Research Article
E-ISSN : 3048-1368
Volume 40, Issue No. 01. 2026
P-ISSN : 3048-1376

The International Journal of Medical Science and Health Research

Soft Tissue Mobilization Techniques in The Rehabilitation of Soccer-Related Myofascial Tears : A Comprehensive Systematic Review

[1] Resaka Yudha Prawira, [2] Bagas Ryan Kusuma
[1,2] Charlie Hospital, Indonesia
Corresponding Email : resakayudha@gmail.com

Article History :

Received date : 2026/01/15
Revised date : 2026/02/27
Accepted date : 2026/03/04
Published date : 2026/04/09

Copyright: *© 2024 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (BY NC) license (https://creativecommons.org/licenses/by-nc/4.0/).*

E-ISSN :

P-ISSN

ABSTRACT

Introduction: Myofascial tears are prevalent in soccer, often leading to significant recovery times and high reinjury rates. Soft tissue mobilization (STM) techniques, including instrument-assisted soft tissue mobilization (IASTM) and myofascial release (MFR), are widely used in rehabilitation, yet their specific efficacy for soccer players with myofascial tears remains unclear. This systematic review synthesizes evidence on the effectiveness of STM for this specific population and injury type.

Methods: A systematic review was conducted, screening 80 sources that investigated STM techniques in populations including soccer players or athletes with musculoskeletal conditions. Studies were included if they reported on outcomes such as pain, range of motion (ROM), strength, function, or return-to-play. Data on study design, participant characteristics, interventions, and outcomes were extracted and synthesized.

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

Results: The review revealed significant heterogeneity in study quality and findings. For soccer players, specific evidence supports the use of MFR and IASTM for improving hamstring flexibility (2,4,5,62) and restoring hip ROM (8). Positive effects on pain and pressure pain thresholds were also observed (1,3,7). However, the largest and most rigorous meta-analyses (9,31) found no clinically meaningful benefit of IASTM for pain or function when added to other treatments, citing very low-quality evidence. A sham-controlled trial suggested that non-specific effects may account for much of the observed benefit (10). For return-to-sport, structured, exercise-based programs (11,12) showed stronger evidence than STM alone.

Discussion: The evidence for STM in soccer myofascial tears is strongest for short-term ROM improvements and as an adjunct to exercise for pain management. Positive soccer-specific findings are often from studies targeting specific deficits like hamstring tightness (2,4,5) or myofascial trigger points (7). The discrepancy between these and null meta-analyses likely stems from differences in study quality, outcome measures, and the pooling of heterogeneous populations and techniques (9). Notably, STM appears to produce effects comparable to other manual techniques, suggesting the mechanical stimulus itself is key (37,70,74). The most robust return-to-sport outcomes are achieved through comprehensive, exercise-based, multifactorial rehabilitation programs (11,13,14).

Conclusion: Soft tissue mobilization techniques, including MFR and IASTM, can be effective adjuncts in the rehabilitation of soccer players with myofascial injuries, particularly for improving range of motion and managing pain. However, they should not be considered standalone treatments. Their greatest value is within a

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

structured, exercise-centered rehabilitation program that includes progressive loading and sport-specific functional training. Future high-quality, sham-controlled trials in homogenous soccer player populations with specific myofascial tears are needed.

Keywords: Myofascial release, IASTM, soccer, rehabilitation, hamstring, soft tissue mobilization

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

INTRODUCTION

Myofascial tears are a common and often debilitating injury in soccer, affecting players at all levels and leading to significant time loss from training and competition (1, 3). These injuries, which involve damage to the muscle and its surrounding connective tissue, frequently recur, posing a substantial challenge for sports medicine practitioners (12). Rehabilitation is critical for a successful return to play, yet the optimal strategies remain a subject of ongoing research and debate (13).

Soft tissue mobilization (STM) techniques, such as myofascial release (MFR) and instrument-assisted soft tissue mobilization (IASTM), are widely employed in clinical practice to treat these injuries (24, 35). Proponents argue that these techniques can break down adhesions, improve tissue extensibility, reduce pain, and enhance muscle function, thereby accelerating recovery (16, 28, 57). Despite their popularity, the evidence base for their specific efficacy in treating soccer-related myofascial tears is fragmented and conflicting.

Research Gap: While numerous studies have examined STM for various musculoskeletal conditions, a significant gap exists in synthesizing evidence focused specifically on soccer players with myofascial tears. Existing systematic reviews often pool heterogeneous populations and injury types, making it difficult to draw clinically applicable conclusions for this specific context (9, 31). The fundamental research question is whether the promising results from some soccer-specific studies (1-8) are supported by high-quality evidence or if they are contradicted by broader, more rigorous meta-analyses.

Objective: This systematic review aims to comprehensively synthesize and critically appraise the existing literature on the effectiveness of soft tissue mobilization techniques in the rehabilitation of soccer-related myofascial tears.

Hypothesis: The central hypothesis is that STM techniques, when applied as part of a structured rehabilitation protocol, lead to clinically meaningful improvements in pain, range of

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

motion, strength, and return-to-play timelines in soccer players with myofascial tears compared to control interventions.

Novelty: This review offers a novel contribution by focusing specifically on the intersection of three critical elements: a defined injury (myofascial tear), a specific intervention (STM), and a distinct athletic population (soccer players). It aims to reconcile the apparent contradictions in the literature by analyzing findings based on study quality, intervention type, and clinical context, thereby providing practical, evidence-informed guidance for clinicians working with this population.

Benefits: The findings will assist physiotherapists, athletic trainers, and sports medicine physicians in making evidence-based decisions regarding the integration of STM into rehabilitation programs for soccer players, ultimately aiming to optimize recovery and minimize reinjury risk.

METHODS

Protocol

The study strictly adhered to the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) 2020 guidelines to ensure methodological rigor and accuracy. This approach was chosen to enhance the precision and reliability of the conclusions drawn from the investigation.

Criteria for Eligibility

This systematic review aims to evaluate The Soft Tissue Mobilization Techniques in The Rehabilitation of Soccer-Related Myofascial Tears.

Screening

We screened in sources based on their abstracts that met these criteria:

- **Population - Soccer Players**: Does the study include soccer players (amateur or professional) as participants?

- **Population - Myofascial Tears**: Are participants diagnosed with myofascial tears through clinical examination or imaging?

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

- **Intervention Type**: Does the intervention involve soft tissue mobilization techniques (including manual therapy, instrument-assisted soft tissue mobilization, myofascial release, or massage therapy)?
- **Outcome Measures**: Does the study report quantifiable rehabilitation outcomes such as pain scores, functional assessments, range of motion, strength measures, return-to-play timeframes, or re-injury rates?
- **Study Design**: Is the study design a randomized controlled trial, controlled clinical trial, cohort study, case-control study, case series, systematic review, or meta-analysis?
- **Focus - Rehabilitation**: Does the study focus on rehabilitation of existing injuries (rather than solely on prevention)?
- **Injury Specificity**: Does the study focus on myofascial tears (rather than acute muscle strains, complete muscle ruptures, or other non-myofascial soft tissue injuries)?
- **Intervention Focus**: Is the intervention primarily focused on soft tissue mobilization (rather than being primarily pharmacological, surgical, or electrotherapeutic without soft tissue mobilization components)?
- **Study Quality and Size**: Does the study have 5 or more participants AND is it a peer-reviewed publication (not a conference abstract, editorial, or opinion piece)?

We considered all screening questions together and made a holistic judgement about whether to screen in each paper.

Search Strategy

The keywords used for this research based PICO :

Element	P (Population)	I (Intervention/Exposure)	C (Comparison/Context)	O (Outcome)
Keyword 1	Soccer	Soft Tissue Mobilization	Exercise Therapy	Rehabilitation

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

	Players			
Keyword 2	Footballers	Myofascial Release	Passive Stretching	Return to Play
Keyword 3	Athletes	Instrument-Assisted Soft Tissue Mobilization (IASTM)	Conventional Rehabilitation	Range of Motion
Keyword 4	Sports Participants	Manual Therapy	Sham Treatment	Pain Reduction

The Boolean MeSH keywords inputted on databases for this research are: *("Soccer Players" OR "Footballers" OR "Athletes" OR "Sports Participants") AND ("Soft Tissue Mobilization" OR "Myofascial Release" OR "Instrument-Assisted Soft Tissue Mobilization" OR "Manual Therapy") AND ("Exercise Therapy" OR "Passive Stretching" OR "Conventional Rehabilitation" OR "Sham Treatment") AND ("Rehabilitation" OR "Return to Play" OR "Range of Motion" OR "Pain Reduction")*

Data extraction

- **Study Design**:

  Extract study design (RCT, etc.) and methodological quality indicators relevant to evaluating soft tissue mobilization for soccer-related myofascial tears, including: sample size, randomization method, blinding procedures, control/comparison groups, and any quality assessment scores (PEDro, Cochrane risk of bias, etc.)

- **Participant Characteristics**:

  Extract detailed participant demographics and injury characteristics specific to soccer-related myofascial tears, including: number of soccer players, age range, gender, competitive level (recreational, amateur, professional), specific myofascial tear location and severity, time since injury, previous treatment history, and any inclusion/exclusion criteria related to soccer participation or myofascial injury type

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

- **Mobilization Technique**:

  Extract comprehensive details about the specific soft tissue mobilization technique used for myofascial tear rehabilitation, including: technique name and type (IASTM, manual therapy, self-myofascial release, etc.), specific tools or instruments used (Graston, ASTYM, foam roller, etc.), target tissues and anatomical locations treated, and theoretical mechanism or rationale for use in myofascial tear recovery

- **Treatment Protocol**:

  Extract complete treatment protocol details for soft tissue mobilization in soccer-related myofascial tear rehabilitation, including: frequency of sessions (per week), session duration, total number of sessions or treatment period length, specific techniques performed within each session, progression or modification criteria, who delivered the treatment (physiotherapist, athletic trainer, self-administered), and any concurrent treatments or restrictions

- **Rehabilitation Outcomes**:

  Extract all rehabilitation-related outcome measures specifically relevant to soccer-related myofascial tear recovery, including: pain levels (VAS, numeric rating scales), range of motion measurements, functional assessments, strength testing, return-to-sport criteria or timelines, soccer-specific performance measures, patient-reported outcomes, and any adverse events or complications related to the mobilization treatment

- **Treatment Effectiveness**:

  Extract quantitative and qualitative results demonstrating the effectiveness of soft tissue mobilization for soccer-related myofascial tear rehabilitation, including: pre/post treatment changes with effect sizes and confidence intervals, between-group differences when

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

applicable, statistical significance levels, clinically meaningful improvement thresholds, time to return to soccer activity, and any factors that influenced treatment success or failure

- **Contextual Factors**:

  Extract contextual information that may influence the applicability of soft tissue mobilization techniques to soccer-related myofascial tear rehabilitation, including: injury severity classification, anatomical location of tear (hamstring, quadriceps, calf, etc.), acute vs chronic injury status, treatment setting (clinical, field-based, home), combination with other interventions, patient compliance or adherence issues, and any sport-specific considerations or modifications made for soccer players

