

The effect of Myofascial Release (MFR) on Low Back Pain(LBP)

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Abstract: *Low back pain (LBP) is a pervasive condition globally, impacting both productivity and individual well-being. The various aspects of LBP are examined in this paper, along with strategies for treating it, with a focus on myofascial release (MFR) as a viable therapeutic approach. Effective management techniques are required for LBP since it has a large economic and societal impact on a sizable section of the population.*

This comprehensive review investigates the effects of MFR on various aspects of LBP, including pain intensity, back disability, lumbar range of motion, pelvic inclination, and quality of life. The analysis synthesizes findings from numerous studies to provide a nuanced perspective on the potential benefits of MFR, offering valuable insights into its influence on LBP.

The assessment of pain intensity indicates a noteworthy reduction following MFR; however, the overall effect size does not reach statistical significance. In contrast, evidence pertaining to back disability is more compelling, demonstrating MFR's ability to significantly alleviate disability and enhance lumbar function, suggesting a promising therapeutic avenue.

While MFR may not consistently impact quality of life, this review underscores its potential in improving the lives of individuals dealing with LBP. In conclusion, this investigation highlights the complexity of LBP and the potential of MFR as a valuable addition to the spectrum of therapeutic interventions for this widespread and debilitating condition.

Keywords:.

Keywords: *Myofascial release, Low back pain, Thoracolumbar fascia, Self myofascial release, chronic low back pain*

1. Introduction

Low back pain is the second most common reason for lost labour in many nations, and it is a condition that lowers productivity. With an annual frequency ranging from 22% to 65%, low back pain (LBP) is a frequent illness linked to work absenteeism, disability, and high healthcare costs. These epidemiology findings have considerable impact on economic and social well-being [1].

Low back pain in general term is characterized by acute (<6weeks), Sub acute (6-12 weeks), chronic (>12 weeks) and are duration pendant and location specific.

According to studies, LBP affects 80% of adults at some point in their lives. LBP can result from a variety of regional structures, aberrant biomechanics, and etiological factors. A number of factors based on theories, clinical observations, and research studies have been linked to the emergence of LBP.

NSLBP: Due to excessive healthcare use and rising healthcare expenditures, non-specific low back pain has grown to be a serious issue. Many present treatments are no longer effective. In industrialised nations, it is a significant cause of low back impairment, persistent low back pain, and time away from work.

CLBP: Chronic lower back pain has yet not been fully understood in terms of aetiology and nature, despite its high prevalence. It has been suggested that lumbar fasciae might be involved in CLBP. In addition to the lumbar fascia, other soft tissues have been related to LBP as well. studies have revealed asymmetries in the muscle cross-sectional

area of the quadratus lumborum, psoas, or multifidus in subjects with LBP. These findings led several investigations to hypothesise that LBP might be connected to abnormalities in these muscles [2,4].

Myofascial release is a specialized manual therapy technique that focuses on releasing tension and restrictions within the fascia, a connective tissue that surrounds and supports muscles, bones, and organs throughout the body. This therapy aims to improve mobility, reduce pain, and enhance overall physical function by addressing imbalances and restrictions within the fascial system.

The lumbar spine alone cannot support the typical loads that it carries throughout the day, but it plays a crucial part in maintaining the body's postural stability. A complex myofascial and aponeurotic girdle that surrounds the body is necessary to stabilise the lumbar vertebrae on the sacral base. The TLF, a merging of aponeurotic and fascial planes that forms the retinaculum encircling the

paraspinal muscles of the lower back and sacral region, is the focal point of this girdling structure on the posterior body wall. In the thoracic and cervical areas, this intricate combination of fascia and aponeurotic tissue is continuous with paraspinal fascia and eventually fuses to the cranial base. Numerous muscles of the trunk and extremities, with a variety of thicknesses and geometries, integrate into the TLF's connective tissue planes, where they can influence the tension and stiffness of the structure [3].

Fascial System: Fascia is a complex web-like network of collagen fibers that provides structural support, stability, and protection to various body components. It plays a crucial role in maintaining proper posture, movement, and overall bodily function. Overtime physical trauma, poor posture, inflammation, and stress can lead to the development of restrictions and tension within the fascial system. These restrictions can cause pain, decreased range of motion, and discomfort [5].

There are various techniques employed in myofascial release, including direct myofascial release (applying pressure directly to the restricted area), indirect myofascial release (gentle stretching and movement), and foam rolling (using a foam roller to apply pressure to specific areas).

