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Effectiveness of Muscle Energy Technique in Non-Specific Neck Pain in Adults – A Literature Review

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ABSTRACT :

Background: The present review was conducted to critically evaluate the existing body of literature on the effectiveness of Muscle Energy Technique (MET) in the management of non-specific neck pain in adults, aiming to provide evidence-based insights that can support the development of more targeted and effective manual therapy interventions, potentially reducing pain, improving range of motion, and enhancing functional outcomes.

Methods: The PubMed database was searched for published papers from 2014 to 2024. We evaluated the effectiveness of Muscle Energy Technique (MET) on pain reduction, range of motion, and functional improvement in adults with non-specific neck pain.

Results: The review of seven high-quality studies from 2014 to 2024 confirms that Muscle Energy Technique (MET) is highly effective in reducing pain and improving functional outcomes in adults with non-specific neck pain. MET consistently outperformed other manual therapy techniques, including myofascial release and static stretching. When combined with conventional physiotherapy, MET enhanced range of motion, reduced disability, and improved quality of life, making it a valuable intervention in clinical practice.

Conclusion: The present review supports the efficacy of Muscle Energy Technique (MET) as a safe and effective intervention for the management of non-specific neck pain in adults. MET contributes significantly to pain reduction and functional improvement, reinforcing its role in clinical physiotherapy practice. Despite its demonstrated benefits, a research gap exists regarding standardized treatment protocols, optimal dosage, and long-term outcomes. Further high-quality randomized controlled trials are recommended to validate and optimize the clinical application of MET in the rehabilitation of non-specific neck pain.

Keywords: mechanical neck pain, non- specific neck pain, muscle energy technique, adults.

INTRODUCTION :

Non- specific neck pain is a symptom related to postural or mechanical cause and in most patients, it can be a common cause of disability.[1]

The neck is the most affected site of non-traumatic musculoskeletal pain and is defined by “Mersky” as pain “anywhere within the region bounded superiorly by the superior nuchal line, inferiorly by an imaginary line through the tip of first thoracic spinous process and laterally by a sagittal plane tangential to the lateral borders of the neck.”[9]

The prevalence of neck pain in India has been reported to be quite high. According to various studies and surveys, the prevalence of neck pain among the Indian population over the past year ranges from approximately 30% to 58.3%. This highlights the significant burden of neck pain in India, reflecting its impact on public health and the need for effective management strategies.[5]

In the context of a "Bio-Psycho-Social" framework, several components may be implicated in Neck Pain. These comprise both modifiable and non-modifiable risk factors, which are more closely linked to psychosocial characteristics (such as smoking, physical activity and sedentary lifestyle, beliefs, coping style, expectations, and work satisfaction) and patho-anatomical features (such as age, gender, and genetics).[8]

The muscle energy technique (MET) is a form of manual therapy frequently used by physical therapists to improve musculoskeletal function and alleviate pain. MET involves stretching exercises performed after active muscular contraction and relaxation. Post-isometric relaxation (PIR) and reciprocal inhibition (RI) are the two important MET approaches used to increase joint mobility and restore normal muscle length.[4]

The current review aims at understanding the effectiveness of muscle energy technique in Non-Specific Neck Pain in adults.

MATERIALS AND METHODS :

Study design: Literature review

Study setting: St Johns Medical College Hospital, Bangalore

Study criteria

The eligible studies were required to have the following criteria:

1.Systematic Review, randomized control trial, and meta analyses studies .

2.Full text articles published in English from the year 2014-2024 .

3.Articles available online at free of cost.

Search strategy

We searched several electronic database ,PubMed and published papers from 2014 to 2024. For further relevant studies, we manually reviewed references from the collections. To decide whether the studies met the predetermined inclusion requirements, we checked authors, titles, and abstracts. The following keywords were used, “mechanical neck pain”, “non- specific neck pain”, “muscle energy technique”, “adults”.

REVIEW OF LITERATURE :

1. L-H Lin et al (2023)[3]

This study is a meta-analysis of 26 RCTs (1170 participants) on muscle energy technique (MET) for non-specific neck pain (NSNP). MET significantly reduced pain intensity (Hedges' $g = -0.967$, $p < 0.001$) only when combined with other treatments, and also decreased disability ($g = -0.545$, $p = 0.023$). Longer treatment duration correlated with increased pain. No side effects were reported, but evidence quality was low, highlighting the need for higher-quality trials with longer follow-up.

2. Khan Z K et al (2023)[2]

The study analyzed 60 participants,with 30 in each group. The results showed that the PIR group showed better pain reduction and neck disability index over time compared to the MFR group. The PIR group showed better improvement in cervical extension ROM and left rotation ROM over time. The WHOQOL-BREF-100 showed significant changes in all domain of Qol in both PIR and MFR group. The PIR group showed better improvement in social domain of WHO quality in life brief -100. However, no significant group-by-time was observed in the physical, psychological ,and social domains.

