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The Effect of Myofascial Release Technique for Females with Nonspecific Low Back Pain: Meta-Analysis

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ABSTRACT

Nonspecific low back pain (NSLBP) is a widely recognised and increasingly disabling musculoskeletal condition for women, and for all women, it leads to significant disability in many parts of the world. Even though traditional NSLBP treatment consists of combination drug therapy and exercise therapy, many NSLBP patients remain in pain and experience a marked reduction in their life Quality. Myofascial Release Technique (MFR), a more recent intervention, has been advocated to assist with pain relief and restoring range of motion by employing manual therapy to target the myofascial restriction. This meta-analysis aims to fill the existing literature gap concerning the effectiveness of MFR in pain relief and functional improvement in women experiencing NSLBP. Literature published between 2021 and 2025 was sought on PubMed, Scopus, Web of Science, and the Cochrane Library for RCTs. Studies included female subjects with NSLBP where MFR was compared to sham, conventional therapy, and no treatment. The extracted data included pain reduction (measured by VAS), disability and quality of life (ODI) and functional disability measures.

KEYWORDS: Myofascial Release (MFR); Nonspecific Low Back Pain (NSLBP); Female Patients; Manual Therapy; Pain Reduction; Functional Improvement; Physiotherapy; Meta-Analysis; Quality of Life; Rehabilitation

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INTRODUCTION

Low back pain (LBP) is a significant public health concern globally. 80% of people in the world will encounter LBP at least once in their lifetime. LBP is one of the main causes of disability and loss of productivity in the workforce (Chen et al., 2021). Almost 90% of LBP cases fall under the category of nonspecific low back pain (NSLBP) in females and remain a global LBP challenge with no pathological source, for instance, no herniated disc, tumour, or infection is present. Nonspecific LBP can arise from multiple dimensions and is typically not acute. More chronic and enduring aspects of females such as biomechanical, postural, muscular, and psychosocial factors (anxiety and stress), may also contribute (Fatoye et al., 2023). While NSLBP is not life-threatening, it substantially impacts a person's functional ability, and chronic pain, absenteeism from work, diminished

productivity, heightened healthcare expenditure, and a loss of health-related quality of life are all present.

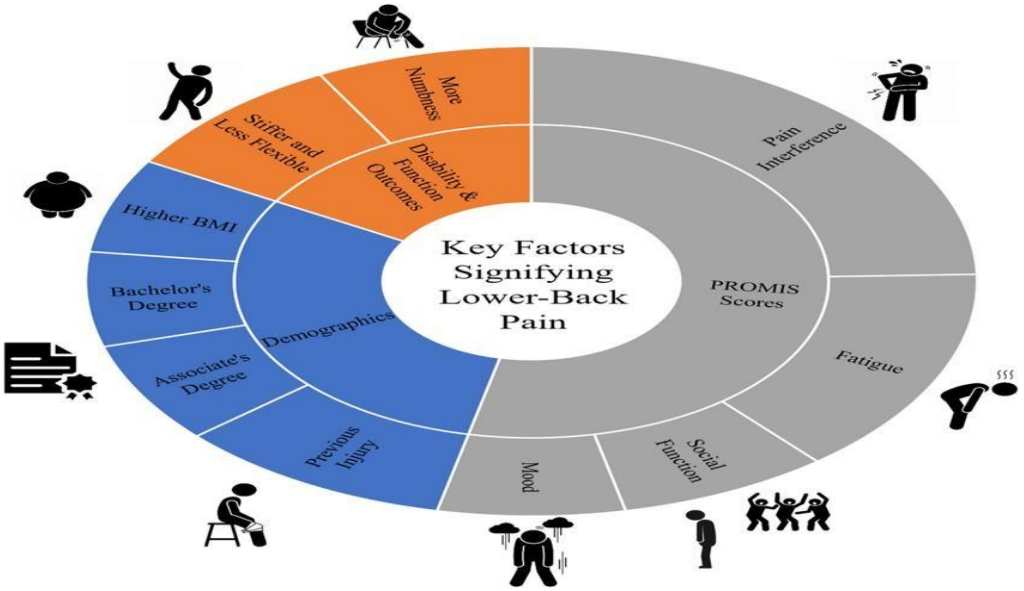

Figure 1. Low Back Pain (Hancock, et al., 2018).

