Review Article

Manual Physical Therapy in Patients with Myofascial Pain in Upper Trapezius; A Systematic Review

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Abstract

A myofascial trigger point is a specific area of pain in a tight band of skeletal muscle, according to clinical definitions. Trigger points are often the site of both chronic and acute pain, even in people with untraceable pain. Trigger points are places along a tight band of muscle that are described as being hypermobile and having both local and referred pain. Almost all muscle groups are susceptible to developing trigger points. The most often damaged muscles are those that are involved in maintaining posture, including the Levator Scapula, Upper Trapezius, Sternocleidomastoid, Scalene, and Quadrates Lumborum. Muscle soreness is a recognized symptom of myofascial pain syndromes.

Patients' discomfort, function, and range of motion were considerably improved by combining stretching exercises, positional release techniques, and myofascial release. Muscle stretching was shown to be inferior to myofascial release in terms of relieving pain and impairment. Additionally, myofascial trigger point therapy and manual therapy both significantly reduced pain and disability. The effects of muscle energy method, ischemia compression, and ultrasound on pain and range of motion were likewise favorable. These results demonstrate the effectiveness of manual physical therapy approaches in treating upper trapezius myofascial pain and enhancing patient outcomes.

Keywords: Manual physical therapy, Myofascial pain, Upper trapezius, Randomized control trials

Introduction

A myofascial trigger point is a specific area of pain in a tight band of skeletal muscle, according to clinical definitions. Trigger points are often the site of both chronic and acute pain, even in people with untraceable pain. Trigger points are places along a tight band of muscle that are described as being hypermobile and having both local and referred pain. Almost all muscle groups are susceptible to developing trigger points. The most often damaged muscles are those that are involved in maintaining posture, including the Levator Scapula, Upper Trapezius, Sternocleidomastoid, Scalene, and Quadrates Lumborum. Muscle soreness is a recognized symptom of myofascial pain syndromes. Myofascial Pain Syndrome, which includes the presence of Myofascial Trigger Points, is a significant musculoskeletal dysfunction and is one of the main causes of headache and neck pain, according to epidemiological research. Myofascial trigger point sufferers may benefit from a variety of physical therapy techniques, including ischemic compression, spray, stretching, ultrasound therapy, and needling therapies. Few outcome studies, however, use standardized treatment strategies on well defined patient populations [1].

The majority of commonly held beliefs are based on hypotheses developed from those beliefs, and a more scientific method of comprehending and treating the phenomenon of myofascial trigger points has only recently emerged. This is only seldom the case, however. Triggering factors are often seen as being somewhat trivial when analyzed. It's unclear if the psychological condition these people exhibit is a sign of their illness or just a response to their ongoing discomfort. It is essential to note that psychological illnesses of any type will impact how a patient feels about their pain and maybe how they respond to treatment [2].

Numerous studies have shown that myofascial discomfort may be the source of up to 85% of back pain and 54% of headache-accompanied neck pain. MTPt, which most

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How to cite this article: Aldawsari OA, Alenazi NA, Alghanim AS, Alharbi AM, Alaskar AB. Manual Physical Therapy in Patients with Myofascial Pain in Upper Trapezius; A Systematic Review. Arch Pharm Pract. 2023;14(S):A06231455.

frequently affects the neck and back muscles, is connected to poor posture and can subtly develop from both professional activities, such as cradling a telescope handset between the head and shoulder or slightly hunching over in front of a computer, as well as non-professional activities, such as bending one's head for an extended period of time while knitting or reading. Myofascial pain is caused by structural defects, constrictive clothing, systemic alcohol poisoning, inflammatory circumstances, and a deficiency in relative growth hormone. One may utilize specialized manual therapy methods, acupuncture, stress management, electrotherapy, body mechanics and ergonomics training, nutritional counseling, and a range of medication therapies to treat myofascial pain. One of the most significant physical therapeutic approaches in MTPt treatment, which is employed to heat deep tissues, is ultrasonic (US) therapy [3, 4].

Nevertheless, investigations on its usefulness in treating musculoskeletal system disorders have yielded inconsistent conclusions. Muscle energy technique: relaxing Relaxing tight muscles by alternating between active contraction and passive stretching is called by numerous names. Physical therapists generally use the words rhythmic stabilization or contract-relax [3]. The study's objective is to determine the short-term effects of a physiotherapy treatment plan that includes manual physical therapy interventions on the overall outcomes of a group of patients with trigger points.

