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Effectiveness of Myofacial Release Therapy and Self Stretching Technique for Tight Quadratus Lumborum Muscle in Patients with Non Specific Low Back Pain: A Comparative Study

Dr. Chetana Vikas Zambare[1], Dr. Manasi Karpe[2], Dr. Tanvi Sanjay Chalse[3]

[1,3]Intern, Sir Dr. M.S. Gosavi College Of Physiotherapy And Health Care Management, Nashik, India.
[2]Assistant Professor, Sir Dr MS Gosavi College Of Physiotherapy And Health Care Management, Nashik, India.

ABSTRACT:

Background and need for reseach: Low back pain is considered to be one of the most common health conditions faced. Quadratus Lumborum is a deep trunk muscle which stabilizes the lumbar spine during sustained repetitive movements, leading to formation of myofascial trigger points, which can be the leading source of pain in low back. Stretching leads to increase in extensibility and improving flexibility by elongating structures that have adaptively shortened. The thoracolumbar fascia has a basal tension which helps it to sense and control of underlying muscles due to presence of mechanoreceptors. Thus, study was undertaken to see whether MFR or self stretching technique is more effective in treating non-specific low back pain.

Method: 40 participants were included in study and were divided into 2 groups randomly. Participants between 18-25 years old both male and female with mechanical low back pain and having quadratus lumborum tightness were included and the participants with any recent lumbar fracture or surgery were excluded. Group A received MFR and Group B received self stretching. NPRS scores pre and post intervention were recorded.

Result: Group A(MFR) showed significant change in NPRS value (p value-<0.0001), while Group B(self-stretching) was not significant (p value 0.117). Post comparison between the groups was extremely significant($p<0.0001$).

Conclusion: The study concluded that MFR was better effective in reducing pain than self-stretching. Result or this study can be included in the treatment of non specific low back pain.

Keywords: Low Back Pain, Quadratus Lumborum, Myofascial Release, Self Stretching.

INTRODUCTION:

Low back pain is regarded as one of the most prevalent health issues encountered across all age demographics, with potential causes including Myofascial pain, muscle spasms, or trigger points.

The Quadratus lumborum is a deep muscle situated near the center of rotation of the spinal segments. This muscle acts as both a lateral flexor and extensor of the lumbar spine, facilitating movements that can result

in pain. Myofascial release therapy is characterized as the enhancement of mechanical, neural, and psychophysiological adaptive potential, as integrated through the myofascial system.
The fascial system in the thoraco-lumbar region maintains a baseline tension that aids in the sensing and regulation of the underlying muscles, attributed to the presence of mechanoreceptors.
Stretching is described as a therapeutic technique aimed at enhancing the extensibility of soft tissues and improving flexibility, as well as the range of motion, by lengthening structures that have adaptively shortened or become hypomobile over time.
Self-stretching entails the gradual elongation of the muscle to a tolerable limit, with the individual holding the position for a duration that does not induce pain voluntarily[1].

AIM OF THE STUDY:
To compare the effectiveness of myofascial release therapy and self stretching technique for tight quadratus lumborum muscle .

OBJECTIVES OF THE STUDY:
- To assess the effectiveness of myofascial release therapy for tight Quadratus Lumborum muscle.
- To assess the effectiveness of self stretching technique for tight Quadratus Lumborum muscle.
- To compare the effectiveness of myofascial release therapy and self stretching for tight Quadratus Lumborum muscle.
- To assess improvement in mechanical low back pain using Numerical pain rating scale(NPRS).

RESEARCH AND METHODOLOGY:
STUDY DESIGN
Type of study : Comparative study
Duration of study : 6 months
Study setting : undergraduate college

SAMPLE DESIGN
Type of sampling : convenient sampling
Sample population : undergraduate students
Sample size : 40

MATERIALS REQUIRED :
- Pen
- Paper
- Plinth
- Foam roller,Timer

INCLUSION CRITERIA : College going students
Age 18 – 25 years
Males and females with mechanical LBP (1:1)
NPRS score 3 – 8
Pain duration >6 weeks

EXCLUSION CRITERIA : Congenital causes , Any spinal surgery
Inflammatory causes , Traumatic causes

PROCEDURE:

- Ethical committee clearance was taken .
- Subjects were screened according to inclusion and exclusion criteria.
- Subjects were screened for quadratus lumborum tightness using quadratus lumborum tightness test and were given information sheet and concent forms[5].
- NPRS (numerical pain rating scale) was used an an outcome measure and Pre and post NPRS scores were noted .
- Group A received MFR and group B received self stretching single repetition each.
- Subjects were asked to report any discomfort during the study period and brief about the use of safety switch[5].
- A statistical analysis was done in the groups and between the groups.