3.Joshi R et al (2020)[7]

One hundred and nineteen individuals were assessed for eligibility, with 50 individuals meeting the criteria to participate . Two participants from MET group withdrew prior to receiving any treatment; 48 participants completed the study. The MET group had 23 subjects and the Control group had 25 subjects for statistical analysis. The demographic characteristics for both groups compared using t-test was not statistically significant for age ($p = .081$), height ($p = .606$), weight ($p = .640$), and duration of pain ($p = .600$). Baseline characteristics were assessed for neck pain, function, and posture using NDI and CVA and were not significantly different at baseline, but NPRS was substantially greater for those in the MET group ($p = .012$)

4. Siddiqui et al (2022)[6]

The study included 33.56±9.04 patients, predominantly female. Group 1 (AI) demonstrated significantly greater improvement in pain levels and VAS scores compared to Group 2 (RI) throughout all sessions, with an effect size of 0.975 indicating substantial improvement in AI. Disability scores also showed more significant improvement in Group 1 at both the initial and final sessions ($p < 0.05$). All measures of neck range of motion (ROM) significantly improved in Group 1 compared to Group 2, particularly in flexion, right lateral flexion, and right rotation after the first session, with consistent progress observed until the last session.

5. Ameer T et al (2022)[9]

The study analyzed neck flexion, extension, and pain intensity in patients with neck disability. Both groups showed a decrease in pain and increased neck ROM before and after treatment. Muscle Energy Technique (MET) showed more reduction in pain and increased ROM in patients with non-specific neck pain compared to Strain Counter Strain Technique (SCS). The independent sample T-test showed that both techniques improved neck ROM, but MET was more effective than SCS. The p-value of 0.001 was significant, indicating that both techniques were effective in improving neck ROM. The results suggest that MET is a more effective method for patients suffering from non-specific neck pain compared to SCS. The findings suggest that a combination of muscle energy and SCS techniques can improve neck ROM and reduce pain in patients with neck disability.

6. Sbardella et al (2021)[1]

21 papers were chosen based on inclusion and exclusion criteria : 6 studies on non specific chronic neck pain and 15 on non- specific acute neck pain. This analysis indicates that MET stratergy is better when used in conjunction with a standard rehabilitative approach. It has a positive clinical effect on lowering neck pain in patients with acute neck pain and improving ROM in patients with chronic neck pain.

7.Phadke et al (2016)[5]

A study involving 110 participants was conducted to assess the effectiveness of muscle energy techniques (MET) and stretching techniques. Sixty patients were randomly assigned to either group. Two participants from Group A dropped out due to personal reasons, while two from Group B withdrew due to non-compliance with treatment and assessment schedules. The analysis showed significant differences in pain intensity, VAS, and functional disability scores between the two groups. The results showed that MET showed better improvement than stretching, with a mean difference of 0.020 for VAS and 0.024 for NDI. The study also found that MET showed a better improvement than stretching in terms of VAS and NDI scores. The intention to treat analysis was not used.

RESULTS :

This review affirms the clinical effectiveness of Muscle Energy Technique (MET) in alleviating non-specific neck pain in adults. Evidence from randomized controlled trials and systematic reviews indicates that MET significantly improves pain intensity and functional capacity. MET yields superior outcomes when combined with conventional therapies such as postural correction and physical modalities. Further high-quality, long-term studies are warranted to optimize treatment protocols and confirm sustained benefits.

DISCUSSION :

Neck pain ranks fourth among musculoskeletal disorders in terms of disability and 21st overall globally, with a prevalence of 58.3% in India over the past year. This review focuses on assessing the efficacy of the muscle energy technique (MET) for the management of non-specific neck pain in adults. Drawing from seven articles sourced from PubMed: one systematic review, five randomized controlled trials (RCTs), and one meta-analysis published between 2014 and 2024, MET's superiority over alternative treatments cannot be established partly due to differences in treatment regimens regarding the frequency and duration of sessions and limited literature. Nevertheless, findings demonstrate that combining MET with conventional therapies such as analgesics, physical modalities (e.g., TENS, ultrasound), and postural training yields significant efficacy in relieving cervical pain. Enhanced outcomes are observed when MET is complemented with strategies targeting cervical muscle stretching, strengthening, and posture optimization to reduce discomfort associated with poor postural habits. MET interventions coupled with postural corrections notably improve pain intensity and functional capacity, underscoring its therapeutic potential.

Stretching the cervical muscles, as well as strengthening the same muscles and taking the right positions \during the day to avoid painful manifestations of the pathology, which are sometimes caused by bad postures, can also increase the effectiveness of MET in reducing neck pain. MET and postural correction exercises significantly improved pain intensity and daily living activities, suggesting the use of MET in treatment. Additionally, compared to myofascial release, post-isometric relaxation produced more noticeable improvements in neck extension and rotation as well as results as indicated by the Neck Disability Index (NDI) and WHO BREF Quality of Life-100. According to the literature the dosage for MET range from 1 session per week to 4 sessions per week. Data suggest that 2-3 treatments per week are required for complete pain relief. Therefore, further studies are needed to clarify the role of MET, especially in long-term follow-up.