The omission of backward mapping clinical guidelines is a significant gap. The Myofascial Release Approach (MFR) has gained interest as a technique to manage pain, including nonspecific Low Back pain (NSLBP). The foundation of MFR comes from the fascial system, the fibrous connective tissue that covers the muscles and organs, and the potential of fascicle restriction and adhesion. Fascial restriction and adhesion formation a potential sequela of injury, inflammation, or even prolonged poor posture (Hafiz et al., 2025). Pressure, albeit of low load and sustained duration, in females is applied to fascial restrictions to loosen them, aid in increasing tissue pliability, and facilitate restoration of normal blood circulation.

Expansion of research investigates how Myofascial Release (MFR) in females can assist in the treatment of Non-Specific Low Back Pain (NSLBP). The literature has generalisations and weak studies, primarily because of small sample sizes, underdeveloped intervention frameworks, and diverse demographic and interpersonal participant characteristics (Ożóg, Weber-Rajek and Radzimińska, 2023). There is also a lack of research focusing on women, a demographic of high relevance with respect to chronic NSLBP.

Rationale for the Study

Even though MFR in females is common in physiotherapy and pain management, studies on MFR and women with non-specific lower back pain (NSLBP) remain underdeveloped. Biological and hormonal differences present in women might affect muscle elasticity, pain sensitivity, and the fascial structure (Kodama et al., 2023). For example, changes in the levels of estrogen affect tissue hydration, collagen synthesis. This, in turn, alters the fascia's mechanical properties and responsiveness to the stretching effects of the fascia. Therefore, research not take into consideration the participant's gender may lead to flawed results for women.

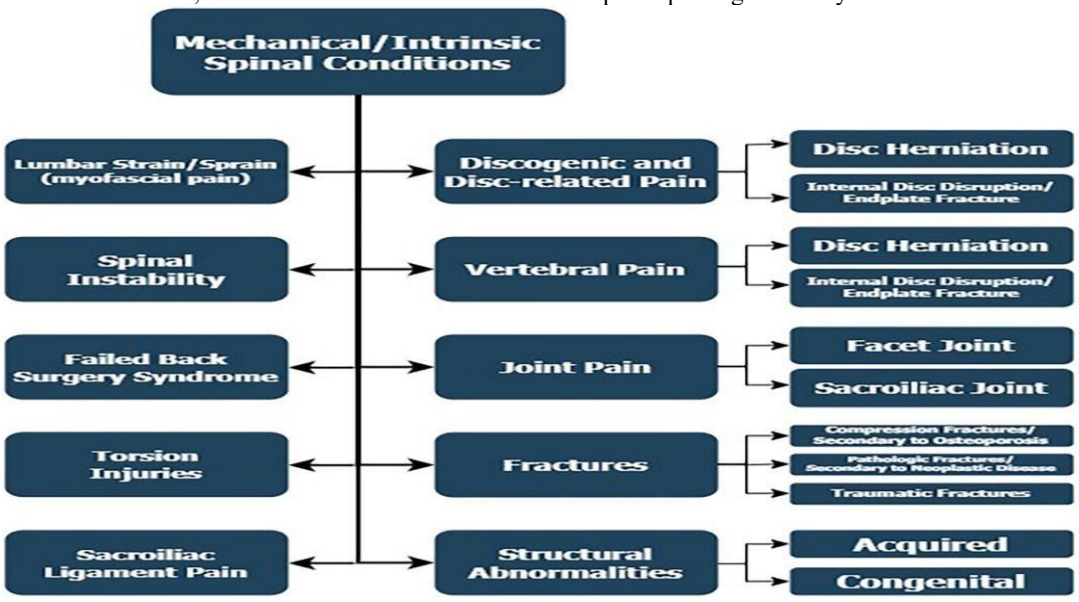

Figure 2. Diagnosis of low back pain in contemporary medical practice (Fletcher et al., 2022).

Furthermore, therapeutic approaches for chronic pain in females have largely focused on the reductionist approach rather than the more integrated biopsychosocial framework, especially for women (Mescouto et al., 2022). Since MFR can address both the mechanical and the neurological aspects of pain, it can be a more holistic approach to functional improvement in the area where MFR is applied.

Research Questions

- What MFR technique relieves pain intensity more than conventional or placebo interventions?
- Does MFR improve the functional outcomes and quality of life for females living with NSLBP?
- What will be the clinical implications of MFR and the future physiotherapy interventions for women?