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

Table 1. Article Search Strategy

Database	Keywords	Hits
Pubmed	*("Soccer Players" OR "Footballers" OR "Athletes" OR "Sports Participants") AND ("Soft Tissue Mobilization" OR "Myofascial Release" OR "Instrument-Assisted Soft Tissue Mobilization" OR "Manual Therapy") AND ("Exercise Therapy" OR "Passive Stretching" OR "Conventional Rehabilitation" OR "Sham Treatment") AND ("Rehabilitation" OR "Return to Play" OR "Range of Motion" OR "Pain Reduction")*	27
Semantic Scholar	*("Soccer Players" OR "Footballers" OR "Athletes" OR "Sports Participants") AND ("Soft Tissue Mobilization" OR "Myofascial Release" OR "Instrument-Assisted Soft Tissue Mobilization" OR "Manual Therapy") AND ("Exercise Therapy" OR "Passive Stretching" OR "Conventional Rehabilitation" OR "Sham Treatment") AND ("Rehabilitation" OR "Return to Play" OR "Range of Motion" OR "Pain Reduction")*	250
Springer	*("Soccer Players" OR "Footballers" OR "Athletes" OR "Sports Participants") AND ("Soft Tissue Mobilization" OR "Myofascial Release" OR "Instrument-Assisted Soft Tissue Mobilization" OR "Manual Therapy") AND ("Exercise Therapy" OR "Passive Stretching" OR "Conventional Rehabilitation" OR "Sham Treatment") AND ("Rehabilitation" OR "Return to Play" OR "Range of Motion" OR "Pain Reduction")*	222
Google Scholar	*("Soccer Players" OR "Footballers" OR "Athletes" OR "Sports Participants") AND ("Soft Tissue Mobilization" OR "Myofascial Release" OR "Instrument-Assisted Soft Tissue Mobilization" OR "Manual Therapy") AND ("Exercise Therapy" OR "Passive Stretching" OR "Conventional Rehabilitation" OR "Sham Treatment") AND ("Rehabilitation" OR "Return to Play" OR "Range of Motion" OR "Pain Reduction")*	6,500
Wiley Online Library	*("Soccer Players" OR "Footballers" OR "Athletes" OR "Sports Participants") AND ("Soft Tissue Mobilization" OR "Myofascial Release" OR "Instrument-Assisted Soft Tissue Mobilization" OR "Manual Therapy") AND ("Exercise Therapy" OR "Passive Stretching" OR "Conventional Rehabilitation" OR "Sham Treatment") AND ("Rehabilitation" OR "Return to Play" OR "Range of Motion" OR "Pain Reduction")*	135

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Research Article
E-ISSN : 3048-1368
Volume 40, Issue No. 01. 2026
P-ISSN : 3048-1376

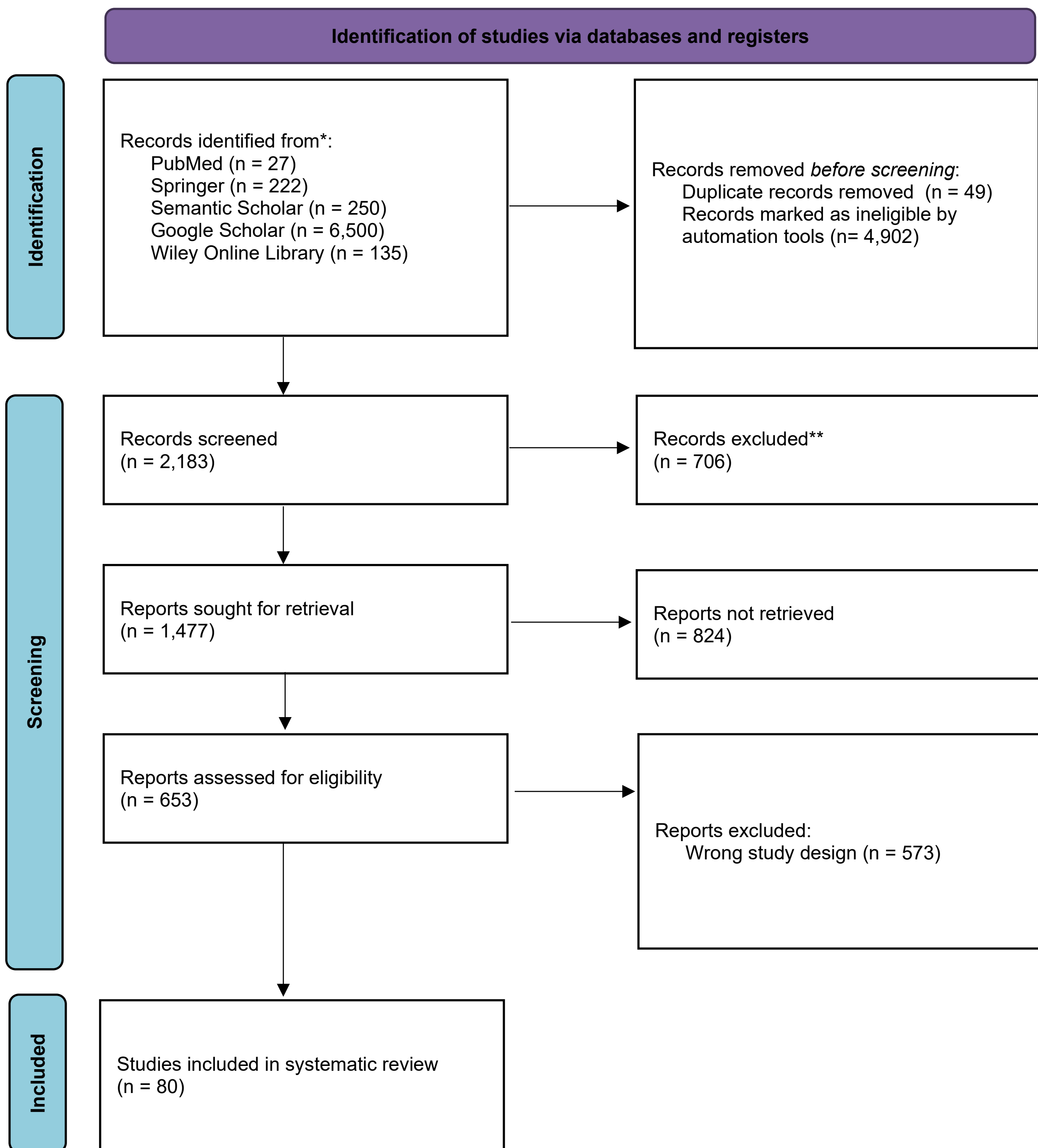

Figure 1. Article search flowchart

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

JBI Critical Appraisal									
Study	**Bias related to tempor al preced ence** Is it clear in the study what is the "cause" and what is the "effect" (ie, there is no confusi on about which	**Bias related to selection and allocation** Was there a control group?	**Bias related to confoun ding factors** Were particip ants include d in any compari sons similar?	**Bias related to administ ration of intervent ion/expo sure** Were the participa nts included in any comparis ons receiving similar treatment /care, other than the exposure or interventi on of	**Were there multiple measure ments of the outcome, both pre and post the intervent ion/expos ure?**	**Were the outcome s of particip ants included in any compari sons measure d in the same way?**	**Were outcom es measur ed in a reliable way?**	**Bias related to particip ant retentio n** Was follow-up complete and, if not, were difference s between groups in terms of their follow-up adequatel y described and analyzed?	**Statistic al conclusi on validity** Was appropria te statistica analysis used**?**

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

	variable comes first)?			interest?					
Erika Quintana Aparicio et al., 2009	✓	✓	✓	✗	✓	✗	✓	✓	✓
B. S. Unuvar et al., 2024	✓	✓	✓	✗	✓	✗	✓	✓	✓
Cristina B. Seffrin et al., 2019	✓	✓	✓	✗	✓	✗	✓	✓	✓
Return-to-play process after injuries, 2022	✓	✓	✓	✗	✓	✗	✓	✓	✓
A. Weir et al., 2011	✓	✓	✓	✗	✓	✗	✓	✓	✓
Amandeep Singh et al., 2024	✓	✓	✓	✗	✓	✗	✓	✓	✓
W. B. Leite et al., 2020	✓	✓	✓	✗	✓	✗	✓	✓	✓

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Yeenang Bagang et al., 2025	✓	✓	✓	✗	✓	✗	✓	✓	✓
Linhan Wang et al., 2025	✓	✓	✓	✗	✓	✗	✓	✓	✓
Irivichetty Sai Chandana et al., 2024	✓	✓	✓	✗	✓	✗	✓	✓	✓
Sung-hak Cho et al., 2020	✓	✓	✓	✗	✓	✗	✓	✓	✓
C. Bejarano et al., 2019	✓	✓	✓	✗	✓	✗	✓	✓	✓
Jooyoung Kim et al., 2017	✓	✓	✓	✗	✓	✗	✓	✓	✓
Hafiza Javeria et al., 2023	✓	✓	✓	✗	✓	✗	✓	✓	✓
M. Hägglund et al., 2007	✓	✓	✓	✗	✓	✗	✓	✓	✓
Tony Boucher et	✓	✓	✓	✗	✓	✗	✓	✓	✓

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Research Article Volume 40, Issue No. 01. 2026
E-ISSN : 3048-1368 P-ISSN : 3048-1376

al., 2023									
K. Fousekis et al., 2016	✓	✓	✓	✗	✓	✗	✓	✓	✓
Maria Elisa Duarte França et al., 2024	✓	✓	✓	✗	✓	✗	✓	✓	✓
Scott W. Cheatham et al., 2016	✓	✓	✓	✗	✓	✗	✓	✓	✓
Leonid Kalichman et al., 2017	✓	✓	✓	✗	✓	✗	✓	✓	✓
A. Karmali et al., 2019	✓	✓	✓	✗	✓	✗	✓	✓	✓
G. Nazari et al., 2019	✓	✓	✓	✗	✓	✗	✓	✓	✓
M. Lambert et al., 2017	✓	✓	✓	✗	✓	✗	✓	✓	✓
T. Mauntel et al., 2014	✓	✓	✓	✗	✓	✗	✓	✓	✓

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

James M. McKivigan et al., 2020	✔	✔	✔	✘	✔	✘	✔	✔	✔
J. Brummitt et al., 2008	✔	✔	✔	✘	✔	✘	✔	✔	✔
Jafar Ketabchi et al., 2019	✔	✔	✔	✘	✔	✘	✔	✔	✔
M. Sherry et al., 2004	✔	✔	✔	✘	✔	✘	✔	✔	✔
J. Doeringer et al., 2022	✔	✔	✔	✘	✔	✘	✔	✔	✔
Kristi McKenney et al., 2013	✔	✔	✔	✘	✔	✘	✔	✔	✔
Ilara Sousa Muniz et al., 2025	✔	✔	✔	✘	✔	✘	✔	✔	✔
N. Dhiman et al., 2021	✔	✔	✔	✘	✔	✘	✔	✔	✔
Justin Stanek et al., 2018	✔	✔	✔	✘	✔	✘	✔	✔	✔

