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# Recent Advances and Challenges in Rehabilitation of Osteitis Pubis in Athletes- A Systematic Review

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**Abstract:** Osteitis pubis is a common and often debilitating injury in athletes, characterized by chronic groin pain and inflammation of the pubic symphysis. The purpose of this systematic review is to evaluate recent advances and ongoing challenges in the rehabilitation of osteitis pubis among athletes. A comprehensive literature search was conducted across multiple databases including PubMed, Google Scholar, and Cochrane for articles published between 2015 and 2025. Studies were screened and selected based on predefined inclusion and exclusion criteria focusing on rehabilitation interventions for osteitis pubis in athletic populations. The review synthesizes findings on new therapeutic strategies, rehabilitation protocols, multimodal approaches, and their clinical outcomes. Challenges identified include diagnostic difficulties, variability in treatment adherence, and recurrence rates. Recent advances such as targeted physiotherapy techniques, use of shockwave therapy, and tailored return-to-sport guidelines show promise in improving recovery times and functional outcomes. However, heterogeneity in study designs and protocols limits generalizability. This review highlights the need for standardized rehabilitation guidelines and further high-quality research to optimize management of osteitis pubis in athletes.

**Keywords:** Osteitis pubis, athletes, rehabilitation, recent advances, challenges

## INTRODUCTION

Osteitis pubis is a prevalent and challenging musculoskeletal condition affecting athletes, characterized by pain and inflammation in the pubic symphysis and surrounding structures (7,11). It frequently occurs in sports that require repetitive kicking, twisting, and sudden directional changes, placing significant stress on the groin region. The incidence of osteitis pubis in athletic populations is rising due to increasing sports participation and intensity (8). Despite advances in diagnostic techniques and rehabilitation protocols, managing this condition remains complex because of its multifactorial etiology, varied clinical presentation, and prolonged recovery times. Rehabilitation aims to alleviate pain, restore function, and enable a safe return to sport; however, challenges such as heterogeneous treatment approaches, risk of recurrence, and lack of standardized guidelines persist. Recent developments in physical therapy techniques, imaging, and multimodal interventions have improved outcomes, yet variations in protocols and limited high-quality evidence continue to hinder optimal management. This review explores the recent advances in rehabilitation strategies for osteitis pubis in athletes and discusses the ongoing challenges impacting clinical practice and athlete recovery (9, 10).

