

Effect of Myofascial Trigger Point Release along with Stretching of Quadratus Lumborum Muscle on Pain, Range of Motion and Function on Subjects with Non-Specific Low Back Ache

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Abstract: ***Background:** Non-specific low back ache is a common musculoskeletal condition associated with pain, reduced lumbar mobility and functional limitation. The quadratus lumborum is an important contributor to lumbar stability and may develop myofascial trigger points that reproduce pain and restrict movement. The present study evaluated the effect of myofascial trigger point release followed by quadratus lumborum stretching on pain, lumbar range of motion and functional disability. **Aim:** The aim of the study is to find out the effect of myofascial trigger point release along with stretching of quadratus lumborum on pain, range of motion and function on subjects with non-specific low back ache. **Methodology:** A pre- and post-experimental study was conducted on 30 subjects with non-specific low back ache. Participants received quadratus lumborum myofascial trigger point release followed by stretching. Pain was assessed using the Numeric Pain Rating Scale (NPRS), lumbar mobility using the Modified Schober's Test (MST), and disability using the Oswestry Disability Index (ODI). **Results:** All selected outcome measures showed statistically significant pre- to post-treatment changes ($p < 0.001$). Mean NPRS decreased from 6.43 ± 1.01 to 3.17 ± 1.26 . Lumbar flexion increased from 3.83 ± 0.75 cm to 6.27 ± 0.79 cm; right lateral flexion increased from 11.93 ± 1.89 cm to 13.87 ± 2.03 cm; and left lateral flexion increased from 12.67 ± 1.61 cm to 14.87 ± 1.83 cm. Mean ODI decreased from 35.93 ± 8.11 to 22.00 ± 6.15 . **Conclusion:** Within this study group, myofascial trigger point release combined with quadratus lumborum stretching was associated with significant improvements in pain, lumbar range of motion and functional disability.*

Keywords: Myofascial trigger point release; Quadratus lumborum; Stretching; NPRS; Modified Schober's Test; ODI

1. Introduction

Low back pain is one of the most prevalent musculoskeletal disorders and represents a major public health concern. Non-specific low back pain is not attributable to a specific structural pathology and may nevertheless produce pain, movement restriction and disability. The lumbar region provides stability and movement while transmitting loads between the trunk and lower limbs.

The quadratus lumborum (QL) is a deep posterior abdominal wall muscle extending from the iliac crest and iliolumbar ligament toward the twelfth rib and upper lumbar transverse processes. It contributes to lateral trunk flexion, pelvic elevation, lumbar stability and postural control. Because of its continuous postural activity and biomechanical demands, the QL may be susceptible to overload, fatigue, shortening and myofascial trigger points.

Myofascial trigger points are hyperirritable areas within a taut band of skeletal muscle that may produce local tenderness, referred pain and movement dysfunction. Trigger points in the

QL can refer pain toward the iliac crest, sacroiliac region, buttock and lower lumbar area. Release of trigger points may reduce muscle tension and pain, while subsequent stretching may help restore muscle length and extensibility.

Previous work cited in the dissertation describes QL trigger point release, myofascial release and stretching as potentially useful approaches for patients with non-specific or chronic low back pain. However, the dissertation notes a limited number of studies specifically isolating a QL-focused intervention. The present study therefore evaluated a combined QL trigger point release and stretching protocol.

2. Aim and Objectives

Aim

To evaluate the effect of myofascial trigger point release along with quadratus lumborum stretching on pain, lumbar range of motion and functional disability in subjects with non-specific low back ache.

Objectives

- To assess the effect of myofascial trigger point release with quadratus lumborum stretching on pain intensity.
- To assess the effect of the intervention on lumbar flexion and right and left lateral flexion.
- To assess the effect of the intervention on functional disability using the Oswestry Disability Index.

Hypothesis

The intervention would produce significant pre- to post-treatment improvements in pain, lumbar range of motion and functional disability.