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

D. Gulick et al., 2017	✓	✓	✓	✗	✓	✗	✓	✓	✓
Ho-Seong Kang et al., 2020	✓	✓	✓	✗	✓	✗	✓	✓	✓
M. Hussey et al., 2017	✓	✓	✓	✗	✓	✗	✓	✓	✓
T. R. Webb et al., 2016	✓	✓	✓	✗	✓	✗	✓	✓	✓
E. Rodríguez-Merchán et al., 2020	✓	✓	✓	✗	✓	✗	✓	✓	✓
G. Nazari et al., 2022	✓	✓	✓	✗	✓	✗	✓	✓	✓
Shuren Yan et al., 2024	✓	✓	✓	✗	✓	✗	✓	✓	✓
The Use of Instrument Assisted, 2020	✓	✓	✓	✗	✓	✗	✓	✓	✓
Michael S. Gart et al., 2017	✓	✓	✓	✗	✓	✗	✓	✓	✓

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

J. Wilke et al., 2019	✓	✓	✓	✗	✓	✗	✓	✓	✓
T. Michalski et al., 2022	✓	✓	✓	✗	✓	✗	✓	✓	✓
Michael E. Lehr et al., 2021	✓	✓	✓	✗	✓	✗	✓	✓	✓
M. Chughtai et al., 2019	✓	✓	✓	✗	✓	✗	✓	✓	✓
N. Malliaropoulos et al., 2004	✓	✓	✓	✗	✓	✗	✓	✓	✓
Ketaki Sakhalkar et al., 2022	✓	✓	✓	✗	✓	✗	✓	✓	✓
Stefano Palermi et al., 2021	✓	✓	✓	✗	✓	✗	✓	✓	✓
M. A. Sandrey et al., 2020	✓	✓	✓	✗	✓	✗	✓	✓	✓
Precious L Barnes et al., 2022	✓	✓	✓	✗	✓	✗	✓	✓	✓

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

Aric J. Warren et al., 2020	✓	✓	✓	✗	✓	✗	✓	✓	✓
Terry Loghmani M et al., 2016	✓	✓	✓	✗	✓	✗	✓	✓	✓
Ziwei Ming et al., 2025	✓	✓	✓	✗	✓	✗	✓	✓	✓
Burak Menek et al., 2024	✓	✓	✓	✗	✓	✗	✓	✓	✓
C. Moreno et al., 2017	✓	✓	✓	✗	✓	✗	✓	✓	✓
Manuel García-Sillero et al., 2021	✓	✓	✓	✗	✓	✗	✓	✓	✓
Mohammad Hamzeh Shalamzari et al., 2022	✓	✓	✓	✗	✓	✗	✓	✓	✓
Dr. Ketaki Nitin Sakhalkar	✓	✓	✓	✗	✓	✗	✓	✓	✓

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Research Article Volume 40, Issue No. 01. 2026
E-ISSN : 3048-1368 P-ISSN : 3048-1376

et al., 2022									
Emine Atıcı et al., 2020	✓	✓	✓	✗	✓	✗	✓	✓	✓
J. Borg-Stein et al., 2009	✓	✓	✓	✗	✓	✗	✓	✓	✓
Anchal Thakur et al., 2026	✓	✓	✓	✗	✓	✗	✓	✓	✓
J. Romero et al., 2019	✓	✓	✓	✗	✓	✗	✓	✓	✓
Heon Kwak et al., 2022	✓	✓	✓	✗	✓	✗	✓	✓	✓
B. Cigdem-Karacay et al., 2025	✓	✓	✓	✗	✓	✗	✓	✓	✓
Jack Martin et al., 2021	✓	✓	✓	✗	✓	✗	✓	✓	✓
G. Telles et al., 2016	✓	✓	✓	✗	✓	✗	✓	✓	✓
K. Rajfur et al., 2026	✓	✓	✓	✗	✓	✗	✓	✓	✓

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

Scott W. Cheatham et al., 2020	✓	✓	✓	✗	✓	✗	✓	✓	✓
Firas Al-Zubaidi et al., 2025	✓	✓	✓	✗	✓	✗	✓	✓	✓
M. Ajimsha et al., 2014	✓	✓	✓	✗	✓	✗	✓	✓	✓
Athanasios Trampas et al., 2010	✓	✓	✓	✗	✓	✗	✓	✓	✓
H. M. El-hafez et al., 2020	✓	✓	✓	✗	✓	✗	✓	✓	✓
C. D'souza et al., 2024	✓	✓	✓	✗	✓	✗	✓	✓	✓
E. Afshari et al., 2023	✓	✓	✓	✗	✓	✗	✓	✓	✓
Anand Patel Niyati Patel et al., 2023	✓	✓	✓	✗	✓	✗	✓	✓	✓
Zeinab Ahmadpou	✓	✓	✓	✗	✓	✗	✓	✓	✓

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

r Emshi et al., 2018									
Iván Asín-Izquierdo et al., 2020	✓	✓	✓	✗	✓	✗	✓	✓	✓
A. Güzelant et al., 2016	✓	✓	✓	✗	✓	✗	✓	✓	✓
M. Ajimsha et al., 2018	✓	✓	✓	✗	✓	✗	✓	✓	✓

RESULTS

Characteristics of Included Studies

Eighty sources were identified for inclusion in this review. These ranged from primary randomized controlled trials (RCTs), etc. The majority of studies did not specifically investigate soft tissue mobilization for soccer-related myofascial tears per se; rather, they addressed one or more components of this intersection — soft tissue mobilization techniques (e.g., instrument-assisted soft tissue mobilization [IASTM], myofascial release [MFR], foam rolling), musculoskeletal or myofascial pathology, and/or soccer player populations. The following table summarizes all included sources.

Study	Population	Technique(s) Examined	Primary Focus
Erika Quintana Aparicio et al., 2009	70 subjects including footballers, mean age 23.4 years [15]	Suboccipital muscle inhibition [15]	Effect on hamstring elasticity in short hamstring syndrome [15]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

Study	Population	Technique(s) Examined	Primary Focus
B. S. Unuvar et al., 2024	39 male soccer players, age 18–23 [1]	IASTM, foam roller [1]	ITB tightness: pain, ROM, strength [1]
Cristina B. Seffrin et al., 2019	Injured and uninjured participants [16]	IASTM (various tools) [16]	ROM, pain, strength, patient-reported function [16]
Return-to-play process after injuries, 2022	Soccer players with hamstring injuries [13]	Multifactorial rehabilitation [13]	Return-to-play methodology [13]
A. Weir et al., 2011	Athletes with adductor-related groin pain [17]	Van den Akker manual therapy [17]	Return to sport, pain [17]
Amandeep Singh et al., 2024	Athletic and musculoskeletal populations [18]	IASTM [18]	Pain, ROM, strength, disability [18]
W. B. Leite et al., 2020	35 recreational athletes [19]	Diacutaneous fibrolysis [19]	Muscle excitation, force, neuromuscular efficiency [19]
Yeenang Bagang et al., 2025	32 subjects with gastrocnemius strain, age 25–35 [20]	LLLT with MFR (foam roller) [20]	Pain, functional capacity [20]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

Study	Population	Technique(s) Examined	Primary Focus
Linhan Wang et al., 2025	29 patients with neck myofascial pain [21]	Myofascial release therapy [21]	Cervical ROM, pain [21]
Irivichetty Sai Chandana et al., 2024	36 recreational football players with hamstring tightness [5]	MFR with kinesiotaping [5]	Flexibility, strength, sprint performance [5]
Sung-hak Cho et al., 2020	24 subjects with short hamstring syndrome [22]	Suboccipital muscle inhibition [22]	ROM, stress hormones [22]
C. Bejarano et al., 2019	Musculoskeletal dysfunction patients [23]	MFR [23]	Pain reduction [23]
Jooyoung Kim et al., 2017	General soft tissue injury populations [24]	IASTM (Graston, Astym, etc.) [24]	Mechanisms and effects of IASTM [24]
Hafiza Javeria et al., 2023	Musculoskeletal soft tissue injury patients [25]	IASTM (Graston, M2T blade) [25]	Pain, ROM, function [25]
M. Hägglund et al., 2007	582 amateur male soccer players, mean age 24 [12]	Coach-controlled rehabilitation program [12]	Reinjury rate reduction [12]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Research Article Volume 40, Issue No. 01. 2026
E-ISSN : 3048-1368 P-ISSN : 3048-1376

Study	Population	Technique(s) Examined	Primary Focus
Tony Boucher et al., 2023	20 subjects [26]	Graston Technique, manual STM [26]	Hemodynamics, pain [26]
K. Fousekis et al., 2016	70 amateur soccer players, age 24.8 ± 4.4 [7]	Ergon-IASTM, cupping, ischaemic pressure [7]	Myofascial trigger points in low-back [7]
Maria Elisa Duarte França et al., 2024	Athletes [27]	MFR (instrument-assisted and self-applied) [27]	Force, speed, ROM, flexibility [27]
Scott W. Cheatham et al., 2016	Musculoskeletal patients [28]	IASTM (Graston) [28]	Musculoskeletal pathology, ROM [28]
Leonid Kalichman et al., 2017	General population [29]	Self-myofascial release (foam rolling) [29]	Pain, flexibility, strength [29]
A. Karmali et al., 2019	Musculoskeletal patients [30]	IASTM (Graston) [30]	Pain intensity [30]
G. Nazari et al., 2019	Athletes, general populations, pathological conditions [31]	IASTM [31]	Function, pain, ROM [31]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Study	Population	Technique(s) Examined	Primary Focus
M. Lambert et al., 2017	Musculoskeletal impairment patients [32]	IASTM [32]	Pain, function [32]
T. Mauntel et al., 2014	General populations [33]	Myofascial release therapies [33]	ROM, muscle function [33]
James M. McKivigan et al., 2020	Musculoskeletal injury patients [34]	Graston Technique [34]	Pain, ROM [34]
J. Brummitt et al., 2008	Athletes [35]	Massage, soft tissue mobilization [35]	Sports performance, recovery, rehabilitation [35]
Jafar Ketabchi et al., 2019	30 young soccer players [36]	IASTM vs. PNF [36]	Ankle dorsiflexion ROM [36]
M. Sherry et al., 2004	24 athletes with acute hamstring strain [11]	Agility/trunk stabilization vs. stretching/strengthening [11]	Return to sport, reinjury rate [11]
J. Doeringer et al., 2022	33 subjects with hamstring tightness [37]	IASTM, therapeutic cupping [37]	Hamstring mobility [37]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Study	Population	Technique(s) Examined	Primary Focus
Kristi McKenney et al., 2013	Orthopaedic patients [38]	MFR (indirect/passive) [38]	Orthopaedic conditions [38]
Ilara Sousa Muniz et al., 2025	Soccer players [39]	Various physiotherapy interventions [39]	Rehabilitation challenges and outcomes [39]
N. Dhiman et al., 2021	Asymptomatic adults [40]	MFR along superficial back line [40]	Flexibility [40]
Justin Stanek et al., 2018	44 physically active persons (53 limbs) [41]	CMR, Graston Technique [41]	Ankle dorsiflexion ROM [41]
D. Gulick et al., 2017	29 healthy individuals with trigger points [42]	IASTM (Graston tools) [42]	Pressure pain threshold of MTrPs [42]
Ho-Seong Kang et al., 2020	30 athletes including 16 soccer players [43]	GIASTM (Graston) [43]	Gastrocnemius muscular properties [43]
M. Hussey et al., 2017	Overhead athletes [44]	IASTM (Graston) [44]	Shoulder ROM [44]
T. R. Webb et al., 2016	Symptomatic non-pathological subjects (n=534) [45]	Myofascial techniques [45]	JROM, pain [45]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Study	Population	Technique(s) Examined	Primary Focus
E. Rodríguez-Merchán et al., 2020	Musculoskeletal disorder patients [46]	Astym therapy [46]	Tendinopathy, scar tissue [46]
G. Nazari et al., 2022	Individuals with/without pathologies [9]	IASTM [9]	Function, pain, ROM [9]
Shuren Yan et al., 2024	46 adolescent soccer players with HMS hip [8]	Self-MFR (foam rolling) vs. static stretching [8]	ROM, strength, hop tests [8]
The Use of Instrument Assisted, 2020	20 healthy subjects with hamstring tightness [47]	IASTM vs. massage/PNF [47]	Hamstring flexibility [47]
Michael S. Gart et al., 2017	Athletes with upper extremity injuries [48]	Soft tissue mobilization, strength training [48]	Upper extremity rehabilitation [48]
J. Wilke et al., 2019	Athletes with lower limb muscle strain (16 studies) [49]	Not specific to mobilization [49]	Connective tissue lesion prevalence in strain [49]
T. Michalski et al., 2022	40 male soccer players [50]	Self-MFR (foam roller) [50]	Muscle bioelectric activity [50]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Study	Population	Technique(s) Examined	Primary Focus
Michael E. Lehr et al., 2021	147 collegiate athletes [51]	IASTM, MWM [51]	Ankle dorsiflexion ROM, balance [51]
M. Chughtai et al., 2019	Musculoskeletal disorder patients [52]	Astym therapy [52]	Various musculoskeletal conditions [52]
N. Malliaropoulos et al., 2004	80 athletes with second-degree hamstring strain, mean age 20.5 [53]	Stretching [53]	ROM recovery, return to training [53]
Ketaki Sakhalkar et al., 2022	30 amateur football players, age 18–30 [2]	MFR vs. passive stretching [2]	Hamstring flexibility [2]
Stefano Palermi et al., 2021	Athletes with lower limb muscle injuries [14]	Multi-phase rehabilitation protocols [14]	Rehabilitation and therapeutic exercise [14]
M. A. Sandrey et al., 2020	20 moderately active participants [54]	Foam rolling vs. IASTM [54]	Knee ROM, fascial displacement [54]
Precious L Barnes et al., 2022	Musculoskeletal patients [55]	Active Release Technique [55]	Pain, ROM, disability [55]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