Conditions Treated: Myofascial release can be beneficial for a wide range of conditions, including but not limited to:

- Musculoskeletal pain
- Tension headaches
- Temporomandibular joint (TMJ) dysfunction
- Plantar fasciitis
- Scar tissue adhesions [6].

Professionals in rehabilitation and fitness frequently utilise self-myofascial release (SMR) to improve myofascial mobility. The foam roll and different roller massagers are common SMR implements. There is evidence that these instruments can improve joint range of motion, the healing process, and post-exercise muscle function by reducing the impacts of acute, delayed-onset, and post-exercise muscle soreness. There are several sizes and foam densities available for foam rollers and roller massage bars [7].

Myofascial release is a versatile and holistic approach to improving physical well-being that considers the intricate relationship between fascia, muscles, and overall body function. Whether you're seeking relief from chronic pain or aiming to enhance your body's performance, myofascial release offers a pathway to unlocking a more balanced, flexible, and revitalized you.

One possible management strategy for the treatment of LBP is manual therapy. Myofascial release (MFR) is a type of manual therapy that involves applying a low-load, prolonged stretch to the myofascial complex with the goal of restoring the fascial tissue's ideal length, reducing discomfort, and enhancing functionality [8,9].

2. The effect of MFR

2.1 The effect of mfr in pain intensity

Seven out of eight investigations evaluated pain severity in patients before and after the intervention, with four of these employing the Visual Analog Scale (VAS) and the remaining four using the McGill Pain Questionnaire (MPQ). One study utilized both VAS and MPQ to gauge pain levels. The outcomes demonstrated a noteworthy reduction in pain intensity among patients who underwent Myofascial Release (MFR) in comparison to the control group. Moderate heterogeneity among the studies was identified through heterogeneity testing. Consequently, the origins of this variability were examined via a sensitivity analysis. Upon exclusion of the two most divergent studies, the absence of heterogeneity across the remaining studies was observed[8]. Subsequently, a random effects model was applied to evaluate the combined effect size of the studies after the elimination of sources of heterogeneity. The findings revealed that MFR did not yield a

statistically significant impact on the reduction of pain intensity [11, 22].

2.2 The effect of MFR on back disability

Eight studies examined back disability in individuals experiencing low back pain. Among these, four studies incorporated the Oswestry Disability Index (ODI), while two studies utilized the Quebec Back Pain Disability Scale (QBP) and an additional two employed the Roland-Morris Questionnaire (RMQ). The assessment of heterogeneity revealed a notable degree of variability among the studies. Consequently, a sensitivity analysis was conducted to identify the underlying sources of this heterogeneity. Upon the exclusion of the two studies with the highest heterogeneity, a substantial reduction in heterogeneity was observed. As a result, these two studies were identified as the main contributors to the heterogeneity and were consequently excluded. The subsequent analysis involved six studies that employed random effects models to evaluate the combined effects. The findings indicated that, in comparison to the control group, Myofascial Release (MFR) can effectively mitigate back disability and enhance lumbar function [12, 14, 17]. Rehabilitation strategies play a pivotal role in the comprehensive care of patients who have undergone lumbar spine

fusion (LSF) surgery. These strategies serve a dual purpose: not only do they aim to alleviate pain and reduce disability, but they are also instrumental in elevating the quality of life for these individuals, allowing them to regain the ability to participate in recreational sports and other activities [28].

2.3 The effect of MFR on lumbar range of motion

Ellythy et al. conducted research in 2011 and 2012 to assess the impact of combining Myofascial Release (MFR) with specific physical therapy on lumbar range of motion. All patients underwent inclinometer measurements in a standing posture, and the cumulative effects were synthesized for analysis. The outcomes indicated that there were no statistically significant differences in lumbar flexion, extension, right flexion, and left flexion when compared to the control group. Given that the I-2 values exceeded 50%, a random effects model was employed for effect evaluation. The results demonstrated that, when compared to the control group, the combined approach of MFR and physical therapy did not yield a significant effect on lumbar flexion, extension, left flexion, or right flexion.

However, upon comparison with pre-intervention levels, it was observed that patients exhibited a noteworthy increase in

lumbar range of motion across all four directions after undergoing four weeks of MFR combined with specialized physical therapy [13].

Additionally, Arguisuelas et al. and Ozsoy et al. also investigated maximum lumbar range of motion during flexion, extension, and bilateral side-bending. These two studies were excluded from this meta-analysis due to variations in measurement conditions. Arguisuelas et al. reported no substantial difference in maximum trunk range of movement between the MFR group and the Sham group. Conversely, Ozsoy et al. demonstrated that, in the sagittal plane, the combination of core stabilization exercise (CSE) with MFR yielded greater improvements in spinal mobility when compared to the CSE group [8, 13, 14].

