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Comparative study between the effects of Myofascial Release Technique (MFR) and Phonophoresis followed by Cervical Isometrics in pain and range of motion on patients with

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ABSTRACT

Background: The inflammation of the trapezius muscle, known as trapezitis, is brought on by overworking the muscle and injuring it, which causes regional fibers to unintentionally shorten. MFR works by loosening up tight muscles, boosting circulation and lymphatic drainage, and triggering the stretch reflex in the muscles and surrounding fascia. (1) Phonophoresis is a therapeutic ultrasound technique used to deliver pharmacologic substances, typically anti-inflammatory or analgesic medicines, via the skin into the subcutaneous tissues. (2)
Methodology: sixty individuals were chosen based on inclusion and exclusion criteria. They were split into two groups, each with thirty subjects, and given treatment using MFR and Phonophoresis followed by Cervical Isometrics. Treatment was given for six consecutive days. VAS, NDI, and ROM were assessed and compared. Outcome measure: Visual analogue scale (VAS), Cervical ROM, Neck Disability Index (NDI)
Result: Both groups saw considerable Pain reduction, ROM improvement, and improvement in Neck Disability; however, Group A experienced more significant differences in pain, disability index, and ROM than Group B.
Conclusion: In lowering pain and neck dysfunction while enhancing ROM in patients with Trapezitis,
Myofascial Release Technique is superior to Phonophoresis.
Keywords: Trapezitis, MFR, Phonophoresis, Dexamethasone, VAS, NDI, Cervical ROM

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INTRODUCTION

The term "trapezitis" refers to inflammation of the trapezius muscle. [3] The trapezius is a triangular, flat muscle that originates from all twelve thoracic vertebrae as well as the medial third of the superior nuchal line of the occipital bone, ligamentum nuchae, and the spinous process. Upper fibers are put into the lateral portion of the clavicle's posterior edge. Middle fibers are placed into the acromion's medial border and the crest of the scapula's top lip. A deltoid tubercle tendon that has recovered is what inserts the lower fibers. [4] The amount of the population that has neck pain is influenced by the workplace and the posture that people adopt during the day. People who spend a lot of time driving or working at desks and on computers are more likely to develop this illness because their upper trapezius muscles become uncomfortable and spasmodic. The person whose neck movement is precipitated or worsened may suffer a restriction in their range of motion, neck pain, and a sense of stiffness. Even when you are at rest, you might still feel pain, and exercise makes it worse. Agonist muscle groups' discomfort and protective spasms can cause passive range of motion to be uncomfortable and limited. [5] The stress that causes this illness frequently involves both muscle tension and contraction. The function of side bending, extension, and neck rotation is assisted by the trapezius muscle. The neck's range of motion may be reduced by muscle tightness. The cervical joints' mobility may be negatively impacted by the reduction in range of motion. [6] Pain from trapezitis can be effectively treated with Physical Therapy. There are numerous therapeutic techniques available, including Ultrasound, Laser, TENS, and IFT. Trapezitis treatment necessitates a diverse strategy. The taut bands are to be eliminated in the near future. Pain alleviation using tender points and trigger points. Long-term, the muscle must regain its flexibility. In order to lower the rate of recurrence. [6]

MYOFASCIAL RELEASE TECHNIQUE: The definition of the soft tissue mobilization technique known as myofascial release is "the facilitation of mechanical, neurological and psycho physiological adaptation potential as interfaced via the myofascial system". [7][8] The Myofascial Complex is used in MFR therapy, which aims to restore ideal length, reduce discomfort, and enhance function.[9] Myofascial release uses manual traction and sustained muscle and fascia stretching to break down adhesions, which reduces discomfort, increases flexibility, and expands range of motion (ROM).[10]

PHONOPHORESIS: Phonophoresis is a method that uses therapeutic ultrasound to deliver pharmacologic compounds through intact skin and into the subcutaneous tissues, typically anti-inflammatory or analgesic medicines. Theoretically, the treatment of common inflammatory disorders including bursitis, sprains, strains, and tendinitis with phonophoresis can offer a secure and painless alternative to injections. Numerous anti-inflammatory medications, such as hydrocortisone, dexamethasone, and salicylates, as well as aesthetics like lidocaine, have been investigated in vivo with phonophoresis, with varying degrees of success. [2] Epicondylitis, tendinitis, tenosynovitis, bursitis, and osteoarthritis have all been conditions that phonophoresis has been used to treat. Greater cell permeability and local vasodilation in conjunction with an acoustic pressure wave may lead to increased topical agent diffusion. [2]

