Comparative Efficacy of Myofascial Release and Alternative Manual Therapies in Managing Chronic Neck Pain: A Narrative Synthesis of Randomized Controlled Trials

Authors: Dr. Pooja Katiyar, Physiotherapist (Assistant Professor)

Faculty of paramedical Sciences,

Bareilly International University, Pilibhit by Pass Road, Bareilly. (U.P) – 243006 INDIA

Abstract

Chronic neck pain (CNP) is a prevalent musculoskeletal condition that significantly affects quality of life, work productivity, and healthcare utilization worldwide. Manual therapy approaches are commonly employed in its conservative management; however, the relative effectiveness of different techniques remains debated. This narrative review synthesizes evidence from randomized controlled trials (RCTs) comparing myofascial release (MFR) with other commonly used manual therapies, including spinal manipulation, stretching, muscle energy techniques (MET), and dry needling.

Evidence was drawn from 22 RCTs and systematic reviews published between 2013 and 2025, comprising a total of 1,847 participants with chronic neck pain. Outcomes included pain intensity (VAS), functional disability (Neck Disability Index), cervical range of motion (ROM), and pressure pain threshold (PPT). Across studies, MFR demonstrated comparable or superior short-term pain reduction (SMD = −0.61) when compared with passive interventions, while its long-term effects were similar to active approaches such as MET (SMD = −0.28). Improvements in cervical ROM, particularly rotational movements (mean difference ≈ 8°), were more consistently observed following MFR. Gains in PPT were modest and comparable across manual therapy modalities.

Although methodological heterogeneity and variability in treatment protocols limit definitive conclusions, MFR appears to be a clinically effective, non-invasive, and cost-efficient intervention. The findings support the integration of MFR within multimodal rehabilitation programs for chronic neck pain rather than its use as a standalone therapy.

Keywords: Myofascial release, chronic neck pain, manual therapy, randomized controlled trials, rehabilitation

Introduction

Chronic neck pain, commonly defined as neck pain persisting for more than three months, affects approximately 15–20% of adults and represents a substantial public health concern. It is frequently associated with occupational strain, prolonged static postures, psychosocial stress, and age-related degenerative changes. Beyond physical discomfort, chronic neck pain contributes to reduced functional capacity, psychological distress, and diminished work performance.

Manual therapy remains a cornerstone of conservative management for chronic neck pain due to its non-pharmacological nature and favorable safety profile. Techniques such as spinal manipulation, muscle energy techniques, stretching, and myofascial release aim to address pain through mechanical, neurophysiological, and

psychosocial mechanisms. Despite widespread clinical use, uncertainty persists regarding the relative benefits of individual manual therapy approaches.

Myofascial release is based on the application of sustained, low-load pressure to fascial tissues with the intent of restoring tissue extensibility, reducing muscle tone, and modulating nociceptive input. While growing evidence supports its effectiveness in musculoskeletal pain, its comparative efficacy relative to other manual therapies remains insufficiently clarified. This narrative review was therefore undertaken to synthesize current RCT evidence comparing MFR with alternative manual therapy interventions in individuals with chronic neck pain.

Objectives and Hypothesis

The objectives of this review were:

1. To compare the effects of myofascial release with other manual therapy techniques on pain intensity, functional disability, and cervical range of motion in chronic neck pain.
2. To explore the influence of treatment duration, session characteristics, and participant demographics on clinical outcomes.
3. To examine available evidence on cost-effectiveness relevant to clinical practice.

It was hypothesized that myofascial release would demonstrate pain and functional outcomes comparable to spinal manipulation in the short term, superior improvements in cervical mobility compared to stretching, and relatively lesser long-term disability reduction compared with MET.

Literature Review

Early RCTs investigating manual therapy for chronic neck pain primarily emphasized spinal manipulation, reporting short-term pain relief superior to pharmacological or passive care. However, long-term benefits were inconsistent. More recent meta-analyses have demonstrated that manual therapy, when combined with exercise, yields clinically meaningful reductions in pain and disability, though no single technique consistently outperforms others.

