

Short Term Effects of Muscle Energy Technique with Resistance Band Exercises and Myofascial Release Technique with Conventional Exercises on Pain, ROM and Functional Disability in Postpartum Women with Trapezitis: A Randomized Clinical Trial

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ABSTRACT

Background: In Postpartum women, the forward head posture due to breastfeeding leads to lengthening of the trapezius muscle for prolonged period which causes its weakness and low level activity of trapezius muscle so the most common cause of neck pain in postpartum women is inflamed trapezius muscle which in turn reduces cervical ROM and causes tightness of trapezius muscles.

Aim: To compare the short term effects of MET with elastic resistance bands and MFR with conventional exercises

Material And Methodology: Postpartum women with trapezitis having pain while performing neck flexion, neck side rotation, neck side flexion and activities affected such as lifting, reading, driving, sleeping, working, while concentrating and doing recreational activities were included in this study. A comparative study was done wherein Group A (n=15) received muscle energy technique with elastic resistance band exercises and Group B(n=15) received myofascial release technique with conventional exercises which included static neck exercises, neck stretching exercises. Treatment was given for 6 times a week for a week. Pain, range of motion and functional disability were assessed using VAS, Goniometry and neck disability index.

Results: Group A (Muscle energy technique with resistance band exercises) showed significant decrease in pain and neck disability and significant increase in neck range of motion as compared to Group B (Myofascial release technique with conventional exercises.) Mean post VAS on rest in MET group (0.44) was significantly lower than mean post VAS on rest in MFR group (1.31) (p=0.001) Mean post VAS on activity in MET group (1.37) was significantly lower than mean post VAS on activity in MFR group (2.32) (p=0.002)

Mean post CROM flexion in MET group (61.93) was significantly higher mean post CROM flexion in MFR group (47.20) (p<0.001) Mean post right side flexion in MET group (41.87) was significantly higher mean post right side flexion in MFR group (33.67) (p<0.001)

Mean post left side flexion in MET group (42.87) was significantly higher mean post left side flexion in MFR group (33.40) (p<0.001) Mean post right side rotation in MET group (67.67) was significantly higher mean post right side rotation in MFR group (57.60) (p<0.001)

Mean post left side rotation in MET group (68.93) was significantly higher mean post left side rotation in MFR group (57.80) (p<0.001) Mean post NDI in MET group (2.87) was significantly lower mean post NDI in MFR group (6.33) (p<0.001) This shows that short term effects of MET and

resistance band exercises were effective on pain and functional ability in postpartum subjects with trapezitis than effect of MFR and conventional exercises on pain and functional ability in postpartum subjects with trapezitis.

Conclusion: The study concluded that both the groups showed positive results on pain, cervical range of motion and functional mobility. (According to the coefficient variables as it is less in Group B compared to group A). Hence, Muscle energy technique with elastic resistance band exercises is more effective than the myofascial release technique with conventional exercises in postpartum women with trapezitis for reducing pain and functional disability and increasing the neck range of motion.

Keywords: MET with elastic resistance bands, MFR with conventional exercises, Postpartum Women with Trapezitis

INTRODUCTION

“Inflammation of trapezius muscle is known as Trapezitis”. It is an inflammatory pain causing severe neck spasm. Trapezius with its shape resembling a big diamond consists of the upper, middle and lower portions. Trapezius forms the slope of the shoulder. It originates from the back of the skull and from the spine of C7 to T2 vertebrae. It has its attachments to the outer one third of the collarbone, the acromion process and the spine of shoulder border. It receives nerve supply from the accessory nerve and the C1 to C4 cervical nerve roots. Neck pain being the common problem in general population has prevalence between 10% and 15%. In Postpartum women, the prevalence of Neck-shoulder pain(NSP) was very high and which was commonly encountered by breastfeeding women.⁽²⁾ The most common region for neck pain is the upper trapezius muscle. There are studies which report that prevalence of NSP in postpartum Japanese women at one month after delivery was 78%.⁽³⁾

In postpartum women, the main cause of trapezitis is due to stress and tension, repetitive movements, forward head posture, sitting without back support, prolonged head bending activity, using thick pillow, tight pectoral major muscle and severe neck spasm.⁽¹⁾ Patient may have symptoms of pain and tightness in the trapezius, along with headaches, dizziness, neck pain and mid-back pain. The most distinctively seen features in postpartum women with trapezitis are the mental states, breastfeeding, past history of Premenstrual

syndrome, and anemia during pregnancy.⁽²⁾ The upper trapezius is designated as postural muscle and it is highly susceptible to overuse.⁽¹⁾ The pain is present even during rest and is aggravated by activity; it may be referred to the other area from the site of primary inflammation. Passive range of motion may be painful and restricted due to pain and protective spasm in antagonist muscle group.⁽²⁾ The trapezius is also activated by stressful thoughts and feeling or abnormal breathing pattern. Bad posture is frequently incriminate as the cause of trapezitis.⁽⁶⁾ Trigger points are typically located by palpation. Simons described the criteria for identification of taut band - a tender spot on the taut band, referred pain or altered sensation at least 2 cm beyond the spot, which is triggered by the pressure held for 10 seconds and restricted ROM in the joint, the muscle crosses.⁽⁸⁾

