

## A STUDY TO COMPARE IMMEDIATE EFFECT OF MYOFASCIAL RELEASE & POSITIONAL RELEASE TECHNIQUE ON PAIN IN COMPUTER WORKERS WITH UPPER TRAPEZITIS-AN INTERVENTIONAL STUDY

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### ABSTRACT

**Background:** Trapezitis is a common condition among computer workers due to prolonged static postures and poor ergonomics. Continuous desk work causes the trapezius muscle to remain in a fixed position, leading to muscle fatigue and spasms. Pain intensity can be assessed using the Numerical Pain Rating Scale (NPRS). Manual therapy techniques like Myofascial Release (MFR) and Positional Release Technique (PRT) are commonly used to manage this condition. Both treatments have been found effective in reducing pain and improving muscle function in individuals with upper Trapezitis.

**Aim:** To compare immediate effect of myofascial release & positional release technique on pain in computer workers with upper Trapezitis.

#### Objective:

- 1] To evaluate the effect of Myofascial release on pain in computer workers with upper Trapezitis.
- 2] To evaluate the effect of Positional release technique on pain in computer workers with upper Trapezitis.
- 3] To compare the effect of Myofascial release and positional release technique on pain in computer workers with upper Trapezitis.

**Methodology:** A total of 30 subjects were randomly selected from the computer department based on inclusion and exclusion criteria. Participants were randomly divided into two groups: Group A received the Myofascial Release Technique, and Group B received the Positional Release Technique. Each participant received only one treatment session. The intensity of pain was measured before and after the intervention using the Numerical Pain Rating Scale (NPRS). The study aimed to compare the immediate effects of both techniques on upper Trapezitis. Data were analyzed to determine the effectiveness of each treatment.

**Result:** Data were analyzed using SPSS software. For statistical evaluation, a paired t-test was used to compare pre- and post-treatment scores within each group, and an unpaired t-test was used to compare outcomes between Group A and Group B.

**Conclusion:** Both techniques were found to be effective in relieving pain associated with upper Trapezitis. However, Myofascial Release (MFR) was found to be more effective than the Positional Release Technique (PRT) in reducing pain.

**Key Words:** Trapezitis, Myofascial Release, Positional Release Technique, Computer Workers, Pain Relief.

## INTRODUCTION

The trapezius is a large, superficial muscle spanning the upper back and neck, composed of especially long muscle fibers. It supports and helps maintain the spinal column's upright posture when standing. The trapezius covers the top back of the shoulders and neck and is trapezoidal in shape, broad, and thin. It primarily aids in posture but is also involved in active movements such as side bending, head rotation, lifting and lowering of the shoulders, and internal rotation of the arm. Sensory innervation of the trapezius comes from the ventral rami of C3 and C4, while its motor function is controlled by the spinal accessory nerve. The muscle consists of three parts: the superior part connects the neck (ligamentum nuchae) and skull (external occipital protuberance and superior nuchal line), facilitating head extension; the middle part attaches to the spinous processes of C7-T12 and adducts the scapulae; the inferior part depresses the scapula. Insertions include the scapular spine, acromion process, and lateral clavicle. The muscle's role is critical for stabilizing the scapula, allowing the scapulohumeral muscles to function properly<sup>1, 2</sup>.

Trapezitis is defined as an inflammation of the neck and upper back muscle, often associated with myofascial pain syndrome<sup>3</sup>. The pain usually arises from overuse in unnatural positions, sustained static postures, stress, and tension. Contributing factors include repetitive motions, prolonged sitting without back support, use of excessively high keyboards, extended neck flexion during activities such as driving or cycling, tight pectoralis muscles, and sudden unilateral movements<sup>4</sup>. Computer workers are particularly prone to upper Trapezitis due to their prolonged desk work, maintaining fixed head positions, and poor ergonomic setups like working with the computer screen below eye level. This sustained poor posture leads to muscle fatigue and spasms, causing discomfort and pain, which can affect productivity and quality of life.