Study	Population	Technique(s) Examined	Primary Focus
Aric J. Warren et al., 2020	17 collegiate athletes with hamstring pathology [56]	MFD (cupping) vs. SMR (foam roller) [56]	Hamstring flexibility, patient-rated outcomes [56]
Terry Loghmani M et al., 2016	General populations [57]	IASTM [57]	Emerging efficacy of IASTM [57]
Ziwei Ming et al., 2025	ITB syndrome patients [58]	MFR with hip strengthening [58]	Pain, ITB normalization [58]
Burak Menek et al., 2024	45 young adults with hamstring tightness [59]	IASTM, percussion massage, dynamic stretching [59]	Jumping, agility, flexibility [59]
C. Moreno et al., 2017	24 non-professional male soccer players with ALErGP [6]	Intratissue percutaneous electrolysis + active physical therapy [6]	Pain, functional recovery [6]
Manuel García-Sillero et al., 2021	40 subjects (38 men), age 24.3 ± 2.6 [60]	MT, mechanical vibration, percussion therapy, foam roller [60]	Muscle recovery after eccentric exercise [60]
Mohammad Hamzeh Shalamzari et al., 2022	24 college-aged male athletes with hamstring shortness [61]	Self-MFR (foam rolling) [61]	H/Q strength ratio, ROM [61]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Study	Population	Technique(s) Examined	Primary Focus
Dr. Ketaki Nitin Sakhalkar et al., 2022	30 amateur football players, age 18–30 [62]	MFR vs. passive stretching [62]	Hamstring flexibility [62]
Emine Atıcı et al., 2020	48 patients with shoulder pain [63]	Soft tissue mobilization (subscapularis) [63]	Pain, ROM, functionality [63]
J. Borg-Stein et al., 2009	Musculoskeletal injury patients [64]	Various treatments [64]	Musculoskeletal pain and sports injury [64]
Anchal Thakur et al., 2026	Adults ≥18 years with hamstring tightness [65]	IASTM, neurodynamic techniques [65]	Hamstring flexibility, neural mechanosensitivity [65]
J. Romero et al., 2019	20 federated soccer players, age 18–30 [66]	Self-MFR (golf ball on plantar fascia) [66]	Hamstring flexibility via fascial chain [66]
Heon Kwak et al., 2022	30 male high school soccer players [3]	Myofascial release [3]	Soccer function, pain, body composition [3]
B. Cigdem-Karacay et al., 2025	84 female patients with myofascial pain, age 18–45 [10]	Graston IASTM [10]	Pain, disability, depression, quality of life [10]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368
P-ISSN : 3048-1376

Study	Population	Technique(s) Examined	Primary Focus
Jack Martin et al., 2021	General athletic populations [67]	Percussion massage gun devices [67]	Lower limb ROM, muscle soreness [67]
G. Telles et al., 2016	18 patients with anterior knee pain [68]	Myofascial techniques + exercise [68]	Pain, disability [68]
K. Rajfur et al., 2026	General physiotherapy populations [69]	Massage, dry needling, foam rolling, IASTM, etc. [69]	Pain, flexibility, ROM [69]
Scott W. Cheatham et al., 2020	30 inexperienced participants [70]	Foam rolling, IASTM, floss band [70]	Passive knee ROM [70]
Firas Al-Zubaidi et al., 2025	16 soccer players with type II thigh muscle rupture, age 17–19 [71]	Rehabilitation exercises with resistors and balance tools [71]	ROM, strength, pain [71]
M. Ajimsha et al., 2014	66 patients with plantar heel pain [72]	MFR [72]	Pain, functional disability [72]
Athanasios Trampas et al., 2010	30 physically active males with MTrPs and tight hamstrings [73]	MTrP therapy + PNF stretching [73]	ROM, pain, PPT [73]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Study	Population	Technique(s) Examined	Primary Focus
H. M. El-hafez et al., 2020	40 patients with upper trapezius trigger points [74]	IASTM (M2T blade) vs. stripping massage [74]	Pain, function [74]
C. D'souza et al., 2024	62 male recreational soccer players, age 18–30 [75]	Neural sliding and tensioning [75]	Hamstring flexibility [75]
E. Afshari et al., 2023	51 semi-elite athletes with ITB shortness [76]	Foam roller, PNF stretching, combination [76]	Hip ROM, functional activities [76]
Anand Patel Niyati Patel et al., 2023	102 male footballers with hamstring tightness, age 18–25 [4]	MET vs. MFR [4]	Hamstring flexibility [4]
Zeinab Ahmadpour Emshi et al., 2018	1 patient with upper trapezius trigger point [77]	IASTM [77]	Pain, PPT, disability [77]
Iván Asín-Izquierdo et al., 2020	Soccer players with groin pain [78]	Exercise, manual therapy, shockwave [78]	Risk factors, prevention, rehabilitation [78]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Study	Population	Technique(s) Examined	Primary Focus
A. Güzelant et al., 2016	60 patients with neck myofascial pain syndrome [79]	Scapular and Cyriax mobilization [79]	Pain, local tenderness, disability [79]
M. Ajimsha et al., 2018	Various neuromuscular conditions [80]	MFR [80]	Quality of MFR research [80]

Effects

Pain Outcomes

Pain reduction is one of the most commonly assessed outcomes across the included studies. Among the meta-analyses, Singh et al. (2024) found a statistically significant reduction in pain with IASTM compared to control interventions (MD −1.33, 95% CI [−1.59, −1.06], $p < 0.0001$) [18]. Karmali et al. (2019) reported that five of six studies demonstrated a statistically and clinically significant ($p < 0.05$) reduction in pain within IASTM groups [30]. Lambert et al. (2017) similarly reported significant pain improvements compared to control or conservative groups [32]. However, the largest and most methodologically critical review by Nazari et al. (2022), encompassing 46 RCTs, found no statistically significant or clinically meaningful effect of IASTM on pain intensity (SMD −0.05, 95% CI −0.53 to 0.43) [9].

In soccer-specific populations, Kwak et al. (2022) reported significant pain improvement ($p < 0.05$) after 8 weeks of myofascial release in adolescent soccer players [3]. Moreno et al. (2017) found that intratissue percutaneous electrolysis combined with active physical therapy provided greater and faster pain reduction in non-professional male soccer players with adductor-related groin pain than active physical therapy alone [6]. Fousekis et al. (2016) observed that all three interventions (Ergon-IASTM, cupping, ischaemic pressure) significantly improved pain pressure threshold and pain sensitivity in amateur soccer players with low-back myofascial trigger points,

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

with Ergon-IASTM being superior [7]. Unuvar et al. (2024) found that IASTM and foam rolling significantly increased pressure pain thresholds (P = .001) in soccer players with ITB tightness, while exercise alone did not change pain thresholds [1].

In non-soccer-specific primary studies examining myofascial and trigger point pain, Gulick et al. (2017) demonstrated that six IASTM sessions over three weeks significantly increased the pressure pain threshold of upper trapezius trigger points ($p < 0.0001$) [42]. Cigdem-Karacay et al. (2025) found significant improvements in pain (NRS), trigger point count, and disability (NDI) with the Graston technique, though sham IASTM was equally effective in pain reduction and trigger point reduction [10]. Ajimsha et al. (2014) reported a 72.4% reduction in pain and functional disability at 4 weeks with MFR for plantar heel pain, persisting at 60.6% at 12-week follow-up [72].

The following table summarizes the key pain findings across study types.

