

Release Techniques in Rehabilitation of Trapezius Muscle among Patients with Chronic Neck Pain

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Received: 28 Jan 2023; Accepted: 01 May 2023; Published: 06 May 2023

Citation: Shaheen HM, Shameh RA, Shaheen AM. Release Techniques in Rehabilitation of Trapezius Muscle among Patients with Chronic Neck Pain. Int J Res Phys Med Rehabil, 2023; 1(1): 1-5.

ABSTRACT

Aim: To compare between the efficacy of Active release technique and Myofascial Release Technique on pain and range of motion in-patient chronic neck pain.

Subjects and Methods: 20 patients with neck pain who were randomly assigned to one of two groups that received Active release technique (n = 10; mean age, 46.00 years) or Myofascial Release Technique (n = 10; mean age, 46.00 years). Both groups were received their programs for one week; 7 sessions per week.

Main Measures: VAS and ROM an assessment was made for each group at the initial visit (before initiation of treatment) and at end of the program.

Results: there were differences between the two methods with regard to flexion and the differences were in favor of active release technique where the improvement was greater where P-value was (0.014), as the results showed that there were differences with regard to extension and the differences were in favor of active release technique, where P-value was (0.021). As for the pain, the differences were in favor of the myofascial release technique, as the pain decreased more, where P-value was (0.009).

Conclusion: There was a significant difference between active release technique and myofascial release technique as regard to pain reduction and improvement ROM. Which active release technique allows a greater improvement in ROM than the myofascial release technique. In addition, myofascial release technique allows a greater degree of pain relief than active release technique in-patient with chronic neck pain.

Keywords

Chronic neck Pain, Active Release Technique, Myofascial Release Technique.

Introduction

Neck pain is the second most common disorder associated with spine dysfunction after back pain, and it affects people of all ages, including children and young people [1]. Cervical pain is regarded as the fourth cause of inefficiency. Within a year of the onset of the first symptoms, approximately 60-80 percent of people who are professionally active experience a relapse [2,3].

Mechanical dysfunction, which produces aberrant joint movement, is a common cause of neck discomfort, since improper cervical joint mobility inside the joint capsule can limit neck movement [4].

Myofascial Release (MFR) is a therapy for soft tissue mobilization. It is described as "the facilitation of mechanical, neurological, and psychophysiological adaptation potential as interfaced through the myofascial system." It breaks away adhesions by using manual traction and sustained stretching of the fascia and muscle, which helps to reduce pain, enhance flexibility, and thus increase range of motion [5].

The active release method (ART) is a manual treatment for soft tissue function recovery that involves the removal of scar tissue, which can cause pain, stiffness, muscular weakness, and aberrant sensations, as well as mechanical dysfunction in the muscles, myofascia, and soft tissue. In patients with a partial tear of the supraspinatus tendon, ART is similarly beneficial at reducing pain and increasing ROM [6].

The aim of the study was to assess the therapeutic efficacy of active release and myofascial release techniques in minimizing severity of pain and improving range of motion in chronic neck pain cases, and to determine which one of these two common release technique is more effective to reduce pain intensity and improve range of motion.

Methods and Materials

The current study was design to determine the therapeutic effectiveness of myofascial release and active release technique in reducing pain intensity and improve range of motion in rehabilitation patients with chronic neck pain. Twenty male and female patients with age from 35-55 years suffering from chronic neck pain were participate in this study. All patients were randomly selected from orthopedic surgeon.

The subjects were divided into two groups: Group (A) (myofascial release) 10 patients were received myofascial release technique for 12 sessions over a four weeks' period, for three sessions each week. Group (B) (active release technique) 10 patients were received active release technique for 12 sessions over a four weeks' period, for three sessions each week. All patients in all groups were receive a hot pack; it was used for 20 minutes before each session.