3. Materials and Methodology

Study design	Pre- and post-experimental study
Setting	College of Physiotherapy, SVIMS, and BIRRD Hospital
Study duration	6 weeks
Study period	6 months
Sample	30 subjects; purposive sampling
Ethical approval	Institutional Ethics Committee No. 1953

Eligibility Criteria

Inclusion Criteria

- Both males and females.
- Age group specified as 25–55 years.
- Chronic or subacute non-specific low back ache (>4 weeks).
- Presence of active or latent QL trigger points.
- NPRS pain score 4–8.
- Moderate to severe disability on ODI.

Exclusion Criteria

- History of spinal surgery.
- Spinal pathologies such as tuberculosis.
- Benign or malignant tumors.
- Osteoporosis.
- Pregnancy.
- Uncontrolled hypertension.
- Cognitive impairment affecting ability to follow instructions.
- Neurological deficits affecting either lower limb.

Outcome Measures

Outcome measure	Purpose
NPRS	Assessment of pain intensity
Modified Schober's Test	Assessment of lumbar flexion and right/left lateral flexion
Oswestry Disability Index	Assessment of functional disability

Intervention

Myofascial trigger point release: The participant was positioned prone with a pillow under the abdomen to reduce lumbar lordosis and facilitate relaxation. The QL was

palpated between the twelfth rib and iliac crest. After identification of a taut band and tender trigger point, sustained ischemic compression using the elbow was applied to a tolerable level of discomfort for 60–90 seconds, repeated 2–3 times with approximately 30 seconds between applications. The documented treatment duration for the technique was 7 minutes.

Quadratus lumborum stretching: In supine, the therapist passively moved the leg downward and across the midline to lengthen the QL. The participant performed an isometric hip-hiking effort for approximately 15 seconds while breathing normally. Following relaxation, the leg was taken farther into the stretch and the procedure was repeated on the opposite side.

The six-week treatment schedule documented three sessions per week. The dissertation's weekly protocol also included conventional physiotherapy components such as hot moist pack application and progressive exercises alongside the QL-focused intervention.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using SPSS version 25.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean and standard deviation. Paired t-tests were used to compare pre- and post-treatment values of NPRS, lumbar flexion, right and left lateral flexion and ODI. Gender-wise comparisons and age-wise comparisons were also reported. A p-value <0.05 was considered statistically significant.

Study Algorithm

Screening → eligibility → informed consent → baseline assessment → pre-test NPRS, MST and ODI → QL trigger point release + QL stretching according to the six-week protocol → post-test assessment → statistical analysis.

4. Results

Thirty subjects were included in the study. The demographic distribution reported in the dissertation showed 16 participants (53.3%) in the 51–60 year category and 7 participants (23.3%) each below 40 years and 41–50 years. There were 16 females (53.3%) and 14 males (46.7%).

Characteristic	Frequency	Percent
Below 40 years	7	23.30%
41–50 years	7	23.30%
51–60 years	16	53.30%
Male	14	46.70%
Female	16	53.30%

Pre- and Post-Treatment Outcomes

Outcome	Pre mean±SD	Post mean±SD	t-value	p-value	Direction
NPRS	6.43±1.01	3.17±1.26	20.605	<0.001	Decrease
Lumbar flexion (cm)	3.83±0.75	6.27±0.79	17.223	<0.001	Increase
Right lateral flexion (cm)	11.93±1.89	13.87±2.03	16.554	<0.001	Increase
Left lateral flexion (cm)	12.67±1.61	14.87±1.83	16.868	<0.001	Increase
ODI	35.93±8.11	22.00±6.15	20.708	<0.001	Decrease

Pain intensity decreased significantly after treatment. Mean NPRS fell from 6.43 ± 1.01 to 3.17 ± 1.26 ($t=20.605$, $p<0.001$). Lumbar flexion improved from 3.83 ± 0.75 to 6.27 ± 0.79 cm ($t=17.223$, $p<0.001$). Right and left lateral flexion also improved significantly. ODI decreased from 35.93 ± 8.11 to 22.00 ± 6.15 ($t=20.708$, $p<0.001$).