Study	Population	Intervention	Pain Measure	Result	Statistical Significance
Singh et al., 2024	Athletic/MSK conditions (meta-analysis of 6 RCTs) [18]	IASTM [18]	Various pain scales [18]	MD −1.33 (95% CI [−1.59, −1.06]) [18]	$p < 0.0001$ [18]
Nazari et al., 2022	Various pathologies (46 RCTs) [9]	IASTM [9]	Pain intensity [9]	SMD −0.05 (95% CI −0.53 to 0.43) [9]	Not significant [9]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Study	Population	Intervention	Pain Measure	Result	Statistical Significance
Karmali et al., 2019	MSK conditions (5 RCTs, 1 CCT) [30]	IASTM (Graston) [30]	Pain scales [30]	5/6 studies: significant reduction [30]	$p < 0.05$ [30]
Kwak et al., 2022	30 adolescent soccer players [3]	MFR [3]	Pain intensity [3]	Significant improvement [3]	$p < 0.05$ [3]
Fousekis et al., 2016	70 amateur soccer players [7]	Ergon-IASTM, cupping, ischaemic pressure [7]	PPT, VAS [7]	Ergon-IASTM superior [7]	$p < 0.05$ [7]
Moreno et al., 2017	24 non-professional soccer players [6]	EPI + APT [6]	NRS [6]	Greater/faster reduction in combined group [6]	Functional recovery: $P = 0.093$ [6]
Unuvar et al., 2024	39 male soccer players [1]	IASTM, foam roller [1]	Pressure pain threshold [1]	Increased PPT in IASTM/FR groups [1]	$P = .001$ [1]

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

Study	Population	Intervention	Pain Measure	Result	Statistical Significance
Gulick et al., 2017	29 healthy individuals with MTrPs [42]	IASTM (Graston) [42]	PPT (dolorimeter) [42]	Significant increase in PPT [42]	p < 0.0001 [42]
Cigdem-Karacay et al., 2025	84 female MPS patients [10]	Graston IASTM [10]	NRS, TPC, PPT [10]	Pain and TPC improved; sham equally effective for pain [10]	Significant vs. control for NRS [10]
Ajimsha et al., 2014	66 patients with plantar heel pain [72]	MFR [72]	FFI, PPT [72]	72.4% pain reduction at wk 4; 60.6% at wk 12 [72]	P < 0.001 [72]

The discrepancy between Singh et al.'s positive meta-analytic result and Nazari et al.'s null finding is notable. This may partially reflect differences in included studies, methodological rigor thresholds, and timing of follow-up assessments. Nazari et al. (2022) explicitly rated the evidence as very-low quality and highlighted rising publication of IASTM trials in suspected predatory journals [9].

Range of Motion and Flexibility Outcomes

Range of motion (ROM) improvements are the most consistently demonstrated benefit of soft tissue mobilization across the literature. Seffrin et al. (2019) found large effect sizes for ROM improvement in uninjured individuals treated with IASTM [16]. Cheatham et al. (2016) reported

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

that IASTM produced significant short-term ROM gains up to 24 hours [28]. Mauntel et al. (2014) observed significant ROM increases in 8 of 10 studies reviewed [33]. Kalichman et al. (2017) noted increased joint ROM with self-myofascial release without decreasing muscle force [29].

In soccer-specific studies, the evidence for ROM/flexibility improvement is robust. Sakhalkar et al. (2022) found that MFR was more effective than passive stretching in improving hamstring flexibility in amateur football players, with a 10–20 degree reduction in active knee extension angle compared to 5–10 degrees for stretching ($p < 0.0001$) [2, 62]. Patel et al. (2023) demonstrated that both muscle energy technique and MFR significantly improved hamstring flexibility in 102 footballers, with no significant difference between techniques [4]. Chandana et al. (2024) found that combining MFR with kinesiotaping produced significantly greater improvements in active knee extension than MFR alone ($p = 0.026$) in recreational football players [5].

Yan et al. (2024) showed that 6 weeks of foam rolling restored hip flexion and abduction ROM to healthy levels in adolescent soccer players with hypomobility syndrome, though internal and external rotation remained lower than the unaffected side [8]. Romero et al. (2019) demonstrated an immediate effect of self-myofascial release applied to the plantar fascia (using a golf ball) on hamstring flexibility in federated soccer players, with significant improvements in the Sit and Reach Test [66]. Ketabchi et al. (2019) reported that IASTM was superior to PNF in improving ankle dorsiflexion ROM in young soccer players, both immediately and at one-week follow-up ($P = 0.01$) [36].

Among non-soccer-specific studies, Doeringer et al. (2022) found that both IASTM and therapeutic cupping significantly increased hamstring mobility after a single 5-minute session, with Sit-n-Reach improving from 29.50 to 32.11 for IASTM and goniometric hip flexion from 83.45° to 92.73° ($P < .05$) [37]. Stanek et al. (2018) demonstrated that compressive myofascial release was superior to the Graston Technique for improving ankle dorsiflexion, with large effect sizes (Cohen $d = 1.23$ for standing position) [41]. Thakur et al. (2026) pooled data from nine RCTs and found a mean difference of 6.2° (95% CI: 2.5–9.9; $P = 0.001$) favoring IASTM for active knee extension [65]. Shalamzari et al. (2022) found that 8 weeks of foam rolling significantly increased hamstring ROM ($P = .001$) without altering the hamstring-to-quadriceps strength ratio [61]. Cheatham et al.

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

(2020) compared foam rolling, IASTM, and floss band in a standard 2-minute treatment and found small but statistically significant ROM gains for all three (2°, 3.5°, and 4° respectively) [70].

However, the largest systematic review challenged these positive findings. Nazari et al. (2022) found no clinically meaningful improvements in ROM when IASTM was added to other treatments [9]. Similarly, Dhiman et al. (2021) concluded that while MFR appeared to improve flexibility, it was not superior to other soft tissue release techniques [40]. Nazari et al. (2019) reported that six of nine trials with 36 outcomes showed no clinically important differences in ROM between IASTM and comparison groups [31].

Strength and Muscle Performance Outcomes

Strength outcomes are less consistently measured but relevant for return-to-sport decision-making. Unuvar et al. (2024) demonstrated significantly greater hip muscle strength gains in soccer players receiving IASTM or foam roller in addition to exercise compared to exercise alone ($P = .001$) [1]. Chandana et al. (2024) found that MFR combined with kinesiotaping produced superior hamstring strength improvements ($p = 0.002$) in recreational football players [5]. Yan et al. (2024) observed that foam rolling restored flexion, abduction, and external rotation strength in adolescent soccer players to healthy reference levels, whereas static stretching produced substantially lower strength improvements [8].

However, several studies suggest that soft tissue mobilization does not independently enhance strength. Seffrin et al. (2019) found that IASTM did not improve strength in injured participants [16]. Mauntel et al. (2014) reported no significant changes in muscle function following myofascial release treatment across ten studies [33]. Nazari et al. (2019) found only small effects on muscle performance with IASTM compared to no treatment (SMD range 0.03–0.24) [31]. Shalamzari et al. (2022) specifically demonstrated that foam rolling did not change the hamstring-to-quadriceps ratio [61].

Leite et al. (2020) found that diacutaneous fibrolysis increased force response and neuromuscular efficiency in the lateral gastrocnemius of recreational athletes [19]. Kang et al. (2020) demonstrated that Graston IASTM significantly decreased muscle stiffness and increased

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

elasticity and mechanical stress relaxation time in the gastrocnemius of athletes (including soccer players), more so than self-stretching [43].

Return to Sport and Functional Outcomes

Malliaropoulos et al. (2004) found that an intensive stretching program significantly shortened rehabilitation time for second-degree hamstring strains (13.27 ± 0.71 days vs. 15.05 ± 0.81 days) and ROM recovery (5.57 ± 0.71 days vs. 7.32 ± 0.53 days) [53]. Sherry et al. (2004) demonstrated that progressive agility and trunk stabilization exercises reduced return-to-sport time compared to traditional stretching/strengthening (22.2 vs. 37.4 days), with dramatically lower reinjury rates (7.7% vs. 70% at 1 year, $P = .0059$) [11]. Weir et al. (2011) showed that multimodal manual therapy resulted in faster return to sport for adductor-related groin pain (12.8 vs. 17.3 weeks, $P = 0.043$), though only 50–55% achieved full return in either group [17].

Hägglund et al. (2007) demonstrated that a coach-controlled rehabilitation program in amateur soccer reduced reinjury risk by 66% overall and 75% for lower limb injuries, with the greatest preventive effect within the first week of return [12]. The return-to-play systematic review (2022) concluded that multifactorial approaches — incorporating elements such as lumbopelvic control, running technique, gluteal training, and plyometrics — offer greater efficacy in the return-to-competition process for hamstring injuries in soccer [13].

Palermi et al. (2021) outlined a structured three-phase rehabilitation framework for lower limb muscle injuries, with return-to-sport criteria including absence of pain, complete ROM recovery, strength at ≥50% of theoretical maximum, and aerobic capacity at ≥90% of pre-injury levels [14]. They emphasized that soft tissue modalities (including MFR) should be integrated within a broader progressive exercise-based protocol rather than used in isolation [14].

Functional performance in soccer players was specifically evaluated by Chandana et al. (2024), who found that sprint performance improved comparably between MFR+kinesiotaping and MFR alone ($p = 0.704$) [5]. Kwak et al. (2022) showed significant improvements in soccer-specific function after 8 weeks of myofascial release ($p < 0.05$) [3]. Afshari et al. (2023) found that foam rolling, PNF stretching, and their combination all significantly improved single-leg hop, lateral hop,

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

and vertical jump performance in semi-elite athletes with ITB shortness, with no differences between interventions [76].

Adverse Events

Adverse event reporting was notably sparse across the included literature. Nazari et al. (2022) found that only 10 of 46 included RCTs assessed and reported IASTM-related adverse events [9]. Singh et al. (2024) noted that potential side effects of IASTM include bruising, inflammation, and muscle soreness [18]. Kim et al. (2017) described bruising and soreness as known side effects of IASTM [24]. Hussey et al. (2017) reported hyperemia with petechiae formation as a recognized adverse effect [44]. The IASTM-vs-massage/PNF study (2020) found that IASTM caused significantly higher discomfort during treatment compared to massage/PNF ($P = .044$), though outcomes were comparable [47]. Michalski et al. (2022) cautioned that self-myofascial release may temporarily alter muscle activation patterns, warranting careful use before intensive exercise or competition [50].

Synthesis

The evidence base for soft tissue mobilization techniques in the rehabilitation of soccer-related myofascial tears is characterized by substantial heterogeneity in populations, techniques, outcome measures, and study quality. The apparent contradictions in the literature — with multiple studies and smaller reviews showing positive effects on pain and ROM while the largest and most rigorous reviews find no clinically meaningful benefit — can be reconciled through several analytical lenses.

Technique and Modality Distinctions

The term "soft tissue mobilization" encompasses a broad spectrum of interventions, and their effects are not equivalent. IASTM (using Graston, Ergon, M2T blade, or similar tools) [7, 10, 16], applied myofascial release [2, 72], self-myofascial release via foam rolling [8, 50, 61], percussion therapy [60, 67], diacutaneous fibrolysis [19], cupping/myofascial decompression [56], and Active Release Technique [55] all have distinct mechanical and neurophysiological properties. Studies that find MFR superior to passive stretching for hamstring flexibility in football players [2, 62] are measuring a different intervention than those finding IASTM adds nothing to other

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

Research Article Volume 40, Issue No. 01. 2026
E-ISSN : 3048-1368 P-ISSN : 3048-1376

treatments for general musculoskeletal pathology [9]. The positive findings from soccer-specific studies tend to involve applied MFR or IASTM as stand-alone or additive treatments targeting specific deficits (hamstring tightness, ITB restriction), while the null findings emerge from meta-analyses pooling diverse pathologies, body regions, and comparison conditions.