Recent studies have hypothesized that the trapezitis pathogenesis results from the overloading and injury of muscle tissue, which further leads to involuntary shortening of localized fibers. The areas which are affected, its soft tissue receive less oxygen, glucose, and nutrient delivery, due to which high levels of metabolic waste products is accumulated in those stressed areas. The final result of this cascade of events is the creation of altered tissue status, pain, and the formation of Trigger Points (TP). Muscle spasm keeps the muscle continuously in contracted state whereas this overload gives a rise to a knot in the muscle. These are the trigger points which lead to pain^[8,11] Myofascial trigger point is

found mostly in the midpoint of upper border of trapezius [8] Pain, stiffness and tenderness are felt on palpation in the belly and at paraspinal region [12] Thus, reducing the range of neck movements and also the mobility of the cervical joints. Neck pain and restricted movements provide a subjective feeling of stiffness which further aggravate pain and ultimately results in muscle spasm, increase in soft tissue tightness, with an ensuing pain-spasm cycle which might be difficult to break [7,12] It is essential to provide relief and to improve the function. TPs are related to hyperalgesia and limited range of motion (ROM) and are therefore clinically important to identify as these possess the potential to limit functional activities. (5) Prolonged static muscle activity or repetitive job tasks, cause muscle metabolic disturbances as it worsens the pain [5,6]. Trapezius pain is a classic example of stress pain and also the most typical musculoskeletal disorder which may result in long and serious disability. Interruptions of low frequency within the muscle activity during repetitive tasks are associated with future development of neck pain. There are studies which have shown a correlation between pain and trapezius muscle activation [9,10].

Muscle energy technique is a direct technique which was originally developed by two osteopathic physicians, Fred Mitchell, Sr. and Fred Mitchell, Jr. The purpose of this technique is to treat hypomobile joint (stiffness) and restore proper biomechanical and physiological function to the joints. A tonus release can be achieved in a muscle before stretching using MET. (5) This involves the introduction of an isometric contraction to the affected muscle producing post isometric relaxation and a nociceptive response is produced as the pressure is applied. The area is then positioned in such a manner as to reduce the tension in the affected muscle and subsequently the pain in the Trapezius. (1,5) Achieving the position of ease or pain reduction, the stressed tissues attain their

most relaxed state, which in turn produces a local reduction in tone. MET is effective in mobilizing restricted joints, relaxing hypertonic and spastic muscle and is also used in facilitating neuromuscular reorganization. It is an appropriate technique for patient whose symptoms are aggravated by certain posture or bodily position. (5)

In 1960s, Robert Ward, an osteopath, is attributed with coining the term MFR. (1,6) Myofascial Release (MFR), this technique mobilizes the soft tissues. MFR facilitates the neural, mechanical and psychophysiological adaptive potential as it is interfaced via the myofascial system" [8]. MFR therapy involves specifically guided low load, long duration mechanical forces to manipulate the myofascial complex, which intends to restore optimal length, reduce pain, and improve function. MFR therapy utilizes the prolonged stretching of the fascia with manual traction, this breaks the adhesions of the affected muscle, thereby, decreasing the pain and increasing its flexibility. This causes the ROM to increase. (6) By MFR, there is a change in the viscosity of the ground substance to a more fluid state which eliminates the fascia's excessive pressure on the affected area which is sensitive to pain and restores proper alignment. This technique helps in the reduction of trapezius muscle spasm. (1)

There are treatment protocols used to reduce neck pain which includes technique like myofascial release (MFR) and muscle energy technique (MET). (1) There are studies which proved that resistance band exercises versus conventional exercises have proved to be effective in reducing pain and neck disability in subjects with Trapezitis. (1,4) There are currently no literature comparing these both techniques along with the elastic resistance band exercises and conventional exercises in postpartum women with trapezitis and as there is a lack of evidence, thereby making it an arising need of study.

Aim and Objectives

The aim of this study is

- To evaluate the effectiveness of muscle energy technique with elastic resistance band exercise versus myofascial release technique with conventional exercises on pain, cervical range of motion and functional disability in postpartum women with trapezitis.
- To evaluate the short term effect of MET with elastic resistance band exercises on pain, ROM and functional ability in postpartum women with trapezitis.
- To evaluate the effect of MFR with conventional exercises on pain, ROM and functional ability in postpartum women with trapezitis.
- To evaluate and compare the short term effects of MET with resistance band exercises and effect of MFR with conventional exercises on pain, ROM and functional ability in postpartum women with trapezitis.

REVIEW OF LITERATURE

1. Jhaveri A, Gahlot P, *et.al.* 2018
The study concluded that Muscle Energy Technique found to be significantly more added effect than myofascial release technique in improving pain, cervical disability and cervical movements for subjects with chronic trapezitis.
2. Koyasu K, Kinkawa M, Ueyama N, Tanikawa Y, Adachi K, Matsuo H, *et.al.* 2015
This study investigated the prevalence, location, and severity of neck and shoulder pain (NSP), its disturbance of quality of life (QOL), and the factors related to NSP in Japanese postpartum women. The prevalence of NSP in postpartum women was very high. The factors which affect NSP were the mental states, breastfeeding, past history of PMS, and anemia during pregnancy.
3. Koyasu K, Ueyama N, Tanikawa Y, Yamasaki M, Matsuo H, *et. al.* 2016

The objective of this study is to elucidate the pathophysiology of NSP in relation to specific mental and physical states in postpartum women.