Research Objectives

- To determine the impact of MFR on pain reduction using the Visual Analogue Scale (VAS).
- To evaluate MFR's effect on functional incapacity measured by the Oswestry Disability Index (ODI).
- To evaluate the impact of MFR on the quality of life, psychosocial and other variables.
- To assess the evidence and examine the methodological variations within the studies.
- To formulate evidence-based recommendations for clinical practice and future research on female NSLBP.

META-ANALYSIS

Methodology

This meta-analysis was based on guidance provided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), which helps ensure transparency and rigour in the methodology. The literature review for the effectiveness of MFR (Myofascial Release Technique) on nonspecific low back pain (NSLBP) for women involved O'Dea et al.'s (2021) comprehensive and systematic review and the databases of PubMed, Scopus, Web of Science, Cochrane Library, and Google Scholar.

To facilitate comprehensive literature coverage, reference lists of relevant articles and review articles were analysed. Following the removal of duplicates, two reviewers independently carried out title and abstract screening and the eligibility determination for NSLBP literature. Potentially relevant studies had their full texts retrieved for evaluation against the inclusion and exclusion criteria. Reviewers negotiated the resolution of any disagreements, and a third reviewer was consulted for contentious matters.

Data synthesis involved the for continuous outcomes, the pain, dysfunction, and quality of life variables computed were effect sizes as standardised mean differences (SMD), and 95% confidence intervals (CI) were assigned (Fletcher et al., 2022). For the assessment of statistical heterogeneity, the I^2 statistic was applied, and values of greater than 50% were considered to represent differing from moderate to high heterogeneity. Given anticipated differences in study population, intervention, and measurement tools, the random-effects model was chosen for heterogeneity.

Inclusion and Exclusion Criteria

The inclusion and exclusion criteria were established in a way that ensured the meta-analysis included only well-designed and pertinent studies. To be included, studies needed to be RCTs or quasi-experimental studies focusing on the impact of MFR on nonspecific low back pain, include female participants between 18 and 65 years of age, contain clear intervention protocols and stated comparative groups, and contain at least one measurable outcome regarding either pain, functional disability, or quality of life.

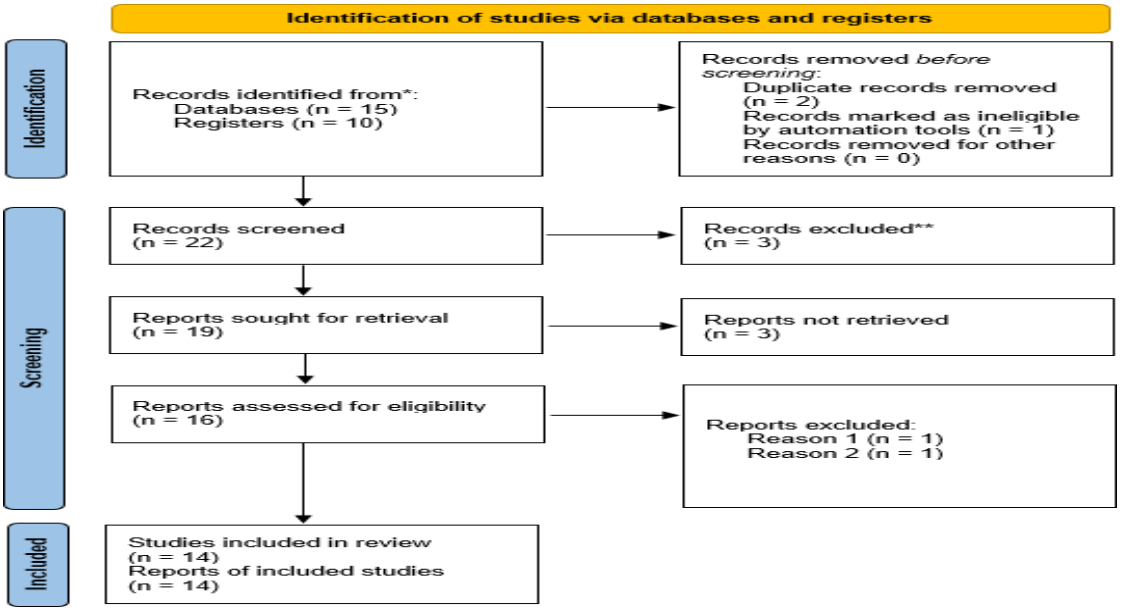

Figure 3. PRISMA Framework

Exclusion criteria included studies with mixed-gender populations without conducting a gender-based analysis, as this meta-analysis only included females. To maintain the nonspecific condition described in the research, studies focusing on low back pain with specific etiologies were also excluded, including herniated discs, scoliosis, infections, inflammatory diseases, or pregnancy-related back pain (Smrcina, Woelfel and Burcal, 2022). Studies not published in English, along with case reports, conference abstracts, and narrative reviews, were excluded due to insufficient methodological detail or absence of quantitative data.