Myofascial Release (MFR) is a soft tissue mobilization technique described as the facilitation of mechanical, neural, and psychophysiological adaptive potential via the myofascial system. MFR alters the viscosity of the ground substance, changing it to a more fluid state, which relieves excessive pressure of the fascia on pain-sensitive tissues and restores normal alignment. This method accelerates the reduction of trapezius muscle spasms<sup>5</sup>. By improving tissue flexibility and blood

flow, MFR helps reduce pain and improve functional movement.

Positional Release Technique (PRT) is a manual therapy that restores muscle to its normal resting tone by positioning the muscle in a shortened, comfortable posture. Prolonged contraction causes adaptive shortening and spasms, and PRT involves lengthening the fibers near the hypertonic muscle's origin and insertion to inhibit muscle spindle activity. This reduces efferent impulses that cause hypertonicity, allowing muscles to relax and return to neutral posture without triggering the spindle reflex. PRT has been found effective in relieving muscle tension and pain by encouraging relaxation and restoring normal muscle length.

Though multiple studies have examined the individual effects of MFR and PRT in trapezitis, no research has yet compared the immediate effects of these techniques on pain in computer workers with upper Trapezitis. Considering the high incidence of trapezius pain in this population due to poor posture and prolonged static positions, this study aims to compare the immediate effectiveness of MFR and PRT in relieving pain, providing valuable insights for clinicians in choosing the most effective treatment for this common condition.

## METHODOLOGY

This prospective intervention study was conducted in the computer department of Harivandana College, Rajkot. Written consent was obtained from all participants prior to their inclusion. A total of 39 patients were screened, of which 30 met the inclusion criteria and were selected for the study.

The participants were equally divided into two groups using a simple random sampling method. Subjects were informed about the study's objectives, and informed consent was obtained from each participant. They underwent general screening followed by specific tests to determine eligibility based on the inclusion and exclusion criteria.

### Inclusion Criteria:

- Age between 18 to 60 years
- Computer workers with neck pain and unilateral upper Trapezitis
- Both male and female subjects included
- Patients with a positive trigger point jump sign

### **Exclusion Criteria:**

- History of fracture or any pathology related to the shoulder joint within the past year
- Post-surgical cases related to the cervical spine or shoulder joint
- Psychiatric illness or uncooperative patients
- Presence of any other neurological deficits
- Subjects who did not provide consent

### **PROCEDURE**

A total of 30 subjects (both male and female) were selected based on the inclusion and exclusion criteria. Measurement forms and written consent were obtained prior to treatment. Participants were educated about the inflammation of the upper trapezius muscle, its effects on neck pain, and the use of the Numerical Pain Rating Scale (NPRS) for pain assessment. After administering the respective techniques, pain levels were re-evaluated using the NPRS. Based on convenience, subjects were then divided into two groups:

Group A: Myofascial release technique

Group B: Positional release technique

GROUP A: Myofascial Release (MFR) Technique

The patient was positioned comfortably in a sitting posture on a chair, with both feet firmly placed on the floor. Gradual friction was applied to the primary trigger point using the right thumb, while the left thumb was used to reinforce the pressure from above.

Pressure was applied for 90 seconds, followed by a 15-second rest period, and this cycle was repeated three times.<sup>8,9</sup>

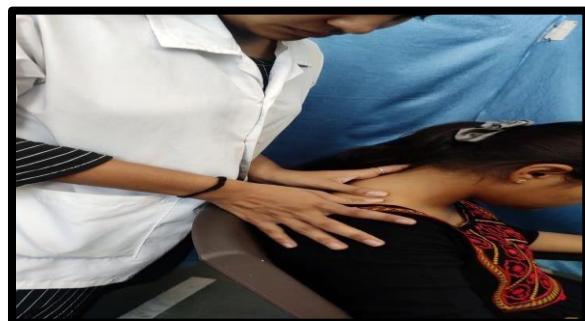


Figure 1 Myofascial Release Technique

GROUP B: Positional Release Technique (PRT)