The criteria for patient's selection classified in to two types: Inclusion Criteria in which Age ranged from 35 to 55 years, who had a 3-month or longer history of neck pain, and who had trapezius spasm diagnosed clinically. History of trauma or fracture in the neck or upper back or shoulder, Surgery in the neck or upper back or shoulder, any skin diseases in the trapezius area, and Patients with spondyloarthritis, lumbar spinal stenosis, or scoliosis were excluded.

Outcomes Measures

- **Tap Measure:** Tape measurement is the measuring tool by using tape in centimeters with different landmarks as reference marks. Visual estimation is measuring skill which is observer visually estimate the cervical range of motion in the subject in sitting position [7].
- **Visual Analogue Scale (VAS):** It is a graphic rating scale, which is commonly interpreted as a valid report of pain intensity and was used to record the degree of pain intensity. VAS is a-10 cms line, at one end, it was written (no pain = zero) and at the other end, it was written (worst pain = 10). Each subject was asked to mark and score on the line at the point that represent intensity of pain [8].

Intervention and Procedure

- **Active Release Technique:** patient was sitting on a stool with hands supported on the thighs. Therapist stood behind the patient stabilizing the shoulder with one hand. Neck taken in extension and contact made using thumb with the trapezius muscle over the tender area and deep tension stretch was applied. Patient then asked to flex and turn the neck. This repeated for 3-5 times [9].
- **Myofascial Release Technique:** patient was 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 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 will be given for 3-4 times [10].

At the end of 12th session both the groups A and B were reassessed to check active cervical ROM using tape measure and the pain intensity with VAS. Data was recorded and both the groups were compared for its effect after 12th session of the treatment.

Results

Twenty male and female patients suffering from neck pain considered the inclusion criteria and were included in the study. Following the data collection, the subjects were allotted into two groups, Group (A) myofascial release technique and group (B) active release technique. During 4 weeks of protocol 10 patients were in group A and 10 patients were in group B. All the patients in all groups received Hot pack was applied for 20 minutes.

Table 1: Paired Samples Test to examine the differences between the sample before and after using Active Release Technique.

		Mean	Standard Deviation	P. value
Age		46.00	5.98	.980
Weight		81.70	13.30	.990
Height		171.50	8.24	.880
BMI		27.76	4.08	.340
Flexion	Pre	3.50	1.35	.014*
	Post	1.30	1.15	
Extension	Pre	15.70	1.49	.021*
	Post	18.70	1.15	
Pain	Pre	6.70	1.56	.009*
	Post	2.80	1.87	

The above table shows the results of Paired Samples Test to examine the differences between the sample before and after using Active Release Technique. It shows that the mean age of the sample was (46.00), the mean of the sample weights was (81.70), and the mean of the sample heights was (171.50), as for the BMI, its mean was (27.76), as shown in the following figure:

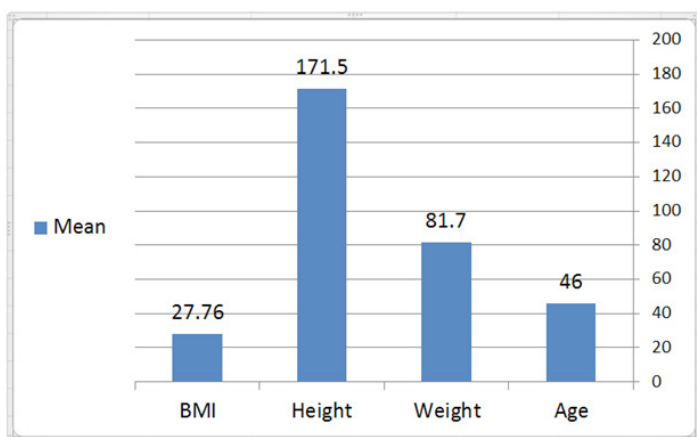


Figure 1: Means of Demographic variables of group A (Active Release Technique).

