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Effect of Myofascial Release Therapy versus Muscle Energy Technique on Pain Pressure Threshold, Range of Motion and Disability among patients with Turtle Neck Syndrome

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ABSTRACT

1. Objectives:
To find out the effects of Myofascial Release therapy versus Muscle Energy Technique on Pain Pressure Threshold, range of motion and Disability among patients with Turtle Neck Syndrome

2. Methodology:
Total fifty participants were included in the study divided into two groups A and B. Each group had twenty-five patients having turtle neck syndrome and use mobile phone for at least 6 hours. All participants who met the inclusion criteria were included in the study. For checking pain intensity Visual Analog Scale (VAS) was used. Flexion range of motion was checked through Goniometer and pain pressure threshold of sub occipital muscle, sternocleidomastoid muscle and trapezius muscle through Algometer. The total time line for the treatment was four weeks in which pre assessment was done on day one and post assessment was done last day of the session. Confidentiality of participants was maintained and informed consent was taken.

3. Results:
The results showed the readings of Visual analog scale (VAS) MFR group in which pre mean and S.D 2.6±0.50 and post mean and S.D was 1.16±0.37. For MET group pre mean and S.D 2.4±0.51, post mean and S.D was 21.6±0.49.Regarding Neck Disability Index (MFR group) pre reading was 2.28±0.84 and post reading was 1.40±0.76. Neck Disability Index (MET group) pre reading was 2.44±0.82 and post reading was 1.28±0.67. For MFR group flexion ROM pre mean and S.D was 36.4±5.2 and post reading was 44.6±2.9. MET group flexion ROM pre mean and S.D was 36.0±6.0 and post reading was 37.9±5.2. Pain pressure threshold of cervical muscles was observed. Right trapezius muscle (MFR group) pre mean 7.3±3.5 and post mean was 12.6±3.9. left trapezius muscle pre reading 8.0±2.6 and post reading was 12.6±3.4. Right trapezius muscle (MET group) pre mean 12.3±4.0 and post mean was 12.7±3.8.For left trapezius musclepre reading 11.6±3.6 and post reading was 12.8±3.7.Right sternocleidomastoid muscle (MFR group) pre reading was 8.2±3.2 and post reading was 12.8±3.3. Left sternocleidomastoid muscle pre reading 8.8±3.0 and post reading was 13.6±2.6. For Right sternocleidomastoid muscle (MET group) pre reading was 12.4±3.3 and post reading was 13.2±3.5. Left sternocleidomastoid muscle pre reading 13.0±2.8 and post reading was 14.1±2.6. Right sub

occipital muscle (MFR group) pre mean was 3.9±1.4 and post reading was 6.8±1.5. left sub occipital muscle pre mean was 4.2±1.4 and post reading was 7.0±1.2.For Right sub occipital muscle (MET group) pre mean was 7.0±1.4 and post reading was 7.2±1.3. left sub occipital muscle pre mean was 7.2±1.7 and post reading was 7.4±1.7.

4. Conclusion:

0It was concluded that for individuals with turtle neck syndrome, both Myofascial release and Muscle Energy technique has a greater approach in treating pain, flexion range of motion and pain pressure threshold.

Keywords:

Turtle Neck Syndrome, Myofascial Release, Muscle Energy Technique, Pain pressure Threshold, Range of Motion

ARTICLE

INTRODUCTION

Repetitive stress due to forwarding leaning of the neck cause a condition known as Turtle neck syndrome or Text neck Syndrome. In a neutral position a human head weighs around 10lb which gets doubled if there is a forward head tilt due to any re3ason. This creates stress on neck and causes turtle neck syndrome. (1). A survey carried out in the America revealed that almost 40% of the youthful inhabitants suffered from text neck syndrome (2). According to statistics of India the frequency of text neck syndrome is 32% out of which it affects 80% females and 20 males (3).

Dr. Dean L. Fisherman referred to this condition as turtle neck due to the continued bending posture of the head, which can be caused by using mobile devices such as tablets and laptops. It affects the spinal cord and causes other conditions. The forces on the neck increase when the head flexes at a certain angle. The stress on the neck grows to 27 pounds at 15 degrees of flexion, 40 pounds at 30 degrees, 49 pounds at 45 degrees, and 60 pounds at 60 degrees.

(4).The primary problem of this condition includes pain in the neck, stiffness, headaches, and soreness in the spinal curvature. If left untreated, this can lead to various spinal issues such as spinal mal alignment and disc compression (5). Turtle neck syndrome is diagnosed through goniometry and measuring cranial vertical angles during a physical examination. Depending upon the severity, the treatment can either be conservative or surgical. Since text neck syndrome is not a severe enough condition to warrant surgery, conservative measures are advised.