The results suggested that psychological stress in postpartum women might be related to worsening of NSP through the modification of ANS activity and worsening of NSP after birth was associated with breastfeeding posture.

4. Khare D, Pathak R, *et.al.* 2017
This study is believed to draw attention to the importance of exercises in Trapezitis and to contribute to formation of clinical guidelines in the future and further researches on similar protocols with varied parameters.
5. Joshi, R. and Manisha Rathi, *et.al.* 2015
The study concludes Clinically Muscle energy technique was more effective than positional release technique in subjects having trapezitis with non-specific neck pain.

MATERIAL AND METHODOLOGY

An approval for the study was obtained from the institutional Ethical Committee of College of Physiotherapy, Wanless Hospital, Miraj Medical Centre, Miraj. A Randomized Clinical trial was conducted in subjects with trapezitis in postpartum women in Matrusuva Superspeciality Hospital, Maa Hospital, Rawal Hospital, Tamboli Maternity Hospital respectively. Sample was achieved by Simple random sampling. A total of n=30 subjects were selected. All the subjects were screened for inclusion criteria i.e. Women willing to participate in the study, Age group of 22-38 years, Postpartum women with trapezitis, Subjects with VAS score from 4. The exclusion criteria included subjects with any Cervical spine or Shoulder surgery, Subjects with cervical spondylosis. Malignancy, History of Whiplash injury, Radiating pain in upper extremity. The Demographic data including the Name, Age, Postpartum women with trapezius spasm > 1 week after the delivery

for vaginal delivery and < 1 week for LSCS, Visual Analogue Scale for pain, Goniometry for Cervical range of motion and Neck disability index for functional mobility were collected through data sheet. All the subjects were given written consent prior to the intervention and were briefed about the study. Subjects were randomly divided into two groups with Group A of 15 and Group B of 15 subjects. Group A performed Muscle Energy Technique (MET) with Elastic Resistance Band Exercises and Group B performed Myofascial Release Technique (MFR) with Conventional Exercises for six sessions a week. The data was collected pre and post treatment using Visual analogue scale, Cervical goniometry and Neck disability index. Pain VAS (scale Validity = 0.941/Reliability = 0.97(0.96-0.98): The pain intensity was measured using Visual Analogue Scale. A 10 cms line was drawn on which zero represents No pain and 10 represents Highest pain intensity. Cervical Goniometry and functional mobility (NDI)

For Group A (MET and resistance band exercises):

The subjects lie supine, arm along the side of the trunk, head/neck side bent away from the side being treated to just short of the restriction barrier, while therapist stabilizes the shoulder with one hand and cups the ipsilateral ear / mastoid area.

With other hand, with the flexed neck fully side bent and fully rotated contra laterally, the posterior fibres of upper trapezius are involved in the contraction. This will facilitate subsequent stretching of this aspect of muscle. The various contraction and subsequent stretches will be performed with therapist's arm crossed, hands stabilizing the mastoid area and shoulder. The effort towards the movement is important in order to introduce a contraction of the muscle from both ends

simultaneously.⁽¹⁾ The degree of effort should be mild and no pain should be felt. The contraction is sustained for 7 to 10 seconds and upon complete relaxation of effort, the therapist gently eases the head/neck into an increased degree of side bending and rotation, where it is as stretching is introduced, the subject can usefully assist in this phase of treatment by initiating on instruction, "the stretch of the muscle" (as you breathe out please slide your hands towards your feet).

Once the muscle is in a stretched position, the subject relaxes and stretch is held for up to 30 seconds. 3 repetitions should be given of MET.⁽¹⁾



Elastic resistance band exercises

- Shrugs
- Lateral raise
- Back pull down
- Upright row

- a. **Dosimetry:** 1 set of 3 repetitions with hold of 10 sec in each repetition. Position- standing



Fig. Lateral raise

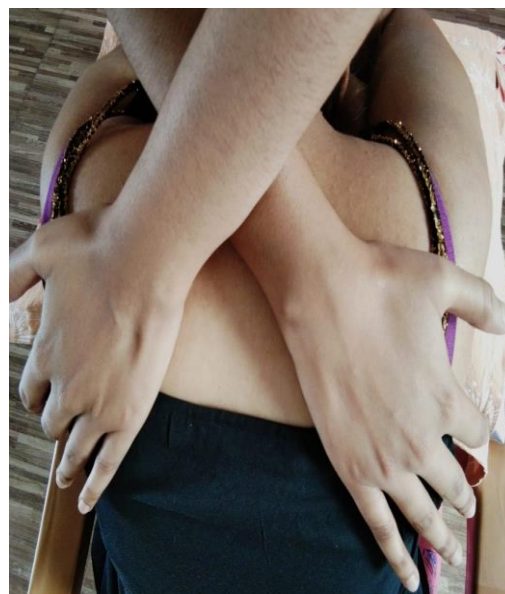
For group B (MFR and conventional exercises):

- MFR will be applied with patient in long sitting with support, Therapist will stand behind the patient close on the side to be treated.
- Forearm and/or ulnar border of the palm will be used to apply the pressure and glide medially towards the base of the neck and/ or towards the upper scapular region.
- As the glide is given, patient is asked to do side bending and to turn the head in opposite direction while sitting in erect position. Glides are given for 3-4 times.⁽¹⁾
MFR for middle and lower trapezius fibres

- Have the client forward bending in sitting position.
- Place one hand, skin on skin, with the palm of your hand lateral to the spine and your fingers lying across the medial border of the scapula and onto the scapula.
- Place your other hand in the same place on the opposite side.
- Lean into the client to the tissue depth barrier, wait and follow each subtle release three-dimensionally.
- Avoid forcing the tissue or slipping or gliding over the skin.
- Apply the technique for at least five minutes for optimal results.



