



ORIGINAL RESEARCH PAPER

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COMPARATIVE EXPERIMENTAL STUDY OF MYOFASCIAL RELEASE VS STRETCHING ON PIRIFORMIS SYNDROME AMONG THE CAB DRIVERS

KEY WORDS: Buttock pain; Myofascial release; Piriformis syndrome; Sciatica; Stretching

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ABSTRACT

Introduction: Piriformis syndrome is also synonymous with sciatica or buttock pain. This is a condition where the muscle irritates the sciatic nerve. This nerve passes above, below, or in between the piriformis muscle piercing it. The muscle tightens or shortens, thus compressing the nerve and disturbing the impulses passing from it. Here in this study, we aim to compare two treatment modalities i.e. myofascial release vs stretching in piriformis syndrome among the cab drivers. **Methodology:** The study provided two different treatment to two different groups, group 1 (STR) and group 2 (MFR). The study was conducted on the cab drivers, those who were positive on the Flexion, Adduction and Internal rotation (FAIR) test, 30 drivers were selected and divided randomly into two groups. Treatment went four weeks. The pain and range of motion were evaluated at the beginning and end of the study. **Results:** In the group one in which stretching strategy was applied, there was a greater reduction in discomfort and a substantial increase in hip joint abduction and lateral rotation range of motion for the participants, hence, this experimental study found that stretching gives better outcome than myofascial release technique. Therefore, it can be recommended to practice the stretching exercise in their daily life to the patients with piriformis syndrome. **Conclusion:** The effect of stretching on piriformis syndrome is more effective than myofascial release. The intensity of the pain reported a significant decrease after stretching. The participants gained more range of motion in hip movements especially in lateral rotation of hip and abduction of hip. The stretching improved low back function and provided more comfort during long drives. Finally, it was discovered that the two groups varied significantly.

INTRODUCTION

The gluteal region of the hip and the proximal forearm may include a pear-shaped, flat muscle known as the piriformis. Proximal foreleg external rotators are a group of six tiny muscles in the gluteal region of the proximal leg. Parallel to the posterior gluteal periphery, it is buried deep within.¹ A condition of the nervous system that can be quite debilitating. Piriformis syndrome may be caused by compression or irritation of the sciatic nerve. Sciatic nerve suffocation and constriction are induced by Piriformis muscle tension and dysfunction.² Chronic lower back pain may result from a muscular imbalance caused by overuse and strain on the muscles. The piriformis muscle's type 1 fibers shorten or tighten while under stress. In functional exercises, excessive hip abduction and internal rotation may lead to Piriformis muscle over-lengthening and greater eccentric load compression.²

Misdiagnosis and undertreatment are common occurrences. Sciatica, sacroiliitis, lumbar radiculopathy, or trochanteric bursitis are all common causes of buttock discomfort. Piriformis syndrome instances have grown considerably over the years. Several people have been left permanently or partially disabled as a result of this illness. Delay in judgement results in habitual pain, hyperesthesia and paresthesia's, as well as muscular weakness.³ Pain in the buttocks and occasional shooting pains throughout the nerves' distribution characterised the piriformis pattern. Sciatica is more common in those whose ischiaicus nerve pierces the piriformis muscle. Sciatica is characterised by chinking, apathy, or discomfort in the buttocks and along the nervus ischiadicus nerve.⁴ Sitting for long periods of time, going up and down stairs, stretching, and squinching might exacerbate the discomfort. Piriformis pattern is based on the patient's history and clinical tests. A nerve conduction study and an MRI are used to identify other disorders. Stretching and activities are used to address piriformis pattern after it has been identified.⁴ Here, in this study we aim to compare two treatment modalities i.e. myofascial release vs stretching in piriformis syndrome among the cab drivers.

METHODOLOGY

The present comparative experimental study was conducted among cab drivers who had buttock pain. The participants were enrolled by using convenient sampling. Inclusion criteria consisted of cab drivers who were willing to participate and had piriformis syndrome. Exclusion criteria comprised of patients who had any recent injuries around hip and knee, cancer patients, post-surgery, trauma patients and patients who pain in coccyx region.