Commonly used Drugs: • Dexamethasone-phosphate (DEX-P) • Sodium diclofenac • Acetic acid • Hydrocortisone • Salicylates • Lidocaine The medication that will be used is

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Dexamethasone Phosphate (DEX- P) Compared to other factors • Better outcomes • Fewer negative impacts are the reason. • Budget-friendly

CERVICAL ISOMETRIC EXCERCISES: Exercises for the neck that involve isometric contraction and relaxation massage all the toxins that contribute to inflammation. Additionally, due to the same, muscle fibers are strengthened. [11] If performed in this way, neck exercises will help to increase the neck muscles stability. [12][13] • Cervical flexion: Lean the neck slightly forward, place palm of both hands-on forehead and push the head towards the hands while resisting the movement with hands. • Cervical extension: Keep the neck straight, put palm of both hands behind the head, push the head backwards the hands while resisting the movement with hands. • Right Lateral Flexion: Keep the neck straight, put palm of right hand on right side of the head, push the head towards the hand to bring head down to the right shoulder while pushing the hand vice versa. • Left Lateral Flexion: Keep the neck straight, put palm of left hand on left side of the head, push the head towards the hand to bring head down to the left shoulder while pushing the hand vice versa.

OBJECTIVES OF THE STUDY:

1. To determine how MFR followed by Cervical Isometrics affect pain and ROM in patients with trapezitis.
2. To determine how Phonophoresis followed by Cervical Isometrics affect pain and ROM in patients with Trapezitis.
3. To evaluate the effects of MFR and Phonophoresis followed by Cervical Isometrics on pain and ROM in patients with Trapezitis

HYPOTHESIS:

NULL HYPOTHESIS: There is no significant difference between the effects of Myofascial Release Technique and Phonophoresis in patients with trapezitis.

ALTERNATE HYPOTHESIS: There is significant difference between the effects of Myofascial Release Technique and Phonophoresis in patients with Trapezitis.

REVIEW OF LITREATURE:

1. Divya Sanjay Raja P.T., Parag Kulkarni P.T., and Ajay Kumar P.T (2018) conducted Comparative study between the effects of Ultrasound and Phonophoresis in patients with Trapezitis and concluded that Ultrasound and Phonophoresis both are beneficial in reducing pain, whereas there is significant improvement in ROM using Phonophoresis than compared to Ultrasound.
2. Dr. Saad Kamil P. T, Princy Dhakan, Tanvi Joshi, Dr. Sarfraj Khan P.T (2020) conducted Comparative study between effects of Ultrasound and Myofascial Release Technique in patients with Trapezitis and concluded that MFR is more effective than US in reducing pain and ROM in patients with Trapezitis.
3. Bishop, Dianna L. "A Comparison of Myofascial Release and Ultrasound in the Treatment of Musculoskeletal Pain" (1987). Master of Science (MS), Thesis, Community & Environmental Health, Old Dominion University, DOI: 10.25777/6235-ay49.
4. Shrikrishna S et al / Int. J. of Allied Med. Sci. and Clin. Research Vol-7(2) 2019 [586-591] "Effectiveness of myofascial release technique vs therapeutic ultrasound in the management of plantar fasciitis"

METHODOLOGY:

Study setting: Shri U.S.B. College of Physiotherapy, Abu Road. Source of data: Various colleges in Mumbai and Abu Road.
Method of collection of data:
Study population: Patients with trapezitis Subjects size: 60 Sampling method: Randomized control trial
Study design: An experimental study
Materials to be used: • Electrotherapy modality Ultrasound • Ultrasonic gel • Cotton • Dexamethasone • Consent Form • Pillow • Chair • Goniometer • Questionnaire of NDI, VAS, Cervical ROM.