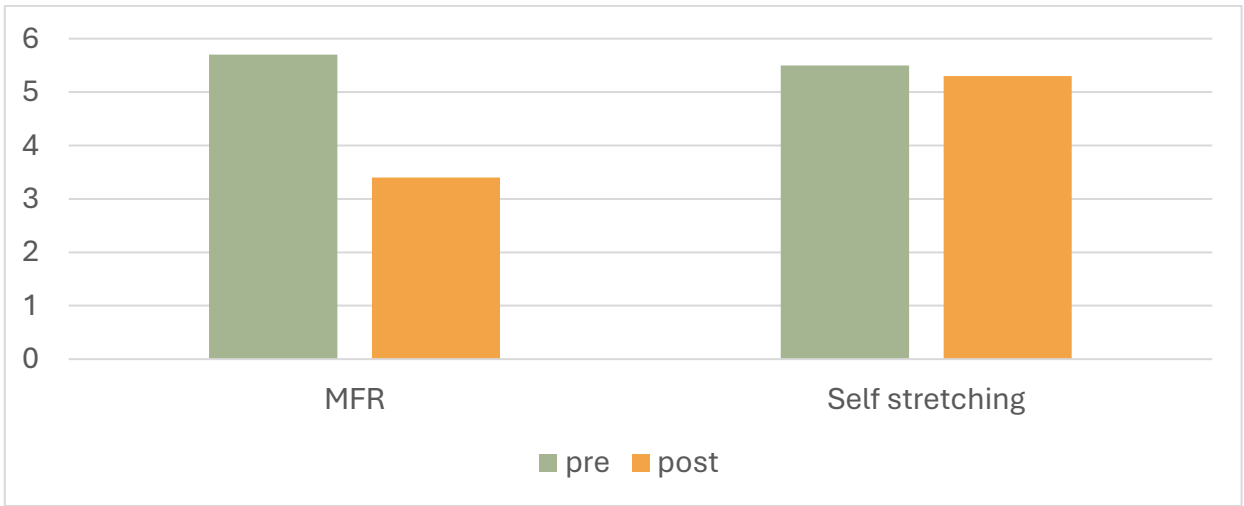
RESULT:

Comparison between mean values of pre and post MFR and Self stretching using unpaired t-test

TABLE NO. 1:

	MFR		**SELF STRETCHING**	
	pre	post	pre	post
Mean	5.7	3.4	5.55	5.3
SD	0.80	1.04	0.68	0.92
SEM	0.17	0.23	0.15	0.20
P value	0.04	>0.10	0.117	>0.10
Significance	significant		Not significant	

GRAPH NO: 1



Inference: Group A(MFR) showed significant change in NPRS value (p value-<0.0001), while Group B(self-stretching) was not significant (p value 0.117). Post comparison between the groups was extremely significant(p<0.0001).

CONCLUSION:

The study concluded that MFR was better effective in reducing pain than self-stretching. Result or this study can be included in the treatment of non specific low back pain.

LIMITATIONS :

- Small sample size
- Only two intervention techniques were considered

FURTHER STUDIES :

Other intervention techniques can also be included.

DISCUSSION:

According to the results, MFR was more effective than Self stretching technique on Mechanical low back pain is explained below:

Siddhi V. Bhosale et.al [1] It has been stated that the Quadratus Lumborum is a frequent cause of low back pain that is often neglected. It is essential to consider the Quadratus Lumborum when addressing low back pain due to its importance in spinal mobility and stability. Consequently, the findings of the current study revealed that the group receiving Myofascial Release (MFR) and self-stretching for the tight Quadratus Lumborum muscle exhibited significant improvement in low back pain.

Karen P. Barr et.al[3] has stated that the quadratus lumborum serves as a significant lateral stabilizer of the spine. It connects to the transverse processes of the lumbar spine via the thoracolumbar fascia, thereby enhancing lumbar stiffness. This muscle is a crucial focus in physical therapy aimed at lumbar stabilization.

Sonja kneppers et.al[3] stated The function of the quadratus lumborum in relation to stability requirements is linked to its heightened activity during instances of lumbar sagittal moments and compression.

Dr Anushka singh rao et.al[6] in her study indicated that Myofascial Release (MFR) is frequently employed to restore the range of motion and alleviate pain, thereby facilitating an earlier return to function. The relaxation of tense muscles reinstates circulation to an area, often associated with muscle spasms, which in turn enhances venous and lymphatic drainage. The objective of Myofascial treatment is to activate stretch reflexes in hypertonic muscles. The Myofascial release technique applies mechanical pressure that can diminish adhesions between tissues and alleviate muscle fiber tension. By exerting pressure on the muscle belly, the autonomic nervous system is activated through the stimulation of sensory nerve fiber endings, leading to a reduction in sympathetic activity, an increase in gamma (γ motor neuron) motor neuron activity, and the relaxation of Myofascial tension.

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