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Original research article

A correlation study between the myofascial release v/s active release therapy on upper trapezius spasm in patients with non-specific neck pain" in out patient department of pacific medical college

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Abstract

Neck pain that is not specific to any cause is a common issue among the general population, with a prevalence ranging from 10% to 15%. There is a strong association between trapezius muscle spasm and non-specific neck pain. [Aim] To compare the effect of two therapeutic approaches, namely Myofascial Release (MFR) and Art Therapy, addressing upper trapezius spasm for patients suffering from non-specific neck pain. [After approval of the Institutional Ethics Committee. (I.E.C) patients between the age group of 20-50 years having non-specific neck pain were selected based on inclusion and exclusion criteria. Three outcome measures were taken, VAS for pain assessment Cervical ROM and NDI for functional performance in routine activities. Materials and Methods: The study was done over a sample size of 30 patients which included both male and female patients among the age group of 20 – 50 years suffering from non-specific neck pain. They were divided in two groups where Group A(n-15) received ART and Group B (n-15) received MFR. Randomized sampling was used for selecting the sample population. Duration of study was 12 weeks. Results: Paired and unpaired sample t-test were used to compare the outcome differences between each group. Improvement was significant in both the groups but Group A who received ART had a higher efficacy and effectiveness with VAS (P<0.003), cervical ROM (P<0.004), NDI (P<0.002) as compared to Group B in terms of pain, and range of motion and functional ability. Conclusion, although both the techniques are effective in improving the symptoms of non-specific neck pain, active release therapy had higher effectiveness.

Keywords: Active Release Technique, Myofascial Release, Visual Analog Scale, Neck Disability Index

Introduction

Neck pain that is not specific to any particular cause is a common issue among the general population, with a prevalence ranging from 10% to 15%. Studies conducted on large populations have shown that the lifetime occurrence of neck pain is between 67% and 87% [1]. Neck pain related to work has become a significant concern in industrialized countries, and its incidence is increasing even among adults, which poses future challenges for everyone. [2]. The symptoms of neck pain typically worsen with prolonged periods of inactivity or repetitive tasks, leading to disturbances in muscle metabolism [3, 4]. Prolonged periods of maintaining an incorrect head posture, which is not ergonomically sound, can result in musculoskeletal disorders and subsequent disability [5].

Myofascial pain syndrome (MPS) is a common clinical issue, which arises from the muscle and produces sensory, motor, and autonomic symptoms which are caused by hypercontracted muscle tissue [6]. They are usually a tight/taut band of skeletal muscle which is painful when compressed. Studies have shown a strong correlation between trapezius muscle activation and pain [7, 8]. Myofascial trigger points are frequently found in the middle of the upper border of the trapezius muscle [5]. These trigger points are hyperirritable spots or nodules in fascia, and they can cause local tenderness, muscle twitching, referred pain, and a jump sign when compressed or contracted [9]. These trigger points can lead to muscle tightness, reducing the range of motion and mobility of the cervical joints. [10].

This study aims to compare the effectiveness of two different clinical therapies: Active Release Therapy (ART) and Myofascial Release (MFR).

Active Release Technique (ART)

ART, developed by Dr. P. Michael Leahy, focuses on treating soft tissue injuries and musculoskeletal disorders. It focuses on treating soft tissues, such as; tendons, nerves, and myofascia. ART is most

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widely accepted treatment protocol/ consideration when it comes to repetitive injuries/ strains; acute injury, and functional fixation damage due to abnormal posture maintained over long term [11]. Cumulative trauma disorders, also called as: repetitive stress; or overuse syndromes are a source of major problems among the workforce population. A major problem with these cumulative trauma disorders is that it forms accumulation of adhesions. Once these adhesions are released, separated and broken up using ART, the affected soft tissue will tend to re-establish optimal texture, resilience, and proper function, thus becoming smooth and allowing the muscles, ligaments, tendons, nerves to move freely on each other [12].

ART involves applying deep, tolerable pressure with the fingertips on myofascial trigger points in shortened muscles due to pain and muscle spasms, while the patient actively moves the muscle in a lengthening position. This pressure helps break the adhesions in the muscle. ART is used to treat various musculoskeletal conditions, restore soft tissues, release entrapped nerves and vasculature, and improve tissue texture, resilience, and function [13].