In this technique, the ideal position of comfort was achieved and held for 90 seconds, followed by a 15-second rest period, and then a passive return of the body part to an anatomically neutral position. This cycle was repeated three times.<sup>1</sup> The subject was

asked to lie in a supine position and relax completely. The therapist sat at the head of the table and elevated the subject's scapula by moving the shoulder or scapula in a superior and medial direction toward the ear. The neck was then rotated to the opposite side, extended, and side-bent to the same side. Fine-tuning of the release was performed through adjustments at either the neck or shoulder. This position was held for 90 seconds, and after the release, the subject was returned to a neutral anatomical position<sup>10</sup>



Figure 2 Positional Release Technique (PRT)

### **DATA ANALYSIS AND RESULT**

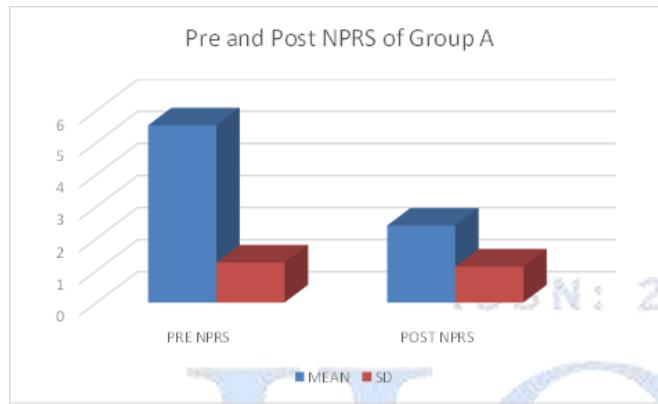
Statistical analysis was carried out using IBM SPSS Statistics Version 20.0 for Windows. Descriptive statistics including mean and standard deviation (SD) were calculated for the pre- and post-intervention pain scores using the Numerical Pain Rating Scale (NPRS). Paired t-tests were employed to assess within-group differences in NPRS scores before and after treatment. An unpaired (independent) t-test was used to compare the post-treatment outcomes between the two intervention groups. A p-value of less than 0.05 was considered statistically significant. Microsoft Excel and Word were used for generating tables and charts.

Table 1: Mean and SD of Pretreatment and Post treatment calculated as a measure of dispersion. Pre NPRS and Post NPRS data numeric pain rating scale analyzed of Group A and GROUP B

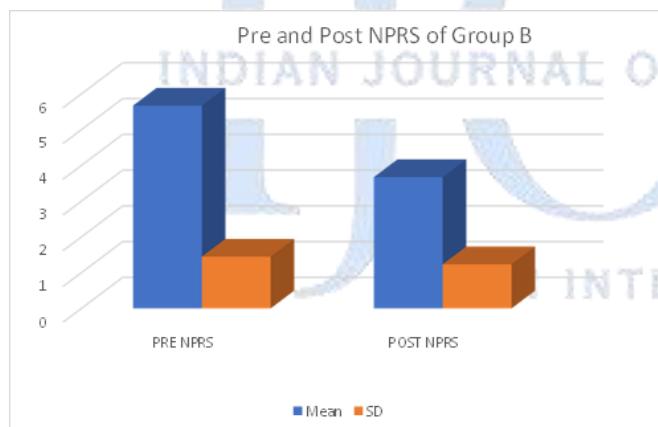
GROUP	TECHNIQUE	NPRS	NO. OF SUBJECT	MEAN	SD
A	MFR	PRE-NPRS	15	5.53	1.246
		POST-NPRS	15	2.40	1.121

GROUP	TECHNIQUE	NPRS	NO. OF SUBJECT	MEAN	SD
B	PRT	PRE-NPRS	15	5.67	1.447
		POST-NPRS	15	3.67	1.234

The study involved 30 subjects with neck pain and unilateral upper Trapezius. The result is presented for 30 patients (15 patients in Group A and 15 patients in Group B).



