International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2025: 7.089

To Compare the Effect of Instrument Assisted Soft Tissue Mobilization Versus Manual Trigger Point Release Along with Trapezius Stretch on Trapezitis in Smartphone Users

Suraksha S P[1], Veena J[2], Dr. B. S. Jayaram[3]

[1]Post Graduate Student, Kempegowda Institute of Physiotherapy, Bengaluru, India

[2]Assistant Professor, Kempegowda Institute of Physiotherapy, Bengaluru, India

[3]Professor, Department of Orthopaedics, KIMS, Bengaluru, India

Abstract: ***To compare the effect of instrument assisted soft tissue mobilization versus manual trigger point release along with trapezius stretch on trapezitis in smartphone users. Background and Objectives: The trapezius muscle in the upper back and neck plays vital role in maintaining posture, shoulder and neck movements, and stabilizing the shoulder blades. Due to overuse of this muscle leads to inflammation of the trapezius muscle. (1). The improper position of neck and shoulder leads to myofascial pain syndrome characterized by trigger points i.e., knots in skeletal muscles which forms tenderness on palpation (2) which causes pain and tenderness.***

Keywords: Trapezitis, IASTM, Manual Trigger Point Release, Neck Disability Index, Pressure Pain Threshold, Range of Motion

1. Introduction

Trapezitis is a frequently encountered musculoskeletal disorder that primarily affects the upper trapezius muscle. It can develop due to both traumatic and non-traumatic factors, with poor posture and repetitive strain being the most common causes (1). The trapezius muscle, which spans from the occipital bone to the scapula and thoracic spine, plays a vital role in posture control, cervical motion, and scapular stabilization. Owing to its continuous functional demand, it is highly susceptible to overuse and inflammation (2).

Inflammation of the trapezius often results in the formation of myofascial trigger points, which are localized hyperirritable nodules in skeletal muscle fibers. These trigger points contribute to myofascial pain syndrome, leading to pain, muscle tightness, restricted movement, and functional limitations (3–5). Symptoms may persist at rest and are aggravated with movement, often radiating to adjacent areas.

Lifestyle changes, particularly the rising use of smartphones and digital devices, have significantly contributed to the growing incidence of trapezitis. Prolonged neck flexion, static postures, and repetitive strain while using electronic gadgets predispose users to muscular fatigue and microtrauma (6). Occupations requiring sustained neck positions, such as software professionals, students, dentists, and tailors, further increase the risk of trapezius overload.

The pathophysiology involves sustained muscle contraction and inadequate blood supply, which restrict oxygen and nutrient delivery. This leads to an accumulation of metabolic waste products, contributing to pain and the formation of trigger points (7,8). Epidemiological studies suggest a higher prevalence of trapezitis in women compared to men, with the upper trapezius being the most common site of involvement (9).

Conservative physiotherapy remains the cornerstone of trapezitis management. Interventions such as stretching, strengthening, manual therapy, and soft tissue mobilization are widely used. Instrument Assisted Soft Tissue Mobilization (IASTM) has gained attention for its ability to release fascial restrictions and improve circulation (10,11), while Manual Trigger Point Release (MTPR) is considered effective for inactivating myofascial trigger points and reducing localized pain (12,13). Despite their clinical utility, limited comparative studies exist on their effectiveness in trapezitis management. This study was therefore designed to compare the effectiveness of IASTM and MTPR, both combined with trapezius stretching, in reducing pain and improving function in smartphone users with trapezitis.

2. Methodology

For this study 60 patients were taken with unilateral trapezitis between age group 18 to 30 years according to inclusion and exclusion criteria and were divided into 2 groups. Each group is allocated 30 patients respectively. Group A samples were given instrument assisted soft tissue mobilization along with trapezius stretch and Group B samples were given manual trigger point release along with trapezius stretch for 3times a week for 2weeks.

