Effect of Massage Therapy with Myofascial Release Technique in Individuals with Spinal Pain: A Review

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Abstract

Introduction: Myofascial release (MFR) is a manual technique designed to restore optimal fascia length and muscle, reduce pain, and enhance person's function. This review aimed to evaluate the efficiency of MRT approaches on individuals with spinal pain. **Materials and Methods:** The databases of the Cochrane Library, PubMed, Web of Science, and Scopus were searched to find relevant articles published up to December 2024. We included randomized controlled trials (RCTs) that assessed the impact of MFR technique on pain in individuals experiencing spinal neck or low back pain (LBP). **Results:** Six studies were chosen for final evaluation based on the inclusion criteria. The findings indicated that massage therapy incorporating MFR techniques significantly reduced pain in individuals suffering from neck or low back pain when compared to their pain levels before the intervention. Additionally, combining MFR with corrective exercises resulted in a greater reduction in pain compared to MFR alone. **Conclusion:** Overall, the results suggest that myofascial release interventions have a significant positive effect on patients with spinal pain, especially when compared to both passive and active control groups.

Keywords: Back pain; Myofascial release; Massage therapy; Neck pain

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Introduction

Neck pain is a common musculoskeletal condition that substantially impacts quality of life and disrupts professional and social activities. It ranks as the fourth most prevalent disability worldwide associated with annual prevalence rates between 30% and 50%. When neck flexes, cervical muscles work to counteract gravity in order to keep suitable posture and prevent injury to the neck (1) . Forward head posture can cause strain on shoulders, neck, and upper back muscles since the head is not properly supported by the spine(2). Additionally, back pain is another major complication associated with spinal issues and is one of the primary causes of disability(3). This type of pain often recurs, leading to significant discomfort and economic burden for affected individuals. Approximately 84% of people report experiencing back pain in their lives, and 23% go on to develop chronic back pain (4).

Most people recover from acute low back pain (LBP) within a few weeks, regardless of the treatment they receive (5). However, some individuals expand chronic LBP, typically defined as symptoms lasting longer than a 3-month period. This chronic pain can be either fluctuating with periods of relief or continuous (6). Approximately one in five people with chronic LBP will experience substantial limitations in their daily life or work and may benefit from additional treatment (7). For people experiencing with chronic non-specific LBP, the most effective approaches involve a combination of psychological and physical treatments that enhance function and address the psychosocial factors contributing to the pain (8, 9).

In addition to pharmaceutical treatment and exercise therapy, a biopsychosocial method can effectively minimize disability resulting from chronic neck and back pain. Research works suggest that strength training of spinal muscles can be beneficial in decreasing neck discomfort, back pain, and their related disabilities. Isometric exercises, referred to static exercises, are an efficient approach to strengthen weak muscles without putting stress on pain-sensitive tissues like ligaments, tendons, or the

joints of the neck and back (10). Recently, the myofascial release technique (MFR) technique has gained popularity to rehabilitate musculoskeletal injuries, including LBP, neck pain, ankle sprain, and scapulohumeral periarthritis (11). Clinical applications and related studies of MFR have shown an increasing trend. This technique targets human fascia directly, helping to regulate deep muscles and connective tissues, restore fascia tension, and alleviate pain while improving function (12). Moreover, MFR technique enhances soft tissue extension and release, restores the range of motion (ROM) in limited joints, and promotes local blood circulation. As a result, it may improve stiffness, muscle pain, and exorbitant fatigue to a certain extent (13).

There have been a growing number of experimental studies examining MFR as a therapeutic approach for patients experiencing spinal pain. However, there is an insufficient evidence of comprehensive studies that summarize its characteristics, application methods, and therapeutic effects of MFR technique in patients with spinal pain. The aim of this review article was to explore the effects of MFR in treating patients with spinal pain.

Materials and Methods

The search strategy was conducted by the population intervention comparison outcome (PICO) method. The electronic databases of Cochrane Library, PubMed, Scopus, and Web of Science were searched to find studies published up to December 2024.

The review consisted randomized controlled trials (RCT) in peer-reviewed journals published in English or Persian language, which compared (1) outcomes of patients with back pain or neck pain or both (Population) (2) outcomes with MFR (Intervention); (2) outcomes of patients with a placebo/sham treatment or different physiotherapeutic interventions (Comparison); and (4) applied outcome measures of pain of the neck or low back (Outcome measure).