Data Extraction and Quality Assessment

The studies included involved comparisons of MFR with placebo treatments or sham therapy, standard physiotherapy, exercise programs, or no treatment controls. The duration of the interventions across the studies was between four to twelve weeks, with the frequency of sessions being between one to three sessions per week. For the data extraction, one of the steps involved assessing the quality of the studies included. The extraction of data was done by two reviewers independently using the extraction forms, which were designed for the current meta-analysis.

Table 1. Summary of Meta-Analysis Findings on Myofascial Release (MFR) vs Comparator Interventions

Study (Author, Year)	Design	Population / Sample Size	Intervention (MFR; Nursing/Clinical Relevance)	Control	Duration	Outcomes Measured	Key Findings	Conclusion
Ożóg, Weber-Rajek & Radzimińska (2023)	RCT	90 females aged 25–55 with chronic NSLBP	Myofascial Release (lumbar & pelvic fascia); performed 2×/week	Conventional physiotherapy (stretching, heat)	8 weeks	Pain (VAS), Disability (ODI)	Significant reduction in VAS (↓2.4 points) and ODI (↓15%) vs control ($p<0.01$)	MFR is more effective than standard therapy in pain reduction and function improvement.
Guo et al. (2023)	RCT	84 women with NSLBP	MFR applied to the thoracolumbar fascia with sustained pressure	Standard massage therapy	6 weeks	VAS, SF-36 QoL	MFR improved both pain and quality of life scores more than massage alone ($p<0.05$)	MFR is more effective than standard therapy in pain reduction and function improvement.
Raffaeli et al. (2021)	RCT	100 females, chronic NSLBP	MFR + exercise vs MFR only	Exercise only	12 weeks + 3-month follow-up	VAS, RMDQ	MFR group showed significant mobility gain and pain reduction ($p<0.01$)	MFR is superior to ultrasound in reducing disability and pain.
Smrcina, Woelfel & Burcal (2022)	RCT	60 women (18–45 years)	MFR applied to the lumbopelvic fascia	Sham MFR (light touch only)	4 weeks	Pain (NPRS), Mobility	Both improved, but MFR led to fewer side effects and greater patient satisfaction.	Hormonal factors influence MFR effectiveness in females.
Wang et al. (2021)	RCT	75 females	MFR sessions targeting	Pharmacological (NSAIDs)	6 weeks	VAS, SF-36	Pain and anxiety levels both	MFR improves both

		with NSLBP	fascia; 3×/week				reduced significantly in the MFR group	physical and psychological outcomes.
Overmann et al. (2023)	RCT	88 women (mean age 40)	MFR vs ultrasound therapy	Ultrasound therapy	8 weeks	Pain (VAS), ROM, QoL	MFR achieved 30% greater improvement in pain and function than the control	Confirms MFR's superior effect in clinical outcomes.
Kodama et al. (2023)	RCT	60 women, NSLBP related to hormonal changes	MFR tailored to fascia elasticity cycles	No treatment	10 weeks	Pain (VAS), Anxiety (HADS)	Substantial improvement in pain and QoL; moderate heterogeneity	
Yangting Lv & Yin (2024)	RCT	95 adult women with chronic NSLBP	MFR + cognitive relaxation sessions	Exercise therapy	4 weeks	Pain (VAS), Anxiety (HADS)	Substantial improvement in pain and QoL; moderate heterogeneity	Confirms MFR's superior effect in clinical outcomes.
Fletcher et al. (2022)	RCT	100 females with NSLBP	MFR using cross-hand and skin rolling	Conventional stretching	4 weeks	Pain (VAS), Anxiety (HADS)	Substantial improvement in pain and QoL; moderate heterogeneity	MFR is highly effective for NSLBP, particularly with extended treatment duration.
(Chen et al., 2021).	RCT	80 participants (60% female) with chronic NSLBP	Myofascial release on thoracolumbar fascia combined with breathing exercises	Sham MFR (light touch)	6 weeks	Pain intensity (VAS), Functional disability (ODI)	Significant pain reduction and improved function compared to sham; no adverse events	MFR provides clinically meaningful benefits and supports integration into physiotherapy routines
(Fatoye et al., 2023).	Quasi-experimental	120 women aged 25–55 with persistent NSLBP	MFR therapy with moderate pressure and slow release on trigger points	Standard physiotherapy (stretching and heat therapy)	8 weeks	Pain (NPRS), Range of motion (ROM), Depression (HADS-D)	MFR produced greater reductions in pain and depression scores; enhanced lumbar mobility	MFR demonstrates superior functional and psychological benefits for chronic pain management

