

Original Research

Comparison of the efficacy of myofascial release therapy and static stretching on pain and cervical lateral flexion ROM in trapezius spasm patients

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ABSTRACT:

Background: Neck pain is very commonly shown by most people to be in the region of the back of the neck and between the bases of the neck to the shoulder, primarily indicating the region of the trapezius muscle. The aim of the study was to compare the efficacy of myofascial release therapy and static stretching on trapezius muscle spasms.

Methods: 30 subjects (15 in each group) at the age group of 30-60 years were selected for two groups by random selection. Group A received MFR therapy for 15 minutes followed by thermotherapy for 20 minutes and Group B received static stretching of trapezius by side flexing the neck to the contralateral side of spasm, with each stretch lasting for 10 seconds was done for 10 minutes then thermotherapy was given for 20 minutes. Each patient was given a Visual Analog Scale (VAS) to rate the perceived pain from 0 to 10 and the range of motion of cervical lateral flexion was taken with the help of a universal goniometer. The follow up of each subject was taken and the pain (VAS) and range of motion of the trapezius muscle were measured after 5 days of treatment. The two groups were then compared to determine which of the two methods of treatment of trapezius spasm was more efficient in relieving pain and increasing range of motion of lateral flexion. Students t-test was used as statistical test for data analysis.

Results and Discussion: Intergroup and intra group analysis was done. There was a significant decrease in pain and increase in cervical lateral flexion in the intergroup analysis with a significant difference.

Conclusion: We conclude from this study that there was a significant decrease in pain and increase in cervical lateral flexion in the intergroup analysis. Myofascial release therapy showed better results in decreasing pain and increasing the range of motion for cervical lateral flexion.

Keywords:

Myofascial release, Static stretching, Trapezius.

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To compare the efficacy of myofascial release therapy and static stretching on pain and cervical lateral flexion ROM in trapezius spasm patients

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INTRODUCTION

In the last two decades, neck pain has been gradually rising and is now second to back pain, the most severe musculoskeletal condition. Trapezius spasms are very commonly seen now-a-days due to the sedentary lifestyle and dependence on machines. Every 6 out of 10 individuals are known to suffer from trapezitis. It is more commonly seen in people of age group 18-50 years, more so in the student and working population. Women are more likely than men to develop and suffer neck pain. Those women are experiencing symptoms of localized muscle pain, contact tenderness, stiffness, and excessive muscle fatigue while being actively working. In particular, works related to computer has been associated with symptoms of neck pain and, more specifically, trapezoidal muscle pain or trapezoidal myalgia is common in women engaged in repetitive and monotonous work activities.

Myofascial release Chuen-Ru *et al.* (2002) is a type of soft tissue therapy intended to alleviate pain and to increase motion range. Techniques involve manual massage that is applied to stretch the fascia with the release of bonds between fascia, integument, muscles and bones. The fascia is manipulated, directly or indirectly, so that the connective tissue fibers can be reorganized more flexibly and functionally. Myofascial release is an entire body treatment method that recognizes the tightness and restrictions which affects the entire body. Restrictions cause uneven stress to the body and inefficient patterns of movement. The bodies maintain the most energy effective patterns of posture and movement available to us. Our current posture, muscle tension, and movement patterns can be recognized as "normal"-not quite as functional or pain-free as a more productive posture can be. Myofascial release requires reeducation of the central nervous system to accept a better and less painful new posture and muscle tension.

Static stretching is used to stretch out muscles

while the rest of the body will be free Bronfort (2004). It consists of different techniques which gradually stretch a muscle to an elongated position (to the point of discomfort) and hold that position for 30 sec to two minutes. 30 sec is the minimum duration to get the benefits of stretching, whereas two minutes is the maximum (if a position can be held for more than two minutes, a farther stretch should be performed). In the muscle, static stretching exercises require specialized tension receptors. When done properly, static stretching slightly decreases the sensitivity of tension receptors, allowing the muscle to relax and stretch longer. There is doubt over the effectiveness of static stretching, with some circles of sport strongly recommending against it.

Thermotherapy Cryotherapy, TENS (Transcutaneous Electrical Nerve Stimulation), SWD (Short Wave Diathermy), cervical isometrics, passive accessory intervertebral movements (Maitland's grades) are some of the other treatments available for trapezius spasm. There are a few studies which support that there is an effect of myofascial release therapy and static stretching to decrease pain and increase the lateral neck flexion range of motion in patients with trapezius spasm. The aim of the study was to compare the efficacy of myofascial release therapy and static stretching on trapezius muscle spasms.