Graph 1 : Graphical presentation of Group A



Graph 2: Graphical presentation of Group B

Paired T test was used for pre treatment and post treatment comparison of NPRS analysed of Group A and Group B

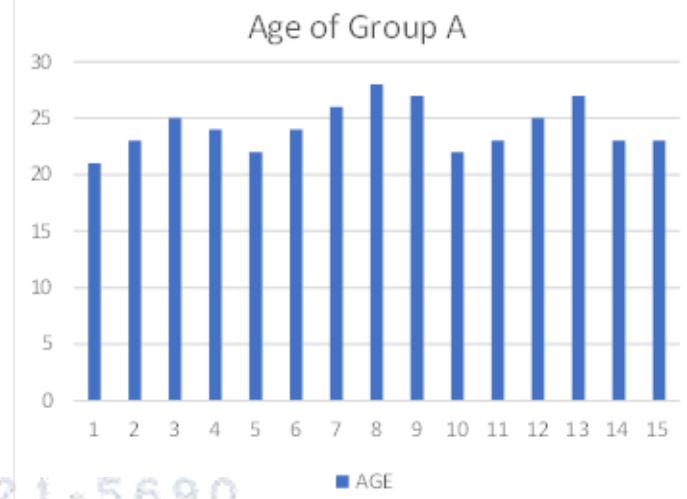
Interpretation: A statistically significant difference was found between Group A and Group B in post-treatment NPRS scores ( $p < 0.0001$ .)

GROUP		T	P	Interpretation
A	Pre and Post NPRS	16.33	P<0.000	Significant
B	Pre and post-NPRS	14.49	P<0.000	Significant

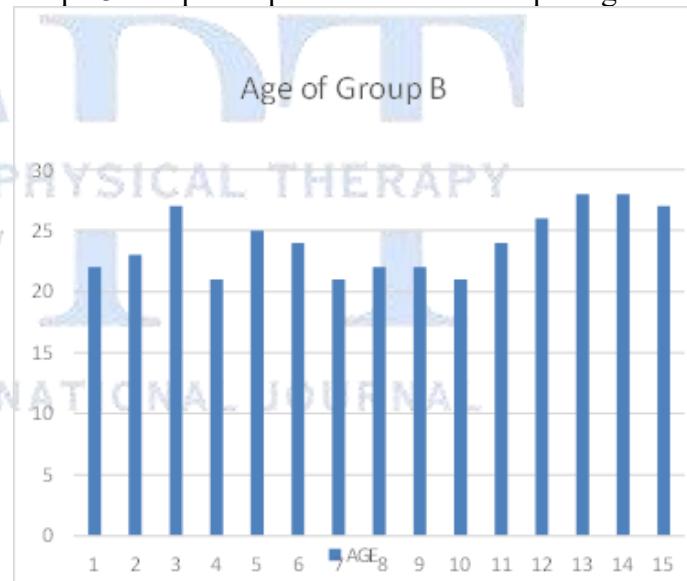
Table 2: p value, T value and interpretation of Group A and Group B

Unpaired T test was used for between group comparison of NPRS analyzed of Group A and Group B

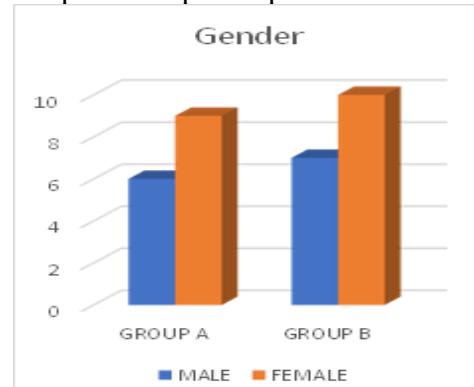
Interpretation: The above table shows the result of unpaired T test. Result show significant difference for pre and post NPRS analyzed of both the group.



Graph 3: Graphical presentation of Group A age



Graph 4: Graphical presentation of Group B age



Graph 5: Graphical presentation of gender of Group A and Group B

**Interpretation:** Above table and graph shows the gender of Group A and Group B

## DISCUSSION

This comparative study investigated the immediate effect of one session of Myofascial Release (MFR) and Positional Release Technique (PRT) on pain intensity in computer workers diagnosed with upper trapezitis. The findings reveal that both Group A (MFR) and Group B (PRT) demonstrated statistically significant reductions in pain scores, as measured by the Numerical Pain Rating Scale (NPRS), with  $p < 0.000$  for both groups. This clearly indicates that both interventions were effective in providing immediate pain relief after a single session, supporting their clinical utility in acute management of upper trapezius myofascial pain.

