

Efficacy of Positional Release Therapy Versus Deep Transverse Frictional Massage on Quadratus Lumborum Strain among IT Workers

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How to cite this article: Rizwana.K, Anitha.A, Ramana.K et al. Efficacy of Positional Release Therapy Versus Deep Transverse Frictional Massage on Quadratus Lumborum Strain among IT Workers. Indian Journal of Physiotherapy and Occupational Therapy / Volume 18, Year 2024.

Abstract

Background: The study was designed to inspect the effectiveness of Positional Release Therapy (PRT) and Deep Transverse Frictional Massage (DTFM) on Quadratus Lumborum Strain.

Purpose: The purpose of this study is to compare the efficacy of Positional Release and Deep Transverse Frictional Massage for Quadratus Lumborum.

Materials and Methods: Sixty subjects with Trigger Points in quadratus lumborum muscle were divided randomly into two equal groups. Group “PRT” received Positional Release Therapy five times/week while Group “DTFM” received Deep Transverse Frictional Massage five times/week for two weeks. Numeric Pain Rating Scale (NPRS), Universal Goniometer were used to evaluate subjects at two intervals (Pre-Treatment and Post-Treatment). The entire process was performed from November 2022 to March 2023.

Result: The results of the study revealed that both the interventions were effective but in terms of superiority PRT gave a significant result than DTFM.

Conclusion: Based on the study results, it was concluded that PRT was found to be more effective for the treatment of Quadratus Lumborum strain.

Key Words: NPRS, Goniometer, Low back pain, Lumbar range of motion.

Introduction

The Quadratus Lumborum muscle group is important in regular body function. These muscle groups consist of number of small muscles found deep to lower back muscle mass. Quadratus Lumborum (QL) is thought to assist, lengthen the lumbar spine and promote flexion, lateral flexion and extension of spine.^{1,2,3} To support the trunk and maintain

body mechanics, a prolonged contraction of QL is necessary during walking, sitting, lying, and other functional tasks. Chronic low back pain prevalence was 4.2% in individuals aged between 24 and 40 years old.⁴ However, various occupations are subjected to varying working environments, and the nature of the job has an impact on the employees' health.⁵ Sitting still may cause soft tissues to shorten, which therefore reduces the range of motion for the joints.⁶

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Positional Release Therapy is a manual treatment that restores the muscles typical resting tone. This method comprises passive body alignment, which is intended to produce both short-term and long-term decreases in soreness at trigger points as well as pain relief for musculoskeletal disorders. The position of comfort is maintained while using the tender point as a reference. The muscle is typically in this posture, which causes the least amount of discomfort. The joint is passively and slowly brought back to the neutral position after being kept in the position for 90 seconds. Both the intrafusal and extrafusal fibres of the muscle shorten as a result of the prolonged muscular contraction. These adjustments have led to a notable increase in function and ROM as well as a decrease in pain. The subjects are set up in positions that closely resemble the places where the hypertonic muscle originates and inserts.

Maintaining mobility within the ligament, tendon, and muscle soft tissue structures and preventing adherent scar formation are the goals of deep transverse friction massage.⁷ Its mechanical action leads in hyperaemia, which increases the area's blood flow.⁸ However, transverse friction treatment must be viewed as a sort of counterirritation that produces the necessary analgesia.⁹ When sufficient physical pressure is applied directly to the musculo-tendinous junction, Golgi tendon organs are stimulated and muscle tension is reduced.

Aim

To compare the efficiency of Positional Release and Deep Transverse Frictional Massage for Quadratus Lumborum strain.

Material and Method

This study was conducted with 60 subjects with quadratus lumborum Trigger Points, age between 25-45 yrs was taken from Panruti Islamic Baithumal Trust and hospital. Convenient sampling with the random allocation method was used in the study. The randomization was done using the odd-even method. Study period: November 2022 to March 2023.

Inclusion Criteria

- Both genders.
- Age group 25 - 45 yrs.

- Subjects who had pain in the lumbar region and at Quadratus Lumborum attachments.
- Subjects whose pain lasts no longer than six weeks.
- Palpable trigger point in QL muscle.
- IT workers with shift hour more than 12 hrs.

Exclusion Criteria

- Spinal canal stenosis.
- Spondylolysis.
- Spinal Fracture.
- Disc prolapse.
- Rheumatoid arthritis.
- Malignancy.

Outcome Measures

Assessment was performed at baseline (before starting of treatment) and after two weeks of study.

- Numerical Pain Rating Scale (NPRS).
- Universal Goniometer.

Procedure

Subjects who were screened for selection criteria were involved in the study and informed consent was obtained. Subjects were recruited from Panruti Islamic Baithumal Trust hospital was selected. Totally 60 subjects were selected and they were randomly divided into PRT group (n=30) were treated with Positional release technique while the DTFM group (n=30) were treated with Deep friction massage for QL strain. The randomization was done. Pre and post treatment score for pain, ROM were assessed using NPRS, Universal Goniometer. The duration for the study intervention was 5 sessions per week for 2 weeks and the post-test values were recorded and statistically evaluated.