Myofascial Release (MFR)

Myofascial Release (MFR), was coined in the 1960s by Robert Ward, an osteopath. Ward, along with physical therapist John Barnes, are considered the primary founders of myofascial release. On the other hand, it is a soft tissue mobilization technique that aims to facilitate mechanical, neural, and physiological parameters of the myofascial system. It involves applying manual traction and timed stretching of fascia and muscle to loosen adhesions, improve range of motion, and limit pain [14]. Myofascial Release, first breaks the cross linkages between the collagen and elastin fibres of the fascial tissue and then reorganises their length back to normal.

Myofascial unwinding and myofascial rebounding form two points of the triangle of the John F. Barnes sustained MFR approach. The third point is the techniques. Myofascial unwinding is the spontaneous movement of any part of the body or of the entire body. Rebounding is the term used for an oscillation of the tissues, joints, and extremities, to return solidity to a fluid state and increase tissue and joint motility and mobility. Rebounding and unwinding, which often flow together, do not involve specific techniques. They occur when the fascial tissue begins to soften and yield. As the ground substance returns to its fluid state, physical and emotional restrictions release creating an energetic build-up and subsequent discharge. This discharge propels the body into movement. [15].

Materials and Methods

Thirty patients were selected through random sampling, Ethical approval was taken from the Human Resource and Ethical Committee of Pacific Medical College with the registration number - **PMU/PMCH/IEC/2022/238**

The sample population was randomly divided in two groups:

- A (n-15) received ART.
- B (n-15) received MFR.

The study was directed over a period of 12 weeks, with patients engaging in the intervention for 30 minutes per day, five days per week. All, patients of the study were informed about the study steps, and the expected benefits were explained before signing the informed consent. All patients included in this study were to sign informed consent.

Procedure

Group-A: - art (active release therapy)

For application of ART, patient was made to sit on a stool with hands supported on the thighs. Therapist stood behind the patient stabilising the shoulder with one hand. Neck was taken in extension and contact was made using thumb with the trapezius muscle over the tender area and deep tension stretch was applied. Patient was then asked to flex and turn the neck. This was repeated for 3-5 times over a period of 12 weeks with patients engaging in the intervention for 30 minutes per day, five days per week. At the end of 12th week, patients were re-evaluated and compared to determine their active range of motion (ROM) in the cervical region using a goniometer.

Group B: - MFR (Myofascial Release)

MFR was also applied with patient sitting on stool, arm supported on thighs. Therapist stood behind the patient close on the side to be treated. Forearm and/or ulnar border of the palm were used to apply the pressure and glide medially towards the base of the neck and/ or towards the upper scapular region. As the glide was given, patient was asked to do side bending and to turn the head in opposite direction while sitting in erect position. Glides were given for 3-4 times. At, the end of 12th week, both Group A and Group B were re-evaluated and compared to determine their active range of motion (ROM) in the cervical region using a goniometer, functional ability assessed using NDI scale, and pain intensity using VAS (Visual Analog Scale).

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Statistical Analysis and Result

The paired statistical comparisons of distribution of categorical variables were tested using paired and unpaired t-test. All results are shown in tabular as well as graphical format to visualize the statistically significant difference more clearly.

Group A: Art

Table 1: Mean and + SD, for group A (ART) pre-post analysis.

	Group a (ART)		p-value
	Pre-test	**Post-test**	
VAS	7.73 ± 1.33	4.26 ± 3.10	0.003
NDI	20.73 ± 2.96	15.46 ± 5.42	0.002
Cervical ROM	284 ± 22.95	304.66 ± 35.63	0.004

Group B: MFR

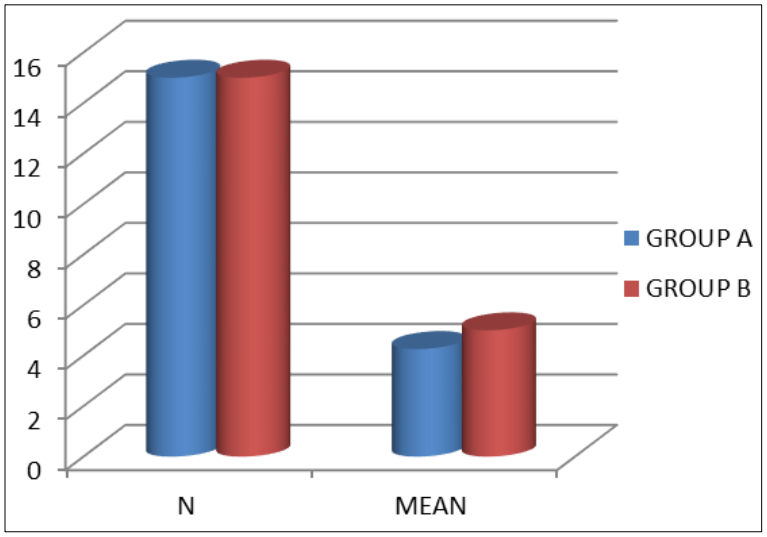
Table 2: Mean and + SD for Group B (MFR) Pre-Post analysis