MFR for upper trapezius fibres



MFR for middle and lower trapezius fibres

2. Conventional Exercises

a) Passive stretching

Hold- 5sec

b) Static neck exercises

Hold- 10sec

Rest- 5 sec

Group B

Strengthening exercises

- shoulder shrugs
- scapular retraction

Dosimetry: 1 set of 3 repetitions

Position: supine, long sitting

RESULTS

Statistical analysis for the present study was done using statistical package of

social sciences (SPSS) version 16.0 so as to verify the results obtained.

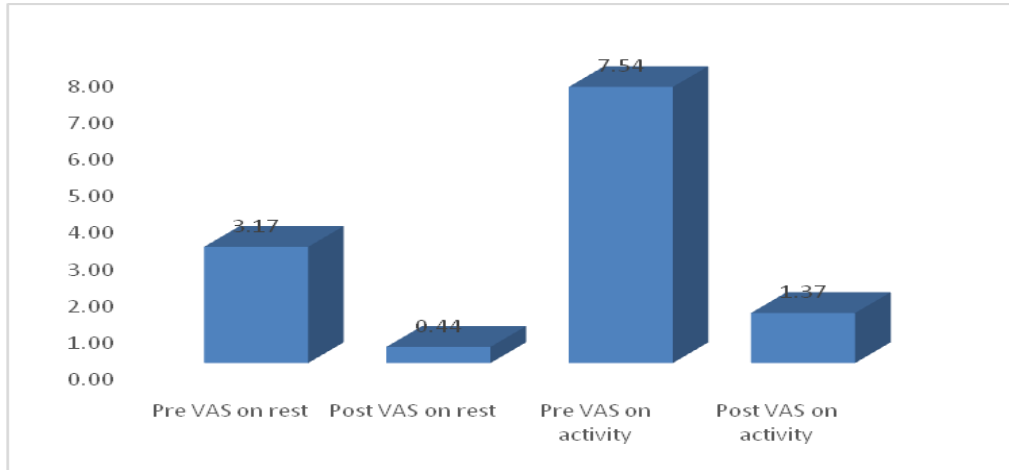
Paired t-test was done to compare the variables within the Groups and Unpaired t-test was done to compare the variables between the groups. In muscle energy technique, pre intervention and post intervention was done by the paired t-test i.e., In Myofascial release technique along with elastic resistance band exercises, pre and post intervention was done by the paired t-test. Unpaired t test was done to compare the effectiveness of muscle energy technique with resistance band exercises and myofascial release technique with conventional exercises in postpartum women with trapezitis.

Table 1: Effectiveness of MET and resistance band exercises on pain and functional ability in postpartum subjects with trapezitis

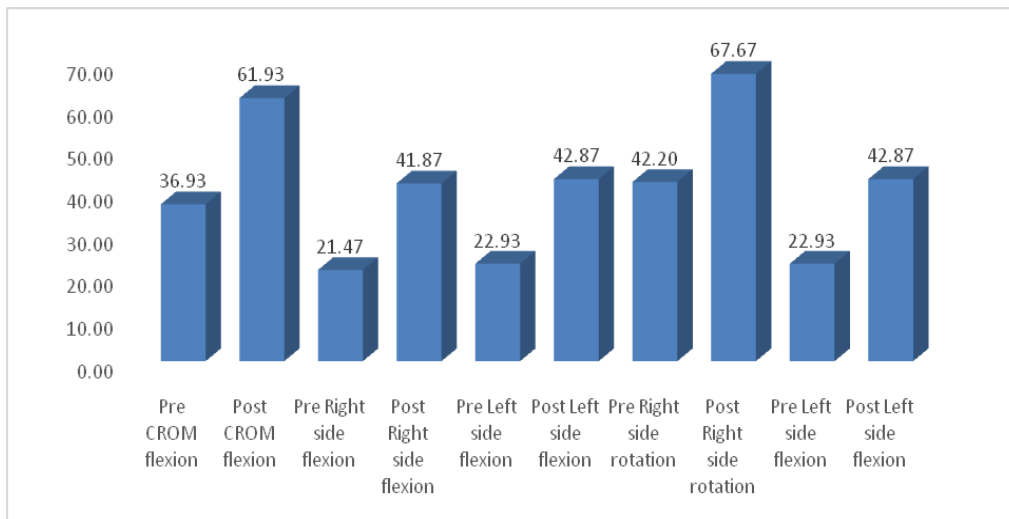
MET group	N	Mean	Std. Deviation	Paired t statistic	p value
Pre VAS on rest	15	3.17	±0.67	21.07	<0.001
Post VAS on rest	15	0.44	±0.41		
Pre VAS on activity	15	7.54	±0.82	56.25	<0.001
Post VAS on activity	15	1.37	±0.71		
Pre CROM flexion	15	36.93	±7.60	18.54	<0.001
Post CROM flexion	15	61.93	±2.49		
Pre Right side flexion	15	21.47	±5.28	29.04	<0.001
Post Right side flexion	15	41.87	±2.61		
Pre Left side flexion	15	22.93	±5.28	23.36	<0.001
Post Left side flexion	15	42.87	±2.39		
Pre Right side rotation	15	42.20	±8.13	28.67	<0.001
Post Right side rotation	15	67.67	±5.19		
Pre Left side rotation	15	43.02	±8.03	27.28	<0.001
Post Left side rotation	15	68.93	±5.39		
Pre NDI	15	20.80	±6.58	11.78	<0.001
Post NDI	15	2.87	±0.92		

Paired t test was done to check the effectiveness of MET and resistance band exercises on pain and functional ability in postpartum subjects with trapezitis.