When IASTM is compared head-to-head with other manual techniques (stripping massage, PNF stretching, therapeutic cupping), the outcomes are generally equivalent [37, 47, 74, 76]. This suggests that the mechanical stimulus provided by soft tissue mobilization — regardless of the specific delivery method — may be the active ingredient, rather than any unique property of a given instrument or brand. This interpretation is supported by Stanek et al. (2018), who found compressive myofascial release (a manual technique) superior to the Graston Technique (an instrument-based technique) for ankle dorsiflexion [41], and by Cheatham et al. (2020), who found foam rolling, IASTM, and floss band to produce similar small ROM gains [70].

Acute Versus Sustained Effects

A critical distinction emerges between acute (single-session) and sustained (multi-week) effects. Many positive ROM findings reflect immediate post-treatment gains: Doeringer et al. (2022) measured effects of a single 5-minute session [37]; Cheatham et al. (2016) noted ROM gains up to 24 hours [28]; and D'souza et al. (2024) showed that hamstring flexibility improvements diminished within 60 minutes [75]. In contrast, studies employing multi-week protocols report more durable benefits: Yan et al. (2024) used a 6-week foam rolling program [8]; Shalamzari et al. (2022) found significant ROM increases after 8 weeks of foam rolling [61]; and Kwak et al. (2022) applied MFR three times weekly for 8 weeks [3]. This temporal gradient suggests that while soft tissue mobilization produces reproducible short-term tissue responses, its clinical value for injury rehabilitation likely depends on repeated application within a structured program rather than isolated sessions.

Standalone Versus Multimodal Application

The most consistent positive findings emerge when soft tissue mobilization is combined with other interventions. Unuvar et al. (2024) found IASTM and foam rolling enhanced exercise effects on pain, ROM, and strength [1]. Moreno et al. (2017) demonstrated that combining

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

percutaneous electrolysis with active physical therapy produced faster pain reduction than active therapy alone in soccer players [6]. Telles et al. (2016) showed that adding myofascial techniques to an exercise program improved both pain (Cohen's d = 0.35) and disability (Cohen's d = 0.30) beyond exercise alone [68]. Ming et al. (2025) found preliminary evidence that MFR may accelerate pain relief and ITB structural normalization when combined with hip strengthening [58]. The return-to-play systematic review emphasized that multifactorial approaches — acting on coadjuvant components — offer greater efficacy [13]. In contrast, Nazari et al. (2022) found that adding IASTM to other treatments produced no additional benefit (function SMD −0.28, 95% CI −0.66 to 0.09) [9], suggesting that any additive effect may be small and dependent on the baseline treatment program.

Summary of Findings by Context

Soft tissue mobilization techniques demonstrate the most robust evidence for short-term ROM improvement and some benefit for pain reduction when applied within structured, multi-session rehabilitation programs and combined with exercise-based interventions. For soccer players specifically, applied MFR and IASTM show consistent benefits for hamstring flexibility [2, 4, 5], and self-myofascial release via foam rolling can restore hip ROM and improve certain strength parameters in adolescents with mobility restrictions [8]. For pain management in soccer-specific myofascial conditions (trigger points, enthesopathies, ITB tightness), IASTM and MFR appear to provide benefit when added to exercise [1, 3, 6, 7].

However, the evidence that these techniques add clinically meaningful benefit beyond exercise and stretching alone is weak when evaluated through high-quality meta-analyses [9, 31]. The sham-controlled Cigdem-Karacay et al. (2025) study finding that sham IASTM matches real IASTM for pain and trigger point outcomes [10] further suggests that non-specific effects (therapeutic contact, mechanical stimulation regardless of technique specifics) may account for much of the observed benefit. For return-to-sport outcomes after actual muscle injury, progressive agility-based rehabilitation programs [11] and structured coach-controlled protocols [12] hold stronger evidence than any specific soft tissue mobilization modality. Clinicians working with soccer players recovering from myofascial tears should view soft tissue mobilization as a potential

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

adjunct within a comprehensive, exercise-centered rehabilitation framework rather than a standalone intervention, and should prioritize progressive loading, neuromuscular control, and sport-specific functional criteria for return-to-play decisions [12–14].

DISCUSSION

This systematic review synthesized evidence from 80 sources to evaluate the effectiveness of soft tissue mobilization (STM) techniques in the rehabilitation of soccer-related myofascial tears. The findings reveal a complex and somewhat contradictory landscape, characterized by positive results in many soccer-specific primary studies but a lack of robust support from the highest-quality meta-analyses. This discussion will explore the nuances of these findings, focusing on the distinctions between technique and modality, acute versus sustained effects, and the critical role of multimodal rehabilitation.

A key finding is that while STM demonstrates consistent benefits for improving range of motion (ROM) and flexibility, the evidence for pain reduction and functional improvement is less certain. For soccer players, multiple studies report significant improvements in hamstring flexibility with applied MFR compared to passive stretching (2, 62). This is supported by findings that self-myofascial release (SMR) via foam rolling can restore hip ROM in adolescent players (8) and that IASTM is effective for ITB tightness (1). These positive outcomes are mechanistically plausible, as STM may alter the viscoelastic properties of fascia and muscle, leading to acute increases in tissue extensibility (28, 43). However, these positive results are challenged by the largest and most methodologically rigorous meta-analyses, which found no clinically meaningful effect of IASTM on pain intensity (SMD −0.05) or ROM (9, 31). This discrepancy may be explained by several factors. First, the meta-analyses pooled studies across diverse pathologies and body regions, potentially diluting any specific effect for myofascial conditions in the lower limbs of athletes (9). Second, the inclusion of studies with high risk of bias and the rising publication of trials in predatory journals, as noted by Nazari et al. (9), may have skewed the positive findings in the smaller reviews. Furthermore, a sham-controlled study by Cigdem-Karacay et al. (10) found that sham IASTM was equally effective as real IASTM for pain and trigger point reduction, highlighting

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

that non-specific effects—such as therapeutic touch, patient expectation, and the mechanical stimulus itself—may account for much of the observed benefit.

The data also suggest that the specific type of STM modality may be less important than the application of mechanical force itself. Multiple head-to-head comparisons have found IASTM to be equivalent to other manual techniques. For instance, Doeringer et al. (37) and El-hafez et al. (74) found similar improvements in hamstring mobility and trigger point pain when comparing IASTM to cupping or stripping massage, respectively. Cheatham et al. (70) found that foam rolling, IASTM, and floss bands all produced comparably small ROM gains. This suggests that the active ingredient is the mechanical stimulus applied to the tissue, rather than any unique property of a specific instrument or brand. This interpretation is further supported by Stanek et al. (41), who found a manual compressive myofascial release technique to be superior to the instrument-based Graston Technique for ankle dorsiflexion, indicating that the manner and direction of force application may be more critical than the tool used.

A crucial distinction is between acute, single-session effects and sustained, long-term clinical outcomes. Many of the positive ROM and pain findings are acute effects measured immediately or within hours of a single treatment (28, 37, 75). While these short-term gains are valuable for acute management, their clinical significance for long-term injury rehabilitation is questionable. In contrast, studies employing multi-week protocols, such as the 6-week foam rolling program by Yan et al. (8) or the 8-week MFR program by Kwak et al. (3), demonstrate more durable benefits, including restored strength and improved soccer-specific function. This suggests that for STM to have a meaningful impact on rehabilitation outcomes, it must be applied repeatedly within a structured, progressive program rather than as an isolated intervention.

The most consistent and robust findings for return-to-sport (RTS) outcomes come not from STM alone, but from comprehensive, multimodal programs. The work by Sherry and Best (11) demonstrated that a progressive agility and trunk stabilization program dramatically reduced RTS time and reinjury rates compared to traditional stretching and strengthening. Similarly, Hägglund et al. (12) showed that a coach-controlled rehabilitation program significantly lowered reinjury risk in amateur soccer players. The systematic review on the RTS process after hamstring injuries (13) and

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

the rehabilitation framework proposed by Palermi et al. (14) both emphasize that soft tissue modalities should be integrated within a broader, exercise-based protocol. This is further supported by studies showing that STM adds value when combined with other interventions, such as exercise (1, 6, 68). Therefore, the evidence points towards STM serving as a valuable *adjunct* to accelerate early ROM and pain management, but it should not replace the foundational elements of progressive loading, neuromuscular control, and sport-specific functional training that are critical for a safe and durable RTS.

CONCLUSION AND RECOMMENDATIONS

Conclusion:

This systematic review concludes that soft tissue mobilization techniques, including myofascial release and instrument-assisted soft tissue mobilization, can be beneficial adjuncts in the rehabilitation of soccer players with myofascial injuries. Their most consistent and clinically significant effects are in improving acute range of motion and flexibility. Evidence for their independent effect on pain reduction and strength is weaker, with high-quality meta-analyses and a sham-controlled trial suggesting that non-specific effects may play a substantial role. The most robust outcomes, particularly for a safe and timely return to sport, are achieved when STM is integrated into a comprehensive, exercise-based, multifactorial rehabilitation program that emphasizes progressive loading, neuromuscular control, and sport-specific criteria.

Recommendations:

For clinical practice, STM should be used as a complementary tool to facilitate early ROM restoration and pain management, not as a standalone treatment. Clinicians are advised to prioritize structured, progressive exercise protocols (11, 12, 14) and use STM to support these primary interventions. For future research, there is a critical need for well-designed, sham-controlled randomized controlled trials with adequate sample sizes that focus specifically on homogenous populations of soccer players with clinically and/or radiographically confirmed myofascial tears. Such studies should employ standardized, multi-week treatment protocols and report long-term outcomes, including reinjury rates, to definitively establish the added value of STM in this context.