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Inclusion Criteria • Young adults of age 18-25 diagnosed with Trapezitis • Both Male and Females were included • Patient having neck pain • Pain of minimum 3/10 on VAS • Restriction in Cervical Lateral Rotation
•Jump Sign characterized by patient vocalization and withdrawal
Exclusion Criteria • Traumatic Neck Injury • Torticollis • Malignancy of upper trapezius • Cervical Radiculopathy • Fracture of Cervical Vertebrae • Neurological Deficit • Inflammatory Disease • Skin allergic condition • Scoliosis • Congenital Anomalies • Any degenerative condition of Cervical Spine.

Outcome Measures:

1. VAS: The VAS is made up of one continuous horizontal line that is typically 10 cm in printed length, together with two descriptive sentences at either end. The standard range for the scale is 0 (left, least extreme) to 10 (right, most extreme). [14]

2. Cervical ROM: The most popular and affordable tool used in clinical settings to record joint ROM during physical evaluation is the universal goniometer (UG). The UG is a protractor having two arms that may be rotated 180 degrees or 360 degrees. One arm is fixed while the other is moveable around the axis. [15] disability index (NDI), [16] while enabling clinicians and researchers to share knowledge. and examine the results of interventions, offering a standard measure to be utilized in clinical practices and research projects. [17]

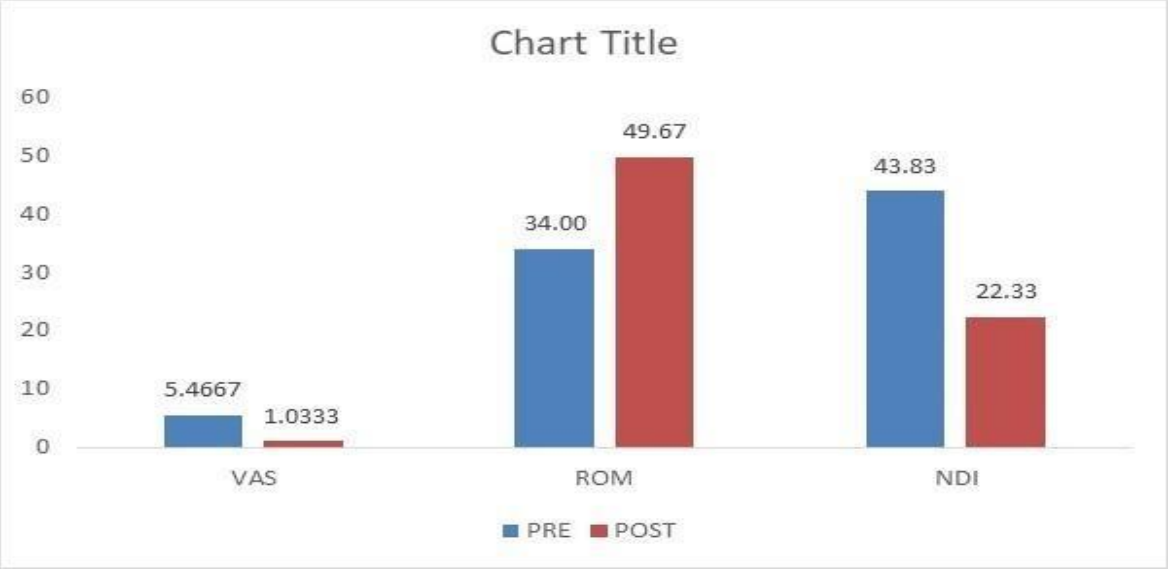
Procedure:

• Group A: This will include 30 patients of both sexes who will receive Myofascial Release Technique treatment. The patient should be su-upported in the back and sat comfortably, with the elbow extended and the forearm resting on a pillow. For 30 seconds, apply sustained deep pressure with the thumb to the upper trapezitis. Lowering the tension in the upper trapezius muscle will relieve pressure. MFR must be applied for 5 minutes before doing Cervical Isometrics Ex. Isometrics for cervical flexion, extension, and side flexion on the right and left.

• Group B These 30 patients, who will be of both sexes, will receive treatment using ultrasound, Dexamethasone Phosphate Ions combined with Ultrasonic Gel-Phonophoresis Technique. 1.5 w/cm3 for intensity Phonophoresis must be applied for 6 minutes before doing Cervical Isometrics Ex. Isometrics for cervical flexion, extension, and side flexion on the right and left.