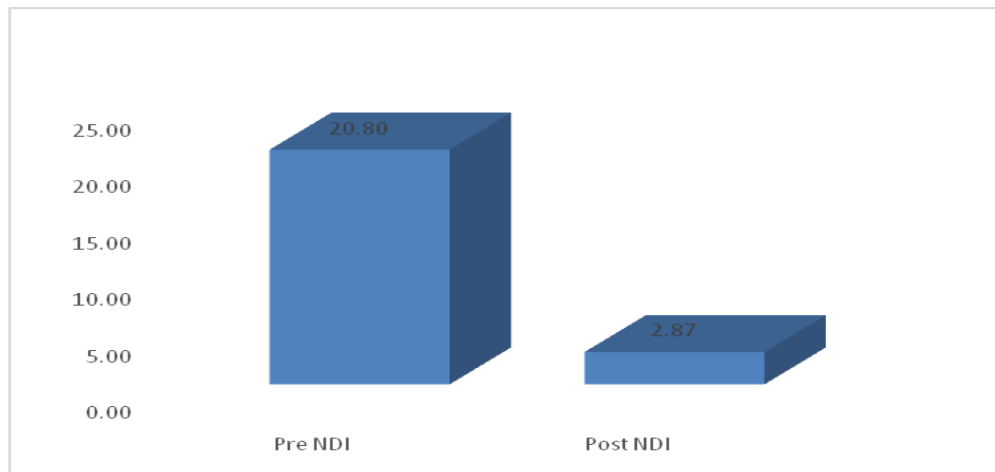
This shows that MET and resistance band exercises were effective on pain and functional ability in postpartum subjects with trapezitis



Graph 1: Comparison of means of VAS in MET with resistance band exercises group on rest and at activity (pre and post intervention)



Graph 2: Comparison of means of CROM of MET with resistance band exercises group (pre and post intervention)



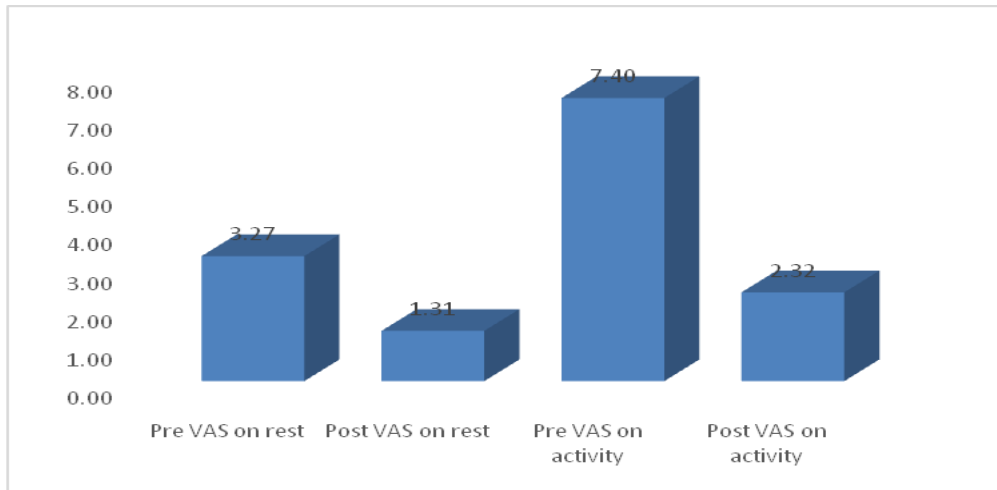
Graph 3: Comparison of mean of NDI in MET with resistance band exercises group (pre and post intervention)

Table 2: Effectiveness of MFR and conventional exercises on pain and functional ability in postpartum subjects with trapezitits