Materials and Method Used Sources of Data:

Kempegowda Institute of Physiotherapy Outpatient Department, Bangalore
KIMS Hospital Inpatient Department, Bangalore
KIMS Hospital Outpatient Department, Bangalore.
Study design: Comparative study
Sample size: 60 sample

Sampling Method- Simple random sampling method
Study duration- 12 months
Study design

Group A- IASTM on trapezitis in smartphone users
Group B- Manual triggers point release on trapezitis in

Inclusion Criteria:
- Subjects diagnosed with unilateral trapezitis.
- Age group 18–30 years.
- Smartphone users presenting with upper trapezius pain.
- Patients willing to participate and provide informed consent.
- Both male and female participants.

Exclusion Criteria:
- History of cervical spine fracture, trauma, or surgery.
- Neurological disorders affecting cervical/upper limb function.
- Systemic musculoskeletal conditions (e.g., rheumatoid arthritis, fibromyalgia).
- Acute infections or skin conditions at treatment site.
- Cervical disc herniation or radiculopathy.
- Patients unwilling or unable to follow the protocol.

3. Procedure

Group A: Instrument Assisted Soft Tissue Mobilization (IASTM) with Trapezius Stretch
The patient was positioned comfortably in sitting, with forehead supported on the forearm placed on a treatment couch. The therapist stood behind the patient on the affected side. The M2T blade was cleaned with an alcohol swab and coated with Vaseline. The trapezius muscle was palpated to identify taut bands and trigger points. The blade was applied at ~45°–60° to the skin, using sweeping strokes (1–3 repetitions) along the upper trapezius fibers for about 3 minutes, from spinous process of C7 to lateral clavicle and spine of scapula. After treatment, an ice pack was applied for 5 minutes to reduce soreness. Patients then performed trapezius stretching (3 repetitions × 30 seconds with rest between). Sessions were given 3 times/week for 2 weeks.

Group B: Manual Trigger Point Release (MTPR) with Trapezius Stretch
The patient sat comfortably with arms relaxed. The therapist stood in stride stance beside the patient. Palpation identified trigger points in the upper trapezius. Sustained manual pressure was applied with the thumb/fingertip directly on the trigger point. Pressure was increased gradually until the patient reported tolerable pain (~7/10 NPRS). Pressure was held until discomfort reduced to ~3–4/10 (20–30s), repeated 3 times per session. Sessions were given 3 times/week for 2 weeks. After MTPR, the same trapezius stretch protocol was performed. Procedure details align with established physiotherapy guidelines (14,15,16).

4. Protocol

Group A: IASTM with trapezius stretch using M2T blade for 3 minutes, 3 sessions per week for 2 weeks. Group B: Manual Trigger Point Release for 30 seconds hold, repeated 3 times, combined with trapezius stretch. Both groups performed trapezius stretches, 3 repetitions held for 30 seconds each (17).

5. Statistical Analysis

SPSS 26.0 was used. Paired t-tests and Independent t-tests analyzed within- and between-group changes. Chi-square test was used for categorical data. A p-value < 0.05 was significant (18).

6. Results

Both groups showed significant improvement in pain, PPT, NDI, and cervical ROM after 2 weeks of intervention. Group A (IASTM) demonstrated superior outcomes in pain reduction and ROM improvement, whereas Group B (MTPR) showed better results in reducing trigger point tenderness. These findings are in agreement with prior studies on trapezius interventions (19,20).