As for the (flexion), its mean before the application of Active Release Technique was (3.50), while after the application, it was (1.30), and this indicates that the flexion has improved (decreased) by a difference of (2.2). With regard to (extension), the mean before applying Active Release Technique was (15.70), while after application it was (18.70), this indicates that the (extension) improved (increased) by a difference of (3.0). Regarding pain, the mean before applying Active Release Technique was (6.70), while after application it was (2.80), and this indicates that the pain was reduced by a difference of (3.9). The table also shows the presence of significant differences before and after the application of Active Release Technique where all values of (p. Value) were less than (0.05) which is the value of the assumed statistical significance and these differences were in favor of post-application as it appears through the means. This is evident in the following figure:

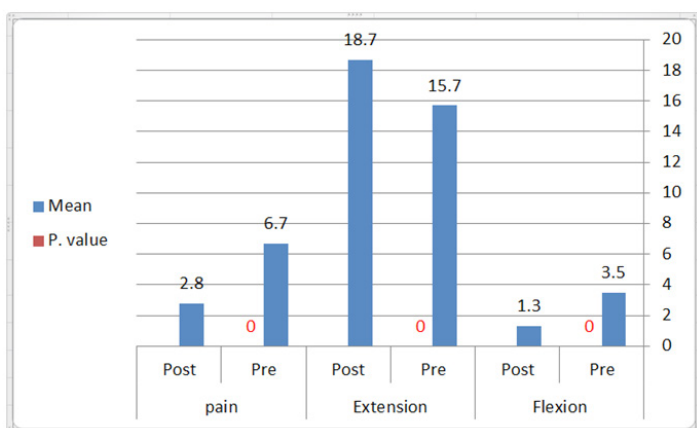


Figure 2: Means and P. values for flexion, extension, and pain. Pre and Post active release technique.

Table 2: Paired Samples Test to examine the differences between the sample before and after using Myofascial Release Technique.

		Mean	Standard Deviation	P. value
Age		46.00	6.94	.960
Weight		89.10	9.45	.990
Height		175.60	6.25	1.0
BMI		29.49	2.74	.530
Flexion	Pre	4.60	1.50	.000*
	Post	2.90	1.44	
Extension	Pre	16.00	1.49	.000*
	Post	17.80	1.22	
Pain	Pre	7.30	1.33	.011*
	Post	2.20	1.03	

The above table shows the results of Paired Samples Test to examine the differences between the sample before and after using Myofascial Release Technique. It shows that the mean age of the sample to which the technique was applied was (46.00), the mean of the sample weights was (89.10), the mean of the sample heights was (175.60). As for the BMI, its mean was (29.49). This is shown in the following figure:

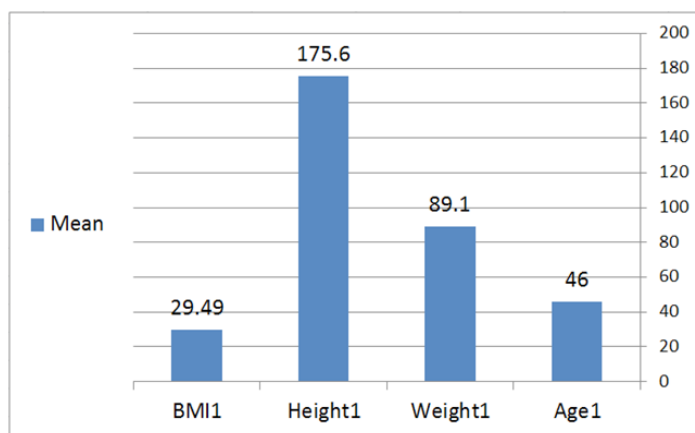


Figure 3: Means of Demographic variables of group A (Myofascial Release Technique).