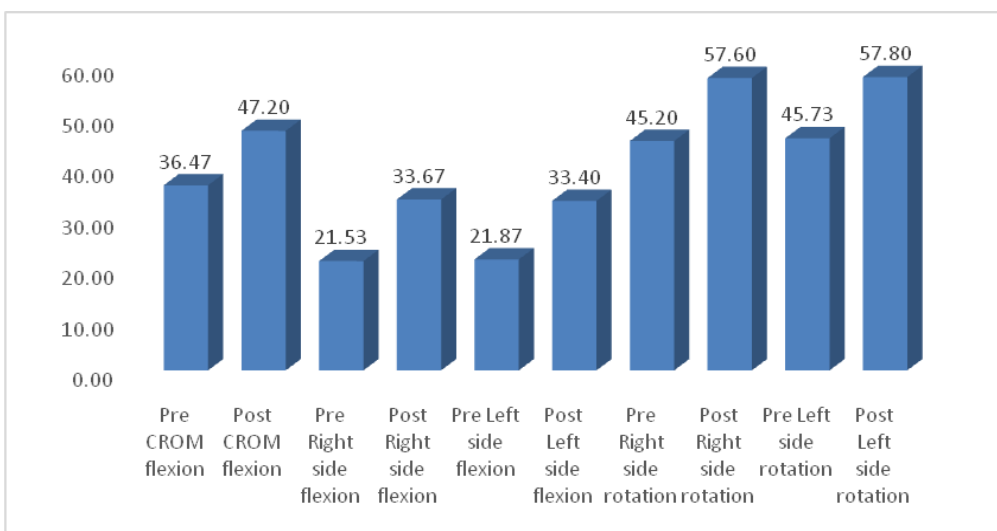
MFR group	N	Mean	Std. Deviation	Paired t statistic	p value
Pre VAS on rest	15	3.27	±0.58	19.009	<0.001
Post VAS on rest	15	1.31	±0.74		
Pre VAS on activity	15	7.40	±0.69	31.04	<0.001
Post VAS on activity	15	2.32	±0.83		
Pre CROM flexion	15	36.47	±5.29	16.82	<0.001
Post CROM flexion	15	47.20	±7.01		
Pre Right side flexion	15	21.53	±4.09	63.23	<0.001
Post Right side flexion	15	33.67	±4.01		
Pre Left side flexion	15	21.87	±4.17	16.57	<0.001
Post Left side flexion	15	33.40	±4.12		
Pre Right side rotation	15	45.20	±7.84	75.93	<0.001
Post Right side rotation	15	57.60	±7.90		
Pre Left side rotation	15	45.73	±7.40	52.88	<0.001
Post Left side rotation	15	57.80	±7.22		
Pre NDI	15	21.07	±6.37	11.84	<0.001
Post NDI	15	6.33	±1.72		

Paired t test was done to check the effectiveness of MFR and conventional exercises on pain and functional ability in postpartum subjects with trapezitits.

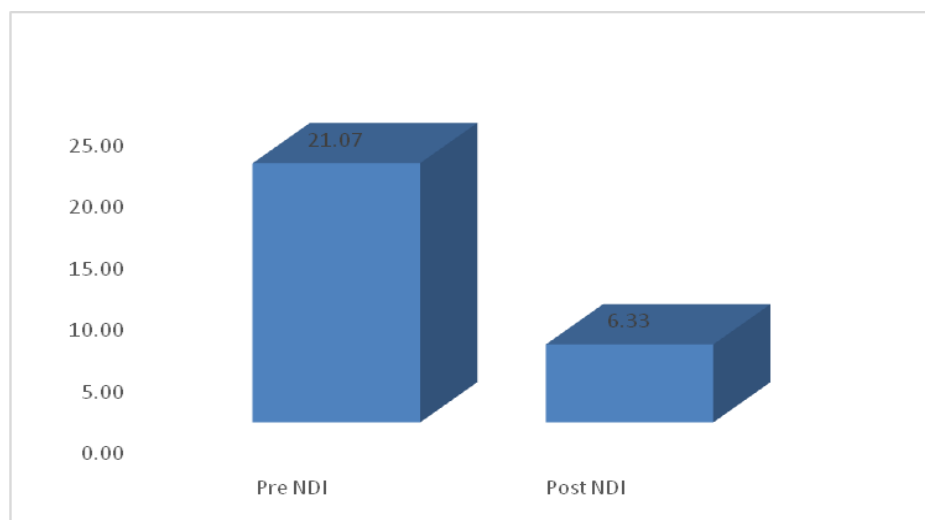
This shows that MFR and conventional exercises were effective on pain and functional ability in postpartum subjects with trapezitits.



Graph 4: Comparison of means of VAS in MFR with resistance band exercises group on rest and at activity (pre and post intervention)



Graph 5 Comparison of means of CROM of MFR with conventional exercises group (pre and post intervention)



Graph.6 Comparison of mean of NDI in MFR with conventional exercises group (pre and post intervention)

Table 3: Comparison of short term effects of MET and resistance band exercises and effect of MFR and conventional exercises on pain and functional ability in postpartum subjects with trapezititis

Group Statistics	Group	N	Mean	Std. Deviation	Unpaired t statistic	p value
Post VAS on rest	MET	15	0.44	±0.41	4.02	0.001
	MFR	15	1.31	±0.74		
Post VAS on activity	MET	15	1.37	±0.71	3.39	0.002
	MFR	15	2.32	±0.83		
Post CROM flexion	MET	15	61.93	±2.49	7.67	<0.001
	MFR	15	47.20	±7.01		
Post Right side flexion	MET	15	41.87	±2.61	6.63	<0.001
	MFR	15	33.67	±4.01		
Post Left side flexion	MET	15	42.87	±2.39	7.70	<0.001
	MFR	15	33.40	±4.12		
Post Right side rotation	MET	15	67.67	±5.19	4.13	<0.001
	MFR	15	57.60	±7.90		
Post Left side rotation	MET	15	68.93	±5.39	4.78	<0.001
	MFR	15	57.80	±7.22		
Post NDI	MET	15	2.87	±0.92	6.90	<0.001
	MFR	15	6.33	±1.72		

Unpaired t test was done to compare short term effects of MET and resistance band exercises and effect of MFR and conventional exercises on pain and functional ability in postpartum subjects with trapezititis.