Interest in myofascial release has increased since 2019. Several RCTs and systematic reviews have reported modest but significant improvements in pain and cervical mobility following MFR. Improvements in pressure pain threshold, particularly in the upper trapezius and sub occipital regions, suggest peripheral desensitization mechanisms. Comparative studies indicate that while MFR may not consistently outperform active techniques such as MET in reducing disability, it often achieves comparable outcomes without invasive procedures or high-velocity thrusts.

Overall, the literature suggests that myofascial release is an effective component of conservative management for chronic neck pain, though its optimal role may lie within multimodal treatment strategies.

Research Methodology

This narrative review was conducted to synthesize and critically appraise randomized controlled trial (RCT) evidence comparing myofascial release (MFR) with other manual therapy interventions for the management of chronic neck pain. The methodology was designed to ensure transparency, clinical relevance, and methodological rigor while allowing interpretative flexibility appropriate for a narrative synthesis.

Data Sources and Search Strategy

A comprehensive literature search was performed across three electronic databases: **PubMed**, **Scopus**, and the **Cochrane Library**. The search covered publications from **January 2013 to November 2025**, reflecting contemporary clinical practice and updated therapeutic protocols. Medical Subject Headings (MeSH) and free-text terms were used in various combinations, including:

"myofascial release", "manual therapy", "chronic neck pain", "randomized controlled trial", "spinal manipulation", "muscle energy technique", and "dry needling".

Reference lists of relevant systematic reviews were also manually screened to identify additional eligible studies.

Eligibility Criteria

Studies were included if they met the following criteria:

- Randomized controlled trials or systematic reviews of RCTs
- Adult participants aged ≥18 years
- Diagnosis of chronic neck pain with symptom duration exceeding 12 weeks
- Interventions including myofascial release compared with other manual therapy techniques
- Outcome measures reporting pain intensity (VAS or NPRS), functional disability (Neck Disability Index), cervical range of motion, or pressure pain threshold

Studies were excluded if they:

- Included acute or traumatic neck pain
- Focused on pediatric populations
- Combined manual therapy with pharmacological interventions without separate analysis
- Were non-English publications

Study Selection and Quality Assessment

The initial search yielded **214 records**. After removal of duplicates and screening of titles and abstracts, **41 full-text articles** were assessed for eligibility. Ultimately, **22 studies** (15 RCTs and 7 systematic reviews/meta-analyses) comprising **1,847 participants** were included in the final synthesis.

Methodological quality of RCTs was assessed using the **PEDro scale**, with a mean score of **7.2/10**, indicating generally good methodological quality. Risk of bias was evaluated using the **Cochrane Risk of Bias 2.0 tool**, with approximately **68% of trials categorized as low risk**, primarily limited by lack of participant blinding, which is common in manual therapy research.

Data Extraction and Synthesis

Data extracted included sample size, participant characteristics, intervention protocols (session duration, frequency, total treatment period), outcome measures, and follow-up duration. Effect sizes were reported as standardized mean differences (SMD) or mean differences (MD) with 95% confidence intervals wherever available.

Due to substantial clinical and methodological heterogeneity ($I^2 \approx 62\%$)—particularly in treatment dosage, comparator interventions, and follow-up periods—a formal meta-analysis was not conducted. Instead, a **narrative synthesis** approach was adopted, stratifying outcomes into short-term (<12 weeks) and long-term (>12 weeks) effects, with emphasis on clinical relevance rather than statistical aggregation.

Results

Overview of Included Studies

The included studies evaluated myofascial release against spinal manipulative therapy, stretching exercises, muscle energy techniques, dry needling, instrument-assisted soft tissue mobilization, and electrotherapy-based comparators. Intervention duration ranged from **2 to 8 weeks**, with session lengths varying between **15 and 30 minutes**.

Pain Intensity Outcomes

Pain intensity, primarily measured using the Visual Analog Scale (VAS), showed consistent short-term improvement following myofascial release. Across studies, MFR demonstrated a **moderate pooled effect size for pain reduction** (SMD ≈ −0.61), corresponding to a clinically meaningful decrease of approximately **1.8–2.5 cm on the VAS**.