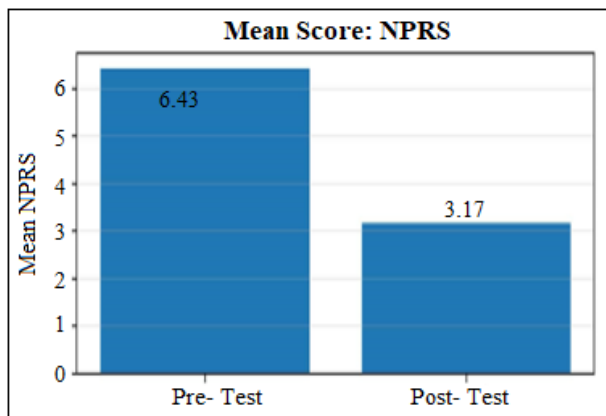


Figure 1: Mean NPRS scores before and after the intervention

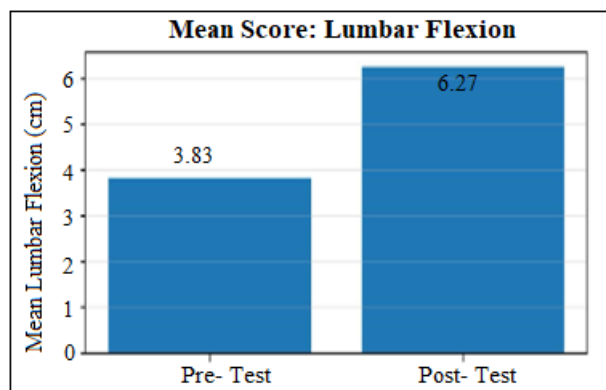


Figure 2: Mean lumbar flexion before and after the intervention.

Results- Range of Motion and Function

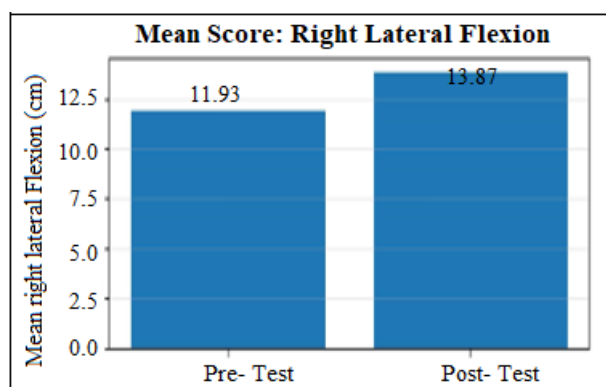


Figure 3: Mean right lateral flexion before and after the intervention

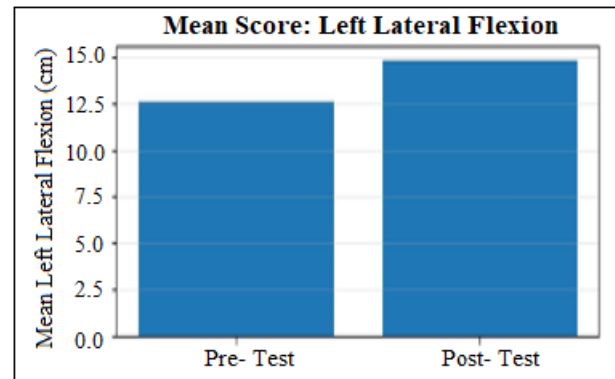


Figure 4: Mean left lateral flexion before and after the intervention.