As for the (flexion), the mean before the application of Myofascial Release Technique was (4.60) while after application it was (2.90), and this indicates that the flexion has improved (decreased) by a difference of (1.7). With regard to (extension), the mean before the application of Myofascial Release Technique was (16.00) while after application it was (17.80) and this indicates that the (extension) has improved (increased) by a difference of (1.8). Regarding pain, the mean before the application of Myofascial Release Technique was (7.30) while after application it was (2.20), and this indicates that the pain was reduced by a difference of (5.1). The table also shows the existence of important differences before and after the application of Myofascial Release Technique where all values of (p. Value) were less than (0.05) which is the value of the assumed statistical significance and these differences were in favor of post-application as it appears through the means. This is shown in the following figure:

Table 3: Paired Samples Test to examine the differences between the two samples for which the two te applied.

		Active Release			Myofascial Release			P. value
		M	SD	Mean Difference	M	SD	Mean Difference	
Flexion	Pre	3.50	1.35	2.2	4.60	1.50	1.7	.014
	Post	1.30	1.15		2.90	1.44		
Extension	Pre	15.70	1.49	3	16.00	1.49	1.8	.021
	Post	18.70	1.15		17.80	1.22		
Pain	Pre	6.70	1.56	3.9	7.30	1.33	5.1	.009
	Post	2.80	1.87		2.20	1.03		

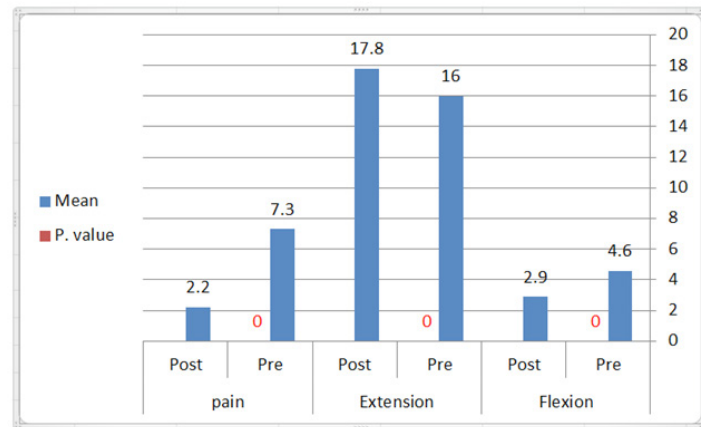


Figure 4: Means and P. values for flexion, extension, and pain. Pre and Post Myofascial release technique.

The above table shows the results of Paired Samples Test to examine the differences between the two samples for which the two therapies were applied, where the results showed that there were differences between the two methods with regard to flexion and the differences were in favor of active release technique where the improvement was greater, as the results showed that there were differences with regard to extension and the differences were in favor of active release technique. As for the pain, the differences were in favor of the myofascial release technique, as the pain decreased more, as evidenced by the difference in the mean. The following figure shows these results:

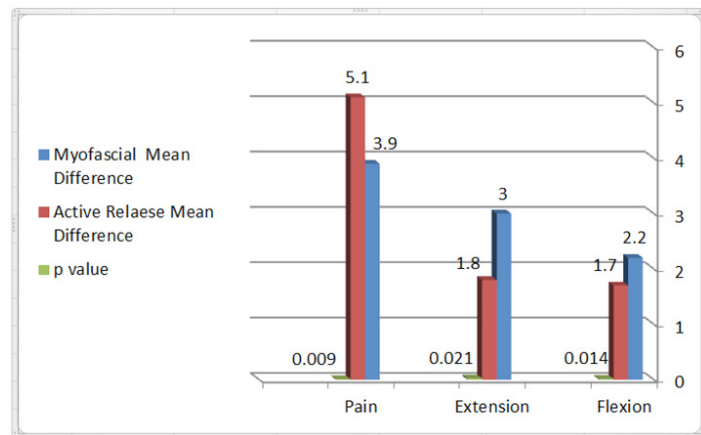


Figure 5: P. value and mean difference in positive effect of the two techniques.

