

# Effect of the Myofascial Release Technique on the Paraspinal Muscles Stiffness of Lumbar Region: A Case Study

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## ABSTRACT

Muscle stiffness refers to a sensation of muscle tightness makes it challenging to move. Muscle stiffness may occur after overuse of a particular muscle. Multifidus to be 1.5 times stiffer than Erector spinae in the Lumbar region the accurate modulation of lumbar erector spinae muscle stiffness is unclear but while adopted the different sitting and upright standing posture. The main purpose of this case study is to explore physiotherapy interventions for a subject with Lumbar region stiffness. Myofascial Release and Cryotherapy (supplimentary) for the improvement of the Range of motion and to increase flexibility which are restricted by stiffness. A 38 years old woman had whole Lumbar region limited ROM and had difficulty to perform ADLs. She is unable to do forward bending and standing position. Investigations and Special test of Lumbar confirms the diagnose of stiffness of Paraspinal muscles of Lumbar region. Total 21 days Physiotherapy session with precautions given to the subject in which we provide the Soft tissue mobilization and Myofascial Release Technique for relieving the stiffness. we also include supplimentary that is Cryotherapy for reducing the soreness comes after the MFR. The following 21 days Physiotherapy management protocol improved the Range of motion of the subject and relieve in the stiffness in the Lumbar region, subject was able to perform the ADLs with minimal discomfort. we gave some instructions to subject to perform home exercise independently. This case report is consistent with recent studies and on the base of the result that demonstrate Myofascial Release Technique with supplimentary Cryotherapy are significant effective for people with stiffness in Lumbar region. After completing the management protocol, their marked improvement in the ROM and Flexibility.

**Keywords:** Myofascial Release, Paraspinal Muscles, Cryotherapy, Stiffness.

## INTRODUCTION

Muscle stiffness refers to a sensation of muscle tightness, which often causes pain and makes it challenging to move. Muscle stiffness may occur after overuse of a particular muscle, or it may indicate an underlying condition. Muscle stiffness primarily affects skeletal muscle, which is a voluntarily-controlled type of muscle that enables humans to move and perform daily activities. In general, these actions are possible after a signal from the nervous system stimulates contraction of the skeletal muscle, resulting in movement. If any problems interfere with the communication between the nervous system and the muscle cells, the muscles may remain contracted and result in stiffness. Muscle stiffness most commonly arises after the overuse of skeletal muscles, which tends to happen after a long period of minimal motion (e.g.,

after extended bed rest) or after engaging in new exercises. These actions can cause temporary damage to the muscle cells, leading to stiffness. Muscle stiffness from overuse of the muscles occurs most frequently among people who do not exercise often.

The accurate modulation of Lumbar erector spinae muscles Stiffness is anatomically, intervertebral disc degeneration cause an increase in the passive Stiffness of lumbar spine, Lumbar erector spinae muscles stiffness in healthy subjects while adopted the different postures like upright standing,static prone and sitting (1). Higher passive mechanical properties of the Multifidus muscles fibre and it's bundle fibres were 45percent stiffer compared than other paraspinal muscles (3).The paraspinal muscles (PsM)allow for extensive tridimensional trunk motions while also ensuring spinal stability.PsM has large number of complicated and polyarticular muscles that are ventrally linked to the dorsal section of the vertebral arc,the dorsal part of the sacrum ,and the iliac crest.PsM are wrapped in an inextensible fascia known as the Thoracolumbar fascia (TLF),with whic they compose the paraspinal Myofascial compartment .The paraspinal compartment works as the spine's bone-muscle composite beam. The elastic characteristics of the paraspinal muscles are crucial for spine stabilization. These qualities are dependent on the subject's posture and can be significantly affected by low back pain.PsM bulging in an inextensible fascia during contraction may also lead to increased stiffness in the paraspinal area(6).According to the Fascia Research Congresses (FRC), fascia is a soft tissue component of the connective tissue system that percolates the human body and has a role in the transmission of tensional forces ]. Myofascial Release (MFR) is a therapeutic treatment that involves light pressure,

Stretching, both direct and indirect, can help reduce discomfort, optimize length, and remove fascial constraints caused by injury, stress, or repetitive use. Research suggests that MFR can improve soft tissue extensibility, increase range of motion, improve joint biomechanics, and considerably reduce pain and muscle tone(7).Myofascial Release (MFR) is a comprehensive, therapeutic technique to manual therapy popularized by John Barnes, PT, LMT, NCTMB. MFR provides a complete method to evaluating and treating the myofascial system, which is the body's network of tissues and muscles.This technique is intended to relieve constraints such as trigger points, muscle tightness, and soft tissue dysfunctions that can cause discomfort and impede motion in all areas of the body. It has been effective in reducing pain and enhancing mobility. The fascia is the primary tissue targeted by MFR for release within the myofascial system. Fascia is the thin tissue that surrounds all of the body's components, including muscles, nerves, arteries, and bones. MFR enables therapists to analyze, detect, and treat fascial restrictions.these restrictions can be caused by various factors,such as trauma, musculoskeletal conditions, repetitive stress syndrome and poor posture(9).The Aim of this case study,To explore the effect of the Myofascial Release Technique to reduce the Stiffness on the paraspinal muscles in the Female.