Positional Release Therapy Group (PRT):

Positional Release Therapy (PRT) is a gentle manual therapy technique used to alleviate pain, reduce muscle tension, and restore normal muscle function.

Position of the Subject: The subject was comfortably positioned in prone.

Tender Point Identification: The therapist identifies the tender points within the QL by

palpating the affected area by applying pressure by using thumb and index finger. Then the subject was asked to flex laterally in the direction of trigger point side.

Gentle Passive Positioning: The therapist then gently positions the patient's body in a way that minimizes strain and tension on the identified tender points. The goal is to find a position of ease, where the muscle is relaxed and the tenderness is reduced.

Procedure: The therapist supported the subject's affected leg on his or her thigh while standing on the side of the subject by placing one knee on the table. The position was then fine-tuned by extending, abducting at a 45° angle, and gently rotating the subject's hip internally. This position was held for 90 seconds, and 60 seconds rest was given between each repetition.

Monitoring Response: During positioning, the therapist closely monitors the subject's response, noting any changes in pain levels, muscle tension, or tissue texture. The goal is to achieve a reduction in tenderness and muscle hyper tonicity.

Release and Return: After the designated time, the therapist slowly and carefully guides the subject out of the position, allowing the muscle to gradually return to a neutral or slightly stretched position.

Deep Transverse Frictional Massage (DTFM):

Deep Transverse Friction Massage (DTFM) is a manual therapy technique commonly used to address soft tissue injuries and promote healing.

Position of the Subject: The subject was comfortably positioned in prone.

Locating The Target Area: The therapist located the specific area of the QL muscle that is affected by the strain which was typically done through palpation.

Procedure: The treatment procedure was started after the therapist palpated the trigger point on the Quadratus Lumborum while the muscle was relaxed and shortened. Then the frictional massage was applied over the tender point of the muscle and the skin and finger of the therapist should move as one to prevent blister formation.

Application Of Friction: The therapist applied deep pressure with the fingers, knuckles, or thumbs, perpendicular to the direction of the muscle fibre creating a transverse or crosswise movement. The therapist performed short, oscillating movements across the muscle fibres depending on patient's tolerance.

Pressure Adjustment: The therapist adjusted the pressure of the friction strokes based on the subject's comfort and tolerance. Any sensations of discomfort or pain during the treatment was communicated so that the therapist can adjust the technique accordingly. As the treatment progresses, the therapist gradually increased the intensity and depth of the friction strokes within the tolerance level. This helps to effectively address the affected tissues and encourage healing.

Data Analysis

The collected data was tabulated and analysed for pain & Lumbar ROM for both PRT Group and DTFM Group. Pre and Post-test values was evaluated. To all parameters mean and standard deviation was calculated. Paired t-test was used to analyse significant changes within the group. Unpaired t-test was used to analyse significant changes in between two groups.

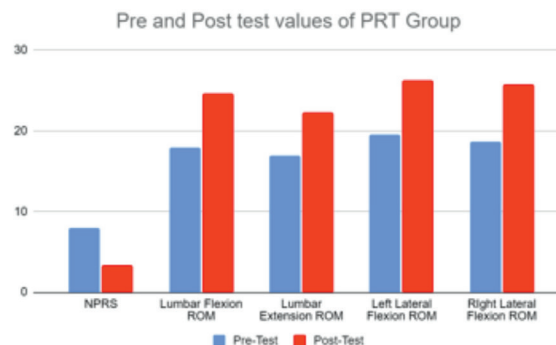


Fig-1 Comparison of pre and post- test values of PRT Group.

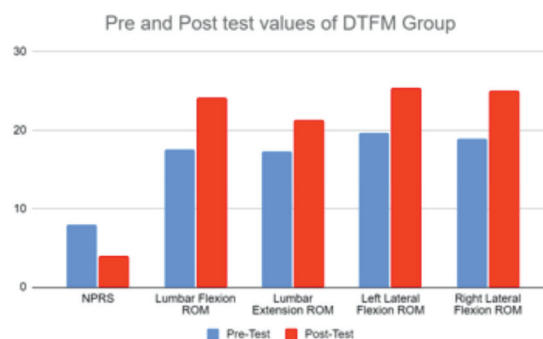


Fig-2 Comparison of pre and post- test values of DTFM Group.