It consists of physical therapy, which aids in posture correction, range enhancement, and pain management. Acupuncture, manipulations, and injections of corticosteroids may be used in chronic situations. (4,5).

A study was carried out in 2019 to determine how often medical students developed turtle neck syndrome as a result of using electronics excessively. 43% of students were found to have turtle neck syndrome, when compared women were more likely to have this syndrome than males. (3).

One of the most effective therapies for neck pain include exercise, lifestyle modifications and manual therapy. (6).A low-load and long duration stretching technique, also known as Myofascial release technique (MRT) decreases the pain, restores the function and length of muscles. (7). A large body of research demonstrates that MRT is beneficial for enhancing cervical spine range of motion and overall quality of life in patients with nonspecific neck discomfort. (8). Another study reported the effectiveness of MRT in increasing fascial mobility and improved pain perception among people with work related neck pain. (9).

A randomized control trial was conducted in the year 2022, to check the effects of Muscle energy technique (MET) and Bowen therapy on pain, function, cervical ROM, cranio-vertebral angle and rounded shoulders. Both techniques showed remarkable improvement in decreasing pain, increasing ROM and improving posture. But Bowen therapy showed more effective results as compared to MET.(10). Another study was piloted in India in the year 2021 to check the effectiveness of MET with and without counter strain technique in the treatment of non-specific neck pain. Both techniques showed vast improvement in treating pain, disability and movements. (11)

Study might benefit:

1. To determine which course of action is best for patients with turtle neck syndrome.

2. To determine which treatment produce the fastest and most effective pain relief, so that the study can be practically applied to improve the activity and lower the pain scores for patients as well as therapists.