DISCUSSION

The overall purpose of our study was to compare the influence of short term effects of muscle energy technique with resistance band exercises and myofascial release technique with conventional exercises on pain, rom and functional disability in postpartum women with trapezititis. The present study found that 6 sessions of MET have shown statistically significant greater effect in improving pain, cervical ROM and cervical disability than

MFR. This was accomplished by decreasing the muscle spasm, relieving the tension over the fascia, pain, hypomobility of the joint, swelling thereby increasing the circulation and maintaining its postural alignment. In various other preconditions, it has been proved that muscle energy technique has an effect on improving pain, cervical range of motion, neck disability index in adults. But there is no published research which compares the short term effects of muscle energy technique with resistance band exercises versus the myofascial release technique conventional exercises in postpartum women with trapezititis.

In muscle energy technique, pre intervention and post intervention was done by the paired t-test. The Mean post VAS on rest (0.44) was significantly lower than

mean pre VAS on rest (3.14) ($p < 0.001$) and the Mean post VAS on activity (1.37) was significantly lower than mean pre VAS on activity (7.54) ($p < 0.001$). Mean post CROM flexion (61.93°) was significantly higher mean pre CROM flexion (36.93°) ($p < 0.001$) Mean post right side flexion (41.87°) was significantly higher mean pre right side flexion (21.47°) ($p < 0.001$) Mean post left side flexion (42.87°) was significantly higher mean pre left side flexion (22.93°) ($p < 0.001$) Mean post right side rotation (67.67°) was significantly higher mean pre right side rotation (42.20°) ($p < 0.001$) Mean post left side rotation (68.93°) was significantly higher mean pre left side rotation (43.02°) ($p < 0.001$) Mean post NDI (2.87) was significantly lower mean pre NDI (20.80) ($p < 0.001$) According to some researchers, muscle energy technique helps to reduce the pain and functional disability and increase the cervical range of motion. Dr. Aneri Jhaveri et al. (2018) their study provided evidence to support the use of MFR and MET in management of chronic trapezitis. MET is more effective than MFR in improving pain, cervical disability and cervical range of motion in patients with upper trapezitis because of stretching effect on muscle and stimulation of nociceptive endings connected to A-delta fibres and Lars Andersen et al. (2010) investigate muscle activation in perceived loading during upper extremity resistance exercises with dumbbells versus elastic resistance bands proved that high-level of muscle activation were obtained during both the Interventions and stated that therapists can choose either type in clinical practice this supporting the use of resistance band exercises. The reduction in the pain following static stretching can be explained on the basis of inhibitory effects of GTO (which causes a dampening effect on the motor neuronal discharges, thereby causing relaxation of the musculotendinous unit by resetting its resting length) and Pacinian corpuscle modification. These reflexes will allow relaxation in musculotendinous unit

tension and decreased pain perception.(15) The effects of MET component for increase in ROM post intervention can be explained on the basis of physiological mechanisms behind the changes in muscle extensibility - reflex relaxation, viscoelastic change, and changes to stretch tolerance. Reflex muscle relaxation following contraction that has been proposed to occur by activation of the golgi tendon organs and their inhibitory influence on the a-motor neuron pool. Combination of contractions and stretches (as used in MET) might be more effective for producing viscoelastic change than passive stretching alone, because the greater forces could produce increased viscoelastic change and passive extensibility.(16) The possible mechanism for the reduction in pain in the MET group can be attributed to the hypo analgesic effects which can be explained by the inhibitory Golgi tendon reflex, activated during the isometric contraction that leads to reflex relaxation of the muscle. Activation of muscle and joint mechano receptors leads to sympatho excitation evoked by somatic efferents and localized activation of the preaqueuductal gray matter that plays a role in descending modulation of pain. The effects of MET for increase in range of motion can be explained on the basis of physiological mechanisms behind the changes in muscle extensibility-reflex relaxation, viscoelastic change and changes to stretch changes. Combination of contractions and stretches (as used in METS) might be more effective for producing viscoelastic change than passive stretching alone, because the greater forces could produce increased viscoelastic change and passive stretching.(17) Muscle energy techniques, i.e., post isometric relaxations are commonly recommended in the management of myofascial trigger points (Lewit, 1999). Lewit and Simons (1984) found an immediate relief of pain and tenderness after treatment with post isometric relaxation in patients with musculoskeletal dysfunction. Goldenberg (1993) found decreased pain intensity in

tender points in patients suffering from fibromyalgia following the application of MET. Schenk et al has proved in his study the effect of MET on CROM. (18) Graff-Radford suggested that the pathogenesis of myofascial pain likely has a central mechanism with peripheral clinical manifestations. Lars Andersen et al. (2010) investigated muscle activation in perceived loading during upper extremity resistance exercises with dumbbells versus elastic resistance bands proved that high-level of muscle activation were obtained during both the Interventions and stated that therapists can choose either type in clinical practice this supporting the use of elastic resistance bands. Our study results support the above articles, it shows significant difference between VAS, ROM and NDI in group A. a positive significant was seen in reduction in pain and neck disability index and increase in cervical ROM. This study shows that MET and resistance band exercises were effective on pain and functional ability in postpartum subjects with trapezitis. Elastic resistance band exercises used in present study have shown improvement in subjects.