However, a between-group comparison showed that the mean NPRS score reduction was more significant in the MFR group than in the PRT group. The unpaired t-test revealed a statistically significant difference ( $p < 0.000$ ) favoring the MFR intervention. This suggests that while both techniques are beneficial, MFR may offer superior immediate analgesic effects in individuals with upper trapezitis.

The greater effectiveness of MFR can be attributed to its mechanical and neurophysiological effects on myofascial trigger points. MFR involves applying sustained pressure and stretching to the fascial system, which leads to local ischemia followed by reactive hyperemia. This process blanches the nodules and then restores blood flow, which flushes out inflammatory exudates and pain metabolites, contributing to a reduction in nociceptive input. Furthermore, MFR is believed to break down adhesions and scar tissue, desensitize free nerve endings, and reduce overall muscle tone, all of which contribute to the alleviation of muscle spasm and pain. These mechanisms are supported by existing literature, which states that MFR is one of the effective manual therapy techniques in reducing pain and disability while improving the isometric extension strength of the neck in patients with non-specific chronic neck pain [11, 12].

In contrast, PRT works through a gentler, indirect neuromuscular re-education approach, which is grounded in placing the affected tissue in a position of maximum comfort. This posture is held for 90 seconds to allow the muscle spindle and related

proprioceptors to reset. The therapeutic rationale behind PRT is based on reducing tension and nociceptive sensitivity by minimizing afferent stimulation from the affected tissues [13]. The central mechanism involves the inhibition of gamma motor neuron activity, which leads to reduced muscle spindle excitability and relaxation of the muscle.

As described by Korr's model, placing a muscle in a shortened and pain-free position decreases gamma discharge activity, thereby inhibiting the facilitated spinal segment and enabling the muscle to return to its normal resting length [14, 15]. This neuromodulatory effect likely explains the observed pain relief in the PRT group, albeit to a lesser extent than MFR.

These findings are supported by previous research. Chaudhary et al. (2013) found that MFR significantly reduced pain and improved function in individuals with upper trapezius spasm compared to cold pack therapy [8]. Similarly, Vispute and Kumar (2022) concluded that both MFR and PRT are effective, but MFR offers greater immediate benefit in reducing pain intensity among students with trapezitis [9]. Kumaresan et al. (2012) also reported the clinical effectiveness of PRT in trapezitis, highlighting its ease of application and safety [10].

In the context of modern-day occupations, especially among computer users with repetitive and static postural demands, techniques like MFR that offer faster relief may be more applicable for workplace health management. However, PRT remains valuable for patients with low pain tolerance or acute sensitivity, as it avoids direct pressure and may be more acceptable in certain clinical scenarios.

## CONCLUSION

It can be concluded that both Myofascial Release (MFR) and Positional Release Technique (PRT) were effective in providing immediate pain relief in individuals with upper trapezitis. However, MFR was found to be significantly more effective than PRT in reducing pain intensity following a single treatment session. These results suggest that while both techniques are clinically useful, MFR may be the preferred intervention for faster and more substantial relief in cases of myofascial pain related to trapezitis, particularly in occupational settings such as among computer users.

## **Limitation of the study**

While the findings of this study provide valuable insights into the immediate effects of Myofascial Release (MFR) and Positional Release Technique (PRT) on upper trapezitis, several limitations must be acknowledged:

**Small Sample Size:** The study included only 30 participants, with 15 subjects in each group. This limited sample size may affect the generalizability of the results to larger populations.

**Lack of Classification by Stage:** The study did not differentiate between acute, subacute, or chronic stages of upper trapezitis. Since the response to treatment may vary across different stages of the condition, this could have influenced the outcomes.

**Exclusion of Structural Deformities:** Participants with underlying structural deformities of the cervical spine or shoulder girdle were excluded. This limits the applicability of the results to populations with such anatomical variations.