Materials and Methods

A comprehensive evaluation of the literature spanning 2005 to 2022 was conducted using the PubMed, Medline, and ScienceDirect databases. Physical therapy, myofascial pain, and upper trapezius were the terms employed. The procedure for choosing the articles to be searched was shown by a PRISMA flowchart **(Figure 1)**.

Inclusion Criteria

- Case-control and randomized control studies
- Published between 2005 and 2023
- English
- with in vivo (human) testing

Exclusion Criteria

- Surveys
- Studies conducted outside the designated period
- Meta-analyses
- Expert opinions
- Narrative reviews

in vitro research.

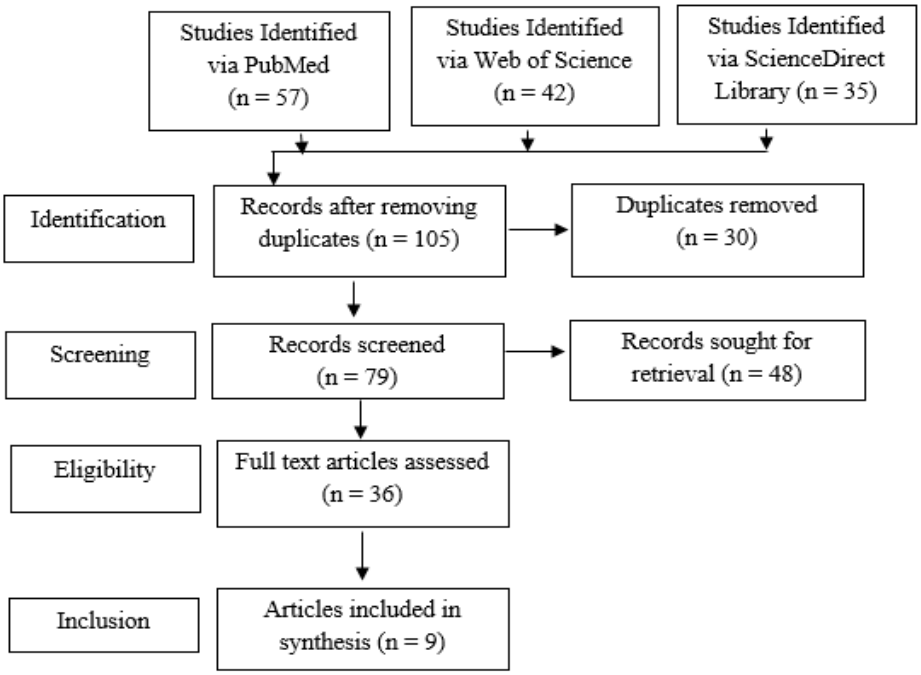

Figure 1. PRISMA Flow Diagram

Risk of Bias Assessment

Cochrane risk of bias assessment method was used to assess the quality of the studies included **(Table 1)**.

Table 1. Summary of Cochrane Risk of Bias Assessment

Study	Selection Bias/Appropriate control selection/baseline characteristics similarity	Selection bias in randomization	Selection bias in allocation concealment	Performance-related bias in blinding	Reporting bias/Selective reporting of outcomes	Detection bias Blinding outcome assessors	Accounting for confounding bias
V, Kalra *et al*., (2016) [5]	+	+	+	-	+	+	+
Pawaria *et al*., (2015) [6]	-	+	+	+	-	+	+
Mukhtar (2015) [7]	+	+	-	+	+	+	+
Srikanth *et al*., (2015) [8]	+	+	+	+	+	+	+
Kamali *et al*., (2014) [9]	+	+	+	+	+	+	-
Hesari *et al*., (2016) [10]	+	-	+	+	+	+	+
Amini (2017) [11]	+	+	+	-	+	+	+
Khan *et al*., (2020) [12]	+	+	+	+	+	-	+
Fryer *et al*., (2005) [13]	+	-	+	+	+	+	+

Results and Discussion

The goal of the research conducted by V. Kalra *et al*. (2016) [5] was to provide the outcomes of a succession of trigger point patients who underwent manual physical therapy and at-home exercise programs. The 15 people with myofascial trigger points were on average 22.533 years old. They received standardized treatment, which included manual therapy, positional release techniques, upper trapezius myofascial release, and a patient-specific home exercise program that included stretches for the upper trapezius. Each patient again completed the outcome measures at the time of treatment termination, which occurred after 4 weeks. In 13 out of 15 patients (86.6%), pain, function, and neck range of motion all had clinically significant improvements. Our results show that a combination of a number of manual treatment approaches greatly improves patients with myofascial trigger points in the upper trapezius.