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

REFERENCES

1. B. S. Unuvar, Ertuğrul Demirdel, H. Gerçek (2024) The Effects of Different Myofascial Release Techniques on Pain, Range of Motion, and Muscle Strength in Athletes With Iliotibial Band Tightness: A Randomized Controlled Study. Journal of sport rehabilitation. https://doi.org/10.1123/jsr.2023-0375

2. Ketaki Sakhalkar, Jaywant Nagulkar, Pradnya Mahajan (2022) Effectiveness of Myofascial Release Versus Passive Stretching on Hamstring Flexibility in Amateur Football Players - A Comparative Study. Social Science Research Network. https://doi.org/10.2139/ssrn.4271380

3. Heon Kwak, S. Hahm (2022) The Effect of Myofascial Release on Soccer Function, Pain, and Body Composition in Adolescent Soccer Players. Journal of the Korea Management Engineers Society. https://doi.org/10.35373/kmes.27.2.4

4. Anand Patel Niyati Patel (2023) Immediate Effects of Muscle Energy Technique versus Myofascial Release Techniques on Hamstring Flexibility in Footballers: A Comparative Study. International Journal of Science and Research (IJSR). https://doi.org/10.21275/sr23703123353

5. Irivichetty Sai Chandana, Vinod Kumar K. C., Feba Roy (2024) Effectiveness of Myofascial Release with Kinesiotaping Versus Myofascial Release Alone in Improving Flexibility, Strength, and Sprint Performance among Recreational Football Players with Hamstring Tightness – Randomized Controlled Trial. College of Physiotherapy, Dayananda Sagar University. https://doi.org/10.18311/dsuphy/9788195874873/2024/045

6. C. Moreno, Gabriele Mattiussi, Francisco J Núñez, et al (2017) Intratissue percutaneous electolysis combined with active physical therapy for the treatment of adductor longus enthesopathy-related groin pain: a randomized trial. Journal of Sports Medicine and Physical Fitness. https://doi.org/10.23736/S0022-4707.16.06466-5

7. K. Fousekis, Eleni Kounavi, Symeon Doriadis, et al (2016) The Effectiveness of Instrument-assisted Soft Tissue Mobilization Technique(ErgonÃÂ© Technique), Cupping and Ischaemic Pressure Techniques in theTreatment of Amateur AthletesÃÂ Myofascial Trigger Points. https://doi.org/10.4172/2165-7025.S3-009

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

8. Shuren Yan, Quan Jiang, Munku Song (2024) Effect of improving asymmetry through self-myofascial release in adolescent soccer player with hypomobility syndrome hip: A randomized controlled trial. Medicine. https://doi.org/10.1097/MD.0000000000039223

9. G. Nazari, Pavlos Bobos, Steve Lu, et al (2022) Effectiveness of instrument-assisted soft tissue mobilization for the management of upper body, lower body, and spinal conditions. An updated systematic review with meta-analyses. Disability and Rehabilitation. https://doi.org/10.1080/09638288.2022.2070288

10. B. Cigdem-Karacay, Tuğba Şahbaz, Dogus Gumusay, et al (2025) Short-term results of instrument-assisted soft tissue mobilization in female patients with myofascial pain syndrome: A randomized blinded sham-controlled study. Turkish Journal of Physical Medicine and Rehabilitation. https://doi.org/10.5606/tftrd.2025.15466

11. M. Sherry, T. Best (2004) A comparison of 2 rehabilitation programs in the treatment of acute hamstring strains. Journal of Orthopaedic and Sports Physical Therapy. https://doi.org/10.2519/JOSPT.2004.34.3.116

12. M. Hägglund, M. Waldén, J. Ekstrand (2007) Lower Reinjury Rate with a Coach-Controlled Rehabilitation Program in Amateur Male Soccer. American Journal of Sports Medicine. https://doi.org/10.1177/0363546507300063

13. (2022) Return-to-play process after injuries in the hamstringregion in soccer players: A systematic review. Cultura, Ciencia y Deporte. https://doi.org/10.12800/ccd.v17i53.1813

14. Stefano Palermi, B. Massa, M. Vecchiato, et al (2021) Indirect Structural Muscle Injuries of Lower Limb: Rehabilitation and Therapeutic Exercise. Journal of Functional Morphology and Kinesiology. https://doi.org/10.3390/jfmk6030075

15. Erika Quintana Aparicio, Luis Borrallo Quirante, C. Blanco, F. A. Sendín (2009) Immediate effects of the suboccipital muscle inhibition technique in subjects with short hamstring syndrome. Journal of Manipulative and Physiological Therapeutics. https://doi.org/10.1016/j.jmpt.2009.03.006

16. Cristina B. Seffrin, Nicole M Cattano, M. Reed, Alison M. Gardiner-Shires (2019) Instrument-Assisted Soft Tissue Mobilization: A Systematic Review and Effect-Size Analysis. Journal of athletic training. https://doi.org/10.4085/1062-6050-481-17

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

17. A. Weir, J. Jansen, I.G.L. van de Port, et al (2011) Manual or exercise therapy for long-standing adductor-related groin pain: a randomised controlled clinical trial. Manual Therapy. https://doi.org/10.1016/j.math.2010.09.001

18. Amandeep Singh, Shabnam Joshi, Rekha Chaturvedi (2024) INSTRUMENT ASSISTED SOFT TISSUE MOBILIZATION IN MANAGEMENT OF ATHLETIC AND MUSCULOSKELETAL CONDITIONS: A SYSTEMATIC REVIEW AND META-ANALYSIS. Türk Fizyoterapi ve Rehabilitasyon Dergisi. https://doi.org/10.21653/tjpr.1382351

19. W. B. Leite, Matheus Lima de Oliveira, M. A. Barbosa, et al (2020) Muscle excitation, force response, and efficiency during explosive force production after diacutaneous fibrolysis on lateral gastrocnemius of recreational athletes. Journal of Bodywork & Movement Therapies. https://doi.org/10.1016/j.jbmt.2020.08.001

20. Yeenang Bagang, Natasha Verma, Jeyakumar, et al (2025) Efficacy of Low-Level Laser Therapy with Myofascial Release in the Management of Tennis Leg. Scientific Hub of Applied Research in Emerging Medical science & technology. https://doi.org/10.61096/shareme.v4.iss3.2025.65-75

21. Linhan Wang, Ming Wang, Jiarui Wang (2025) Effect of image-guided myofascial release therapy on rehabilitation in patients with neck myofascial pain syndrome. International Journal of Advances in Applied Sciences. https://doi.org/10.21833/ijaas.2025.05.020

22. Sung-hak Cho (2020) Can Myofascial Release Techniques Reduce Stress Hormones in the Subject of Short Hamstring Syndrome? A Pilot Study. Journal of international academy of physical therapy research. https://doi.org/10.20540/JJIAPTR.2020.11.4.2237

23. C. Bejarano (2019) LIBERACIÓN MIOFASCIAL PARA REDUCIR EL DOLOR EN DISFUNCIONES DEL SISTEMA MÚSCULO ESQUELÉTICO: REVISIÓN SISTEMÁTICA

24. Jooyoung Kim, D. Sung, Joohyung Lee (2017) Therapeutic effectiveness of instrument-assisted soft tissue mobilization for soft tissue injury: mechanisms and practical application. Journal of Exercise Rehabilitation. https://doi.org/10.12965/jer.1732824.412

25. Hafiza Javeria, Danish Rasool, Dr. Ucksy Mallick (2023) THE EFFECTIVENESS OF INSTRUMENT-ASSISTED SOFT TISSUE MOBILIZATION TECHNIQUE ON

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

MUSCULOSKELETAL SOFT TISSUE INJURIES: A SYSTEMATIC REVIEW AND META-ANALYSIS. Pakistan journal of rehabilitation. https://doi.org/10.36283/pjr.zu.12.1/003

26. Tony Boucher, A. Gallucci (2023) The Effect of Instrument-Assisted Manual Therapy Technique on Brachial Hemodynamics and Pain. Acta Scientific Orthopaedics. https://doi.org/10.31080/asor.2022.06.0654

27. Maria Elisa Duarte França, Mayane dos Santos Amorim Botti, F. C. Ide, et al (2024) Effect of myofascial release techniques on internal biomechanics and their resultant application to sports: A systematic review. Journal of Bodywork & Movement Therapies. https://doi.org/10.1016/j.jbmt.2024.05.003

28. Scott W. Cheatham, Matt Lee, Matt Cain, Russell T. Baker (2016) The efficacy of instrument assisted soft tissue mobilization: a systematic review. Journal of the Canadian Chiropractic Association

29. Leonid Kalichman, Chen Ben David (2017) Effect of self-myofascial release on myofascial pain, muscle flexibility, and strength: A narrative review. Journal of Bodywork & Movement Therapies. https://doi.org/10.1016/j.jbmt.2016.11.006

30. A. Karmali, Ali Walizada, K. Stuber (2019) THE EFFICACY OF INSTRUMENT-ASSISTED SOFT TISSUE MOBILIZATION FOR MUSCULOSKELETAL PAIN: A SYSTEMATIC REVIEW

31. G. Nazari, Pavlos Bobos, J. Macdermid, T. Birmingham (2019) The Effectiveness of Instrument-Assisted Soft Tissue Mobilization in Athletes, Participants Without Extremity or Spinal Conditions, and Individuals with Upper Extremity, Lower Extremity, and Spinal Conditions: A Systematic Review. Archives of Physical Medicine and Rehabilitation. https://doi.org/10.1016/j.apmr.2019.01.017

32. M. Lambert, R. Hitchcock, K. Lavallee, et al (2017) The effects of instrument-assisted soft tissue mobilization compared to other interventions on pain and function: a systematic review. https://doi.org/10.1080/10833196.2017.1304184

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

33. T. Mauntel, Michael A. Clark, D. Padua (2014) Effectiveness of Myofascial Release Therapies on Physical Performance Measurements: A Systematic Review. https://doi.org/10.3928/19425864-20140717-02

34. James M. McKivigan, Gina M. Tulimero (2020) An Analysis of Graston Technique® for Soft-Tissue Therapy. https://doi.org/10.11648/J.RS.20200504.11

35. J. Brummitt (2008) The role of massage in sports performance and rehabilitation: current evidence and future direction. North American journal of sports physical therapy

36. Jafar Ketabchi, S. Shahrbanian, Ehsan tasoujian (2019) Comparison between the Short Term and Durability Effects of Proprioceptive Neuromuscular Facilitation Exercise and Instrument Assisted soft Tissue Mobilization Technique on Ankle-Dorsiflexion Range of Motion. journal of ilam university of medical sciences. https://doi.org/10.29252/SJIMU.27.1.137

37. J. Doeringer, Ramón Ramírez, M. Colas (2022) Instrument-Assisted Soft Tissue Mobilization Increased Hamstring Mobility. Journal of sport rehabilitation. https://doi.org/10.1123/jsr.2022-0015

38. Kristi McKenney, A. S. Elder, C. Elder, A. Hutchins (2013) Myofascial release as a treatment for orthopaedic conditions: a systematic review. Journal of athletic training. https://doi.org/10.4085/1062-6050-48.3.17

39. Ilara Sousa Muniz, Gildene Gomes de Oliveira (2025) FISIOTERAPIA ESPORTIVA: UMA REVISÃO INTEGRATIVA DOS DESAFIOS E RESULTADOS NA REABILITAÇÃO DE ATLETAS JOGADORES DE FUTEBOL. Revista ft. https://doi.org/10.69849/revistaft/ni10202504100724

40. N. Dhiman, B. Das, C. Mohanty, et al (2021) Myofascial release versus other soft tissue release techniques along superficial back line structures for improving flexibility in asymptomatic adults: A systematic review with meta-analysis. Journal of Bodywork & Movement Therapies. https://doi.org/10.1016/J.JBMT.2021.06.026

41. Justin Stanek, Taylor S. Sullivan, S. Davis (2018) Comparison of Compressive Myofascial Release and the Graston Technique for Improving Ankle-Dorsiflexion Range of Motion. Journal of athletic training. https://doi.org/10.4085/1062-6050-386-16

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

E-ISSN : 3048-1368 P-ISSN : 3048-1376

42. D. Gulick (2017) Instrument-assisted soft tissue mobilization increases myofascial trigger point pain threshold. Journal of Bodywork & Movement Therapies. https://doi.org/10.1016/j.jbmt.2017.10.012

43. Ho-Seong Kang, Jung-Hoon Lee (2020) The Immediate Effects of Graston Instrument-Assisted Soft-Tissue Mobilization and Self-Stretching on the Muscular Properties of the Gastrocnemius in Athletes. Journal of the Korean Society of Physical Medicine. https://doi.org/10.13066/kspm.2020.15.4.29