RESULT:

SPSS Statistics version 20.0 for Windows was used to conduct all the statistical analysis. Graphs and tables were produced using Microsoft Excel.



Graph 1.1 - Comparison of Pre and Post readings of Group A

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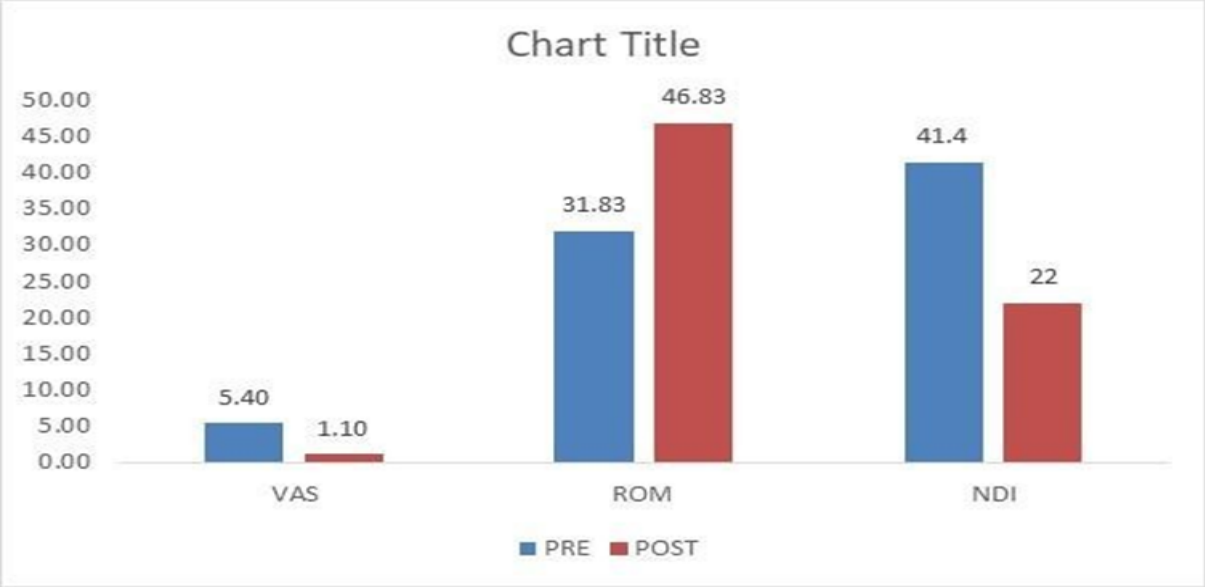
1.1 Comparison of Pre and Post readings of Group A PRE-TREATMENT POST TREATMENT t-Value p-Value MEAN SD MEAN SD VAS 5.4667 1.5024 1.0333 1.2726 3.48397 p<0.05 ROM 34.00 6.997 49.666 6.288 2.4914 p<0.05 NDI 43.83 8.078 22.33 7.581 2.836037 p<0.05

	PRE-TREATMENT		**POST TREATMENT**		**t-Value**	**p-Value**
	MEAN	**SD**	**MEAN**	**SD**		
VAS	5.4667	1.5024	1.0333	1.2726	3.48397	p<0.05
ROM	34.00	6.997	49.666	6.288	2.4914	p<0.05
NDI	43.83	8.078	22.33	7.581	2.836037	p<0.05

Table 1.1 - Comparison of Pre and Post readings of Group A

INTERPRETATION: - According to the data, there was a significant difference (p ‹ 0.05) between the Pre and Post VAS and NDI readings and there was a substantial improvement in cervical lateral flexion ROM



Graph 1.2 - Comparison of Pre and Post readings of Group B Table

1.2 Comparison of Pre and Post readings of Group B PRE-TREATMENT POST TREATMENT t-Value p-Value MEAN SD MEAN SD VAS 5.4 1.404 1.1 0.959 4.483837 p<0.05 ROM 31.83 4.822 46.833 7.249 2.06971 p<0.05 NDI 41.4 6.223 22 6.512 2.979115 p<0.05.