For the significance of this study of piriformis syndrome, we connected with cab drivers outside Galgotias University Greater Noida and by using the Flexion, Adduction and Internal rotation (FAIR) test we could find the cab drivers with piriformis Syndrome and those were willing to participate in the present study were enrolled after taking informed consent. They were taken to the OPD inside the university and measurements were taken for the abduction of the hip and the internal rotation of the hip. And then those who were positive, reading of pain was taken using a VAS pain scale. Because the piriformis muscle is painful when we measure hip abduction and internal rotation range of motion, we can easily assess pain by asking patients, and patients can note their own discomfort to make it easy to acquire an accurate measurement.

Patients were further divided into two groups: group 1 (myofascial release) and group 2 (stretching)]. All 30 individuals were split into two groups, one for myofascial release and one for stretching using a random lottery procedure. The length of each therapy session was between 10 and 15 minutes, twice a week for a period of around two months in addition to a four-week course of therapy.

For pre-testing, our patients can tell us whether the piriformis muscle is bothering them during test hip abduction and internal rotation range of motion by asking them. With patient lying on his or her left side, the affected lower leg is passively flexed (at 90 degrees), followed by adduction, and internal rotation. The hip stability is maintained while applying

downward pressure on the knee, causing the hip to rotate and abduct inward. The examination completes when patient feels discomfort in glutes.

In group 1, passive stretching of the piriformis muscle was accomplished by standing on the patient's affected side and leading them through a prolonged passive stretching phase. First, in order to do this, the patient has to be in the supine position with their hips in an abductor position..The opposing knee should be supported by foot. By guiding the knee toward the opposite shoulder and increasing adduction, internal rotation, and hip flexion, patient may continue stretching. Five repetitions of a 20-30-second piriformis stretch were administered.

In group 2, patient was instructed to lie on their back, the therapist told them to do so. The therapist set the bed's height to his or her liking. Myofascial release to the piriformis muscle was done by pressing and holding the trigger point with the therapist's hand squarely on the muscle (10 to 100 seconds). The muscle fibres were worked back and forth using short, back-and-forth strokes of the kneading fork. To lengthen the fibres, worked in a direction opposite to the direction of the fibres themselves. This was done for at least five minutes, and three sets of five minutes were performed.



Figure 1 and 2: Post-Testing

For post testing, hip internal, external, and abduction range of motion was measured (figure 1 and 2) using a goniometer at the conclusion of the four-week treatment period to see whether the pain severity has decreased.

RESULTS

Table 1: Mean \pm Std Deviation of Hip abduction pre and post treatment

Parameters	Number	Hip abduction pre treatment (Mean \pm Std Deviation)	Hip abduction post treatment (Mean \pm Std Deviation)	P value
Group I (Stretching)	15	41.27 \pm 4.832	48.93 \pm 5.675	0.00
Group II (myofascial release)	15	41.67 \pm 10.168	42.07 \pm 10.361	

Table 2: Mean \pm Std Deviation of Hip lateral rotation pre and post treatment

Parameters	Number	Hip lateral rotation pre treatment (Mean \pm Std Deviation)	Hip lateral rotation post treatment (Mean \pm Std Deviation)	P value
Group I (Stretching)	15	9.33 \pm 2.380	14.07 \pm 2.463	0.00
Group II (myofascial release)	15	15.40 \pm 4.641	15.20 \pm 3.783	

P value

Table 3: Paired sample test for range of motion pre and post treatment

	paired	t	df	P value Sig [2 tailed]
	95% confidence			
	upper			

Hip Abduction-pre -	-2.445	-5.192	29	.000
Hip Abduction-post				
Hip Lateral Rotation-pre -	-1.162	-4.196	29	.000
Hip Lateral Rotation-post				

Table 4: Mean \pm Std Deviation of pain score pre and post treatment

Parameters	Number	Pain pre treatment (Mean \pm Std Deviation)	Pain post treatment (Mean \pm Std Deviation)
Group I (Stretching)	15	5.67 \pm 0.976	1.13 \pm 0.734
Group II (myofascial release)	15	2.93 \pm 1.280	1.60 \pm 0.986