	Group b (MFR)		p-value
	Pre-test	**Post-test**	
VAS	7.93 ± 1.16	5 + 3.02	0.004
NDI	20.2 ± 2.73	15.46 ± 3.88	0.003
CERVICAL ROM	289 ± 24.84	306.66 ± 35.42	0.003

Between Group

Table 3: Mean and ± SD, for between-group anal

	Group a (ART)		p-value	Group B (MFR)		p-value
	Pre-test	**Post-test**		**Pre-test**	**Post-test**	
VAS	7.73 ± 1.33	4.26 ± 3.10	0.003	7.93 ± 1.16	5 + 3.02	0.004
NDI	20.73 ± 2.96	15.46 ± 5.42	0.002	20.2 ± 2.73	15.46 ± 3.88	0.003
CERVICAL ROM	284 ± 22.95	304.66 ± 35.63	0.004	289 ± 24.84	306.66 ± 35.42	0.003



Graph 1: Between Group (VAS)

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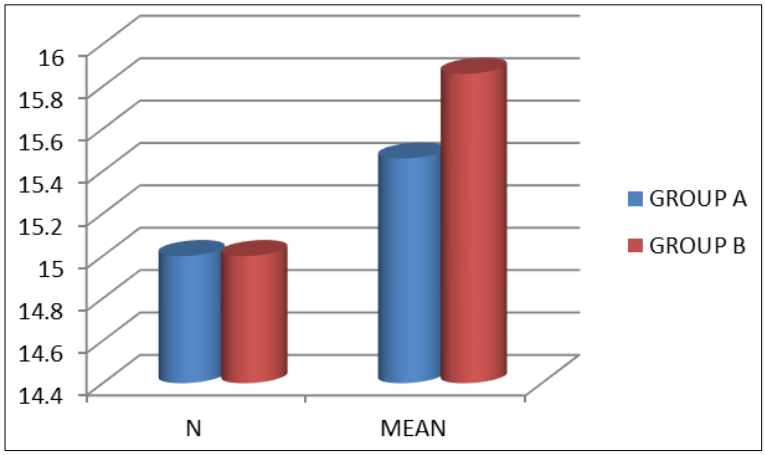
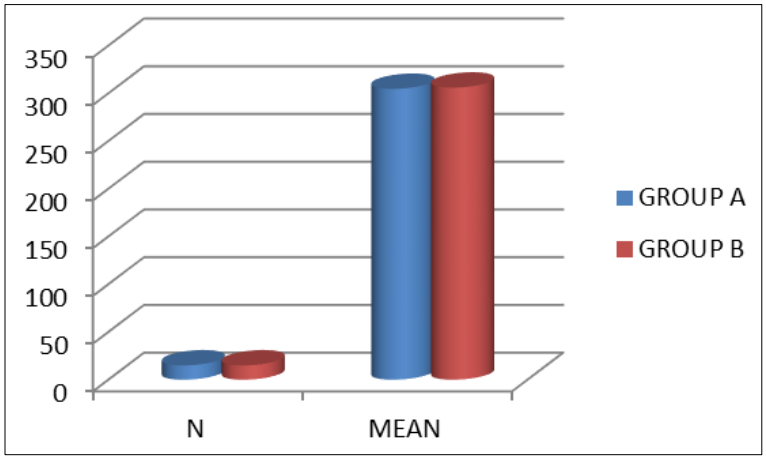


Graph 2: Between Group (NDI)



Graph 3: Between Group (ROM)

Discussions

The purpose of this study was to compare the effectiveness of active release therapy v/s myofascial release therapy in patients suffering from non-specific neck pain. In this study, three outcome measures were taken in order to specify the evaluated results after the treatment through myofascial release and active release therapy.

- VAS (Visual Analog Scale)
- NDI (Neck Disability Index)
- Cervical Range of Motion

The present study aimed to compare the effectiveness of the Active Release Technique (ART) and the Myofascial Release Technique (MFR) in patients with non-specific neck pain. Following a twelve-week treatment period, both ART and MFR demonstrated significant improvements in range of motion (ROM), activity limitations, and pain intensity. However, the Active Release Technique showed superior outcomes, providing greater pain relief and improved ROM and function compared to the Myofascial Release Technique. These findings emphasize the importance of considering different therapeutic approaches for individuals with non-specific neck pain and suggest that incorporating the Active Release Technique may lead to enhanced pain management and functional outcomes.