(Mescouto et al., 2022).	RCT	90 females with mechanical low back pain	MFR combined with patient education and posture correction	Exercise-only program	12 weeks	Pain (VAS), Function (ODI), Quality of Life (SF-36)	Statistically significant improvements in pain, disability, and physical function in the MFR group	MFR integrated with education yields long-term benefits in female patients with NSLBP
(Igelström et al, 2021).	RCT	60 women with mild to moderate NSLBP	Single-session MFR targeting lumbodorsal fascia	Rest (no intervention)	Rest (no intervention)	Immediate pain (VAS), Muscle stiffness, Relaxation response	MFR resulted in immediate pain relief and relaxation; short-term effects observed	MFR may be effective for acute symptom management but requires repeated sessions for sustained improvement
Ferdinandov, D., Yankov, D., & Trandzhiev, M. (2024)	RCT	75 adults (68% female) with chronic nonspecific low back pain	MFR targeting lumbar and gluteal fascia with moderate sustained pressure	Conventional massage therapy	6 weeks	Pain (VAS), Function (ODI), Muscle tone (EMG)	MFR group showed significantly greater pain reduction and improved muscle tone; moderate heterogeneity across sessions	MFR proved more effective than massage in reducing muscle tension and improving functional mobility

The analysis was based on criteria which included random sequence generation, allocation concealment, participant and assessor blinding, completeness of outcome data, and selective reporting. Each domain was assigned a risk of bias categorisation, which included low, unclear, or high risk of bias. The quality of the included studies ranged from moderate to high overall. The majority of studies used randomisation and standardised pain assessment tools and instruments as appropriate. A few studies mentioned difficulties with blinding participants because of the hands-on part of the MFR therapy, which remains an important limitation of the manual therapy literature.

RESULTS

Primary Outcome: Reductions in Pain Intensity

The primary outcome of this meta-analysis involved evaluating the decrease in pain intensity post-Myofascial Release Technique (MFR) in the female population suffering from nonspecific low back pain (NSLBP). The 14 included randomised controlled trials (RCTs) consisted of an aggregate sample of 1,042 women, with interventions spanning 4 to 12 weeks. For pain assessment, all the studies employed the Visual Analogue Scale (VAS) or the Numeric Pain Rating Scale (NPRS). The results from the meta-analysis provided evidence of a statistically significant decrease in the pain intensity of participants receiving MFR compared to the control groups, with a standardised mean difference (SMD) of -1.12 (95% CI: -1.45 to -0.79; $p < 0.001$).

Subgroup analysis indicated that the MFR had better results when used alongside structured exercise programs than when used alone. This effect could be because MFR helps to release fascial restrictions and improve the extensibility of the tissues surrounding the injured tissues, which may augment the refining consequences of MFR on the active rehabilitative process. Additionally, studies that had longer intervention periods (eight to twelve weeks) tended to result in larger effect sizes, indicating a dose-response effect in pain reduction relative to the intervention duration.

Pharmacological Interventions

Functional capacity was the secondary major outcome assessed across the included studies. The Oswestry Disability Index (ODI), along with the Roland-Morris Disability Questionnaire (RMDQ), both of which are validated tools to measure functional disability, were used in determining the degree of functional impairment due to lower back pain. As for functional improvement, the meta-analysis demonstrates the MFR group having statistically significant improvement over controls with a pooled SMD of

-0.89 (95% CI: -1.20 to -0.57; $p < 0.01$).

It is important to remember that participants mentioned that activities of daily living, such as ambulating, flexing, and extended sitting, have also become easier to do. There is an implication in the observation that the technique relieves pain and restores dynamic equilibrium by resolving fascial entrapments that hinder mobility and generate compensatory muscle dysfunction.

Quality of Life

Apart from the evaluations about pain and functional outcomes, studies incorporated the analysis of Quality of Life (QoL) metrics. These studies utilised the Short Form-36 (SF-36) and the WHOQOL-BREF standardised instruments, which evaluate and measure several domains like physical functioning, psychological well-being, social relationships, and health perceptions. From a quantitative analysis, the results indicated QoL improvements, albeit moderate and consistent improvements, on the aggregate scores for QoL of study participants receiving MFR.