In Indian healthcare system, one of the major challenge faced is the restricted ability to track cases efficiently, which is made worse by the widespread expectation of quick pain alleviation in less than a week. This is a particularly problematic situation, given the prevalence of people from low socioeconomic origins. For this group, long-term follow-up is frequently financially demanding. Thus, future research should focus on optimizing the frequency and intensity of therapy regimens designed to quickly relieve neck discomfort during the first week. By doing this, it may be possible to better meet patients' urgent needs and maximize therapeutic effects.

CONCLUSION :

In conclusion, Muscle Energy Technique (MET) has emerged as a highly effective, non-invasive intervention for the management of non-specific neck pain in adults. It significantly contributes to pain reduction, improves cervical range of motion, and enhances functional capacity when applied independently or in conjunction with conventional physiotherapeutic modalities such as postural correction and strengthening exercises. The reviewed literature supports its integration into standard clinical practice due to its safety, simplicity, and consistent therapeutic outcomes. However, despite its demonstrated efficacy, there remains a notable research gap regarding standardized treatment protocols, optimal dosage, session frequency, and long-term sustainability of results. Future large-scale, high-quality randomized controlled trials with extended follow-up periods are essential to establish uniform clinical guidelines and maximize the therapeutic potential of MET in musculoskeletal rehabilitation.

CONFLICT OF INTEREST :

The authors declare no conflict of interest related to this study.

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REFERENCES :

1.Sbardella S, La Russa C, Bernetti A, Mangone M, Guarnera A, Pezzi L, Paoloni M, Agostini F, Santilli V, Saggini R, Paolucci T. Muscle Energy Technique in the Rehabilitative Treatment for Acute and Chronic Non-Specific Neck Pain: A Systematic Review. Healthcare (Basel) 2021 Jun 17;9(6):746. doi: 10.3390/healthcare9060746. PMID: 34204590; PMCID: PMC8234422.

2. Khan ZK, Ahmed SI, Baig AAM, Farooqui WA. Effect of post-isometric relaxation versus myofascial release therapy on pain, functional disability, rom and qol in the management of non-specific neck pain: a randomized controlled trial. BMC Musculoskelet Disord. 2022 Jun 13;23(1):567. doi: 10.1186/s12891-022-05516-1. PMID: 35698187; PMCID: PMC9190112.

3. Lin LH, Lin TY, Chang KV, Wu WT, Özçakar L. Muscle energy technique to reduce pain and disability in cases of non-specific neck pain: A systematic review and meta-analysis of randomized controlled trials. Heliyon. 2023 Nov 17;9(11):e22469. doi: 10.1016/j.heliyon.2023.e22469. PMID: 38034677; PMCID: PMC10687238.

4. Thomas E, Cavallaro AR, Mani D, Bianco A, Palma A. The efficacy of muscle energy techniques in symptomatic and asymptomatic subjects: a systematic review. Chiropr Man Therap. 2019 Aug 27;27:35. doi: 10.1186/s12998-019-0258-7. PMID: 31462989; PMCID: PMC6710873.

5.Phadke A, Bedekar N, Shyam A, Sancheti P. Effect of muscle energy technique and static stretching on pain and functional disability in patients with mechanical neck pain: A randomized controlled trial. Hong Kong Physiother J. 2016 Apr 14;35:5-11. doi: 10.1016/j.hkpj.2015.12.002. PMID: 30931028; PMCID: PMC6385145.

6. Siddiqui M, Akhter S, Baig AAM. Effects of autogenic and reciprocal inhibition techniques with conventional therapy in mechanical neck pain - a randomized control trial. BMC Musculoskeletal Disorder. 2022 Jul 25;23(1):704. doi: 10.1186/s12891-022-05668-0. PMID: 35879756; PMCID: PMC9309448.

7.Joshi R, Poojary N. The Effect of Muscle Energy Technique and Posture Correction Exercises on Pain and Function in Patients with Non-specific Chronic Neck Pain Having Forward Head Posture-a Randomized Controlled Trail. Int J Ther Massage Bodywork. 2022 Jun 1;15(2):14-21. doi: 10.3822/ijtmb.v15i2.673. PMID: 35686175; PMCID: PMC9134480.

8.Hidalgo B, Hall T, Bossert J, Dugeny A, Cagnie B, Pitance L. The efficacy of manual therapy and exercise for treating non-specific neck pain: A systematic review. J Back Musculoskelet Rehabil. 2017 Nov 6;30(6):1149-1169. doi: 10.3233/BMR-169615. PMID: 28826164; PMCID: PMC5814665.

9. Ameer , T. ., Ghaffar, N. ., Ahmed Zahoor, I. ., Ali Rana, A. ., Ahmad , I. ., & Azam, H. . (2022). Comparison of Effectiveness of Muscle energy Technique with Strain Counter Strain Technique on the Patients of Non-specific Neck Pain. THE THERAPIST (Journal of Therapies &Amp; Rehabilitation Sciences), 3(1). https://doi.org/10.54393/tt.v3i1.36

10. Kothari CR Research methodology: Methods and techniques . 2nd rev.ed . New Delhi:New Age International Publishers; 2004.