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EFFECTS OF MYOFASCIAL RELEASE VERSUS POST-ISOMETRIC RELAXATION TECHNIQUE IN TRAPEZITIS AMONG COMPUTER WORKERS: A COMPARATIVE STUDY

Physiotherapy

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ABSTRACT

Background: Trapezitis is a highly prevalent work-related musculoskeletal disorder among computer workers, commonly associated with prolonged static posture, repetitive upper-limb activity, inadequate workstation ergonomics, and psychosocial stress. Persistent activation of the upper trapezius muscle leads to pain, functional limitation, and reduced productivity. Manual therapy interventions such as Myofascial Release (MFR) and Post-Isometric Relaxation (PIR) are frequently used in physiotherapy practice; however, comparative evidence regarding their effectiveness in occupational trapezitis remains limited. **Objective:** To compare the effects of Myofascial Release and Post-Isometric Relaxation techniques on pain intensity and neck-related functional disability among computer workers diagnosed with trapezitis. **Methods:** Forty computer workers aged 22–45 years with clinically diagnosed trapezitis were randomly allocated into two groups (n=20 each). Group A received Myofascial Release, while Group B received Post-Isometric Relaxation. Pain intensity was assessed using the Visual Analog Scale (VAS), and functional disability was evaluated using the Neck Disability Index (NDI) before and after intervention. Statistical analysis was performed using paired t-tests for within-group comparisons and unpaired t-tests for between-group comparisons, with significance set at $p<0.05$. **Results:** Group A demonstrated a statistically significant reduction in VAS scores (mean reduction 2.80 ± 0.41; $p<0.0001$) and NDI scores (mean reduction 14.15 ± 2.78; $p<0.0001$). Group B did not show statistically significant improvement in either outcome measure. Post-intervention comparison revealed significantly greater reductions in pain and disability in the MFR group. **Conclusion:** Myofascial Release was superior to Post-Isometric Relaxation in reducing pain and functional disability among computer workers with trapezitis, supporting its use as a preferred manual therapy intervention in occupational health settings.

KEYWORDS

INTRODUCTION

The global shift toward computer-based occupations has resulted in a substantial increase in work-related musculoskeletal disorders (WRMSDs), particularly affecting the neck and shoulder region [1]. Computer workers are routinely exposed to prolonged sitting, sustained visual demands, repetitive mouse and keyboard use, and high cognitive workload, all of which contribute to musculoskeletal strain. Among the various WRMSDs, trapezitis has emerged as one of the most frequently reported conditions in this population [2].

Trapezitis is characterized by pain, stiffness, spasm, and tenderness of the trapezius muscle, often accompanied by restricted cervical range of motion and reduced functional capacity [3]. Epidemiological studies indicate that neck and shoulder pain affects 30–70% of computer workers during their professional lifetime, with the upper trapezius being one of the most commonly involved muscles [4]. Persistent trapezius pain not only affects physical function but is also associated with decreased work productivity, absenteeism, and psychological distress [5].

Biomechanically, prolonged forward head posture and rounded shoulder posture significantly increase the load on the cervical spine and trapezius muscle [6]. Sustained low-level muscle contraction compromises intramuscular blood flow, resulting in ischemia and accumulation of metabolic by-products such as lactic acid and inflammatory mediators [7]. These changes sensitize nociceptors and contribute to the development of chronic pain. In addition, repetitive micro-trauma and prolonged immobility lead to alterations in the fascial system, including densification, reduced tissue glide, and formation of myofascial trigger points [8].

The fascia is now recognized as an active sensory organ rich in mechanoreceptors and nociceptors [9]. Fascial dysfunction may therefore act as an independent contributor to pain, even in the absence of overt muscle pathology. This understanding has led to increased emphasis on fascial-based manual therapy techniques in the management of chronic musculoskeletal pain conditions.

Conservative management remains the cornerstone of trapezitis treatment, with physiotherapy interventions focusing on pain reduction, restoration of function, and prevention of recurrence. Manual therapy is commonly incorporated as part of a multimodal approach. Among the various manual therapy techniques, Myofascial Release (MFR) and Post-Isometric Relaxation (PIR) are frequently used due to their relative safety and clinical effectiveness [10,11].

Myofascial Release involves the application of sustained, low-load pressure to restricted fascial tissues with the aim of restoring tissue extensibility, improving circulation, and reducing nociceptive input [12]. In contrast, Post-Isometric Relaxation, a muscle energy technique, utilizes brief isometric contractions followed by relaxation to reduce muscle tone through autogenic inhibition mediated by Golgi tendon organs [13].

Although both techniques have demonstrated beneficial effects in neck pain and trapezius dysfunction, direct comparative studies in computer workers with trapezitis remain scarce. Given the occupational relevance of this condition, identifying the most effective manual therapy intervention is crucial for evidence-based clinical decision-making. Therefore, the present study aimed to compare the effects of Myofascial Release and Post-Isometric Relaxation techniques on pain intensity and neck-related disability among computer workers diagnosed with trapezitis.

