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*Review Article*

# Effectiveness of Physiotherapy Management of Meniscal Injuries of the Knee Joint: A Review for Clinical Practice and Research

**Sneha Bhatia ***
Assistant Professor, Shree B. G. Patel College of Physiotherapy, Anand, Gujarat, India

**Corresponding Author:** *Sneha Bhatia

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## Abstract

**Background:** Meniscal tears are among the most common knee injuries in both active and older populations [1]. Historically managed surgically, accumulating evidence over the past decade has shifted practice toward conservative, exercise-based care for many tear types, with physiotherapy (PT) playing a central role in symptom control, functional recovery, and pre-/postoperative optimisation [2].

**Objective:** To review evidence (2015–2025) on the effectiveness of physiotherapy for meniscal injuries, including degenerative and traumatic tears, postoperative rehabilitation after meniscal repair or partial meniscectomy, and management of root tears [3].

**Methods:** A focused literature search of PubMed, PMC, and Google Scholar identified randomized trials, systematic reviews, consensus statements, and high-quality cohort studies (2015–2025) that evaluated physiotherapy, exercise therapy, or rehabilitation protocols for meniscal pathology [4].

**Results:** High-quality RCTs and meta-analyses demonstrate that structured, progressive, exercise-based physiotherapy provides clinically meaningful improvements in pain and function for many patients with degenerative meniscal tears and is often non-inferior to arthroscopic partial meniscectomy (APM) in the short to medium term [5]. For traumatic meniscal tears in young, active patients, repair (rather than conservative care) is often favoured when tears are in the vascular zone or associated with instability (e.g., ACL injury), but physiotherapy remains critical for prehabilitation and postoperative recovery [6]. For meniscal root tears, evidence is mixed: early repair may protect joint mechanics but conservative approaches can be reasonable in selected low-demand patients; data quality is limited and outcomes are heterogeneous [7]. Post-repair rehabilitation protocols vary, but staged programmes that emphasise protected weight bearing, gradual range-of-motion (ROM) progression, progressive strengthening, and neuromuscular control show acceptable healing rates and functional recovery [8].

**Conclusions:** Contemporary evidence supports physiotherapy as first-line management for many meniscal tears particularly degenerative lesions providing symptom relief and functional gains comparable to APM in many cases [9]. For traumatic tears amenable to repair and for root tears that threaten joint mechanics, surgical repair plus structured postoperative physiotherapy is often indicated. Future research should prioritise standardized rehabilitation protocols, stratified treatment algorithms to identify responders to conservative care, and adequately powered RCTs for root and complex tears [10].

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**KEYWORDS:** Meniscal Tear, Meniscus Rehabilitation, Exercise Therapy, Partial Meniscectomy, Meniscal Repair, and Meniscus Root Tear

## INTRODUCTION

The menisci are fibrocartilaginous structures essential for load distribution, shock absorption, joint stability, and lubrication in the knee [11]. Meniscal injuries range from acute traumatic tears common in younger, active individuals to degenerative tears frequently encountered in middle-aged and older adults [12]. Decision-making for meniscal tears has historically oscillated between surgical and conservative options; however, since the early 2010s, a growing body of randomised evidence and guideline statements have challenged the routine use of APM for degenerative tears and promoted exercise-based conservative care as a first-line strategy [13]. This review examines the evidence (2015–2025) regarding the effectiveness of physiotherapy management across meniscal tear subtypes, perioperative rehabilitation, and outcomes relevant to clinicians and researchers [14].

## METHODS

A targeted, non-systematic search of PubMed, PMC, and Google Scholar was undertaken for English-language publications between January 2015 and October 2025 [15]. Search terms combined *meniscal*, *meniscus tear*, *exercise therapy*, *physical therapy*, *rehabilitation*, *partial meniscectomy*, *meniscal repair*, and *root tear*. Priority was given to RCTs, systematic reviews/meta-analyses, clinical practice guidelines (ESSKA, AAOS), and high-quality cohort studies. Because interventions and outcomes were heterogeneous, results were summarised narratively with attention to trial quality and applicability [15].