The search was designed to encompass a broad range of populations and was limited to RCTs. The RCTs involve participants being assigned to groups through a clearly defined method of random sequence generation, such as using a coin tossing, computer random number generator, or drawing lots. Non-randomized controlled trials, as the individuals in those studies are typically assigned in a non-random manner, such as by date of birth, admission number, or alternate assignment, were excluded. Additionally, articles that lacked a control group or did not provide inter-group comparison were excluded. Qualitative studies and cross-sectional studies were also not included. Furthermore, book chapters, conference abstracts, and reviews were excluded from consideration. Articles that did not report on pain, as well as those addressing various pathologies such as craniomandibular dysfunction (CMD), migraine, and tension-type headaches, were also excluded.

Results

In this study, we searched for and collected the articles related to specific keywords until 2024. After reviewing the articles and excluding those that contradicted our criteria, we retained a total of 6 articles (identified as (14-19)). Our initial search in the databases yielded 5,421 studies. After removing those that were not relevant, we eliminated 3,451 articles. Among the remaining 806 articles, further reviews of titles and summaries led to the exclusion of additional studies that were unrelated, less relevant, or not focused on the effects of massage therapy using the MFR technique for patients with spinal pain. Finally, we excluded studies that were either unavailable or did not meet our specified criteria. Ultimately, 6 studies were selected for the final evaluation.

Table 1 summarizes the details of the articles associated with their final conclusions. The average duration of treatment sessions for patients suffering from LBP or neck ranged from 45 to 60 minutes. The MFR group received between a minimum of 4 and a maximum of 20 treatment sessions. The control group underwent various interventions, including sham MFR, physical therapy, or MFR alone. Four studies focused on patients with neck pain (14-17), while two studies targeted patients with LBP (18, 19). Additionally, two studies compared the real MFR group with the sham MFR group (16, 18), and two studies included exercise therapy alongside MFR (17, 19).

Discussion

This review aimed to evaluate the impacts of MFR techniques on individuals with spinal pain. The results indicated that MFR techniques significantly benefited patients with spinal pain compared to those in passive or active control groups. Further analysis of other reviews approved that a manually, single implemented MFR technique could enhance outcomes for patients with spinal pain without unfavorably affecting muscle performance in a short-duration (20, 21). Our review also showed that positive effects of MFR techniques on individuals with spinal pain may be sustained through multiple treatment sessions over time. According to the literature, improvements in patients with back and neck pain can be ascribed to various aspects, like mechanical, functional, neurological, and physiological aspects. The benefits of MFR techniques on spinal

Table 1. The details on of final articles

Author (year)	Participants	Intervention and its duration	Treated regions by myofascial release (MFR) technique	Conclusion
Arguisuelas (2019)(18)	-36 individuals () with nonspecific chronic low back pain -Sham MFR group (n=18, male:6, female: 12) and MRT group (n=18, male:6, female: 12)	MFR, 4 sessions (each lasting 40 minutes), twice a week for 2 weeks	thoracolumbar fascia, Lumbar paravertebral muscle complex, quadratus lumborum, and psoas muscle	The MFR protocol led to a significant decrease in disability and pain compared to the sham group.
Anwar (2024)(14)	-66 individuals with forward head posture and chronic neck pain -MRT group (n=33, male:24, female: 9) and Cognitive Behavior Therapy (CBT) and MRT group (n=33, male:24, female: 9)	MFR, 10 sessions (each lasting 1 hours), 4 to 8 weeks	Stretching the deep fascia in a transverse and reciprocating way by cross-hand stretch	MFR in combination with CBT is an effective intervention in individuals with forward head posture and chronic neck pain
Ozsoy (2019)(19)	-45 elderly with non-specific low back pain - MRT group (n=33, male:23, female: 10) and MRT and core stabilization exercises group (n=33 male:22, female: 11)	MFR with a roller, 18 sessions (each lasting 60 minutes), 3 days per week for 6 weeks	Sacrolumbar fascia/erector spinae, gastrocnemius/achilles tendon	MFR with a roller massager in combination with core stabilization exercises may be a more effective intervention for management of non-specific low back pain in the elderly.
Ramezani (2017)(15)	-34 patients with cervicogenic headache - MFR group (n=17, male:9, female: 8) and suboccipital exercise group (n=17, male:5, female: 12)	MFR, Ten treatment sessions, 10 session, 6 times a week	Upper cervical region	Pain and myofascial stiffness can hinder the full contraction of muscles. Based on the results of this study, exercise and MFR are suitable treatments for improving cervical muscle strength, particularly for the cervical flexors and right and left rotators in people suffering from cervicogenic headaches.
Castro-Sánchez (2011)(16)	-86 patients with fibromyalgia syndrome - Sham MFR group (n=4) and MFR group (n=45)	MFR, Twice-weekly for 20 weeks (each lasting 1 hour)	Cervical, dorsal and lumbar Regions: 10 minutes for each region	The results indicate that MFR may serve as a complementary treatment for managing pain symptoms, improving physical function, and reducing clinical severity.
Rodríguez-Huguet (2018)(17)	41 patients with neck pain - MFR group (n=20, male:10, female: 10) and exercise group (n=21, male:10, female: 11)	MFR, five sessions (each lasting 45 minutes), 2 weeks	Cervical fascia, suboccipital region, sternocleidomastoid muscle	This study provides evidence that MFR may be more effective than a multimodal physical therapy for pain relief in short term and increased pressure pain threshold in individuals with neck pain.