Pawaria *et al*. (2015) [6] conducted study. Three times each week for two weeks, 32 patients were randomly assigned to either Myofascial Release or muscular stretching with hot packs. Measurements of neck disability index, range of motion, and pain were taken in all groups at baseline, 1 week, 2 weeks, and follow-up (after 1 week). No discernible difference in ROM between groups was seen. Myofascial Release is more effective than ultrasonography for treating myofascial trigger points that are active.

Mukhtar (2015) [7] reported that One group received manual therapy at the C3–C4 level. MTrPs were employed in the other group's therapy. There were six treatment sessions total, with three being offered each week for two weeks and one week after that. The outcomes showed a substantially lower degree of discomfort and disability in both groups (P 0.05).

The aim of Srikanth *et al*.'s study from (2015) [8] is to assess the effectiveness of MET on patients with myofascial pain in the upper trapezius utilizing VAS and cervical ROM using the inch tape methodThis program was designed to function seven days a week. The findings show that the experimental group's pre- and post-test pain and range of motion values substantially affected p-values of 0.00. For each outcome variable, the 95% confidence intervals' difference between the pretest and post-test scores was given.

In their study, Kamali *et al*. (2014) [9] evaluated the effects of ischemia compression (IC) on the trigger points in the stretched and neutral states of the trapezius muscle. While Group 2 got the IC with the upper trapezius muscle in its neutral position, Group 1 received treatment with the IC extended out. Results were measured again three days and five minutes after the therapy. The results showed that each group had much decreased local pain intensity, an active cervical lateral flexion range of motion, and a much higher PPT. The two groups did not vary significantly from one another.

In this study, Hesari *et al*. (2016) [10] reported that there was a substantial improvement in upper-limb function (P < 0.001), a decrease in PPT (P = 0.003), an increase in CROM (P = 0.002), and a significant reduction in pain (P >0.001). The DN group achieved better outcomes than the PT group (P <0.001).

Amini (2017) [11] determined the range of cervical lateral flexion that is active and compared the impact of MPMS and PRT on the upper trapezius' latent MTrPs' sensitivity. The experimental group had substantially greater PPT (P = 0.000), lower VAS ratings (P = 0.002), and higher right lateral flexion (P = 0.012) during the follow-up, according to intergroup variations.

In patients with upper trapezius trigger points who use computers, Khan *et al*. (2020) [12] assessed the efficacy of home exercise regimens and ischemic compression therapies. 45 volunteers with an upper trapezius trigger point who met the inclusion and exclusion criteria were divided into three groups using the chit-chat method. Statistically significant both within and between groups are Groups A and B. Control Group C, on the other hand, is not statistically significant. In comparison to Group B, Group A is much more significant.

Using a novel pressure algometer, Fryer *et al*.'s study (2005) [13] reported that Latent MTrPs were looked for in the patients' upper trapezius muscles (N=37, mean age 23.13.2, M=12, F=23). Within-group change was examined using a dependent t-test. The mean PPT significantly increased after the injection of MPR, p0.001), whereas the control group showed no significant change.

Table 2 provides a concise overview of key findings from the included studies, including objectives, patient details, follow-up duration, and results.

Table 2. Summary of findings from included studies

Author's name	Objectives	Patients	Follow up period	Results
V, Kalra *et al*., (2016) [5]	This case series presents the outcomes of several trigger point patients who underwent manual physical therapy and at-home exercise programs.	15	4	When many manual treatment modalities are combined, patients with MTrPs dramatically improve.
Pawaria *et al*., (2015) [6]	The study investigated how myofascial release and muscle stretching affected people with trapezius myofascial trigger points	32	3	No discernible difference in ROM between groups was seen.
Mukhtar (2015) [7]	To assess the efficacy of manual therapy and myofascial trigger point therapy in treating upper trapezius myofascial trigger points.	30	One	The outcomes showed a substantially lower degree of discomfort and disability in both groups (P 0.05).
Srikanth *et al*., (2015) [8]	The study aims to assess MET's effectiveness in treating individuals with upper trapezius myofascial pain.	30	One	No significant differences were observed.
Kamali *et al*., (2014) [9]	This study studied the effects of ischemia compression (IC) on the trigger sites in the trapezius muscle's stretched and neutral states.	30		The two groups did not vary significantly from one another.
Hesari *et al*., (2016) [10]	This study's chief objective was to associate the long-standing effects of dry needling and physical therapy methods on the MTrPs	34	Twice weekly	The DN group achieved better outcomes than the PT group (P = 0.001)..
Amini (2017) [11]	To compare how MPMS and PRT affect the upper trapezius' latent MTrPs' sensitivity.	30		After the examination, there were no discernible differences between the groups (P > 0.05).
Khan *et al*., (2020) [12]	To assess the efficiency of computer users with upper trapezius trigger points' home workout regimens and ischemia compression therapies.	45		Statistically significant both within and between groups are Groups A and B.
Fryer *et al*., (2005) [13]	The effect of manual pressure release (MPR) on the pressure sensitivity of latent MTrPs in the upper trapezius muscle was investigated in this study using a novel pressure algometer.	37		The mean PPT significantly increased after the injection of MPR (t=-5.15, p0.001), whereas the control group showed no significant change.