2.4 The effect of MFR on lumbar flexion angle and pelvic inclination

Numerous research studies have demonstrated that alterations in both the lumbar flexion angle and pelvic inclination angle can be influenced by the tightening of the muscles in the lumbar region, leading to the development or exacerbation of low back pain. Reduced lumbar flexion angle and pelvic inclination angle have the potential to initiate or worsen low back pain by disrupting the natural lumbo-pelvic rhythm [16,19].

In a specific research study conducted as a randomized controlled trial, the participants were divided into two distinct groups. The first group, consisting of 15 individuals, received a total of four sessions of myofascial release treatment utilizing techniques derived from Myer's approach. On the other hand, the second group, also comprising 15 participants, underwent a series of 10 routine electrotherapy sessions over a span of two weeks, serving as the control group.

The test outcomes revealed that following the treatment in both groups, there were significant alterations in the intensity of pain and the angle of lumbar flexion. Notably, the pelvic inclination angle experienced substantial changes exclusively within the myofascial release group, with no significant alterations observed in the control group. As a result, this study concluded that the utilization of lumbar myofascial release techniques holds the potential to enhance the angle of pelvic inclination [19] and lumbar flexion among individuals dealing with chronic non-specific low back pain [20].

2.5 The effect of MFR on quality of life

The effect of Myofascial Release (MFR) on quality of life (QOL) refers to how MFR treatments impact an individual's overall well-being, daily functioning, and satisfaction with

life. While MFR is primarily known for its physical therapeutic benefits, such as pain reduction and improved mobility, its potential influence on QOL can be significant. However, the specific impact of MFR on an individual's QOL can vary depending on their unique circumstances, the severity of their condition, and their overall health. It's important to consider that while MFR can be a valuable component of rehabilitation and wellness, it is often part of a broader treatment plan that may include other therapies and lifestyle modifications to optimize QOL. Two separate studies investigated the impact of myofascial release (MFR) on quality of life scores in patients with chronic low back pain (CLBP) before and after the intervention [23, 24]. Through the application of a random effects model, the analysis revealed that MFR did not yield a statistically significant improvement in quality of life [25].

Regarding the efficacy of myofascial release in addressing CLBP, the findings indicated a significant enhancement in pain reduction and physical function among patients with CLBP. However, no significant effects were observed in terms of balance function, pain pressure-threshold, trunk mobility, mental health, and quality of life [26, 27].

3. Conclusion

In conclusion, this review article delved into the multifaceted landscape of low back pain (LBP) and its management, with a particular focus on myofascial release (MFR) as a potential therapeutic intervention. LBP, a prevalent and debilitating condition, exerts substantial economic and societal burdens globally. The wide-ranging impact of LBP, spanning both non-specific and chronic categories, underscores the urgency for effective management strategies.

Throughout this review, we examined the effects of MFR on pain intensity, back disability, lumbar range of motion, pelvic inclination and quality of life among individuals with LBP. The synthesis of multiple studies provides a nuanced understanding of the potential benefits of MFR, revealing intriguing insights into its impact on various facets of LBP.

The examination of pain intensity revealed a notable decrease due to myofascial release (MFR); however, the overall effect size did not attain statistical significance. Conversely, the evidence was more compelling concerning back disability, where MFR demonstrated a significant ability to alleviate disability and improve lumbar function, pointing toward a hopeful therapeutic avenue.

While the effect of MFR on lumbar range of motion in contrast to control groups did not reach statistical significance, the combination of MFR with specialized physical therapy displayed promise in augmenting mobility following a four-week intervention, implying potential synergistic effects.

Nevertheless, the influence of MFR on quality of life did not result in statistically noteworthy enhancements, underscoring the necessity for continued exploration and an all-encompassing strategy to address the multifaceted aspects of chronic low back pain (CLBP).

In the broader context, this review underscores the evolving nature of LBP research and the ongoing pursuit of effective interventions. The findings presented here serve as a foundation for further investigations into refining MFR protocols, exploring combined therapeutic approaches, and unraveling the intricate mechanisms underlying LBP.

Ultimately, this review contributes to the growing body of knowledge aimed at enhancing our understanding of LBP management and highlights the potential of myofascial release as a valuable tool in the broader arsenal of therapeutic strategies. As the field continues to evolve, collaborative efforts between researchers, clinicians, and patients hold the key to advancing our ability to alleviate the burdens of low back pain and improve the quality of life for those affected.

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