**A Case Description:-** A Women of 38years old(occupational and prolonged sitting posture)had come mainly with concern of restricted Range of Motion and Flexibility in the whole lumbar region.Her diet history has been vegetarian with good appetite.And there was not any type addiction found.

Her relevent family history been found with obesity,she is also also an obese.therefore,on proper Examination what had been found is that she had been facing problem in doing the ADLs related to the lumbar region,also on palpation stiffness present present in the muscles of the Lumbar detected with fascia.upon suffering with this, her felt very uncomfortable while standing for a long period of time.Table 1 shows range of motion and limit of the flexion of the lumbar region tested while examining the pateint.

**Table 1:**

Modified Schober's Test	Limit at 1 to 1.5cm		
Modified Ashworth scale	Grade -3(Hypertonicity)		
Goniometer ROM of Lumbar		Normal	observed
	Flexion.	50°.	15°
	Extension	30°.	10°

**SPECIAL TESTS:**

Modified Schober's Test -While the patient is in a standing position the examiner makes a mark approximately at the level of L5 .Two points are marked: 5 cm below and 10 cm above this point (for a total of 15 cm distance). Then the patient is asked totouch his/her toes while keeping the knees straight. If the distance of the two points do not increase by at least 5 cm, then this is a sign of restriction in the lumbar flexion. Modified Ashworth scale -According to this scale we find the tone of the Muscles.the subject had Grade-3 hypertonicity.

**MANAGEMENT:**

I planned a protocol for 7days treatment for relieve the stiffness and increase ROM and flexibility of the Lumbar region so that she were able to do her ADLs. Superficial soft tissue mobilization once daily 15minutes rest 1min and repeat up to 7days.Myofascial release technique intervention started once daily 10 minutes then 10min rest and repeat 2times up to 8th day to 14th day.Follow up the second week protocol applied the supplementary Cryotherapy for reducing the soreness which comes after the given MFR ,with Ice 1 minute hold 10 second rest and repeat 5times twice daily up to 15th day to 21st day.

**RESULT:**

Before discharge , a reassessment was conducted during the subject final session.the subject claimed she had improved by 90 percent,she was able to flex her lower back without experiencing any restriction by soft tissues.reduction of the hypertonicity and Augmentation in the range of motion of the Lumbar region.As a result the stiffness was relieve from the Paraspinal muscles of the Lumbar region at the end of the 3rd week or post protocol.Observed value shows in

**Table 2 :**

Tests	Normal	Observed
Modified Schober's Test	+5 cm	4.5 cm
Modified Ashworth scale	Grade-1	
Goniometer ROM of Lumbar	Normal	Observed
	Flexion- 50°	45°
	Extension - 30°	25°+

**DISCUSSION:**

Only 1 subject was taken according to the inclusion and exclusion criteria. The subject who satisfied the criteria were allowed to perform the study. The Subject were taken from the Rama Hospital and Research centre Physiotherapy OPD in Kanpur, where Dr. Minhaj Tahir made all the assessment and Guide for making the proper diagnosis (Modified Schober's Test, Modified Ashworth scale and Goniometry) of the stiffness present in the lumbar region Paraspinal muscles. And Intern Akhilesh Singh made the protocol of 21 days (3 weeks) for the study on stiffness relief by the Myofascial Release technique. Before applying the study protocol we taken the some precautions of MFR that is Female is not under the period of Pregnancy, don't had any hyper & hypotension history. Subject without any Anxiety or Psychological problem. The First and second week and second week protocol set for the superficial tissues relaxation, and Third week protocol includes the Indirect Myofascial Release with cross hand technique for the relieving of the Stiffness in the Paraspinal muscles attached to the thoracolumbar fascia. At the end of the protocol the subject shows better flexibility in lower back and perform the ADLs Easily.

**LIMITATIONS:**

A Small Sample Size are 1 Subject and Female population are the major limitation of the Study. Only The M.F.R. Technique is not reduced the Pain and in the presence of the Stiffness of the Lumbar and soreness produce after using this technique.

**CONCLUSION:**

This case report is consistent with recent studies and on the base of result, that demonstrate Myofascial Release Technique with supplementary Cryotherapy are significant effective for people with Stiffness in Paraspinal muscles of lumbar region. After completing the management protocol their was marked improvement in the ROM and flexibility.

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