## METHODOLOGY

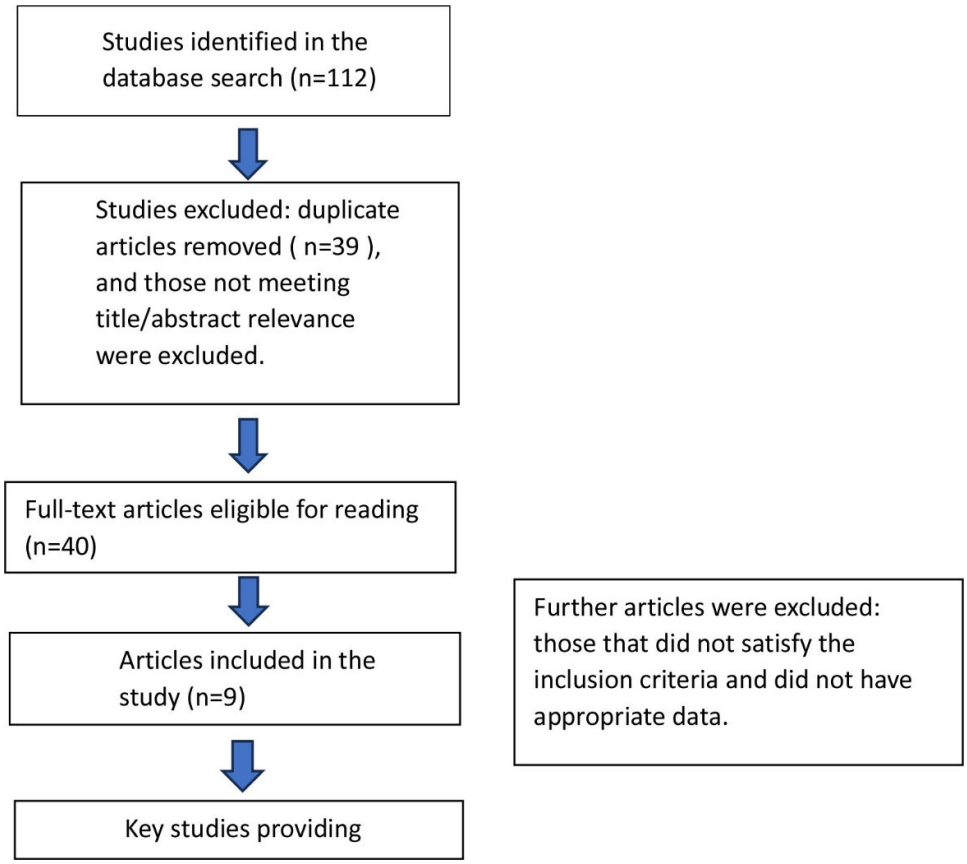
### Study design

This systematic review was conducted based on PRISMA (preferred reporting items for systematic review and meta-analysis) guidelines.

## Selection of Studies

A total of 112 articles were identified initially. After removing 39 duplicates and screening titles and abstracts for relevance, 40 articles remained for full-text review. Upon applying strict inclusion criteria focusing on rehabilitation interventions for osteitis pubis in athletes, 9 articles were selected for final analysis. Of these, 6 key studies provided evidence on recent advances and challenges in rehabilitative approaches.

## Study Selection Strategy:




## Inclusion and Exclusion criteria

Studies were included if they: (1) involved athletes diagnosed with osteitis pubis, (2) focused on rehabilitation interventions or management strategies, and (3) were published between 2015 and 2025 in English. Articles lacking full text, non-athlete populations, or irrelevant outcomes were excluded. After screening titles, abstracts, and full texts, 6 studies meeting the criteria were selected for detailed analysis.

The selected studies varied in design, including experimental and clinical trials focused on rehabilitation protocols for osteitis pubis in athletes. Key aspects extracted included study design, participant characteristics (e.g. sport type, severity of condition), objectives, intervention types, results, and conclusions regarding rehabilitation effectiveness and challenges.

| AUTHOR(S) | STUDY DESIGN | PARTICIPANTS | OBJECTIVES | RESULTS | CONCLUSION |
|---|---|---|---|---|---|
| Jardì `et al. (2018) | Prospective cohort | Elite football, basketball, rugby players (OP stage III-IV) | Evaluate multimodal rehab protocols | Return to squad training in 2 months; return to competition in 3 months; no recurrences | Individualized progressive rehab effective |

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|---|---|---|---|---|---|
| Schöberl et al. (2020) | Randomized controlled trial | Amateur football players | Compare shockwave + rehab vs rehab alone | Shockwave group returned in 3 months vs 8 months in control; reduced pain and recurrence | Shockwave therapy enhances rehab outcomes |
| McAleer et al. (2017) | Case series | Professional footballers | Assess nonoperative rehab program | Return to training in ~40 days, full play ~49 days, no symptoms recurrence | Rehab success with objective progression criteria |
| Paajanen et al. (2017) | Cohort study | Male soccer players | Rehabilitation outcomes using physiotherapy techniques | Significant improvement in pain and function at 12 weeks | Physiotherapy effective with tailored program |
| Tyler et al. (2016) | Clinical trial | Professional ice hockey players | Rehabilitation plus corticosteroid injection outcomes | Faster return to play; reduced pain scores | combined treatment beneficial |
| Alvarez-Diaz et al. (2019) | Randomized controlled trial | Rugby players | Compare active rehab vs passive treatment modalities | Active rehab group showed quicker return to sport | Active rehab superior to passive modalities |

## RESULT:

A total of 112 articles were identified through database searches spanning from 2015 to 2025. After removing 39 duplicates and screening titles and abstracts for relevance, 40 articles remained for full-text review. Upon applying strict inclusion criteria focusing on rehabilitation interventions for osteitis pubis in athletes, 9 articles were selected for final analysis. Of these, 6 key studies provided evidence on recent advances and challenges in rehabilitative approaches (1, 3,4).

The prevailing evidence from these studies indicates that individualized, progressive rehabilitation programs yield effective recovery outcomes in athletes with osteitis pubis, often allowing return to training within 2 to 3 months without recurrences. Multimodal approaches incorporating pain management, core stability, functional movement assessment, and sport-specific conditioning were emphasized across most protocols (9, 10).

In particular, adjunct therapies such as shockwave treatment demonstrated enhanced pain relief and accelerated return-to-play times compared to exercise alone. Objective clinical progression markers were essential for tailoring rehabilitation stages and minimizing recurrence risks (2).