Table 1: Baseline Characteristics of Study Participants

Parameters	Group A (IASTM)	Group B (MTPR)
Age (years)	24.6	25.1
NPRS	7.8	7.6
NDI	32.5	33.1
PPT (kg/ cm^2)	2.3	2.2
Cervical ROM (^{0})	35.6	36.2

Table 2: Post-Intervention Outcomes

Parameters	Group A (IASTM)	Group B (MTPR)
NPRS	2.4	3.1
NDI	12.8	14.2
PPT (kg/ cm^2)	4.5	3.9
Cervical ROM (^{0})	55.2	51.7

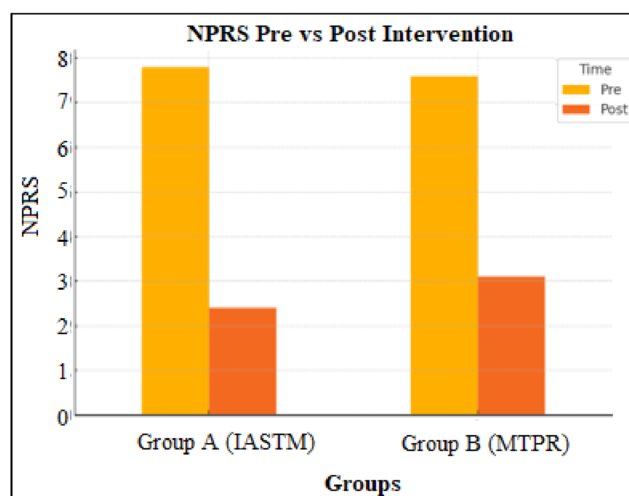

Figure 1: Comparison of NPRS pre and post intervention between groups

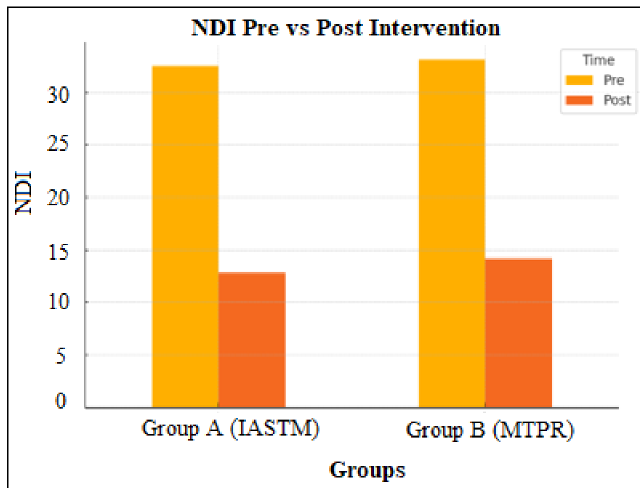

Figure 2: Comparison of NDI pre and post intervention between groups

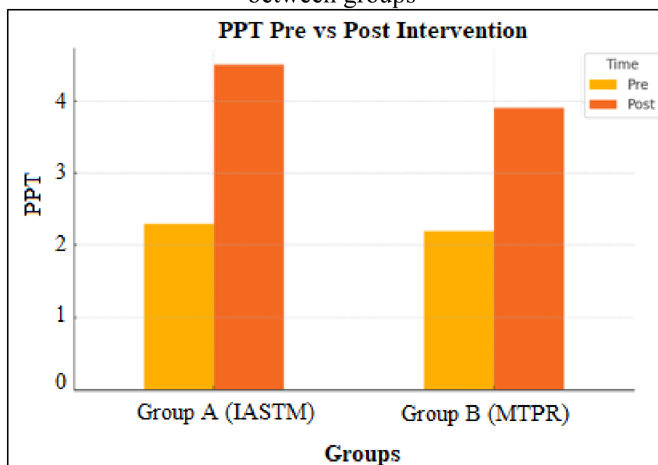

Figure 3: Comparison of PPT pre and post intervention between groups

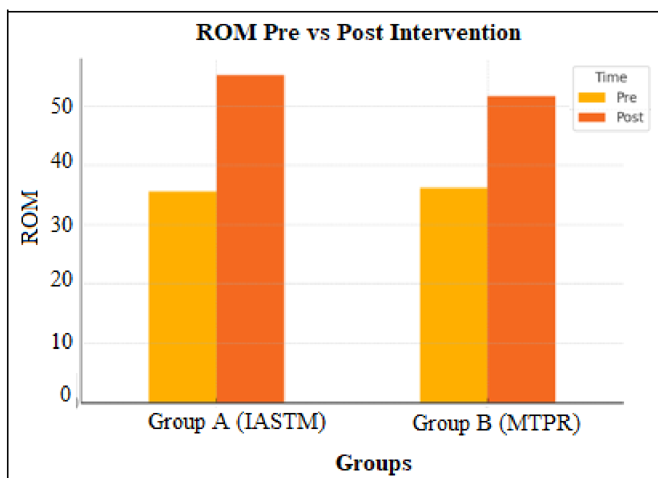

Figure 4: Comparison of Cervical ROM pre and post intervention between groups

7. Discussion

Trapezitis is a frequently encountered musculoskeletal disorder that primarily affects the upper trapezius muscle. It can develop due to both traumatic and non-traumatic factors, with poor posture and repetitive strain being the most common causes (1). The trapezius muscle, which spans from the occipital bone to the scapula and thoracic spine, plays a vital role in posture control, cervical motion, and scapular stabilization. Owing to its continuous functional demand, it is highly susceptible to overuse and inflammation (2).

Inflammation of the trapezius often results in the formation of myofascial trigger points, which are localized hyperirritable nodules in skeletal muscle fibers. These trigger points contribute to myofascial pain syndrome, leading to pain, muscle tightness, restricted movement, and functional limitations (3–5). Symptoms may persist at rest and are aggravated with movement, often radiating to adjacent areas.