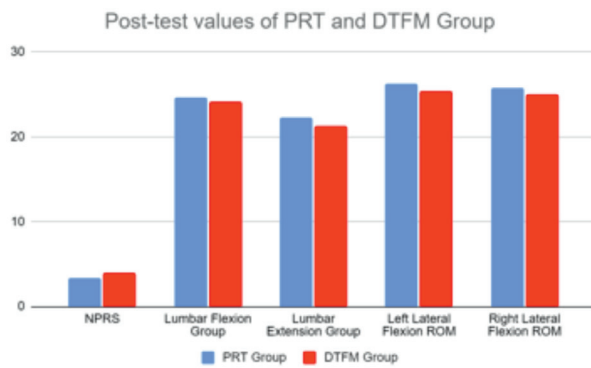


Fig-3 Comparison of post test values of PRT and DTFM group.

Result

- There were statistically significant differences between PRT group and DTFM group as a result of the statistical analysis done on the quantitative data. The post-test mean value of NPRS score PRT group was 3.33 and DTFM group was 3.97. The findings were statistically significant, with the p values of 0.0283. This shows that NPRS scores in PRT group were comparatively more than DTFM group.
- The post-test mean value for Lumbar flexion in PRT group was 24.63 and in DTFM group were 24.20. The findings were statistically significant, with the p value of 0.0318. The post-test mean value for Lumbar extension in PRT group was 22.27 and in DTFM group were 21.30. The findings were statistically significant, with the p value of 0.0161. The post-test mean value for Lumbar left Lateral flexion in PRT group was 26.30 and in DTFM group were 25.37. The findings were statistically significant, with the p value of 0.0071. The post-test mean value for Lumbar right Lateral flexion in PRT group was 25.70 and in DTFM group was 25.07. The findings were statistically significant, with the p value of 0.0389.
- This shows that Lumbar ROM in PRT group were comparatively more than DTFM group. As per the result PRT was more effective than DTFM in decreasing pain and improving ROM.

Discussion

The goal of the study was to compare the efficacy of PRT and DTFM in subjects with Quadratus

Lumborum strain. In this study, 60 subjects were assigned, 30 were in Group PRT and 30 in Group DTFM. Group PRT received Positional Release Therapy 5 sessions/week and Group DTFM received Deep Transverse Frictional Massage 5 session/week for a duration of 2 weeks. Simons claims that localised pressure may ease discomfort by balancing the impacted trigger point's sarcomere length.¹⁰ Positional release technique is frequently with the shortened position of the targeted used muscle to treat painful regions. Positional release technique may lessen pain since the A fibres are activated. Positional Release Therapy (PRT), also known as Strain Counterstrain or Tender Point Therapy. It is a non-invasive manual therapy technique that can be used as a conservative treatment option for various musculoskeletal conditions. One of the primary benefits of PRT is pain relief. By identifying and releasing tender points or areas of muscle tension. By placing the body in a position that minimizes strain on tender points, PRT allows the involved muscles to relax and reduces excessive muscle contractions. By reducing muscle tension and promoting relaxation, PRT can improve range of motion. Tender points and muscle tension often limit joint mobility and movement. PRT helps release these restrictions, allowing for greater joint range of motion. PRT can facilitate tissue healing and recovery by reducing tension in the affected muscles and promoting improved blood flow to the area. By identifying and releasing tender points, PRT helps restore balance and proper functioning of muscles. Mohammed et al concluded that conventional exercises, positional release technique showed promise in alleviating pain, enhancing lumbar range of motion, and reducing the functional impairment limitation in individuals with mechanical low back pain.¹¹ Bailey and Dick suggested a nociceptive hypothesis that the positional release mechanism used by PRT can lessen tissue damage in malfunctioning muscle.¹² They claimed that putting patients in a comfortable position could help the injured tissues relax. Deep Transverse Friction Massage (DTFM) is a manual therapy technique that offers several important benefits and plays a significant role in musculoskeletal rehabilitation. DTFM helps promote tissue healing by increasing blood circulation to the affected area. The friction applied to the soft tissues stimulates the formation of

new blood vessels, improving oxygen and nutrient delivery to the injured tissue. The friction applied during the massage stimulates sensory nerves, which can inhibit pain signals and provide temporary relief. The friction applied transversely to the muscle fibers aids in the realignment and organization of the tissue fibers, allowing for improved muscle contraction, joint mobility, and overall functional performance. DTFM helps improve joint mobility by releasing tight or shortened muscles and fascia. It is often combined with other therapeutic techniques such as exercise, stretching, and strengthening exercises to maximize the benefits. It offers a conservative treatment option for musculoskeletal conditions, minimizing the risks associated with more invasive procedures. The importance of DTFM and PRT lies in its ability to promote tissue healing, reduce scar tissue, relieve pain, restore tissue function, enhance range of motion, and complement rehabilitation efforts. It is a valuable tool in the hands for healthcare professionals, providing numerous benefits for individuals with musculoskeletal injuries and conditions.

Conclusion

According to this study PRT was found to be more effective than DTFM in decreasing pain and improving ROM in subjects with trigger point in Quadratus Lumborum strain.

Ethical Clearance: Taken from Institutional ethical committee 03/070/2022/ISRB/SR/SCPT.

Funding: Self.

Conflict of Interest: Nil.

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