MATERIALS AND METHODS

Subject selection

30 subjects (15 in each group) were selected from Amity Physiotherapy Clinic, Guru Harkrishan Hospital and Muskan Physiotherapy Clinic of India.

Age Group: 30-60 years (Warner, 2007).

Gender: Both males and females

Research design: Experimental pre-post type design

Sample design: Non-probability sampling

Inclusion criteria

Sub-acute or chronic mechanical neck pain particularly due to spasm in the trapezius muscle were

Table 1. Group characteristics

S. No		Group	N	Mean	Std. Deviation
1		MFR	15	7.533	1.489
2	VAS Pre	SST	15	7.267	1.486
3		MFR	15	4.000	1.320
4	VAS Post	SST	15	5.067	1.033
5		MFR	15	36.667	4.724
6	CROM Pre	SST	15	37.467	3.962
7		MFR	15	41.467	3.333
8	CROM Post	SST	15	39.533	3.270

selected.

Exclusion criteria

1. Recent cervical or scapular fracture
2. Tumours or malignancy
3. Any neuro-vascular condition
4. Cellulitis (Warner, 2007)
5. Cervical disk prolapse (Travell and Simons, 1998)
6. Uncooperative patients (Manheim, 2008)
7. Skin or any other infection (systemic or localized)
8. History of any recent surgery
9. Any obvious deformity
10. Acute spasm

Materials used

The materials used in this study included plinth, towel, universal Goniometer, talcum powder and stop-watch.

Procedure

After selection of the subjects on the basis of inclusion and exclusion criteria, the informed consent form was taken. The patients were divided into two groups, 15 in each group, by random selection. Each patient was given a Visual Analog Scale to rate the perceived pain from 0 to 10, 0 being ‘no pain’, 1 being ‘minimum pain’ and 10 being ‘severe intolerable pain’. Next, the range of motion of cervical lateral flexion was taken with the help of a universal goniometer (Norkin and White, 2009). The subject was asked to sit on a plinth or a chair with a low back rest and straight spine. The C7 spinous process of the subject was palpated and the axis of the goniometer was placed on it.

The stationary arm of the goniometer was placed vertically along the thoracic spine and the

Comparison of VAS score from day 1 to day 5

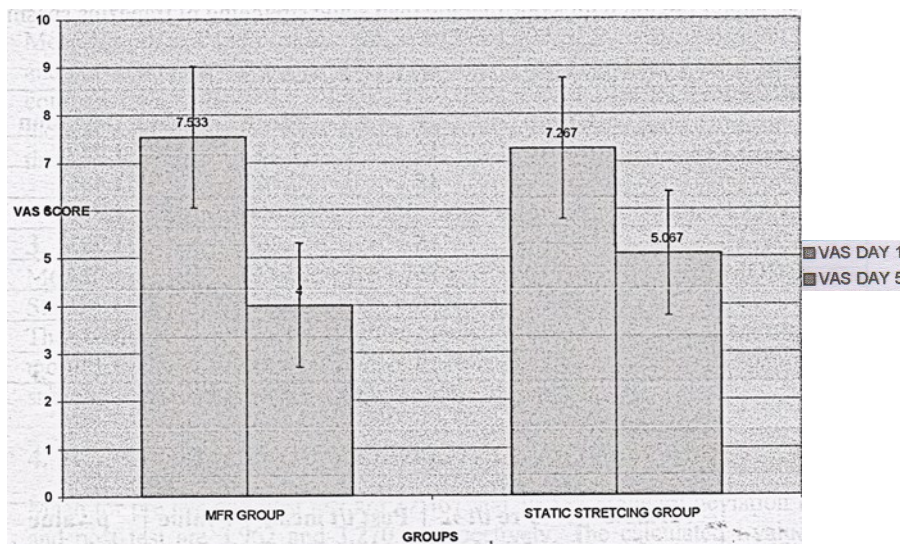


Figure 1. Shows comparison of VAS score from day 1 to day 5

Table 2. Intra and inter group comparison

S. No	Group	Variable	Pre t/t mean	Post t/t mean	t-value	P-value
1	MFR	VAS	7.533	4	9.545	P<0.05 (Significant)
2	Static stretching	VAS	7.267	5.067	6.521	P<0.05 (Significant)
3	Intergroup comparison	VAS	-	-	3.702	P<0.05 (Significant)
4	MFR	CROM	36.667	41.467	5.457	P<0.05 (Significant)
5	Static stretching	CROM	37.467	39.533	2.977	P<0.05 (Significant)
6	Intergroup comparison	CROM	-	-	1.71	P<0.05 (Significant)

movable arm was placed perpendicular to the floor with C0 as the reference point. Stabilizing the shoulder girdle to prevent any trick movement of the thoracic spine, the subject was asked to actively flex the neck towards one side. The degrees in the goniometer were noted and the same procedure was repeated for flexion to the opposite side. These ranges were documented in the data collection form. For spasm in the right upper fibres of trapezius, lateral flexion of neck to left side was noted. After noting the CAS and ranges of Motion, Group A was treated with myofascia release therapy over the area of spasm.