Lifestyle changes, particularly the rising use of smartphones and digital devices, have significantly contributed to the growing incidence of trapezitis. Prolonged neck flexion, static postures, and repetitive strain while using electronic gadgets predispose users to muscular fatigue and microtrauma (6). Occupations requiring sustained neck positions, such as software professionals, students, dentists, and tailors, further increase the risk of trapezius overload.

The pathophysiology involves sustained muscle contraction and inadequate blood supply, which restrict oxygen and nutrient delivery. This leads to an accumulation of metabolic waste products, contributing to pain and the formation of trigger points (7,8). Epidemiological studies suggest a higher prevalence of trapezitis in women compared to men, with the upper trapezius being the most common site of involvement (9).

Conservative physiotherapy remains the cornerstone of trapezitis management. Interventions such as stretching, strengthening, manual therapy, and soft tissue mobilization are widely used. Instrument Assisted Soft Tissue Mobilization (IASTM) has gained attention for its ability to release fascial restrictions and improve circulation (10,11), while Manual Trigger Point Release (MTPR) is considered effective for inactivating myofascial trigger points and reducing localized pain (12,13). Despite their clinical utility, limited comparative studies exist on their effectiveness in trapezitis management. This study was therefore designed to compare the effectiveness of IASTM and MTPR, both combined with trapezius stretching, in reducing pain and improving function in smartphone users with trapezitis.

8. Conclusion

Both IASTM and MTPR with trapezius stretching significantly improved pain and function in trapezitis. IASTM demonstrated greater improvements in ROM and NPRS, while MTPR improved trigger point sensitivity. This aligns with current physiotherapy evidence (23).

9. Future Scope

Future research with larger sample sizes, longer follow-ups, and comparisons with other modalities such as dry needling or laser therapy is recommended (24, 25)