METHODOLOGY

Study Design

An experimental comparative study was conducted at a physiotherapy outpatient department. Ethical approval was obtained prior to study initiation, and written informed consent was secured from all participants.

Participants

Forty computer workers with clinically diagnosed unilateral or bilateral trapezitis were recruited using random sampling.

Inclusion Criteria:

- Age between 22 and 45 years
- Both male and female participants
- Daily computer use ≥5 hours
- Presence of trapezius pain and tenderness

Exclusion Criteria:

- History of cervical spine fracture or surgery
- Neurological disorders affecting the upper limb
- Skin conditions over the treatment area
- Current use of anti-inflammatory or muscle-relaxant medication

Group Allocation
Participants were randomly allocated into two equal groups:
- **Group A (n=20):** Myofascial Release
- **Group B (n=20):** Post-Isometric Relaxation

Baseline demographic and anthropometric characteristics were recorded.

Intervention Protocol
Myofascial Release (Group A):
Sustained, low-load manual pressure was applied along the trapezius muscle and associated fascial planes until a release was perceived. Each session aimed to reduce fascial tightness and improve tissue mobility.

Post-Isometric Relaxation (Group B):
The trapezius muscle was positioned at its first resistance barrier, followed by a gentle isometric contraction (20–25% maximal effort) held for 5–10 seconds. After relaxation, the muscle was passively stretched to a new barrier. The cycle was repeated multiple times per session.

Outcome Measures
- **Visual Analog Scale (VAS)** for pain intensity [14]
- **Neck Disability Index (NDI)** for functional disability [15]

Statistical Analysis
Data were analyzed using GraphPad Prism. Paired t-tests assessed within-group changes, and unpaired t-tests compared post-intervention outcomes between groups. Statistical significance was set at $p<0.05$.

RESULTS
A total of 40 participants completed the study without any adverse events. Baseline demographic and anthropometric characteristics were comparable between the two groups, indicating successful randomization.

Table 1. Demographic Characteristics Of Participants

Variable	Group A: Myofascial Release (n = 20)	Group B: Post-Isometric Relaxation (n = 20)
Age (years), mean ± SD	32.95 ± 6.98	38.30 ± 6.90
Gender (Male/Female)	12-Aug	09-Nov
Height (cm), mean ± SD	170.50 ± 5.50	173.00 ± 4.80
Weight (kg), mean ± SD	67.70 ± 6.78	73.80 ± 3.55
Daily computer use (hours), mean ± SD	6.50 ± 1.15	6.85 ± 1.31

Within-Group Analysis
Group A – Myofascial Release
Participants in Group A demonstrated a statistically significant reduction in pain intensity following intervention. Mean VAS scores decreased from 6.20 ± 1.32 at baseline to 3.40 ± 1.10 post-intervention ($p<0.0001$). The mean reduction of 2.80 points exceeded the minimum clinically important difference for chronic neck pain.

Functional disability also improved significantly. Mean NDI scores decreased from 41.90 ± 8.12 to 27.75 ± 6.32 ($p<0.0001$), representing a mean reduction of 14.15 points. This reduction reflects a transition from moderate-to-severe disability toward mild-to-moderate disability.

Table 2. Pre- and Post-Intervention VAS and NDI Scores – Group A

Outcome Measure	Pre-intervention (Mean ± SD)	Post-intervention (Mean ± SD)	Mean Change	p-value
VAS (0–10)	6.20 ± 1.32	3.40 ± 1.10	−2.80 ± 0.41	< 0.0001*
NDI (0–50)	41.90 ± 8.12	27.75 ± 6.32	−14.15 ± 2.78	< 0.0001*

Group B – Post-Isometric Relaxation
Group B did not demonstrate statistically significant changes in either pain intensity or functional disability. Mean VAS scores showed minimal change, with no significant difference between pre- and post-intervention values ($p=0.577$). Similarly, NDI scores did not show statistically significant improvement.

Table 3. Pre- And Post-Intervention VAS And NDI Scores – Group B

Outcome Measure	Pre-intervention (Mean ± SD)	Post-intervention (Mean ± SD)	Mean Change	p-value
VAS (0–10)	6.68 ± 0.25	6.69 ± 0.25	+0.01 ± 0.04	0.577
NDI (0–50)	42.10 ± 7.85	41.80 ± 7.60	−0.30 ± 0.90	> 0.05

Between-Group Comparison
Post-intervention comparison revealed significantly greater reductions in both VAS and NDI scores in Group A compared to Group B ($p<0.05$).