Technique

With the subject in sitting position, the spinous process of the subject was palpated, one by one, by the therapist and the painful spinous processes were marked with a marker. Some talcum powder was applied onto the skin surface to reduce friction. Now the thumb of the therapist, firm on the skin was moved and dragged along the area of spasm. The spasm was dragged and released into the supraclavicular lymph nodes with a firm hand. This was repeated several times. Immediately after this procedure, a moist hop pack was applied over the trapezius fibres to relax the part and reduce pain. The other group was treated by static stretching Aguilera *et al.* (2009) of trapezius fibres.

With the subject in sitting position, the neck was taken from neutral position to side flexion of the

opposite side if spasm. Passively. It was held in this position for 10 seconds and repeated after a gap of a minute. Immediately after this procedure, a Hot pack was taken as an adjunct in the treatment protocol to relax the muscle spasm and relieve the pain caused by the forceful maneuvers of MFR or static stretching. The follow up of each subject was taken for the pain (VAS) and range of motion of the trapezius muscle were measured after 5 days of treatment. The two groups were then compared to determine which of the two methods of treatment of trapezius spasm is more efficient in relieving pain and increasing range of motion of lateral flexion. Each treatment session lasted for about 30 minutes and the follow-up of each subject was carried out for 5 days.

Group A: MFR therapy for 15 minutes followed by thermotherapy for 20 min (Cunha *et al.*, 2008).

Group B: Static stretching of trapezius by side flexing the neck to the contralateral side of spasm, with each stretch lasting for 10 seconds was done for 10 min. Next, thermotherapy was given for 20 min (Aguilera *et al.*, 2009).

Outcome measures

1. VAS score for pain perceived and
2. ROM of lateral flexion of neck to opposite side

Statistical analysis

Student's t-test was used to compare the two

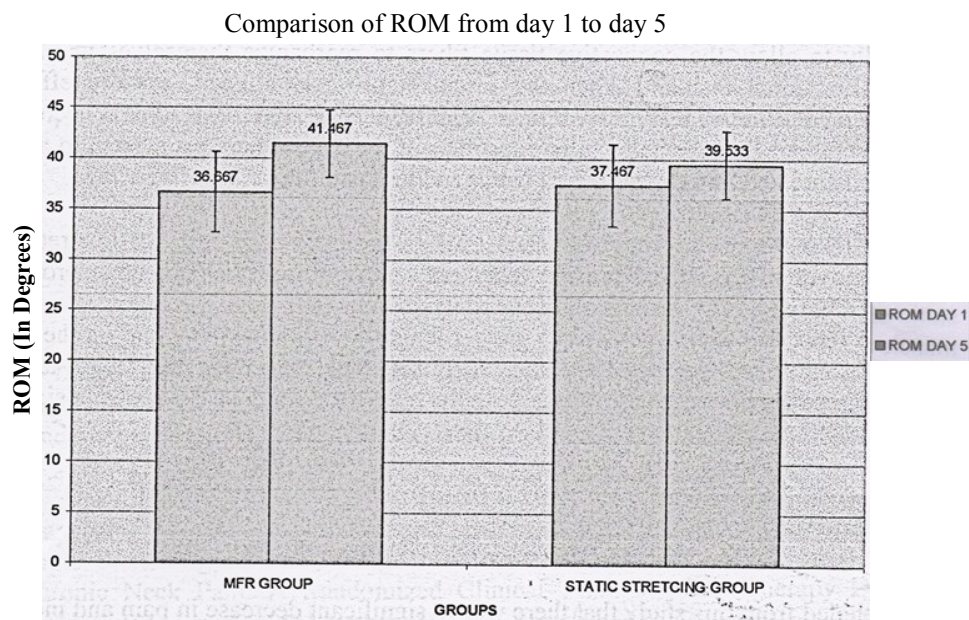


Figure 2. Shows comparison of ROM from day 1 to day 5

groups. Values were presented as mean \pm standard deviation. Statistical significance was set at $P < 0.05$. Inter and Intra group analysis was carried out.