### Evidence for Physiotherapy in Degenerative Meniscal Tears

#### RCTs and Meta-Analyses Comparing Exercise Therapy to APM

Several RCTs and pooled analyses consistently show that structured exercise programmes yield similar pain and function outcomes to APM for degenerative meniscal tears, both short- and long-term [1, 2, 5]. A landmark BMJ trial synthesis concluded that small short-term advantages from surgery are not sustained at one year, and exercise therapy produces comparable improvements in function and activity [5].

More recent multicentre randomized trials and longer-term follow-ups support this position. The *JAMA Network Open* pragmatic trial found that exercise-based PT was an effective first-line strategy and that APM was not superior in middle-aged patients with degenerative meniscal tears [4]. The 10-year follow-up of the OMEX trial reported no sustained superiority for surgery over high-quality exercise therapy, emphasising the durability of conservative management [6]. A 2024 meta-analysis confirmed modest short-term surgical benefits that dissipate over time and highlighted the importance of high-quality rehabilitation as the core conservative strategy [8].

#### Key Elements of Effective Physiotherapy Programmes

Evidence suggests that the content and quality of physiotherapy matter: multimodal programmes combining education, progressive strengthening (closed-chain emphasis), neuromuscular training, and functional task practice produce better outcomes than generic advice [7, 9]. Supervised sessions over 6–12 weeks with home exercise components are common, and adjuncts such as blood-flow restriction (BFR) and hip–core strengthening show promise [10].

### Physiotherapy for Traumatic Tears and Meniscal Repair

#### Role of Physiotherapy in Traumatic Tears

Traumatic meniscal tears, especially in vascular zones are commonly considered for repair due to higher healing potential [11]. Consensus recommendations (ESSKA 2020; AAOS 2022) support preservation where feasible, particularly with ACL reconstruction [12]. Physiotherapy plays a dual role: (1) prehabilitation to restore ROM and reduce swelling, and (2) structured postoperative rehabilitation to protect the repair and restore function [13].

#### Post-Repair Rehabilitation and Outcomes

Post-repair rehabilitation follows staged principles: initial protection (limited weight bearing, ROM control), progressive loading, and sport-specific reconditioning [14]. Systematic reviews note variable failure rates (4–42%), influenced by tear pattern, concomitant procedures, and rehabilitation adherence, but supervised programmes yield high functional recovery and satisfaction [15].

### Meniscal Root Tears: Conservative vs Surgical Management and Role of Physiotherapy

Meniscal root tears disrupt load-bearing function and may accelerate joint degeneration [9]. Surgical repair aims to restore hoop stress, while physiotherapy focuses on controlled loading to protect repair integrity and maintain muscle strength [8]. Evidence remains limited but suggests physiotherapy is valuable for low-demand patients and postoperative recovery following repair [10].

### Implementation: Practical Considerations for Physiotherapists

Successful management requires stratified assessment: tear type, mechanical symptoms, age, activity goals, radiographic osteoarthritis, and preferences [12]. Many guidelines recommend a 6–12-week trial of high-quality physiotherapy for degenerative tears, with escalation criteria (persistent mechanical symptoms) guiding surgical referral [14].

## CONCLUSION

Physiotherapy plays a pivotal role in the management of meniscal injuries across all age groups. Current high-level evidence supports structured, individualised exercise therapy as an effective first-line intervention for most degenerative meniscal tears, providing long-term outcomes comparable to arthroscopic partial meniscectomy. In traumatic and root tears, physiotherapy remains essential in prehabilitation, postoperative recovery, and restoring functional stability. Consistent application of evidence-based rehabilitation protocols, patient education, and progressive loading principles can optimise outcomes and delay surgical interventions. Future

research should refine standardised physiotherapy algorithms and identify biomarkers predicting favourable conservative outcomes.

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**About the corresponding author**

**Sneha Bhatia** is an Assistant Professor at Shree B. G. Patel College of Physiotherapy, Anand, Gujarat, India. Her academic and research interests focus on musculoskeletal disorders, pain neuroscience, and physiotherapy rehabilitation. She aims to enhance patient recovery outcomes through evidence-based physiotherapy practices and innovative educational approaches.