Despite promising results, challenges remain including variability in rehabilitation protocols, diagnostic difficulties, and the absence of standardized guidelines. Future studies are warranted to establish gold-standard protocols and optimize long-term functional outcomes.

Overall, the current literature underscores the importance of customized rehabilitation programs combining physical therapy and novel adjunct modalities to effectively manage osteitis pubis in athletic populations.

## DISCUSSION:

Osteitis pubis is a challenging condition predominantly affecting athletes involved in sports with repetitive pelvic stress such as football, rugby, and hockey. The rehabilitation of osteitis pubis requires a multifaceted approach given the complex aetiology involving musculoskeletal imbalances, pelvic instability, and soft tissue inflammation.

**Jardì et al. (2018) -** This study focused on a structured, individualized conservative rehabilitation protocol for elite athletes with stage III–IV osteitis pubis across football, basketball, and rugby. The protocol emphasized pain control, pelvic stability, and progressive strengthening, with transitions through rehabilitation stages based on clinical milestones rather than fixed timelines. The approach resulted in athletes returning to squad training within

two months and competitive play within three months, without recurrence over multiple seasons. The study demonstrated that individualized and progressive rehabilitation is effective, but it also noted limitations due to small sample size and sport-specific differences in recovery rates.

**Schöberl et al. (2020) -** This landmark study compared standard rehabilitation to the combination of rehabilitation plus shockwave therapy in amateur football players with osteitis pubis. The results indicated that shockwave therapy yielded accelerated pain relief and earlier return to play—within three months—compared to eight months in the control group. Importantly, no recurrences were observed at one-year follow-up in the intervention group. This finding supports the addition of shockwave therapy to physiotherapy for improved recovery, though challenges persist in diagnosis and long-term protocol standardization

**McAleer et al. (2017) -** McAleer et al. reported outcomes after a systematic nonoperative rehabilitation protocol using objective clinical progression markers—focusing on pain reduction, adductor strength, core stability, and functional movement. Five professional and academy footballers returned to training in under 60 days and match play by 72 days, with no recurrences at long-term follow-up. The study highlights the value of progression criteria over time-based approaches, though it acknowledges limitations of cohort size and recommends broad implementation of objective rehabilitation guidelines for elite athletes.

**Paajanen et al. (2017) -** This study evaluated tailored physiotherapy techniques with targeted strengthening and stability exercises in male soccer players. Most participants experienced significant reduction in pain and functional limitation within 12 weeks. The findings support physiotherapy as a cornerstone in osteitis pubis management, emphasizing the need for individualized exercise selection. Nevertheless, considerable heterogeneity existed in intervention protocols and monitoring, which affects generalizability**.**

**Tyler et al. (2016) -** Tyler et al. explored the effectiveness of combining corticosteroid injections with rehabilitation in professional ice hockey players. The combined approach facilitated a faster return to play and lower pain scores compared to rehabilitation alone. While the study provides evidence for a multimodal approach in acute management, long-term follow-up highlighted a need to balance pharmacologic interventions with functional rehabilitation to minimize recurrence.

**Alvarez-Diaz et al. (2019) -** This trial investigated active rehabilitation versus passive treatment modalities in rugby players with osteitis pubis. The active rehabilitation group demonstrated quicker return to sport and lower recurrence rates, emphasizing the superiority of dynamic, function-oriented rehabilitation over passive therapies. Despite positive outcomes, the study points out the ongoing challenge of protocol heterogeneity and highlights the importance of tailored approaches for optimal recovery.

## CONCLUSION:

Assessment of the methodologies and outcomes of the included studies revealed that individualized, progressive rehabilitation programs are effective in managing osteitis pubis in athletes. These programs typically involve a combination of pain management, muscle strengthening, core stabilization, and sport-specific conditioning, resulting in successful return-to-play timelines generally within 2 to 3 months. Adjunct therapies such as shockwave treatment show promise in enhancing recovery speed and reducing recurrence. However, variability in rehabilitation protocols and challenges related to diagnosis and management continuity persist. Despite these challenges, rehabilitation remains the mainstay of treatment with high success rates in symptom resolution and functional restoration. Future research is needed to establish standardized, evidence-based rehabilitation protocols to optimize recovery outcomes and minimize recurrence risk for athletes affected by osteitis pubis.

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## CONFLICT OF INTEREST:

Authors declare that there is no conflict of interest

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