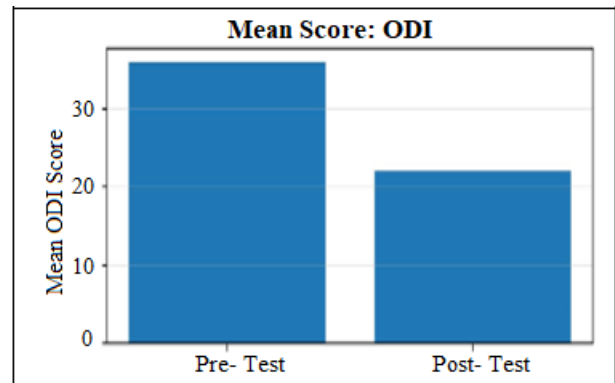


Figure 5: Mean ODI scores before and after the intervention

Age- and Gender-Wise Analysis

Gender-wise analysis revealed no statistically significant differences ($p>0.05$) in NPRS, post-treatment lumbar flexion, right lateral flexion, left lateral flexion and ODI between males and females. A statistically significant difference was observed only for pretreatment lumbar flexion ($p=0.031$). Age-wise analysis demonstrated no statistically significant differences ($p>0.05$) among the reported age groups for pain, lumbar range of motion or functional disability measures. Within the reported analysis, the pre- to post-treatment improvements were therefore observed across the age and gender categories.

Key Statistical Findings

Variable	Pre	Post	p-value
NPRS	6.43 ± 1.01	3.17 ± 1.26	<0.001
Lumbar flexion	3.83 ± 0.75	6.27 ± 0.79	<0.001
Right lateral flexion	11.93 ± 1.89	13.87 ± 2.03	<0.001
Left lateral flexion	12.67 ± 1.61	14.87 ± 1.83	<0.001
ODI	35.93 ± 8.11	22.00 ± 6.15	<0.001

5. Discussion

The present study evaluated the effect of myofascial trigger point release combined with quadratus lumborum stretching on pain, lumbar range of motion and functional disability in subjects with non-specific low back ache. The findings showed highly significant pre- to post-treatment improvements in all selected outcome measures.

The reduction in NPRS may be related to deactivation of myofascial trigger points, reduction in muscle tension and guarding, improved local circulation and decreased nociceptive input. Stretching after release may further reduce

muscle stiffness and restore muscle length. These mechanisms are consistent with the trigger point and myofascial concepts discussed in the dissertation and with the cited literature on QL-related pain.

Lumbar flexion and bilateral lateral flexion improved significantly. QL tightness and trigger points can contribute to restricted lumbar movement; release may reduce soft-tissue restriction while stretching may improve muscle extensibility. The combined change in pain and mobility may help explain the reduction in ODI scores and the improvement in functional performance.

The dissertation's gender-wise analysis did not identify significant differences for most post-treatment outcomes, while the age-wise analysis did not identify significant differences across the reported age categories. These findings describe the study sample and should not be interpreted as proof that treatment response is independent of age or gender in other populations.

6. Conclusion

Within the 30-subject study group, myofascial trigger point release followed by quadratus lumborum stretching was associated with statistically significant improvements in pain, lumbar flexion, right and left lateral flexion, and functional disability after the intervention period ($p < 0.001$ for the principal pre- to post-treatment comparisons). The findings support the use of this QL-focused physiotherapy protocol as an intervention warranting further controlled investigation.

7. Limitations

- Small sample size of 30 subjects.
- Pre- and post-experimental design without a separate control group.
- Long-term follow-up was not reported.
- The documented treatment schedule included additional conventional physiotherapy components, limiting attribution of all observed change solely to the QL-focused techniques.

8. Recommendations

- Future studies should include larger samples and controlled or randomized designs.
- Longer follow-up should be incorporated to assess maintenance of treatment effects.
- Future research may examine QL-focused treatment against other manual therapy or exercise approaches and include additional functional outcomes.

Declaration / Ethical Note

The dissertation reports Institutional Ethics Committee approval (No. 1953) and written informed consent from participants in English and Telugu. This publication-style copy is a reformatted condensation of the supplied dissertation and does not introduce new study data.

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