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	PRE-TREATMENT		POST TREATMENT		t-Value	p-Value
	MEAN	SD	MEAN	SD		
VAS	5.4	1.404	1.1	0.959	4.483837	p<0.05
ROM	31.83	4.822	46.833	7.249	2.06971	p<0.05
NDI	41.4	6.223	22	6.512	2.979115	p<0.05

Table 1.2 - Comparison of Pre and Post readings of Group B

INTERPRETATION: According to the data, there was a significant difference (p ‹ 0.05) between the Pre and Post VAS and NDI readings and there was a substantial improvement in cervical lateral flexion ROM.

Graph 1.3 Comparison of mean of difference between Group A and Group B

	MFR		PHONO	
	Mean Of Difference	SD of Difference	Mean Of Difference	SD of Difference
VAS	4.4334	0.2298	4.3	0.445
ROM	15.67	0.709	15.00	2.427
NDI	21.5	0.497	19.4	0.289

Table 1.3 Comparison of mean of difference between Group A and Group B

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INTERPRETATION: According to the data, there was a substantial difference in VAS, NDI,and Cervical ROM between Group A and Group B. In VAS, NDI, and ROM, Myofascial Release Approach ismore effective

DISCUSSION: The aim of the study was to contrast the effects of Phonophoresis and Myofascial Release Technique on pain and range of motion in patients with Trapezitis. Different electrotherapy and manipulation procedures work to lessen discomfort and muscular spasm while boosting muscle strength and regaining mobility. The effectiveness of these therapeutic approaches has not, however, been supported by many investigations. Therefore, the purpose of this study is to look into the effects of Phonophoresis and Myofascial Release on Trapezitis.

Sixty subjects who met the inclusion and exclusion requirements were divided into two groups of 30 each, by random assignment. MFR was administered to Group A (n=30) patients, whose ages ranged from 18 to 25. Phonophoresis was used to treat Group B (n=30) patients, who ranged in age from 18 to 25. Both groups had their severity assessed using the VAS scale, NDI, and goniometer before the treatment began and at the end of the programmed. The therapy was continued for six days in a row.

Comparison of Pre and Post Treatment values were statistically done using Paired 't' test. The t value of pre and posttest analysis of VAS in Group A is t=3.4839 and in Group B is t=4.4838 with the 'p' value is $p<0.05$, pre and posttest of analysis of ROM in Group A is t=2.4914 and in Group B is t=2.06971 with the 'p' value is $p<0.05$, pre and posttest of analysis of NDI in Group A is t=2.8360 and in Group B is t=2.9791 with the 'p' value is $p<0.05$.

Further comparison between Group A and Group B were done using the means of difference of both groups. The average improvement in VAS score in Group A is 4.4334 and Group B is 4.3. The average improvement in ROM in Group A is 15.67 and Group B is 15.00. The average

improvement in NDI in Group A is 21.5 and Group B is 19.4.

The findings of the current study showed that both groups significantly improved, but when additional comparisons were made using the mean of difference, group A (who had MFR treatment) displayed higher results range of VAS, NDI, and ROM improvement in individuals with Trapezitis.

Therefore, statistical evidence shows that MFR is superior to Phonophoresis in the treatment of Trapezitis.

CLINICAL IMPLICATION:

Results indicate that MFR is more beneficial than Phonophoresis for patients with Trapezitis when compared to both techniques, i.e., MFR and Phonophoresis. MFR may therefore be more advantageous for this group of participants.

LIMITATIONS:

The researchers employed a tiny sample size for their investigation. A larger sample size may have contributed to some variation in the outcome. After the procedure, no follow-up was made. The study was only conducted for 6 days. Because the subjects were not matched for age, sex, height, weight, or body mass index, the outcome could have been impacted.

RECOMMENDATIONS FOR FURTHER STUDIES:

Large sample sizes enable the conducting of additional research. Duration of the study can be more than 6 days. Further studies can be done including other Physiotherapy treatment modalities and exercises.

CONCLUSION:

In this randomized trial investigation, the effects of MFR and Phonophoresis on patients with Trapezitis were compared. Consequently, we determined that MFR is more efficient than the Phonophoresis easing discomfort and enhanced cervical range of motion in Trapezitis patients.

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