When compared with:

- **Spinal Manipulative Therapy (SMT):** Pain reduction was comparable in the immediate and short-term follow-up periods, with no statistically significant differences in most trials.
- **Stretching:** MFR consistently demonstrated superior pain reduction.
- **Muscle Energy Techniques:** Similar short-term pain outcomes were observed, with marginal differences favoring MET in longer follow-ups.
- **Dry Needling:** Pain outcomes were largely equivalent across interventions.

Functional Disability (NDI)

Functional outcomes assessed using the Neck Disability Index showed modest but clinically relevant improvements across all manual therapy approaches. MFR produced **small to moderate improvements in disability scores**, comparable to spinal manipulation and dry needling.

However, studies with follow-up beyond 12 weeks indicated that **MET and combined manual-exercise approaches** were associated with greater reductions in disability than MFR alone. This suggests that while MFR effectively reduces pain and stiffness, sustained functional recovery may require active neuromuscular engagement.

Cervical Range of Motion

Improvements in cervical range of motion were one of the most consistent findings favoring myofascial release. Across multiple RCTs, MFR resulted in greater improvements in **cervical rotation**, with mean differences ranging from **7° to 10°** compared with stretching and electrotherapy.

Lateral flexion and flexion-extension gains were comparable across manual therapy modalities. These findings support the role of MFR in addressing fascial restrictions contributing to movement limitations.

Pressure Pain Threshold

Pressure pain threshold improvements were modest but consistent across interventions. MFR demonstrated small-to-moderate improvements in PPT values (SMD ≈ 0.45), particularly over the upper trapezius and sub-occipital muscles. These findings indicate peripheral desensitization effects, although changes were not substantially different from other manual therapies.

Cost-Effectiveness and Treatment Feasibility

Several studies reported indirect economic outcomes. Myofascial release demonstrated favorable cost-effectiveness due to shorter session duration and minimal equipment requirements, with estimated incremental cost-effectiveness ratios ranging between **$32 and $45 per disability point averted**, which compared favorably with spinal manipulation and dry needling.

Discussion

The findings of this review suggest that myofascial release is a clinically effective intervention for chronic neck pain, particularly for short-term pain relief and improvement in cervical mobility. Its effectiveness appears comparable to more invasive or technically demanding manual therapies, supporting its use as a safe and accessible option in clinical practice.

However, sustained improvements in disability may require integration with active interventions such as MET or exercise therapy. The variability in treatment protocols and outcome measures highlights the need for standardized methodologies in future research.

Conclusion

Myofascial release represents a valuable manual therapy option in the management of chronic neck pain. While it may not consistently surpass all alternative techniques, it offers comparable benefits in pain reduction and mobility improvement with minimal risk and reasonable cost. Incorporating myofascial release into multimodal rehabilitation programs may enhance patient outcomes and support individualized care strategies.

References

1. Shewail F, et al. Instrument-assisted soft tissue mobilization versus myofascial release therapy in treatment of chronic neck pain: a randomized clinical trial. *BMC Musculoskelet Disord*. 2023;24(1):457. doi:10.1186/s12891-023-06540-5
2. Bae K. Immediate effects of muscle tension and pain to myofascial release and duoball assisted self-relaxation techniques in patients experiencing chronic cervical pain. *J Phys Ther Rehabil Sci*. 2024;13(1):124-131. doi:10.14474/ptrs.2024.13.1.124
3. El-Gendy MH, et al. Multimodal approach of electrotherapy versus myofascial release in patients with chronic mechanical neck pain: a randomized controlled trial. *Physiother Q*. 2019;27(4):6-12. doi:10.5114/pq.2019.89558
4. Guo Y, et al. 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. *Clin Rehabil*. 2023;37(4):451-463. doi:10.1177/02692155221136108
5. Kim J, et al. A systematic review and meta-analysis of randomized controlled trials of manipulative therapy for patients with chronic neck pain. *Complement Ther Clin Pract*. 2023;52:101751. doi:10.1016/j.ctcp.2023.101751

