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Effect of myofascial trigger point release on levator scapulae muscle in mechanical neck pain

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Abstract
Background and Purpose: Neck works with shoulder to provide support for head and facilitate rotation of the head about its axis. Neck pain may arise due to muscular tightness in both the neck and upper back, the head is supported by the lower neck and upper back, and it is these areas that commonly cause neck pain. Levator scapulae help in varies action of neck, shoulder and scapula; mainly elevation, abduction and downward rotation of scapula and flexion, extension, side flexion and rotation of cervical spine. Trigger points are deep to the upper trapezius muscle. Myofascial release is the gentle manual application of sustained pressure to release facial restriction. MFR is a stretching technique that requires feedback from patient's body to determine the direction, force and duration of the stretch and to facilitate maximum relaxation of tight or restricted tissue.
Method: Study involved 30 participants which were given Myofascial trigger point release on the taut bands of Levator scapulae muscles in mechanical neck pain. Data was analysed using paired't' test.
Result: The data of the present study was analysed using statistical method of paired't'-test between the pre and post interventional study of pain and range of motion. The result showed statistically significant improvement and visible difference in the post intervention.
Discussion and Conclusion: From the present study we conclude that Myofascial trigger point release on levator scapulae muscle is effective in mechanical neck pain.

Keywords: trigger point, myofascial trigger point release, and mechanical neck pain

1. Introduction
Human neck is a very amazing thing, it moves in all the directions in any position. Weighs our head which is almost 5 kg, with all its movement and complexity, it's no wonder that neck pain can be so prevalent. Neck is made up of vertebrae and cervical discs which absorb shock between the bones. Any abnormalities, inflammation, or injury can cause neck pain or stiffness. Neck works with shoulder to provide support for head and facilitate rotation of the head about its axis [1]. Levator Scapulae muscles are located on either side of the neck. This muscle is originated from posterior tubercle of transverse process of C1-C4 vertebrae, and inserted at superior part of medial border of scapula; nerve supply to it is cervical nerves (C3&C4) and dorsal scapular nerve (C5). This muscle helps in varies action of neck, shoulder and scapula; mainly elevation, abduction and downward rotation of scapula and flexion, extension, side flexion and rotation of cervical spine. It is very common for this muscle to get tensed thus it is one of the major cause for neck pain and neck stiffness, as it decreases the range and movement of cervical area. There are evidences that it leads to mechanical neck pain [2].
Myofascial trigger points are focal, palpable, hypersensitive taut bands of muscle. Upon palpation, trigger points can produce muscle twitch and referred pain, tenderness, and an autonomic response to a remote area. When pressure is applied to a TP, a "jump sign" or "jump response" is elicited whereby the patient reacts with facial grimacing, by a verbal response, or by jumping away from the examiner to cause neck and upper back pain [3].
There are mainly two trigger points located in the lower half of the Levator scapulae muscles. A complete assessment of pain in cervical spine is done as the pain is referred to the cervical spine due to trigger point in the Levator scapulae muscles. Basically the patient will have regional pain complain, pain pattern in the expected distribution of muscular referred pain, palpable taut band in accessible muscles [4].
Myofascial release is the gentle manual application of sustained pressure to release fascial restriction. MFR is a stretching technique that requires feedback from patient's body to determine the direction, force and duration of the stretch and to facilitate maximum relaxation of tight or restricted tissue. Myofascial trigger point release also known as ischemic compression therapy is used to release contracted sarcomeres of the contraction knots in the trigger point [5].

2. Methodology
The participants were made to sit in a comfortable position on a chair, the position of the therapist was behind the participant. An assessment of the trigger point on levator scapulae muscle, pain with the help of visual analogue scale and range of motion of side flexion of the neck was done prior to the technique and was compared after the single intervention of myofascial trigger point release. The trigger point release consist of lengthening the muscle to the point of increasing resistance within the comfort zone and then apply gentle, gradually increasing pressure on the trigger point until

the finger encounters a definite increase in tissue resistance or a barrier [6]. The pressure should be sustained and maintained till 60-90 seconds/counts or 1 minute,participant should feel a degree of discomfort but should not experience pain, until therapist feels slight release of tension under the finger. The therapist then increases the pressure to a new barrier and repeat the procedure again. Likewise three barriers are to be released under the pressure, for better results can even increase the number of barrier according to the resistance of the taut band. Immediate post assessment of pain was taken with the help of Visual analogue scale, and range of motion with the help of a goniometer [7].

3. Results

Thirty participants (n=30) were evaluated using Goniometer. Data for each participant was collected and recorded by the principal investigator. The result of this study showed that Myofascial trigger point release on levator scapulae muscles was highly effective on participants with neck pain and showed a visible difference post intervention.

Mean values of pain assessment by vas scale

Table 1: Comparison of mean in pre and post intervention of pain by VAS scale

Mean ±SD		't' value	'p' value	Result
Pre	Post			
5.33±1.46	3.5±1.38	23.16	<0.0001	Extremely Significant

Mean values of pre and post intervention of range of motion

Table 2: Comparison of mean in pre and post intervention of range of motion with goniometer.

Mean ±SD		't' value	'p' value	Result
Pre	Post			
37.53±4.01	40.33±4.08	2.68	<0.0001	Extremely Significant

4. Discussion

The present study "Effect of myofascial trigger point release on levator scapulae muscles in mechanical neck pain." was conducted in department of Musculoskeletal-Physiotherapy department in Dr. A. P. J. Abdul Kalam, College Of Physiotherapy; Loni, Taluka- Rahata, District- Ahmednagar, Maharashtra, India. Thirty (30) participants were included in this study. The pre-post values of pain were assessed by using VAS sale and range of motion by Goniometer. The main purpose of this study was to find out the effect of Myofascial trigger point release on Levator scapulae muscles in mechanical neck pain. In this study 30 participants were given trigger point release technique on taut bands of Levator scapulae muscles. The effectiveness was evaluated by using the Paired't' tests to compare of pre and post values of pain and range of motion. The result shows that the Myofascial trigger point release on taut bands of Levator scapulae muscles in a single intervention is effective in mechanical neck pain and the intervention was effective in reducing the pain and improved the range of motion of side flexion of the neck in participants with mechanical neck pain.

This study was done to analyse the pain caused due to trigger points in Levator scapulae muscles and restriction or limited range of motion of neck due to the same. It was found out that Myofascial trigger point release on those trigger points showed effective results post treatment. Participants with mechanical neck pain, who complained of limited side flexion, had immediate effect in pain and range of motion in their first intervention when given trigger point release.

The pressure that is applied to the trigger point of taut band should be within a tolerable pain level for each patient to avoid causing excessive pain and autonomic responses with involuntary muscle tensing. An appropriate pressure prescription is important to ensure the clinical efficacy of Myofascial trigger point release technique [8].

Pain relief from the Myofascial trigger point release technique results from breaking the limitation of muscle or connective tissue around the joint, from stimulating the mechanoreceptor, from increasing the blood flow and neuron conductance, or from local or systemic relaxation. Myofascial trigger point release is a stretching technique to require maximum relaxation which requires feedback to determine the force, direction and duration of the stretch. This technique recognizes that a muscle cannot be isolated from the other structures of the body so all muscle stretching is actually the stretching of the fascia [9].

5. Conclusion

This study concludes that Myofascial trigger point release in taut bands of levator scapulae muscles is highly effective in decreasing the pain and improving the range of motion of neck in mechanical neck pain.

6. References

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