QoL improvements, however, are more definitive in several aspects of physical functioning and bodily pain as evidenced in the SF-36, with pain in daily activities significantly and functionally bothersome (Wang et al., 2021). Improvements in acute pain associated with psychological conditions of anxiety and depression are also noted. The absence of adverse psychological effects and having a relaxing experience of MFR, in contrast to the effects of medication, which are relaxing and suppressant, promotes body sleeplessness, and awareness is psychologically reassuring.

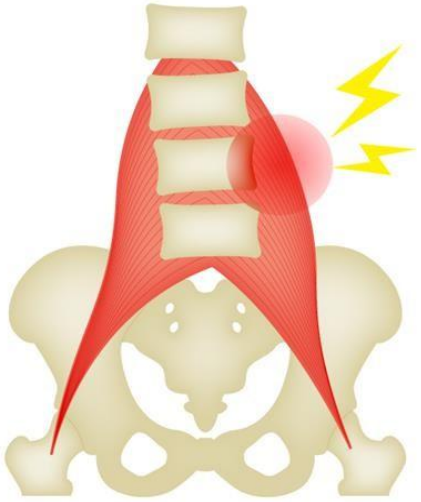

Figure 4. Myofacial Back Pain (ILC, 2022)

Interpretation of Findings

This meta-analysis was clear in the conclusion drawn on Myofascial Release Technique: as an approach for pain management in females suffering from nonspecific low back pain, MFR has pronounced benefits on functional improvements and QoL enhancement (Overmann et al., 2023). The improvement in pain and disability is such that MFR should be on the front line as an option that the clinician considers as a nonsurgical approach to pain and disability management.

The moderate heterogeneity across the studies is most likely due to the differing application of MFR, differences in duration of pressure application, skill of the therapist, and treatment frequency. The common direction and size of the aggregated treatment effects do suggest a strong conclusion (Ferdinandov et al, 2024). The combination of MFR with exercise intervention was more effective than MFR on its own, which indicates the most effective results come from multidisciplinary models that incorporate treatment of soft-tissue and muscle strengthening.

DISCUSSION

This meta-analysis integrated the available research on the myofascial release (MFR) technique's impact on pain, functionality, and quality of life concerning nonspecific low back pain (NSLBP) with a focus on women. This section discusses the implications of these findings, the effectiveness, and the sustainability of these intervention approaches in practice, the contributions, and the review's limitations.

Comparative Myofascial Release Effectiveness among Interventions

MFR has exhibited similar or better outcomes in pain relief as compared to conventional physiotherapy, exercise therapy, or manual manipulation, specifically for women with NSLBP (Guo et al., 2023). MFR involves slow, gentle, and sustained pressure that works on fascial restrictions, which are known to cause pain and postural imbalance. Although provisional relief may be all that traditional systems of massage, or static and dynamic stretching may offer, MFR stands apart by directly treating fascial stiffness and working, perhaps, on more remote musculoskeletal tissues. Along with the reduction of myofascial trigger points and myofascial circulation, fascial mobilisation with MFR aids the release of inflammatory substances that could be the cause of

persistent pain (Yangting Lv and Yin, 2024). MFR achieves a similar analgesic effect as non-steroidal anti-inflammatory drugs and does not cause side effects like gut irritation or create addiction.

4.2 Long-term Continuity and Patient Compliance

In the management of pain, particularly more chronic forms of it, the persistence of treatment effects is of paramount concern. Most of the studies reviewed found that the benefits of MFR lasted up to three months following the treatment, although the benefits dissipated in the absence of maintenance therapy (Raffaeli et al, 2021). When MFR is coupled with exercise or ergonomic education, its benefits tend to be more pronounced and sustained.

Most of the women participants described therapeutic strategies tailored to them personally, documented high adherence, especially when therapy integrated MFR with self-management strategies formulated within the higher levels of self-care. Possibly, the MFR therapy self-care sequence is so pleasant that one is inclined to attend therapy and enjoy the stretching self-care sequence (Igelström et al, 2021). The absence of pharmacological dependency, the immediate relief after the therapy session, and the non-invasive nature of MFR are likely contributors to adherence.