LBP: Low back pain, MFR: myofascial release, CBT: Cognitive Behavior Therapy

pain patients can be interpreted by the changes which they induce in the venous, arterial, and lymphatic circulation systems (22). MFR can enhance blood circulation, delivering oxygen and nutrients to the tissues and facilitating metabolic changes between the fascia and the extracellular matrix (22). Tissue alkalinization may also assist to decrease pain and alleviate muscle tension and soreness (23). The tissue hydration is another crucial aspect that may contribute to the development of spinal pain (24). Since much of the ground substance is composed of water (25), which plays a vital role to determine the stiffness of the myofascial system (26), the water content within the muscle and fascia can significantly affect the level of pain experienced by patients.

Besides the previously stated physiological impacts, the factor of the mechanical pressures implemented in MFR techniques can positively affect collagen cross-link adhesions and the activity of fibroblast cells (27). One of the primary short-term physiological mechanisms of these approaches is the breakdown of fascial adhesion. Long-term laboratory investigations indicate that fibroblasts, referred to mail cells found in fascial tissue, adapt specifically to mechanical loading. This adaptation is influenced by the frequency, duration, and strain, of the applied stimulus (28). The reorganization of the extracellular matrix, driven by fibroblast activity, may play a crucial role in maintaining improvements in joint function for patients experiencing spinal pain. This ability to adapt is explained by a property known as plasticity (28). Moreover, the effects of MFR interventions on patients with spinal pain may also involve neurological mechanisms. The Langevin proposed that fascia acts as a signaling network throughout the body (29). Because fascia contains mechanoreceptors, tissue manipulation can inhibit the sympathetic nervous system and reduce muscle tone (25, 30). These two neurological mechanisms help explicate the impacts of MFR treatments, even those that have a less pronounced mechanical effect, including dry needling or neurodynamic sliding approaches (31).

Limitations and suggestions

This text discusses the limitations in interpreting the impacts of MFR therapy on individual individuals with spinal pain. The findings may have been influenced by focusing on a single case, and gender factors could also affect the efficiency of MFR techniques. Although the literature often investigates the effects of MFR techniques in comparison of passive or active control groups, there are few articles exploring the effects of different therapeutic techniques. As a result, MFR approaches were combined to determine the most effective improvements for patients experiencing spinal pain. The diversity of MRI techniques and the comparison groups further limits the ability to definitively interpret the impacts of MFR on spinal pain patients. This highlights the need for further research on the effects of MRT using consistent research protocols. By comparing intervention groups to control groups, we can achieve a clearer understanding of the impacts of MRT on patients with spinal pain.

Conclusions

MFR techniques may provide greater pain relief in comparison with passive or active control groups in patients experiencing spinal pain. While the findings of this review approve the effectiveness of MFR techniques for spinal pain, the current evidence lacks high certainty. So, future investigations with similar protocols are necessary to achieve more reliable evidence regarding the effects of these techniques on patients with spinal pain.

Highlights

- According to the study, massage therapy with myofascial release technique have a significant positive impact on patients' improvement with spinal pain
- Myofascial release treatment combining with corrective exercises of spine could result in a greater reduction in pain compared to myofascial release alone.

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Conflict of interest

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Authors' contributions

All authors have contributed equally to the preparation of this article

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