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Comparative Effectiveness of Muscle Energy Technique versus Myofascial Release Technique with Phonophoresis in Female Patients with Unilateral Upper Trapezitis

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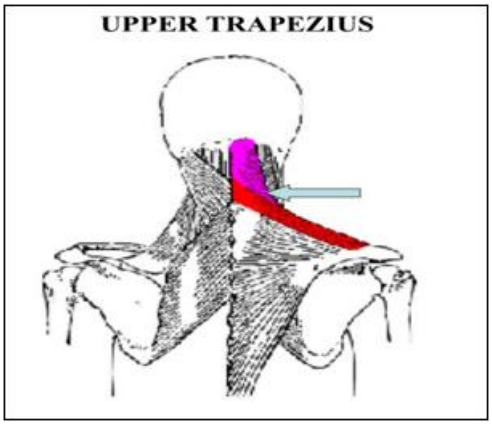
Abstract: ***Background**: Upper trapezitis is a common musculoskeletal disorder characterized by pain, muscle spasm, restricted cervical range of motion, and functional limitations, particularly among young females exposed to postural stress and repetitive activities. Manual therapy techniques such as Muscle Energy Technique (MET) and Myofascial Release (MFR), combined with phonophoresis, are frequently used in physiotherapy management. **Objectives**: To compare the effectiveness of Muscle Energy Technique and Myofascial Release Technique with phonophoresis on pain and cervical range of motion in female patients with unilateral upper trapezitis. **Design**: Randomized controlled pre–post experimental study. **Study Setting**: Physiotherapy Out patient Department, at Index hospital and Amaltas hospital. **Participants**: 60 female patients aged 20–30 years clinically diagnosed with unilateral upper trapezitis. **Main Outcome Measures**: Pain intensity measured using the Visual Analog Scale (VAS) and cervical range of motion (CROM) assessed using a goniometer. **Results**: Both groups showed statistically significant improvements in pain and cervical range of motion following intervention ($p < 0.001$). However, the MET group demonstrated significantly greater improvement in both VAS and CROM scores compared to the MFR group. **Conclusion**: Muscle Energy Technique combined with phonophoresis is more effective than Myofascial Release Technique with phonophoresis in reducing pain and improving cervical range of motion in female patients with unilateral upper trapezitis.*

Keywords: Upper trapezitis, Muscle Energy Technique, Myofascial Release, Phonophoresis, Cervical pain

1. Introduction

Trapezius pain is the classic stress pain and it is the most common musculoskeletal disorder. It is usually caused by placing too much stress or strain over the trapezius muscle. The upper trapezius muscle is designated as postural muscle and is highly susceptible to overuse.[1] Trapezius is large muscle towards the back which arises from the nape of the neck. The muscle performs many main functions of our body, the most important out of them all is lifting the head upwards and shrugging off the shoulder.[2]



About two thirds of people experience neck pain at some point in their lives. In middle age prevalence is highest and women are more affected than men. Neck pain prevalence varies widely in different studies, with a mean point prevalence of 13% (range 5.9% – 38.7%) and mean lifetime prevalence of 50 % (range 14.2% – 71.0 %. (4) Recent studies have hypothesized that the trapezitis pathogenesis results from the overloading and injury of muscle tissue, leading to involuntary shortening of localized fibres. The areas of stressed soft tissue receive less oxygen, glucose, and nutrient delivery, and subsequently accumulate high levels of metabolic waste products.

Bad posture is frequently incriminated as the cause of trapezitis. Watching television or working on computer with an awkward posture or even use of a thick pillow can cause neck spasm.[3]

Muscle Energy Technique
Muscle energy technique (MET) is a form of a manual therapy which uses a muscle's own energy in the form of gentle isometric contractions to relax the muscle via
Autogenic inhibition
Reciprocal inhibition

Myofascial Release (MFR):
Myofascial Release (MFR) is a holistic, therapeutic approach to manual therapy, this technique is designed to release restrictions such a trigger points, muscle tightness, and dysfunctions in soft tissue that may cause pain and limit motion in all parts of the body. It has shown success in decreasing pain and increasing mobility. [4]

2. Material and Methods

Study Design
Randomized controlled pre-test and post-test experimental study.