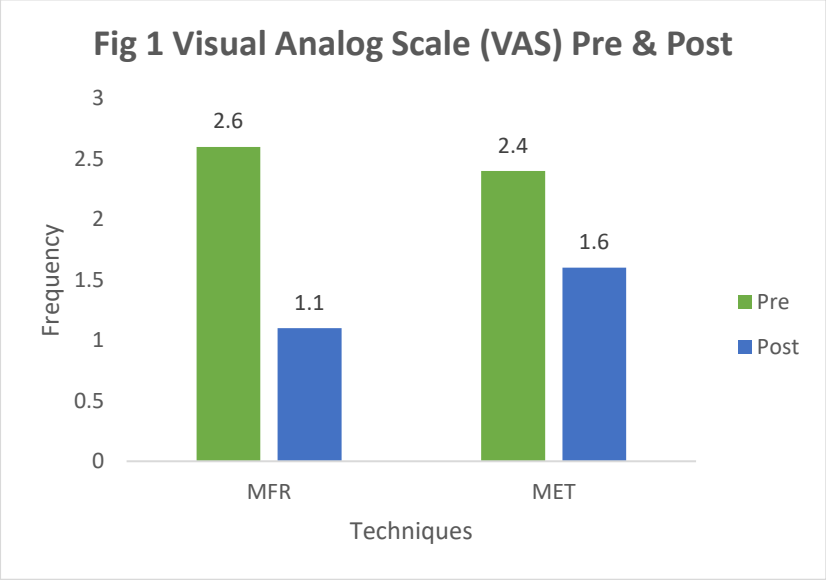
METHODOLOGY

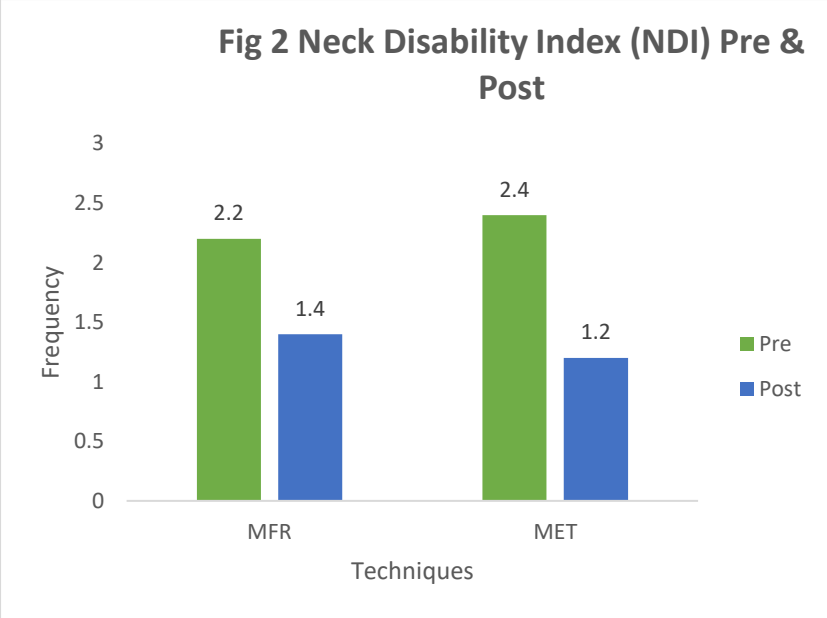
It was an experimental study. Fifty students having turtle neck syndrome participated in the study. The participants were labeled as group A and B. Each group consisted of twenty-five students. Non-probability convenient sampling technique was used. Initially, a screening questionnaire was used to determine whether any of the subjects had turtle neck syndrome. Students pursuing a Doctor of Physical Therapy (DPT) degree having turtle neck syndrome, usage of a mobile device for at least six hours a day and willing to participate were among the inclusion requirements. The study eliminated participants with cervical radiculopathy, orthopedic disorders, neurological abnormalities, recent cervical traumas, and cognitive problems. Group A received MFR therapy and group B received MET therapy. Pre and post visual analog scale (VAS) was utilized to verify the pain scale. Cervical range of motion of sub occipital muscle, sternocleidomastoid muscle and trapezius muscle was identified through goniometer. Neck disability index was filled to check the disability and the pain pressure threshold of sub occipital, sternocleidomastoid and trapezius muscle was investigated through Algometry. The Pre data was taken on day one and post data at the last day of the session. The total therapy program was scheduled for four weeks. Consent was taken from the patients. Data was implied and privacy of the participants was kept preserved.

RESULTS

Table 1. Gender distribution of participants

Technique	Gender N= 25	Frequency	Percentage
MFR	Male	9	36.0
	Female	16	64.0
MET	Male	18	72.0
	Female	7	28.0





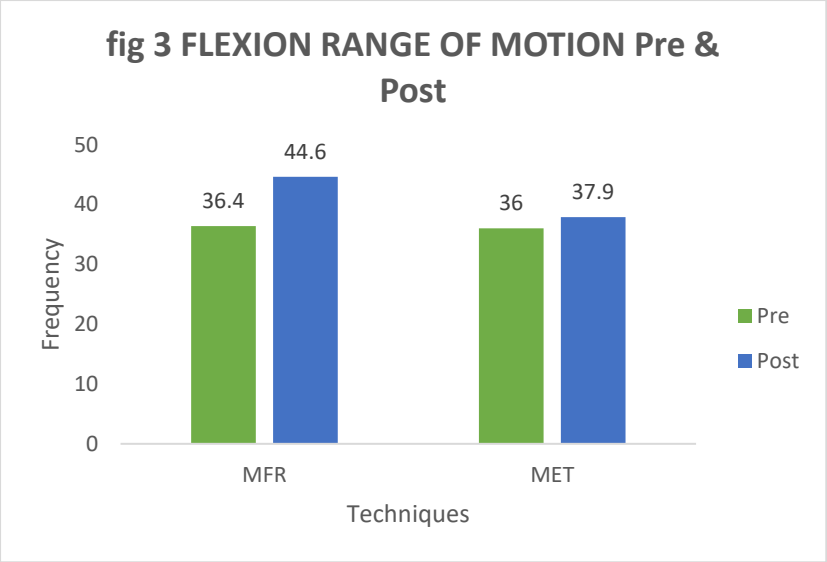


Table 2: Pain Pressure Threshold Right Trapezius Pre & Post

Techniques	Readings	Mean	S.D	Significance
MFR	Pre	7.36	±3.50	0.00
	Post	12.64	±3.90	
MET	Pre	12.32	±4.03	0.20
	Post	12.72	±3.87	

Table 3: Pain Pressure Threshold Left Trapezius Pre & Post				
Techniques	**Readings**	**Mean**	**S.D**	**Significance**
MFR	Pre	8.08	±2.61	0.00
	Post	12.68	±3.44	
MET	Pre	11.68	±3.61	0.00
	Post	12.84	±3.78	

Table 4: Pain Pressure Threshold Right Sternocleidomastoid (SCM) Pre & Post				
Techniques	**Readings**	**Mean**	**S.D**	**Significance**
MFR	Pre	8.28	±3.22	0.00
	Post	12.88	±3.35	
MET	Pre	12.44	±3.39	0.00
	Post	13.20	±3.53	

Table 5: Pain Pressure Threshold Left Sternocleidomastoid (SCM) Pre & Post				
Techniques	**Readings**	**Mean**	**S.D**	**Significance**
MFR	Pre	8.88	±3.01	0.00
	Post	13.68	±2.61	
MET	Pre	13.0	±2.81	0.00
	Post	14.16	±2.65	