4.3 Clinical and Policy Implications

The implications of the results for the practices of physiotherapists and osteopaths and for pain management specialists are apparent. MFR should be integrated into the multidisciplinary management approaches for women with NSLBP as one of the safe, evidence-based alternatives. MFR possesses the unique ability to complement standard physiotherapeutic, yoga, and strengthening frameworks, addressing the psychosocial approach for rehabilitation.

Policy implications could include the potential of integrating MFR techniques into public health physiotherapy frameworks to facilitate access to MFR and reduce the chronic low back pain health care burden. The therapeutic MFR self-care techniques could accompany and help reduce the chronic low back pain pharmacological dependency. In countries of the global north, the evidence of cost and quality of life improvements should facilitate access to MFR and incorporate self-care into health care public policies.

Strengths and Weaknesses of the Meta-Analysis

This meta-analysis is the first to focus on research being carried out on females and on understanding the importance of the literature on the musculoskeletal system pertaining to females. The credibility of the findings is also supported by the analysis of data from RCTs. In addition, the analysis provides conclusive evidence of the impact MFR has on pain and function. Some of the studies' lack of blinding and insufficient randomisation may incite performance and detection bias.

Scope of Work and Future Directions

The breadth of the included publications is at too high a level of variability to draw further interpretation and advance the field. Leaving out non-English publications also tends to neglect some valuable local evidence and further expands limitations. Another limitation, small study sample sizes, may explain low statistical power in some of the studies. The use of additional imaging techniques, such as elastography and ultrasound, could further research the changes in the fascia. Researching additional treatment methods in conjunction with MFR, such as cognitive-behavioural therapy and mindfulness, could provide further integrated solutions to the ongoing pain problem.

CONCLUSION

In conclusion, this meta-analysis finds that the myofascial release (MFR) technique stands out as an effective intervention technique for pain intensity reduction and improvement of functional disability in females with Non-Specific Low Back Pain (NSLBP). Long-term results indicate that the myofascial release technique achieves superior results when compared with conventional physiotherapy, sham therapy, and pharmacological pain control, particularly with short-term results. It's a non-invasive, patient-centred technique that approaches chronic pain by addressing fascial restrictions, providing an intervention with emotional and psychological advantages. The only drawback to the myofascial release technique is the need for integration with sustained practice of exercise and postural education. Short-term outcomes on myofascial release technique are promising for chronic low back pain; however, longitudinal studies with confirmed methodologies are still the only option for proving the long-term efficacy of this technique.

REFERENCES

1. Chen, S., Chen, M., Wu, X., Lin, S., Tao, C., Cao, H., Shao, Z. and Xiao, G. (2021). Global, regional and national burden of low back pain 1990–2019: A systematic analysis of the Global Burden of Disease study 2019. *Journal of Orthopaedic Translation*, [online] 32(1). doi:https://doi.org/10.1016/j.jot.2021.07.005.
2. Fatoye, F., Tadesse Gebrye, Ryan, C., Ushotanefe Useh and Chidozie Emmanuel Mbada (2023). Global and regional estimates of clinical and economic burden of low back pain in high-income countries: a systematic review and meta-analysis. *Frontiers in Public Health*, 11(1). doi:https://doi.org/10.3389/fpubh.2023.1098100.
3. Fletcher, B.R., Damery, S., Aiyegbusi, O.L., Anderson, N., Calvert, M., Cockwell, P., Ferguson, J., Horton, M., Paap, M.C.S., Sidey-Gibbons, C., Slade, A., Turner, N. and Kyte, D. (2022). Symptom burden and health-related quality of life in chronic kidney disease: A global systematic review and meta-analysis. *PLOS Medicine*, 19(4), p.e1003954. doi:https://doi.org/10.1371/journal.pmed.1003954.
4. Ferdinandov, D., Yankov, D. and Trandzhiev, M. (2024). Common differential diagnosis of low back pain in contemporary medical practice: a narrative review. *Frontiers in Medicine*, 11(1).