Table 4. Between-Group Comparison of Post-Intervention Outcomes

Outcome Measure	Group A: Myofascial Release (Mean ± SD)	Group B: Post-Isometric Relaxation (Mean ± SD)	p-value
VAS (0–10)	3.40 ± 1.10	6.69 ± 0.25	< 0.001*
NDI (0–50)	27.75 ± 6.32	41.80 ± 7.60	< 0.001*

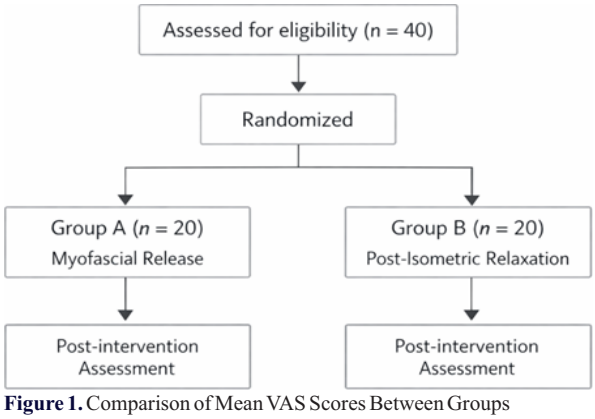

Figure 1. Comparison of Mean VAS Scores Between Groups

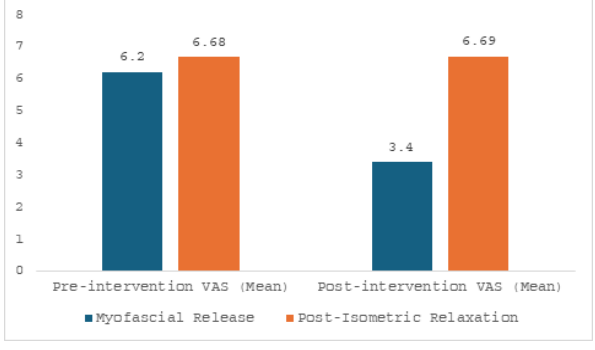

Figure 2. Comparison Of Mean NDI Scores Between Groups

These findings indicate that Myofascial Release was significantly more effective than Post-Isometric Relaxation in reducing pain and improving function among computer workers with trapezitis.

DISCUSSION
The present study aimed to compare the effectiveness of Myofascial Release and Post-Isometric Relaxation techniques in managing trapezitis among computer workers. The results demonstrated that Myofascial Release produced statistically and clinically significant improvements in both pain intensity and neck-related functional disability, whereas Post-Isometric Relaxation did not yield significant benefits.

The superior outcomes observed in the Myofascial Release group can be explained by its direct influence on the fascial system. Fascia plays a crucial role in force transmission, proprioception, and nociception, and its dysfunction has been increasingly implicated in chronic musculoskeletal pain conditions [9,16]. Prolonged computer work contributes to fascial densification and reduced tissue glide, particularly in the cervico-thoracic region [17]. Sustained myofascial pressure may help restore the viscoelastic properties of fascia, improve tissue hydration, and reduce mechanical compression of pain-sensitive structures [18].

Furthermore, Myofascial Release has been shown to enhance local circulation and lymphatic drainage, facilitating removal of inflammatory mediators and metabolic waste products [19]. These physiological changes may contribute to the significant reduction in pain observed in the MFR group. Additionally, MFR has been suggested to influence the autonomic nervous system by promoting parasympathetic dominance, which may reduce stress-related muscle tension commonly observed in computer workers [20].

In contrast, Post-Isometric Relaxation primarily acts through neuromuscular mechanisms. By stimulating Golgi tendon organs, PIR induces autogenic inhibition, resulting in temporary reduction in muscle tone [13]. While this mechanism may be effective in acute muscle tightness, it may be insufficient to address the chronic fascial adaptations and central sensitization associated with long-standing occupational trapezitis. This may explain the lack of significant improvement observed in the PIR group.

The findings of the present study are consistent with previous research reporting greater effectiveness of myofascial interventions in chronic neck pain populations [21–23]. From a clinical perspective, the results highlight the importance of addressing fascial dysfunction in addition to muscle tightness when managing work-related neck pain.

CONCLUSION (≈150 words)

The present study demonstrated that Myofascial Release was significantly more effective than Post-Isometric Relaxation in reducing pain intensity and neck-related functional disability among computer workers with trapezitis. Participants receiving Myofascial Release showed clinically meaningful improvements in both pain and functional outcomes, whereas those treated with Post-Isometric Relaxation did not demonstrate significant benefits. These findings suggest that fascial-based manual therapy techniques may play a crucial role in the management of chronic occupational neck pain. Incorporating Myofascial Release into physiotherapy treatment protocols for computer workers may enhance clinical outcomes, improve work performance, and reduce the burden of work-related musculoskeletal disorders.

Limitations And Future Directions

The study was limited by a relatively small sample size and absence of long-term follow-up. Ergonomic and psychosocial factors were not controlled. Future studies should include larger samples, long-term outcome assessment, and combined interventions incorporating ergonomic correction and exercise therapy.

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