Statistical analysis

Results were analyzed using STATA (14.2). Descriptive statistics {mean (SD), frequency (%) } was used to depict the profile of study population. The improvement from the baseline was assessed using paired t-test in both groups (ART as well as MFR). The efficacy of the groups was compared using independent sample t-test on difference scores and p-value less than 0.05 considered statistically significant

Discussion

The purpose of the study was to explore if there is a difference between the use of myofascial release technique and active release technique on pain intensity and range of motion on patient with chronic neck pain.

Our study revealed that post application of the active release technique there was improvement in all of flexion, extension, and reduce pain. Which means that this technique is beneficial for neck pain. This supports by the result of study for Kim et al., (2015) which was prepared in Republic of Korea to compare the influences of the ART and joint mobilization (JM) on the visual analog scale (VAS) pain score, pressure pain threshold (PPT), and neck range of motion (ROM) of patients with chronic neck pain, the study reported that Active release technique for the treatment of chronic neck pain may be beneficial for neck pain and movement [11].

Such as the study by (Kumar et al. 2017) in India, there was more improvement in active release technique when compared to muscle energy technique & conventional therapy in treating subscapularis trigger points in adhesive capsulitis [12]. Another study was supported by our result, conducted by Bacon (2011) to treat participants who suffered from tension headaches with active release technique ART, the study showed that the use of ART can improve the symptoms associated with tension-type headaches [13].

Our study also revealed that post application of the Myofascial Release technique there was improvement in all of flexion, extension, and pain. Which means that this technique is beneficial in improving neck pain. This result supports the results of previous studies related to the Myofascial Release Technique. Namvar et al. (2016) reported that myofascial release is one of the effective manual therapy techniques in reducing pain, disability, improving the isometric extension strength of neck in patients with nonspecific chronic neck pain [14]. Ashok et al. (2019) were compare Myofascial Release, Muscle Energy Technique and Cervical Manual Therapy in Postural Neck Pain. The study reported that myofascial release technique more effective for the treatment patients with neck pain [15]. also, Hosseinifar et al., 2017 were investigate the effects of neck Myofascial Release (MFR) techniques and exercise therapy on pain intensity and disability in patients with chronic tension-type headache (TTH), The study showed improvement of headache intensity and disability rate in the MFR group than the control group [16].

Our study also revealed that there were differences between the two methods with regard to flexion and the differences were in favor of active release technique where the improvement was

greater, as the results showed that there were differences with regard to extension and the differences were in favor of active release technique. As for the pain, the differences were in favor of the myofascial release technique, as the pain decreased more. This result is consistent with the results of some previous studies such as the study of Mishra et al. (2018) which revealed that the group which received ART showed significant improvements in neck ROM, NDI and in VAS as compared to the group which received MFR. Whereas both techniques are effective in the alleviation of symptoms and associated disability in upper trapezius muscle spasm, ART gave better results as compared to MFR [17]. Trivedi et al. (2014) which compare the Active Release Technique (ART) and Myofascial Release Technique (MFR) in the treatment of Chronic Lateral Epicondylitis (CLE), the study showed that Active Release Technique and Myofascial Release Technique were effective in all outcomes when compared to Control Group. In addition, Myofascial Release Technique was more effective in improving grip strength & reducing pain & disability when compared to Active Release Technique [18].

Conclusion

The current study was concluded that post application of the active release technique there was improvement in all of flexion, extension, and pain. Which means that this technique is beneficial for neck pain. The results also showed that post application of the Myofascial Release technique there was improvement in all of flexion, extension, and pain. Which means that this technique is beneficial in improving neck pain. There were differences between the two methods with regard to flexion and the differences were in favor of active release technique where the improvement was greater, as the results showed that there were differences with regard to extension and the differences were in favor of active release technique. As for the pain, the differences were in favor of the myofascial release technique, as the pain decreased more.

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