RESULTS

In group A, myofascial release therapy was given for 5 days in a week to persons suffering from trapezius spasm.

Intragroup analysis within group A

1. VAS

Mean for pre-test and post-test are 7.733 and 3.600 respectively. Standard Deviation for pre-test and post-test are 1.489 and 1.320 respectively. The calculated t-value is 9.545. When compared with t-table, the calculated t-value is more than the critical value. Hence there is significant decrease in pain with MFR therapy in patients with trapezius spasm.

2. ROM for lateral cervical flexion

Mean for pre-test and post-test are 36.667 and 40.667. Standard deviation for pre-test and post-test are 4.724 and 3.333 respectively. The calculated t-value is 5.457. When compared with t-table the calculated t-value is more than the critical value. Hence there is significant improvement in the range of lateral cervical

flexion with MFR therapy.

Intragroup analysis within group A

3. VAS

Mean for pre-test and post-test are 7.733 and 5.600 respectively. Standard Deviation for pre-test and post-test are 1.486 and 1.033 respectively. The calculated t-value is 6.521. When compared with t-table, the calculated t-value is more than the critical value. Hence there is significant decrease in pain with static stretching in patients with trapezius spasm.

4. ROM for lateral cervical flexion

Mean for pre-test and post-test are 37.467 and 39.533. Standard deviation for pre-test and post-test are 3.962 and 3.270 respectively. The calculated t-value is 2.977. When compared with t-table the calculated t-value is more than the critical value. Hence there is significant improvement in the range of lateral cervical flexion with static stretching of the muscle in patients with trapezius spasm.

Intergroup analysis between MFR and static stretching groups

Interventions in group A and B are MFR and static stretching respectively. Interpretations through intergroup data analysis of group A and B by using t-

test (table C).

1. VAS

Mean post-test values of group A and B are 3.600 and 5.066 respectively. Standard deviation post-test values of group A and B are 1.320 and 1.033 respectively. The calculated t-values is 3.702. When compared with t-table, the calculated t-value is more than the critical value. Hence, there is more significant reduction of pain with MFR therapy than static stretching of trapezius spasm.

2. ROM for lateral cervical flexion

Calculated t-value is 1.710. When compared with t-table, the calculated t-value is more than the critical value. Hence, there is more significant increase in the range of cervical lateral flexion with MFR therapy than static stretching of trapezius spasm.

DISCUSSION

This study entitled “A study to compare the efficacy of Myofascial release therapy and static stretching on trapezius muscle spasm” had not been researched earlier and thus came the need to research it. A lot of review of literature had been done to see whether by using these two parameters (myofascial release therapy and static stretching of trapezius muscle) there could be any difference in results. The two variables that had been taken to conduct this study were VAS and Cervical lateral flexion range of motion, and the study was performed on 30 patients with their written consent.

Luke (2006) suggested that only a few of the numerous non-invasive physical treatments proposed for myofascial pain caused by active myofascial trigger points may be effective, but the clinical efficacy of these interventions requires further research into higher quality trails.

Bendtsen *et al.* (1996) found that myofascial release therapy is a technique that goes deep into the fascia to release splasms and thereafter drains it into the

lymphatic nodes. This procedure is very helpful in relieving pain due to the spasm (by inhibition of nociceptors) and thus, lengthens the contracted muscle, breaking the pain-spasm cycle. With the help of MFR therapy, the fascia is manipulated, directly and indirectly, to allow connective tissue fibers to reorganize in a more versatile and functional manner. When the fascia is properly aligned, a more efficient posture can be achieved using Myofascial release, energy increases and pain decreases. Thus, Myofascial release helps in re-education of the central nervous system to accept the new posture and muscle tension as better and less painful.

Static stretching is used to stretch muscles while the body is at rest. Static stretching exercises involve specialized tension receptors in our muscles. When done properly, static stretching slightly lessens the sensitivity of tension receptors, which allows the muscle to relax and to be stretched to greater length (Copper *et al.*, 1986; Howard and Michael, 2009; Howard and Barry, 2008). Static stretching, on the other relationship of the fibers. Hence, increasing the range of motion of the opposite side.

CONCLUSION

We concluded from this study that there was a significant decrease in pain and increase in cervical lateral flexion in the both the groups. However, myofascial release therapy showed better results in decreasing pain and increasing the range of motion for cervical lateral flexion over static stretching.

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