**Short-Term Follow-Up:** The study assessed only the immediate effect of a single session, without any long-term follow-up to evaluate the duration of pain relief or functional improvements.

## **Further recommendation**

Based on the findings and limitations of this study, the following recommendations are proposed for future research:

**Longer Treatment Duration:** Future studies may explore the effects of administering multiple treatment sessions over an extended period to determine the cumulative and sustained benefits of MFR and PRT techniques.

**Extended Follow-Up:** Incorporating long-term follow-up assessments would help evaluate the duration of therapeutic effects, recurrence of symptoms, and overall functional improvements post-intervention.

**Diverse Population Groups:** Further research should include broader demographic groups, such as geriatric populations or individuals from varied occupational backgrounds, to assess the effectiveness of these interventions across different age groups and functional demands.

**Larger Sample Size:** Studies involving a larger sample size would enhance the statistical power and improve the generalizability of the findings to the wider population.

## **BIBLIOGRAPHY**

1. Ourieff, J., Scheckel, B., & Agarwal, A. (2018). Anatomy, Back, Trapezius
2. Camargo, P. R., & Neumann, D. A. (2019). Kinesiologic considerations for targeting activation of scapulothoracic muscles—part 2: trapezius. *Brazilian journal of physical therapy*, 23(6), 467-475
3. Travell, J. G., & Simons, D. G. (1992). Myofascial pain and dysfunction: the trigger point manual (Vol. 2). Lippincott Williams & Wilkins.
4. Søgaard, K., Blangsted, A. K., Nielsen, P. K., Hansen, L., Andersen, L. L., Vedsted, P., & Sjøgaard, G. (2012). Changed activation, oxygenation, and pain response of chronically painful muscles to repetitive work after training interventions: a randomized controlled trial. *European journal of applied physiology*, 112, 173-181.
5. Kinser, A. M., Sands, W. A., & Stone, M. H. (2009). Reliability and validity of a pressure algometer. *The Journal of Strength & Conditioning Research*, 23(1), 312-314.
6. Travell JG, Simons DG, Myofascial Pain and dysfunction: The Trigger Point Manual, The upper extremities, Baltimore, Md: Williams & Wilkins, 1983:5-90.
7. Jørgensen, R., Ris, I., Falla, D., & Juul-Kristensen, B. (2014). Reliability, construct and discriminative validity of clinical testing in subjects with and without chronic neck pain. *BMC Musculoskeletal Disorders*, 15, 1-15
8. Chaudhary ES, Shah N, Vyas N, Khuman R, Chavda D, Nambi G. Comparative study of myofascial release and cold pack in upper trapezius spasm. *International Journal of Health Sciences & Research*. 2013 Dec;3(12):20-7.
9. Vispute, S., & Kumar, N. (2022). A Comparative Study of Immediate Effects of Myofascial Release Technique and Positional Release Technique on Trapezius among the College Student. *Int J Physiotherapy Res*, 10(3), 4243-49
10. Kumaresan, A., Deepthi, G., Anandh, V., & Prathap, S. (2012). Effectiveness of positional release therapy in treatment of

- trapezitis. International Journal of Pharmaceutical Science and Health Care, 1(2), 71-81.
11. Irmich D, Behrens N et al, Is Acupuncture at distant points really Superior to dry needling of trigger points In chronic neck pain?, pain,2002;83:991-992.
12. Bonica, J. J. (1989). Textbook of pain (pp. 1-18). P. D. Wall, & R. Melzack (Eds.). Edinburgh: Churchill Livingstone
13. Al-Shawabka, S. A., Shenouda, M. M., & Balbaa, A. A. (2013). Positional release technique versus manual pressure release on the upper trapezius muscle in patients with myofascial pain dysfunction syndrome. Bull Fac Phys Ther Cairo Univ, 18(1), 55-63.
14. Korr, I. M. (1947). The neural basis of the osteopathic lesion. J Am Osteopath Assoc, 47(4), 191-8.
15. KORR, I. M. (1975). Proprioceptors and somatic dysfunction. J Am Osteopath Assoc, 74, 638-650.

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