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Fascial manipulation® for musculoskeletal disorders: a scoping review

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Abstract

Objective: The purpose of this scoping review is to synthesize all available literature on the effects/mechanisms of myofascial manipulation interventions and adverse events, to assess knowledge gaps in understanding optimal approaches, and to elucidate therapeutic mechanisms and select indications.

Introduction: Fascial manipulation® (FM) is one of the techniques that have been developed in recent years as a manual therapy for musculoskeletal disorders. Systematic reviews have shown the efficacy of FM for patients with musculoskeletal pain, but mechanisms and adverse events have not been examined.

Inclusion / Exclusion criteria: This review will include patients with musculoskeletal disorders with pain and dysfunction. Outcomes will be pain and physical function. The study design will be that of an interventional trial or observational study or case report, with no restrictions on region, race, gender, or language of the original paper.

Methods: A systematic search of PubMed, CINAHL, Web of Science, and PEDro databases using the keywords “Fascial manipulation®,” “musculoskeletal disorders,” and “myofascial pain” and “musculoskeletal pain” during December 2022. In the first screening step, two independent reviewers will review all the titles and abstracts to exclude irrelevant articles. In the second screening step, two independent reviewers will review all the full texts to exclude irrelevant articles. Outcomes will be focused on pain and physical function. Chapters will be divided for each outcome and the results will be described.

Materials

Introduction
Fascial manipulation (FM) is one of the techniques that have been developed in recent years as a manual therapy for musculoskeletal disorders. It is a manual physiotherapy technique systematized by Italian physiotherapist Luigi Stecco in 1987. It is a systemic treatment that unravels abnormal fascial function (myofascial densification, substrate gelation, and hyaluronic acid aggregation) from the perspectives of fascial alignment, fascial diagonals, and fascial spirals. It is a very effective manual physiotherapy for pain relief, muscle output, and performance improvement (1).
FM has been used to treat acute and chronic conditions alone or in combination with exercise therapy. Stecco's treatment method divides the body into 14 segments, each segment consisting of six fascial units. FM targets the stiff areas within the lines of dysfunction to improve balance and optimize its activation pattern (2-4).
Trauma and overuse syndromes alter the structure and properties of fascia by altering its histological, physiological, and biomechanical properties, resulting in deformity (5). Changes in fascial stiffness can lead to decreased muscle biomechanics, altered muscle coordination, and decreased muscle strength, and abnormal movement patterns can place excessive tissue stress on the capsule and cartilage, and this altered fascia can lead to myofascial pain (4, 6). Fascia is a malleable tissue and can adapt to mechanical, thermal, and metabolic stresses, and manual treatment may restore it to a physiological state; tonus changes in fascia were also observed during FM treatment (7). The association between fascia and intrinsic receptors has also been reported in myofascial pain (8). Thus, there is a possibility that FM can show the effect of manual intervention on the fascia, but the mechanism of the intervention effect has not yet been clarified.
To date, there is one systematic review of FM for pain and dysfunction of the musculoskeletal system (9), but it only indicates that the level of evidence for treatment is low to moderate. The purpose of this review was to synthesize all available literature on the effects/mechanisms of fascial manipulation interventions and adverse events, to assess gaps in knowledge regarding the understanding of optimal approaches, to elucidate treatment mechanisms, and to select indications for disease.

Review question
The purpose of this scoping review is to synthesize all available literature on the effects/mechanisms of Fascial manipulation® interventions and adverse events, to assess knowledge gaps in understanding optimal approaches, and to elucidate therapeutic mechanisms and select indications.

Keywords
Fascial manipulation®; musculoskeletal pain; myofascial pain; musculoskeletal disorders

Eligibility criteria
Patients with musculoskeletal disorders and pain（e.g., low back pain, neck pain, knee pain, chronic ankle instability, sacroiliac joint dysfunction, tendonitis, tendinosis, and tendinopathy）are eligible.
Exclusion criteria for this study are any myofascial intervention other than FM and subjects other than musculoskeletal disorders such as stroke and systematic reviews.

Concept
[Patients]

Patients with musculoskeletal disorders with pain and dysfunction
[Exposure]
Fascial manipulation® [Stecco method]
[Outcome]
Change in pain (e.g., Visual Analog Scale, Numerical Rating Scale), disability (e.g., Knee Injury Osteoarthritis Outcome Score, Oswestry Disability Index, Harris Hip Score, Disability of The Arm, Shoulder, and Hand), quality of life (e.g., SF-36: Mos Short-Form 36-Item Health. Survey), range of motion, muscle strength.
[Study design]
Interventional studies [random control trials, pre-post studies, case reports, quasi-experimental study] and observational studies (cross-sectional study, longitudinal study).

Context
No limitation on location, race, language, or gender has been imposed.

Types of Sources
Interventional trials and observational studies (including exploratory studies) will be included.

Methods
This protocol was developed based on PRISMA-P (10). The proposed scoping review will be also conducted in accordance with the JBI methodology for scoping reviews.

Search strategy
The search strategy aimed to locate both published and unpublished studies. A systematic electronic search of the following databases was conducted: PubMed, Web of Science, CINAHL, PEDro.
The complete search strategy for the four databases was developed using the words contained in the titles and abstracts of the relevant articles (the appendix provides further details).
The search source for unpublished studies/gray literature is ClinicalTrials.gov.