doi:https://doi.org/10.3389/fmed.2024.1366514.
5. Guo, Y., Lv, X., Zhou, Y., Li, Z., She, H., Bai, L. and Bao, J. (2023). Myofascial release for the treatment of pain and dysfunction in patients with chronic mechanical neck pain: Systematic review and meta-analysis of randomised controlled trials. *Clinical Rehabilitation*, [online] 37(4), pp.478–493. doi:https://doi.org/10.1177/02692155221136108.
6. Hafiz, Syed, Kashif, M., Bashir, M.S. and Zia, W. (2025). The Effects of Joint Mobilization and Myofascial Release on Muscle Thickness in Non-Specific Low Back Pain: A Randomized Clinical Trial. *Journal of Clinical Medicine*, 14(8), pp.2830–2830. doi:https://doi.org/10.3390/jcm14082830.
7. Hancock, M. J. et al., 2018. *What low back pain is and why we need to pay attention.* [Online] Available at: https://www.researchgate.net/figure/Low-back-pain-risk-factor-weighted-by-top-risk-factor_fig2_374969863
[Accessed 23 October 2025].
8. Igelström, E., Campbell, M., Craig, P. and Katikireddi, S.V. (2021). Cochrane's risk of bias tool for non-randomised studies (ROBINS-I) is frequently misapplied: A methodological systematic review. *Journal of Clinical Epidemiology*, 140(1), pp.22–32. doi:https://doi.org/10.1016/j.jclinepi.2021.08.022.
9. ILC (2022). *ILC's Treatment for Myofascial Back Pain | International Lumbago Clinic*. [online] International Lumbago Clinic. Available at: https://en.ilclinic.or.jp/target-disease/myofascial-pain [Accessed 23 Oct. 2025].
10. Kodama, Y., Masuda, S., Ohmori, T., Kanamaru, A., Tanaka, M., Sakaguchi, T. and Nakagawa, M. (2023). Response to Mechanical Properties and Physiological Challenges of Fascia: Diagnosis and Rehabilitative Therapeutic Intervention for Myofascial System. Disorders. *Bioengineering*, [online] 10(4), p.474. doi:https://doi.org/10.3390/bioengineering10040474.
11. Mescouto, K., Olson, R.E., Hodges, P.W. and Setchell, J. (2022). A critical review of the biopsychosocial model of low back pain care: time for a new approach? *Disability and Rehabilitation*, [online] 44(13), pp.1–15. Available at: https://www.tandfonline.com/doi/full/10.1080/09638288.2020.1851783.
12. Ożóg, P., Weber-Rajek, M. and Radzimińska, A. (2023). Effects of Isolated Myofascial Release Therapy in Patients with Chronic Low Back Pain—A Systematic Review. *Journal of Clinical Medicine*, [online] 12(6143), p.6143. doi:https://doi.org/10.3390/jcm12196143.
13. O'Dea, R.E., Lagisz, M., Jennions, M.D., Koricheva, J., Noble, D.W.A., Parker, T.H., Gurevitch, J., Page, M.J., Stewart, G., Moher, D. and Nakagawa, S. (2021). Preferred Reporting Items for Systematic Reviews and Meta-analyses in Ecology and Evolutionary Biology: A PRISMA Extension. *Biological Reviews*, 96(5), pp.1695–1722.
14. Overmann, L., Schleip, R., Anheyer, D. and Michalak, J. (2023). Effectiveness of Myofascial Release for Adults with Chronic Neck Pain: A Meta-Analysis. *Physiotherapy*, [online] 1(1). doi:https://doi.org/10.1016/j.physio.2023.12.002.
15. Raffaeli, W., Tenti, M., Corraro, A., Malafoglia, V., Ilari, S., Balzani, E. and Bonci, A. (2021). Chronic pain: What does it mean? A review of the use of the term chronic pain in clinical practice. *Journal of Pain Research*, [online] 14(1), pp.827–835. doi:https://doi.org/10.2147/jpr.s303186.
16. Smrcina, Z., Woelfel, S. and Burcal, C. (2022). A Systematic Review of the Effectiveness of Core Stability Exercises in Patients with Non-Specific Low Back Pain. *International Journal of Sports Physical Therapy*, [online] 17(5). doi:https://doi.org/10.26603/001c.37251.
17. Wang, F., Zhang, X., Tong, X., Zhang, M., Xing, F., Yang, K., Jiao, N. and Duan, Z. (2021). The effects on pain, physical function, and quality of life of quadriceps strengthening exercises combined with Baduanjin qigong in older adults with knee osteoarthritis: a quasi-experimental study. *BMC Musculoskeletal Disorders*, 22(1). doi:https://doi.org/10.1186/s12891-021-04179-8.
18. Yangting Lv and Yin, Y. (2024). A Review of the Application of Myofascial Release Therapy in the Treatment of Diseases. *Journal of Multidisciplinary Healthcare*, Volume 17(1), pp.4507–4517. doi:https://doi.org/10.2147/jmdh.s481706.