In Myofascial release technique along with elastic resistance band exercises, pre and post intervention was done by the paired t-test. The Mean post VAS on rest (1.31) was significantly lower than mean pre VAS on rest (3.27) ($p < 0.001$) and the Mean post VAS on activity (2.32) was significantly lower than mean pre VAS on activity (7.40) ($p < 0.001$) Mean post CROM flexion (47.20°) was significantly higher mean pre CROM flexion (36.47°) ($p < 0.001$) Mean post right side flexion (33.67°) was significantly higher mean pre right side flexion (21.53°) ($p < 0.001$) Mean post left side flexion (33.40°) was significantly higher mean pre left side flexion (21.87°) ($p < 0.001$) Mean post right side rotation (57.60°) was significantly higher mean pre right side rotation (45.20°) ($p < 0.001$) Mean post left side rotation (57.80°) was significantly higher mean pre left side rotation (45.73°) ($p < 0.001$) Mean

post NDI (6.33) was significantly lower mean pre NDI (21.07) ($p < 0.001$) According to some researchers, Dr. Daxa Mishra stated et.al, that in their study the gentle forces applied to the facial restrictions will elicit vasomotor response and increase blood flow to the affected area, thereby enhancing lymphatic drainage of toxic metabolic wastes. It also realigns the facial planes, and most importantly resets the soft tissue proprioceptive sensory mechanism. This latter factor reprograms the central nervous system, enabling a normal functional range of motion without eliciting the old pain pattern, [6] Paul J et al., who compared the effect of MFR and deep transverse friction massage for upper trapezius trigger point, explained that MFR improves the vertical alignment and lengthens the body providing more space for proper functioning of osseous structures, nerves, muscles, blood vessels and organs which improves the function [21] Barnes MF claimed that as a result of MFR, there is change in the viscosity of the ground substance of the muscle and fascia which can restore proper alignment of the muscle fiber and increase the joint mobility. He explained that MFR made the fascia elongated, softened and more pliable thereby, helping to restore the normal length of the fascia. Thus, it can be helpful to increase the flexibility and joint ROM [20,21] The resultant muscle relaxation may encourage a copious return of blood and oxygen, which dramatically elevates pain threshold and encourage healthy, compliant tissue. This promotes healing, reduces pain and pressure in the fibrous band of connective tissue or fascia by breaking up the adhesions.

Unpaired t test was done to compare the effectiveness of muscle energy technique with resistance band exercises and myofascial release technique with conventional exercises in postpartum women with trapezitis. It was found that Mean post VAS on rest in MET group (0.44) was significantly lower than mean post VAS on rest in MFR group (1.31)

($p=0.001$) Mean post VAS on activity in MET group (1.37) was significantly lower than mean post VAS on activity in MFR group (2.32) ($p=0.002$) Mean post CROM flexion in MET group (61.93°) was significantly higher mean post CROM flexion in MFR group (47.20°) ($p<0.001$) Mean post right side flexion in MET group (41.87°) was significantly higher mean post right side flexion in MFR group (33.67°) ($p<0.001$) Mean post left side flexion in MET group (42.87°) was significantly higher mean post left side flexion in MFR group (33.40°) ($p<0.001$) Mean post right side rotation in MET group (67.67°) was significantly higher mean post right side rotation in MFR group (57.60°) ($p<0.001$) Mean post left side rotation in MET group (68.93°) was significantly higher mean post left side rotation in MFR group (57.80°) ($p<0.001$) Mean post NDI in MET group (2.87) was significantly lower mean post NDI in MFR group (6.33) ($p<0.001$)

Hence, the present study concludes that muscle energy technique with elastic resistance band exercises showed more reduction in pain, improvement in functional ability and cervical flexion, side flexion and side rotation. While conducting this study we learned some common aetiology of trapezitis in post-partum women. The major benefit of the treatment seeing as the treatment can be performed by the individual herself, according to their need. In our study it was seen that muscle energy technique with resistance band exercises showed more reduction in pain, improvement in functional ability and cervical flexion, side flexion and side rotation than the myofascial release technique with conventional exercises. This treatment protocol is beneficial for postpartum women which will help them in reducing pain, improving the cervical range of motion and their functional ability as it will be convenient and easier.

CONCLUSION

This study supported alternate hypothesis i.e. we found a significant difference between the short term effects of Muscle energy technique with resistance band exercises and Myofascial release technique on pain, cervical range of motion and neck disability index in postpartum women with trapezitis. This study concluded that, muscle energy technique with resistance band exercises is more effective than the myofascial release technique in postpartum women with trapezitis and can be a treatment of choice to effectively reduce the pain and improve the range of motion and neck disability index in postpartum women.

Limitations And Suggestions

The limitations of this study are Our study had a short duration of treatment protocol. Further study can be done with longer duration of treatment protocol. The Core muscle strength was not measured as it was not the objective of this study. The core muscles secure the neck during contact and reduces the potential for neck injuries. Since the core muscles are important, the study could not access the core muscle strength. Other factors that are required to access in a postpartum women like tenderness grading scale, shoulder range of motion, shoulder disability index was not considered. Further, research can be carried out in postpartum women with a large population.

Future scope

The Quality of life of the patients can be accessed

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