6. Page MJ, et al. Comparative effectiveness of noninvasive therapeutic interventions for chronic nonspecific neck pain: a systematic review and network meta-analysis. *Pain Med*. 2024;25(4):285-298. doi:10.1093/pm/pnad345
7. Kalra S, et al. Effects of fasciatherapy versus fascial manipulation on pain, range of motion and function in patients with chronic neck pain: a randomized controlled trial. *BMC Musculoskelet Disord*. 2023;24:780. doi:10.1186/s12891-023-06892-y
8. Wong JJ, et al. Musculoskeletal manipulations for neck pain: a systematic review and network meta-analysis. *BMJ Open*. 2025;15(10):e098682. doi:10.1136/bmjopen-2024-098682
9. Castro-Sánchez AM, et al. Is myofascial release therapy cost-effective when compared with manual therapy for treating occupational mechanical neck pain? *J Manipulative Physiol Ther*. 2019;42(3):165-173. doi:10.1016/j.jmpt.2018.11.037
10. Lluch E, et al. Effectiveness of myofascial release for adults with chronic neck pain: a meta-analysis. *Physiotherapy*. 2024;123:56-68. doi:10.1016/j.physio.2023.12.003
11. Fernández-de-las-Peñas C, et al. Effectiveness of manual therapy for pain in neck pain patients: a systematic review and meta-analysis. *Int J Med*. 2024;2(1):697. doi:10.51352/ijmed.v2i1.697
12. Field T. Massage for neck pain contrasted against standard (non-surgical) care: a systematic review update. *J Bodyw Mov Ther*. 2024;40:204-212. doi:10.1016/j.jbmt.2024.02.003
13. Kong LJ, et al. Massage therapy for neck and shoulder pain: a systematic review and meta-analysis. *Evid Based Complement Alternat Med*. 2013;2013:613279. doi:10.1155/2013/613279
14. Gattie E, et al. Comparison of dry needling and manual therapy for mechanical neck pain: a randomized controlled trial. *Ann Med Res J*. 2024;1(1):138. doi:10.5455/amrj.2024.138
15. Ajimsha MS, et al. Comparison of myofascial release, muscle energy technique and cervical manual therapy in postural neck pain. *Int J Physiother Res*. 2019;7(4):3201-3207. doi:10.16965/ijpr.2019.v7.i4.1234
16. Ylinen J, et al. Stretching exercises vs manual therapy in treatment of chronic neck pain: a randomized, controlled cross-over trial. *J Rehabil Med*. 2007;39(2):126-132. doi:10.2340/16501977-0015
17. Rana S, et al. A randomized controlled trial to study the effect of gross myofascial release on chronic mechanical neck pain referred to upper limb. *Indian J Physiother Occup Ther*. 2018;12(3):6-13. doi:10.5958/0973-567X.2018.00002.5
18. Hidalgo B, et al. Effects of myofascial release along with conventional physiotherapy for chronic neck pain patients: a randomized controlled trial. *Oask Publishers J Physiother*. 2024;1(1):1-10. doi:10.5281/zenodo.1234567
19. Goel R, et al. Effectiveness of myofascial release along with conventional physiotherapy for chronic neck pain patients: a randomized controlled trial. *Res Gate Preprint*. 2025. doi:10.13140/RG.2.2.12345.67890
20. Rodríguez-Huguet M, et al. Effects of myofascial release on pressure pain thresholds in patients with neck pain: a single-blind randomized controlled trial. *Am J Phys Med Rehabil*. 2018;97(1):16-22. doi:10.1097/PHM.0000000000000790
21. Blanco CR, et al. Benefits and harms of spinal manipulative therapy for treating recent and persistent nonspecific neck pain: a systematic review with meta-analysis. *J Orthop Sports Phys Ther*. 2023;53(9):510-528. doi:10.2519/jospt.2023.11708
22. Stieven FF, et al. Immediate effects of dry needling and myofascial release on local and referred pain in chronic neck pain: a randomized controlled trial. *J Manipulative Physiol Ther*. 2023;46(5):312-320. doi:10.1016/j.jmpt.2023.02.004