Group of Patients receiving Art (Group-A)

After carefully analyzing the data comparing the pain levels before and after undergoing active release technique, a notable and meaningful difference was discovered. The patients experienced a significant reduction in pain intensity, an improvement in range of motion, and a decrease in functional disability following the treatment. These findings highlight the effectiveness of active release technique in alleviating pain and enhancing overall physical function. It suggests that incorporating this technique into pain management strategies can provide relief and improve the quality of life for individuals seeking pain reduction and better mobility.

ART is most widely accepted treatment protocol when it comes to repetitive injuries/ strains; acute injury, and functional fixation damage due to abnormal posture maintained over long term [16].

In a study which reported the effectiveness of the Active release technique in musculoskeletal disorders,

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i.e., frozen shoulder, plantar fasciitis, trigger thumb, upper crossed syndrome, hamstring tightness and trapezius pain. Active release technique shows notable improvements in pain, ROM, functional disability, and quality of life in musculoskeletal disorders [17].

According to an article published in Physical Therapy Rehabilitation Science 2013, by Lee Kyu Chang Yong; ART was presented to reduce pain level of low back in people with chronic low back pain. Completion of the intervention, the visual analogue scale was decreased in ART group (P<0.05). ART was presented to reduce pain level of low back in people with chronic low back pain [18].

Group of Patients receiving MFR
(Group – B)

After carefully analyzing the data comparing the pain levels before and after undergoing myofascial release technique, a notable difference was discovered. The patients experienced a significant reduction in pain intensity, an improvement in range of motion, and a decrease in functional disability following the treatment. These findings highlight the effectiveness of myofascial release technique in alleviating pain and enhancing overall physical function. It suggests that incorporating this technique into pain management strategies can provide relief and improve the quality of life for individuals seeking pain reduction and better mobility.

A study completed on, Myofascial Release Therapy in the Treatment of Occupational Mechanical Neck Pain observed that comparative analysis between therapies after intervention showed statistical differences indicating that group two which received MFR had better craniovertebral angle (P = 0.000), right (P = 0.000) and left (P = 0.009) side bending, right (P = 0.024) and left (P = 0.046) rotations, and quality of life. The treatment of occupational mechanical neck pain by myofascial release therapy seems to be more effective than manual therapy for correcting the advanced position of the head, recovering range of motion in side bending and rotation, and improving quality of life [19].

In the current study, it was observed that active release technique (ART) yielded more favorable outcomes compared to myofascial release (MFR). Apart from its impact on mechanoreceptors, one possible explanation for this difference could be attributed to the direct targeting of muscles by ART and the active involvement of the patient in movement. By directly addressing the muscles, ART effectively breaks down scar tissue adhesions and relieves muscle spasms through the process of muscle shortening and lengthening. Consequently, this leads to a prompt and enduring alleviation of pain, enhanced mobility, and improved neck function. On the other hand, in MFR, the focus is on stretching the fascia, which primarily affects the superficial structures. Since muscles are deeper structures, the impact of MFR on muscles is more indirect.

Although both the techniques are effective for the treatment of non-specific neck pain focusing the upper trapezius muscle spasm but the patients of group A with a VAS (P<0.25) NDI (P<0.002) and cervical ROM (P<0.002) were known to have higher efficacy and effectiveness. This is also observed in prior studies, which concludes the effectiveness of ART in treatment of non- specific neck pain. Following is a supporting study-

Published by Author(s): MISHRA, DAXA; PRAKASH, R. HARIHARA; MEHTA, JIGAR; DHADUK, ANKITA: on the topic Comparative Study of Active Release Technique and Myofascial Release Technique in Treatment of Patients with Upper Trapezius Spasm concludes that although both techniques are effective in alleviation of symptoms and associated disability in upper trapezius muscle spasm, ART gave better results as compared to MFR. [20].

Limitation

- Small sample size
- Short duration of study
- Limited age group of subjects were included.

Recommendation

Further study could be performed with

- Large number of samples
- Duration of study for long period
- Different stages of the selected condition
- Different condition may be selected
- Age group could be extended.

Conclusion

Active release therapy helps to achieve movement with mobilisation which gets soft tissue back in its neutral state, which helps in achieving normal PH of a particular tissue. This study concludes that both the therapeutic interventions ART and MFR was effective in relieving the symptom of pain, increasing range of motion and activity limitation but the Active Release Technique was proven to be more effective because it helps directly and indirectly in achieving ROM through neutralizing bony as well as

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soft tissue integrity.

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