Table 6: Pain Pressure Threshold Right Sub Occipital Muscle Pre & Post				
Techniques	**Readings**	**Mean**	**S.D**	**Significance**
MFR	Pre	3.92	±1.49	0.00
	Post	6.84	±1.59	
MET	Pre	7.08	±1.49	0.00
	Post	7.20	±1.38	

Table 7: Pain Pressure Threshold Left Sub Occipital Muscle Pre & Post				
Techniques	**Readings**	**Mean**	**S.D**	**Significance**
MFR	Pre	4.28	±1.45	0.00
	Post	7.0	±1.22	
MET	Pre	7.2	±1.70	0.005
	Post	7.4	±1.7	

DISCUSSION

In the current investigation, a sample of fifty patients was used. The findings displayed the Visual Analog Scale (VAS) MFR group readings, with a pre data 2.6±0.50 and a post data 1.16±0.37. The Pre reading for the MET group was 2.4±0.51 and the post was 21.6±0.49. The discomfort was significantly improved (0.00 p value) in all therapy groups after the four week treatment. The majority of patients reported either minimal pain or no pain at all on the VAS. Additionally, the before and after mean, S.D. of the Neck Disability Index were recorded. Pre and post data for the MFR group was 2.28±0.84 and 1.40±0.76, respectively. For the MET group the pre reading was 2.44±0.82 and post reading was 1.28±0.67. Every element, such as the degree of discomfort, self-care, lifting, reading, headaches, focus, work, driving, sleeping, and concentration, improved in both treatment groups.

Important findings were also observed in the cervical spine's pre- and post-range of motion. Flexion ROM pre data for the MFR group was 36.4±5.2, and the post data was 44.6±2.9. In the MET group, the pre readings were 36.0±6.0, and the post data was 37.9±5.2. Flexion range of motion increased in both treatment groups. The cervical muscles' pain threshold was noted. Left trapezius muscle pre data was 8.0±2.6 and post readings were 12.6±3.4, while right trapezius muscle (MFR group) pre data was 7.3±3.5 and post means were 12.6±3.9. The pre data of the right trapezius muscle (MET group) was 12.3±4.0 and the after readings were 12.7±3.8.The left trapezius muscle measured 11.6±3.6 before reading and 12.8±3.7 after reading. Right sternocleidomastoid muscle (SCM) muscle of the MFR group pre reading was 8.2±3.2 and the post reading was 12.8±3.3. The pre reading of the right SCM muscle (MFR group) was 8.2±3.2, and the post data was 12.8±3.3. The pre reading of the left sternocleidomastoid muscle was 8.8±3.0, and the post reading was 13.6±2.6. The pre interpretation for the right sternocleidomastoid muscle (MET group) was 12.4±3.3, and the post reading was 13.2±3.5. The pre and post reading for the left sternocleidomastoid muscle were 13.0±2.8 and 14.1±2, respectively. The pre mean and standard deviation for the right suboccipital muscle (MFR group) was 3.9±1.4, whereas the post reading was 6.8±1.5. The mean of the left suboccipital muscle was 7.2±1.7

before reading and 7.4±1.7 after the reading. On the other hand, Seong Joong Kim and Jung Hoo Lee carried out the prior study to investigate the impression of myofascial release on the concealed trigger sites of the upper trapezius, SCM, and the suboccipital muscle. The method demonstrated a considerable decrease in the tissue hardness and an elevation in the threshold for pain. (12) In 2018, Manuel Rodríguez et al. conducted a study which revealed that at the conclusion of the treatment, there were notable mean differences in the VAS (−0.99, 95% confidence interval [CI] = −1.82 to −0.16), the right trapezius PPT (0.38, 95% CI = 0.07 to 0.69), the left (0.28, 95% CI = 0.06 to 0.50) and right (0.40, 95% CI = 0.16 to 0.63) suboccipital pain pressure thresholds, and the right suboccipital pain pressure thresholds. Significant mean differences were seen at the 1-month follow-up for the VAS (−1.85, 95% CI = −2.76 to −0.94) and the suboccipital pain pressure thresholds, left (0.46, 95% CI = 0.12 to 0.80) and right (0.38, 95% CI = 0.06 to 0.69). (13)

The study had limitations like less sample size and the target population was medical students. Also, only two techniques were compared to check the effects on decreasing pain, increasing ROM, decreasing the disability and pain pressure threshold in turtle neck syndrome. It is recommended for future researchers to work on a large sample, comparing the effects of different techniques in the treatment of turtle neck syndrome and its effects on different variables.

CONCLUSION

It was concluded that for individuals with turtle neck syndrome, both Myofascial release and Muscle Energy technique has a greater approach in treating pain, flexion range of motion and pain pressure threshold.