44. M. Hussey, Alex E Boron-Magulick, T. V. Valovich McLeod, Cailee E. Welch Bacon (2017) The Comparison of Instrument-Assisted Soft Tissue Mobilization and Self-Stretch Measures to Increase Shoulder Range of Motion in Overhead Athletes: A Critically Appraised Topic. Journal of sport rehabilitation. https://doi.org/10.1123/jsr.2016-0213

45. T. R. Webb, Dévan Rajendran (2016) Myofascial techniques: What are their effects on joint range of motion and pain? - A systematic review and meta-analysis of randomised controlled trials. Journal of Bodywork & Movement Therapies. https://doi.org/10.1016/j.jbmt.2016.02.013

46. E. Rodríguez-Merchán, H. de la Corte-Rodriguez, J. M. Román-Belmonte (2020) The current role of Astym therapy in the treatment of musculoskeletal disorders. Postgraduate medicine. https://doi.org/10.1080/00325481.2019.1654836

47. (2020) The Use of Instrument Assisted Soft Tissue Mobilization Verse Massage and Proprioceptive Neuromuscular Facilitation Stretching Techniques on Improving Hamstring Flexibility. International Journal of Orthopaedics Research. https://doi.org/10.33140/ijor.03.01.08

48. Michael S. Gart, T. Wiedrich (2017) Therapy and Rehabilitation for Upper Extremity Injuries in Athletes. Hand Clinics. https://doi.org/10.1016/j.hcl.2016.08.016

49. J. Wilke, L. Hespanhol, M. Behrens (2019) Is It All About the Fascia? A Systematic Review and Meta-analysis of the Prevalence of Extramuscular Connective Tissue Lesions in Muscle Strain Injury. Orthopaedic Journal of Sports Medicine. https://doi.org/10.1177/2325967119888500

50. T. Michalski, T. Król, P. Michalik, et al (2022) Does the Self-Myofascial Release Affect the Activity of Selected Lower Limb Muscles of Soccer Players? Journal of Human Kinetics. https://doi.org/10.2478/hukin-2022-0050

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

51. Michael E. Lehr, M. L. Fink, Erin E. Ulrich, Robert Butler (2021) Comparison of manual therapy techniques on ankle dorsiflexion range of motion and dynamic single leg balance in collegiate athletes. Journal of Bodywork & Movement Therapies. https://doi.org/10.1016/j.jbmt.2021.11.004

52. M. Chughtai, J. Newman, A. Sultan, et al (2019) Astym® therapy: a systematic review. Annals of Translational Medicine. https://doi.org/10.21037/ATM.2018.11.49

53. N. Malliaropoulos, S. Papalexandris, Agape Papalada, E. Papacostas (2004) The role of stretching in rehabilitation of hamstring injuries: 80 athletes follow-up. Medicine & Science in Sports & Exercise. https://doi.org/10.1249/01.MSS.0000126393.20025.5E

54. M. A. Sandrey, C. Lancellotti, C. Hester (2020) The Effect of Foam Rolling Versus IASTM on Knee Range of Motion, Fascial Displacement, and Patient Satisfaction. Journal of sport rehabilitation. https://doi.org/10.1123/jsr.2018-0494

55. Precious L Barnes, Matthew J. Rivera (2022) The Effect of Active Release Technique® on Clinician and Patient-Reported Outcomes: A Systematic Review. Journal of sport rehabilitation. https://doi.org/10.1123/jsr.2021-0106

56. Aric J. Warren, Z. Lacross, J. Volberding, Matthew S. O'Brien (2020) ACUTE OUTCOMES OF MYOFASCIAL DECOMPRESSION (CUPPING THERAPY) COMPARED TO SELF-MYOFASCIAL RELEASE ON HAMSTRING PATHOLOGY AFTER A SINGLE TREATMENT. International Journal of Sports Physical Therapy. https://doi.org/10.26603/ijspt20200579

57. Terry Loghmani M, S. Bane (2016) Instrument-assisted Soft Tissue Manipulation: Evidence for its EmergingEfficacy. https://doi.org/10.4172/2165-7025.S3-012

58. Ziwei Ming, Gengxin Dong, Liyu Luo, et al (2025) The Combined Effect of Myofascial Release and Hip Strength Training on Iliotibial Band Syndrome: A Preliminary Randomized Controlled Trial. Complementary Therapies in Medicine. https://doi.org/10.1016/j.ctim.2025.103274

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

59. Burak Menek, U. I. Tayboga (2024) Examining acute impacts of soft tissue mobilization, percussion massage, and dynamic stretching on hamstring tightness. Gazzetta Medica Italiana Archivio per le Scienze Mediche. https://doi.org/10.23736/s0393-3660.23.05180-x

60. Manuel García-Sillero, J. Benítez-Porres, J. García-Romero, et al (2021) Comparison of Interventional Strategies to Improve Recovery after Eccentric Exercise-Induced Muscle Fatigue. International Journal of Environmental Research and Public Health. https://doi.org/10.3390/ijerph18020647

61. Mohammad Hamzeh Shalamzari, H. Minoonejad, Foad Seidi (2022) The Effects of a Self-Myofascial Release Program on Isokinetic Hamstrings-to-Quadriceps Strength Ratio and Range of Motion of the Knee Joint Among Athletes With Hamstring Shortness. Journal of sport rehabilitation. https://doi.org/10.1123/jsr.2020-0487

62. Dr. Ketaki Nitin Sakhalkar, Dr. Jaywant Nagulkar, Dr. Pradnya Mahajan (2022) Effectiveness of Myofascial Release Versus Passive Stretching on Hamstring Flexibility in Amateur Football Players - A Comparative Study. International Journal of Health Sciences and Research. https://doi.org/10.52403/ijhsr.20220832

63. Emine Atıcı, Gamze Aydın, M. Gülşen, Ozgur Surenkok (2020) THE EFFECTS OF SOFT TİSSUE MOBİLİZATİON APPLİED TO THE SUBSCAPULARİS MUSCLE ON PAİN AND FUNCTİONALİTY İN SHOULDER DYSFUNCTİONS. Türk Fizyoterapi ve Rehabilitasyon Dergisi. https://doi.org/10.21653/tjpr.785838

64. J. Borg-Stein, Jason L. Zaremski, Mary Alice Hanford (2009) New Concepts in the Assessment and Treatment of Regional Musculoskeletal Pain and Sports Injury. PM & R : the journal of injury, function, and rehabilitation. https://doi.org/10.1016/j.pmrj.2009.05.013

65. Anchal Thakur, Kanika Bhatia (2026) Effectiveness of instrument-assisted soft tissue mobilization and neurodynamic techniques for improving hamstring flexibility and neural mechanosensitivity: A systematic review and meta-analysis. Journal of Musculoskeletal Surgery and Research. https://doi.org/10.25259/jmsr_481_2025

66. J. Romero, Samuel Gómez Torres, Aurelio Montero Duarte, et al (2019) Efecto inmediato de la auto-liberación miofascial en la superficie plantar sobre la musculatura isquiosural en

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

futbolistas. SPORT TK-Revista EuroAmericana de Ciencias del Deporte. https://doi.org/10.6018/SPORTK.391811

67. Jack Martin (2021) A critical evaluation of percussion massage gun devices as a rehabilitation tool focusing on lower limb mobility: A literature review. https://doi.org/10.31236/osf.io/j9ya8

68. G. Telles, D. Cristovão, F. Belache, et al (2016) The effect of adding myofascial techniques to an exercise programme for patients with anterior knee pain. Journal of Bodywork & Movement Therapies. https://doi.org/10.1016/j.jbmt.2016.02.007

69. K. Rajfur, J. Rajfur, Bartłomiej Kopcisz, Beata Fras-Łabanc (2026) Soft tissue-oriented relaxation techniques in physiotherapy: a narrative review of randomized controlled trials. Health Problems of Civilization. https://doi.org/10.29316/hpc/217718

70. Scott W. Cheatham (2020) Myofascial Compression Interventions: Comparison of Roller Massage, Instrument Assisted Soft-Tissue Mobilization, and Floss Band on Passive Knee Motion Among Inexperienced Individuals. https://doi.org/10.31622/2020/0003.3.5

71. Firas Al -Zubaidi (2025) The effect of rehabilitation exercises with diversity of resistors and moving balance tools in rehabilitating rupture of the second type of muscles for the thigh of the soccer players. Journal Of Physical Education. https://doi.org/10.37359/jope.v37(2)2025.2276

72. M. Ajimsha, D. Binsu, S. Chithra (2014) Effectiveness of myofascial release in the management of plantar heel pain: a randomized controlled trial. The Foot. https://doi.org/10.1016/j.foot.2014.03.005

73. Athanasios Trampas, A. Kitsios, E. Sykaras, et al (2010) Clinical massage and modified Proprioceptive Neuromuscular Facilitation stretching in males with latent myofascial trigger points. Physical Therapy in Sport. https://doi.org/10.1016/j.ptsp.2010.02.003

74. H. M. El-hafez, H. A. Hamdy, M. K. Takla, et al (2020) Instrument-assisted soft tissue mobilisation versus stripping massage for upper trapezius myofascial trigger points. Journal of Taibah University Medical Sciences. https://doi.org/10.1016/j.jtumed.2020.01.006

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved

75. C. D'souza, Sannasi Rajasekar, Ruchit L. Shetty (2024) Comparing the immediate effects of different neural mobilization exercises on hamstring flexibility in recreational soccer players. Hong Kong Physiotherapy Journal. https://doi.org/10.1142/S1013702524500124

76. E. Afshari, Mehrnaz Kajbafvala, Holakoo Mohsenifar, L. Abbasi (2023) Comparison of the Immediate Effect of Active Stretching Techniques and Self-Myofascial Release on the Flexibility of the Iliotibial Band and Functional Activities in Semi-Elite Athletes: A Randomized Clinical Trial. Middle East Journal of Rehabilitation and Health Studies. https://doi.org/10.5812/mejrh-134802

77. Zeinab Ahmadpour Emshi, F. Okhovatian, M. M. Kojidi, S. Zamani (2018) The Effects of Instrument-Assisted Soft Tissue Mobilization on Active Myofascial Trigger Points of Upper Trapezius Muscle. https://doi.org/10.22037/JCPR.V3I3.22593

78. Iván Asín-Izquierdo, Alberto Arribas-Romano, Marcos Chena, et al (2020) Dolor inguinal en el fútbol. Factores de riesgo y estrategias metodológicas de intervención: prevención, rehabilitación y readaptación físico-deportiva. Revisión bibliográfica. https://doi.org/10.12800/ccd.v15i44.1467

79. A. Güzelant (2016) Effectiveness of mobilization practices for patients with neck pain due to myofascial pain syndrome: a randomized clinical trial. https://doi.org/10.5606/tftrd.2016.95777

80. M. Ajimsha (2018) The quality of current myofascial release research. Where we are? Critical appraisal findings of randomized controlled trials and a systematic review. Journal of Bodywork & Movement Therapies. https://doi.org/10.1016/j.jbmt.2018.09.032

Downloaded from theInternationalmedicaljournal.org. For personal use only. No other uses without permission.
Copyright © International Medical Journal Corp. Ltd. All rights reserved