectiveness of performing the PII technique among ACL reconstructive patients in improving strength and ROM.

Materials and Methods: In accordance with PRISMA recommendations, we conducted a comprehensive data search on PubMed, ScienceDirect, Cochrane and Embase using MeSH terms such as post-isometric inhibition and ACLR with Boolean operators AND, OR. As per our inclusion and exclusion criteria, we selected three articles after article screening and duplicate removal. We searched multiple databases, including PubMed Central, ScienceDirect, Cochrane, and Embase, in accordance with PRISMA guidelines. The search strategy utilised Boolean operators (AND, OR) and MeSH terms such as 'isometric contraction,' 'anterior cruciate

ligament reconstruction,' 'muscle strength,' and 'range of motion'. A total of 12 articles were identified in the database, and following the removal of duplicates and application of specific inclusion and exclusion criteria, three articles were selected.

Results: Evidence suggests that integrating isometric exercises with PII significantly reduces postoperative knee joint contracture compared to conventional protocols. Specifically, the application of PII and related PNF techniques has been shown to increase knee flexion by up to 52.8 degrees and improve extensor strength by 40% over four weeks. These techniques utilise the neurophysiological refractory period following an isometric contraction to facilitate muscle relaxation and mitigate the inhibitory effects of joint effusion on the alpha-motoneuron pool.

Conclusion: Post-isometric inhibition facilitates early recovery of ROM, reduces pain, and addresses neuromuscular deficits more effectively than static stretching or isolated strengthening.

Keywords: Anterior Cruciate Ligament, Isometric contraction, Muscle strength, Range of motion.

PARTICULARS OF CONTRIBUTORS:

1. Postgraduate Student, Department of Sports Science, Abhinav Bindra Sports Medicine and Research Institute, Bhubaneswar, Orissa, India.
2. Associate Professor, Department of Movement Science, Abhinav Bindra Sports Medicine and Research Institute, Bhubaneswar, Orissa, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Joydip Saha,
Associate Professor, Department of Movement Science, Abhinav Bindra Sports Medicine and Research Institute, Bhubaneswar-751024, Orissa, India.
Email: joydipsaha77@gmail.com