The decrease in myofascial trigger point pain after using the positional release method may be attributed to the procedure's physical contact component and the reduced trigger point sensitivity. This technique involves passive body alignment and offers pain reduction and an immediate and continuous decrease in soreness at the trigger site [14].

Ateş *et al*. noticed changes in the MTrPs symptoms after injections into the C4-C5 facet joints. Several earlier studies

have documented Improvements from MTrPs regimens that employed the same assessment methods as this one. A combination of ischemic compression and post-isometric relaxation reduces post-treatment VAS and NDI readings, according to studies by Dheeraj *et al*. on 30 patients [15].

Recent studies indicate the manual muscular energy strategy for treating MTPt is more effective. Reciprocal inhibition (RI) and post-isometric relaxation (PIR) are the two forms of isometric MET employed. The results of the present investigation supported the use of the ischemia pressure strategy. Pain severity lessens in the standard posture and during muscular stretching, and the neck's active lateral flexion range of motion rises. The pain pressure threshold was effective, although the two groups had no obvious difference [16].

Repeated needling in the same MTrPs throughout the regeneration phase may reduce muscle capacity and impair the regeneration process. Because of this, the researchers in this study tried to provide an appropriate break between treatment sessions. DN may lead to opioid-mediated pain suppression because prolonged fibre stimulation may activate the inhibitory enkephalin, serotonin, and noradrenergic systems [17].

The findings show that the ischemic compression technique and ultrasonography in combination with at-home exercise are superior to the ischemia compression technique and ultrasound alone. The results of our investigation were strikingly similar to those of the study by Lew *et al*. which examined the effectiveness of a home program using ischemic compression techniques in individuals with myofascial upper trapezius trigger points. Their research showed that combination treatments and at-home exercise regimens were the most effective ways to enhance patients' functional status and lessen pain trigger sites [2].

The immediate benefits of passive stretching, myofascial release technique, and PRT on pain responses, ankle dorsiflexion, and plantar flexion in persistent plantar fasciitis were also compared by Kang *et al*. after only one treatment session. All groups significantly decreased pain, much like in the present study; however, the PRT group's improvement in ROM was less notable than other interventions (6). Doley *et al*. also reported that individuals received treatment on alternate days for three days. For both groups, PPT considerably improved [3].

After 60 seconds of MPR treatment of latent upper trapezius MTrPs, there were notable, quick decreases in the MTrPs' sensitivity to manual pressure. Long-term physical stress may have irritated the MTrPs and made them more sensitive to post-treatment PPT evaluation, but this did not happen. The mean changes in the two groups were considerably different, and using a false technique had no noticeable impact [4].

Conclusion

In conclusion, the research examined show that individuals with upper trapezius myofascial pain benefit from manual physical therapy approaches. Patients' discomfort, function, and range of motion were considerably improved by combining stretching exercises, positional release techniques, and myofascial release. Muscle stretching was shown to be inferior to myofascial release in terms of relieving pain and impairment. Additionally, myofascial trigger point therapy and manual therapy both significantly reduced pain and disability. The effects of muscle energy method, ischemia compression, and ultrasound on pain and range of motion were likewise favorable. Application of ischemia compression in both stretched and neutral postures produced beneficial results. Dry needling and physical therapy methods were successful in lowering pain and enhancing range of motion, pain threshold under pressure, and upper limb function. A higher pain threshold for pressure was also seen when a pressure algometer and a manual pressure release were used. These results demonstrate the effectiveness of manual physical therapy approaches in treating upper trapezius myofascial pain and enhancing patient outcomes.

ACKNOWLEDGMENTS: None
CONFLICT OF INTEREST: None
FINANCIAL SUPPORT: None
ETHICS STATEMENT: This study is exempt from ethical approval.

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