Study/Source of Evidence selection
After searching, all identified citations will be collated and uploaded to Rayyan (11) (Qatar Computing Research Institute, Ar Rayyan, Qatar) to eliminate duplicates. In the pilot test, the title and abstract will be reviewed by two independent reviewers and evaluated against the criteria for inclusion in the review. Potentially relevant references will be retrieved in full text and the citation details will be incorporated into Rayyan.
The full text of selected citations will be evaluated in detail against the inclusion criteria by two independent reviewers. Reasons for excluding full-text evidence references that do not meet the inclusion criteria will be recorded and reported in the scoping review. Disagreements among reviewers at each stage of the selection process will be discussed or resolved with additional reviewers. The search results and study incorporation process will be reported in full at the final scoping review, and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-2020) flow diagram (12) will be used to present the results.

Data Extraction

More than two independent reviewers will use a data extraction tool they created to extract the data from the publications included in the scoping review. Specific information about the participants, context, research techniques, and significant findings related to the review questions will all be included in the retrieved data. The draft extraction form will be provided. It will contain information on the authors, the year the article was published, the origin/country, the purpose and goals, the population and sample size within the evidence source, the type of intervention, the outcomes and their specifics, and key findings pertaining to the scoping review questions. During the process of extracting data from each of the included evidence sources, the authors may need to revise the draft of the data extraction tool. The scoping review will explain the detail of the modification. A disagreement between reviewers will be resolved through discussion or consultation with another reviewer. To request any missing or additional information, we will contact the authors of the paper/study.

Data Analysis and Presentation
It is presented in figures, tables, and maps in categories such as FM intervention type, study population (and appropriate sample size), intervention duration, objectives, the methodology employed, key findings (established evidence), and research gaps.

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Conflicts of interest
None.

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Appendix I: Search strategy
PubMed search strategy
((((((((((("Musculoskeletal dis*"[Title/Abstract]) OR ("Musculoskeletal dis*"[Text Word])) OR ("Musculoskeletal dis*"[MeSH Terms])) OR ("Myofascial pain"[Title/Abstract])) OR ("Myofascial pain"[Text Word])) OR ("Musculoskeletal pain"[Title/Abstract])) OR ("Musculoskeletal pain"[MeSH Terms])) OR (Pain[Title/Abstract])) OR (Pain[Text Word])) OR (Pain[MeSH Terms])) OR (Disability[Title/Abstract])) OR (Disability[Text Word])) AND (((((("Fascial manipulation®"[Title/Abstract]) OR ("Fascial manipulation®"[Text Word])) OR ("Fascial manipulation"[Title/Abstract])) OR ("Fascial manipulation"[Text Word])) OR (FM[Title/Abstract]))

Web of Science search strategy
("Musculoskeletal dis*" OR "Myofascial pain" OR "Musculoskeletal pain" OR Pain OR Disability) AND ("Fascial manipulation®" OR "Fascial manipulation" OR FM)

CINAHL search strategy
((((((((((((TI "Musculoskeletal dis*" OR AB "Musculoskeletal dis*")) OR ("Musculoskeletal dis*")) OR ((MH "Musculoskeletal dis*+"))) OR ((TI "Myofascial pain" OR AB "Myofascial pain"))) OR ("Myofascial pain")) OR ((TI

"Musculoskeletal pain" OR AB "Musculoskeletal pain"))) OR ((MH "Musculoskeletal pain+"))) OR ((TI Pain OR AB Pain))) OR (Pain)) OR ((MH Pain+))) OR ((TI Disability OR AB Disability))) OR (Disability)) AND ((((((TI "Fascial manipulation®" OR AB "Fascial manipulation®")) OR ("Fascial manipulation®")) OR ((TI "Fascial manipulation" OR AB "Fascial manipulation"))) OR ("Fascial manipulation")) OR ((TI FM OR AB FM)))

Physiotherapy Evidence Database (PEDro) Search strategy
Title and abstract: Fascial manipulation

Appendix II: Data extraction instrument

	Scoping Review Details	
	Scoping Review title:	Fascial manipulation® for musculoskeletal disorders: a scoping review
	Review objective/s:	To synthesize all available literature on the effects/mechanisms of fascial manipulation interventions and adverse events, to assess gaps in knowledge regarding the understanding of optimal approaches, to elucidate treatment mechanisms, and to select indications for disease
	Review question/s:	It is possible that manual intervention to myofascia by FM can show the effect of intervention to myofascia, but what is the effect and mechanism of intervention
	Inclusion/Exclusion Criteria	
	Population	Patients with musculoskeletal disorders with pain and dysfunction
	Concept	Fascial manipulation® [Stecco method]
	Context	No limitation on location, race, language, or gender has been imposed

Types of evidence source	Interventional trials and observational studies (including exploratory studies) will be included
Evidence source Details and Characteristics	
Authors	Lead author
Country	Where the study was conducted
Context	No limitation on location, race, language, or gender has been imposed
Participants	Low back pain, neck pain, knee pain, chronic ankle instability, sacroiliac joint dysfunction, tendonitis, tendinosis, and tendinopathy
Details/Results extracted from source of evidence	
Quality of Life Domains assessed	SF-36: Mos Short-Form 36-Item Health. Survey
Pain assessed	Visual Analog Scale, Numerical Rating Scale
Disability assessed	Knee Injury Osteoarthritis Outcome Score, Oswestry Disability Index, Harris Hip Score, Disability of The Arm, Shoulder, and Hand range of motion, muscle strength

Troubleshooting

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