Study Setting
Physiotherapy department of index hospital, Indore and Amaltas hospital.

Sample Size
60 female - subjects.

Study Duration
Two weeks (5 sessions per week).

Participants
Female patients aged 20–30 years with clinically diagnosed unilateral upper trapezitis.

Inclusion Criteria
- Females aged 20–30 years
- Unilateral upper trapezitis
- Voluntary participation
- No prior treatment for trapezitis

Exclusion Criteria
- Cervical deformities (torticollis, scoliosis)
- Cervical radiculopathy
- Thoracic outlet syndrome
- Recent surgery or open wounds
- Generalized inflammatory disorders

Outcome Measures
- Visual Analog Scale (VAS)
- Cervical Range of Motion (CROM) using goniometer

Intervention Protocol
All subjects received phonophoresis using diclofenac sodium gel:
- Ultrasound mode: Continuous
- Intensity: 1.5 W/cm²
- Duration: 5 minutes

Group A- Muscle Energy Technique (MET)
Participants received post-isometric relaxation technique targeting the upper trapezius muscle, repeated five times per session.

Group B- Myofascial Release Technique (MFR)
Participants received sustained palmar and forearm gliding techniques over the upper trapezius muscle for five minutes.

Statistical Analysis
Data were analysed using SPSS version 18. Descriptive statistics were expressed as mean ± standard deviation. Paired t-tests were used for within-group comparisons, and independent t-tests were used for between-group comparisons. Significance level was set at $p < 0.05$.

Comparison of Mean Post Test Vas Score Between Group A and B

Group	N	Mean Post Test VAS	SD	T	p
Group A	15	1.33	0.594	7.839	0
Group B	15	3.07	0.884		

Indicate that post- test VAS of GROUP A and GROUP B Indicates that mean score of VAS for GROUP A at post test intervention mean score (1.33) mean score of VAS for GROUP B at post- test (3.07) and both treatment GROUPS mean VAS score is unequal the GROUP A VAS lower then GROUP B.

Comparison Mean Post Test Crom Score of Group A & Group B

Group	N	Mean Post Test CROM	SD	t	p
Group A	15	77.73	3.654	15.502	0
Group B	15	60.6	2.167		

3. Results

The result showed that Group A significantly effect in pain, the VAS score at post test (t=19.500, P= .000) compare between Group A and Group B. and also showed that GROUP A is significantly higher to improve the CROM score at post test (t=23.270, p=.000) compare between Group A and Group B.

Pain (VAS)
Both groups showed significant reduction in pain post-intervention ($p < 0.001$). Group A demonstrated significantly greater pain reduction than Group B.

Cervical Range of Motion
CROM improved significantly in both groups ($p < 0.001$), with Group A showing superior gains compared to Group B.
Overall Findings
- MET group showed greater reduction in pain intensity
- MET group achieved higher improvement in cervical mobility
- Results indicate superior effectiveness of MET over MFR

4. Discussion

The findings indicate that both Muscle Energy Technique and Myofascial Release are effective in managing unilateral upper trapezitis. However, MET produced superior outcomes, likely due to neurophysiological mechanisms such as autogenic inhibition, Golgi tendon organ activation, and enhanced muscle extensibility.

These results align with previous studies reporting greater pain reduction and functional improvement with MET compared to Myofascial Release Technique. The combination of MET with phonophoresis further enhanced analgesic effects.

5. Limitations

- Small sample size
- Short intervention duration
- Only female participants included

6. Future Scope

- Larger multicentre trials
- Longer follow-up duration
- Inclusion of male participants

- Evaluation of functional and quality-of-life outcomes

7. Conclusion

Muscle Energy Technique combined with phonophoresis is more effective than Myofascial Release Technique with phonophoresis in reducing pain and improving cervical range of motion in female patients with unilateral upper trapezitis. Incorporation of MET into routine physiotherapy protocols may yield superior clinical outcomes.

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