References

[1] VKPD, Abraham J. Effects of a muscular strength approach against middle and lower trapezius muscle strengthening activities on neck function and pain in people with upper trapezius trapezitis. Int J Phys Educ Sport Health. 2019;6(4):85–9.
[2] Patel M, Ajmira MA. An investigation into the effects of dry needling and IASTM in chronic upper trapezius trapezitis: a randomized controlled trial. Indian J Physiother Rehabil Sci. 2022; 1:1–1.
[3] Kumar S. Smartphone use and musculoskeletal disorders: prevalence and association in Indian students. J Clin Diagn Res. 2019;13(6): YC01–YC04.
[4] Baker JJ, Cheatham SW, Larkins LW, et al. Patterns of instrument assisted soft tissue mobilisation used in clinical settings. Sports Training Med. 2021;56(10):1100-11.
[5] Laudner KG, Compton BD, McLoda TA, Walters CM. Acute effects of IASTM for improving range of motion. J Sport Rehabil. 2014;23(4):282–7.
[6] Simons DG, Travell JG, Simons LS. Travell & Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual. 2nd ed. Lippincott Williams & Wilkins; 1999.
[7] Fernández-de-las-Peñas C, Dommerholt J. Myofascial trigger points: pathophysiology and evidence-informed diagnosis and management. J Man Manip Ther. 2018;26(3):167–74.
[8] Hains G, Descarreaux M, Hains F. Chronic neck pain and muscle dysfunction in smartphone users. J Bodyw Mov Ther. 2019;23(1):1–6.
[9] Cagnie B, Cools A, De Loose V, et al. Differences in muscle activity between dominant and non-dominant trapezius in computer users with trapezitis. Clin J Pain. 2010;26(4):314–9.
[10] Farrar JT, Young JP Jr, LaMoreaux L, Werth JL, Poole RM. Clinical importance of changes in chronic pain intensity on an 11-point NPRS. Pain. 2001;94(2):149–58.
[11] Vernon H, Mior S. The Neck Disability Index: a study of reliability and validity. J Manipulative Physiol Ther. 1991;14(7):409–15.
[12] Fischer AA. Pressure algometry over normal muscles: standard values, validity and reproducibility. Pain. 1987;30(1):115–26.
[13] Youdas JW, Carey JR, Garrett TR. Reliability of measurements of cervical spine range of motion. Phys Ther. 1991;71(2):98–104.
[14] Cheatham SW, Kolber MJ, Cain M, Lee M. The clinical effectiveness of IASTM: a systematic review. J Can Chiropr Assoc. 2016;60(3):200–11.
[15] Hou CR, Tsai LC, Cheng KF, Chung KC, Hong CZ. Immediate effects of various physical therapeutic modalities on cervical myofascial pain and trigger points. Arch Phys Med Rehabil. 2002;83(10):1406–14.
[16] Kisner C, Colby LA. Therapeutic Exercise: Foundations and Techniques. 6th ed. F.A. Davis; 2012.
[17] Page P. Current concepts in muscle stretching for exercise and rehabilitation. Int J Sports Phys Ther. 2012;7(1):109–19.
[18] Portney LG, Watkins MP. Foundations of Clinical Research: Applications to Evidence-Based Practice. 3rd ed. Pearson; 2015.
[19] Kim J, Sung DJ, Lee J. Therapeutic effectiveness of IASTM for patients with upper trapezius pain. Phys Ther Sport. 2017; 25:12–7.
[20] Lee JH, Choi TY, Lee MS, et al. Manual therapies for trigger point treatment: a systematic review. Pain Physician. 2015;18(5): E815–30.
[21] Fryer G. Muscle energy technique: an evidence-informed approach. Int J Osteopath Med. 2011;14(1):3–9.
[22] Bron C, Dommerholt JD. Etiology of myofascial trigger points. Curr Pain Headache Rep. 2012;16(5):439–44.
[23] Bialosky JE, Bishop MD, Price DD, Robinson ME, George SZ. The mechanisms of manual therapy in musculoskeletal pain: a comprehensive model. Man Ther. 2009;14(5):531–8.
[24] Castro-Sánchez AM, Matarán-Peñarrocha GA, Arroyo-Morales M, et al. Dry needling and stretching vs stretching alone in neck pain. Clin J Pain. 2014;30(2):109–15.
[25] Dundar U, Solak O, Yigit I, et al. Clinical effectiveness of laser therapy in myofascial pain syndrome. Lasers Med Sci. 2015; 30 (1): 325–32.