Table 5: Paired Samples Test for pain pre and post treatment

GOURP	paired	t	df	Sign 2 tailed
	95% confidence			
	upper			
Group I pre pain and post pain	5.120	16.562	14	.000
Group II pre pain and post pain	2,135	3.568	14	.003

Table 1 shows increase of hip abduction score pre and post treatment. Table 2 shows increase of hip lateral rotation pre and post treatment. Table 3 shows paired sample test for range of motion pre and post treatment with significant p value of <0.05. Table 4 shows pain score pre and post treatment and reported more decrease in pain score in stretching group and significant difference in both groups (table 5). The study provided two different treatments to two different group. Group 1 [STR] and group 2 [MFR]. The study was conducted on the cab drivers, those who were positive on FAIR TEST, we were took 30 drivers and divided randomly into two groups. Treatment was given for four weeks. In the group one stretching strategy, there was a greater reduction in discomfort and a substantial increase in hip joint abduction and lateral rotation range of motion for the participants. Hence, the result of this experimental study is that stretching gives better outcome than myofascial release technique. So, we recommend that the patients with piriformis syndrome, should practice the stretching exercise in their daily life that reveals improvement in range of motion and decrease in pain.

DISCUSSION

Piriformis syndrome is also synonymous with sciatica or buttock pain. This is a condition where the muscle irritates the sciatic nerve. This nerve passes above, below, or in between the piriformis muscle piercing it. The muscle tightens or shortens, thus compressing the nerve and disturbing the impulses passing from it. The sciatic nerve is a combination of nerve roots from L4 to S3. Piriformis works as a lateral rotator and is a synergistic muscle of the flexor and abductor group.⁸

There were two main objectives of this study, piriformis syndrome pain and range of motion are compared, myofascial release and stretching methods should be used. FAIR TEST-positive cabbies have been put through an intensive one-week rehab programme. The NPRS [numerical pain scale] and the goniometer were used to assess the hip abduction and lateral rotation of the hip. each measurement was taken on the first and final day of the therapy [pre] and the data was examined immediately,

Myofascial release is statistically superior than stretching in terms of NPRS (numerical pain reading scale) score, abduction, and lateral rotation. Stretching was more successful in reducing discomfort and increasing range of motion in patients who practised stretching.

Statistics demonstrate that the p-value is less than 0.005, which supports the premise that the stretching group has

undergone substantial modifications. Patients getting therapy with a stretching approach reported improvements in joint range of motion and decreased discomfort as a result of the group's effects.

And also, this study found that drivers who were putting their wallet in the back pocket have more problem of p.s.by putting this wallet in the back during long drives is a main reason for disturbance of the sciatica nerve and that cause piriformis syndrome. The study reveals that the stretching method have an important improvement in the range of motion and improve their quality of life. Means that the intensity of the pain is reducing in a large amount by practicing the stretching method. They can drive long time continuously without any kind of pain in the back and without and problem to sciatic nerve.

It is also important to know the studying was started years ago. There is wide of space for new treatment and new methods to reduce piriformis syndrome. There is also pharmacological studies based on the injection of botulin and using the electrical stimulations .so according to the new medical automation. We can try many new methods .there is also a wide space and about the piriformis syndrome. In a similar study by Zade R et al,⁸ the results were compared between two groups, in one group stretching was done for 30 seconds and in second group stretching was done for 10 seconds and showed that regaining range of motion and lowering muscular tightness can be done effectively. It was discovered that those who received 30 seconds of stretching experienced a substantial decrease in piriformis tightness or an increase in piriformis flexibility compared to the control group (10 Second stretching). In another study by Rajendran S et al,¹ statistical data revealed that there was a significant difference on pre and post-test of group 1 (myofascial release) and group 2 (stretching) on NRS score, abduction and external rotation within the groups. However, contrary to our study and various other studies, Kukadia HA et al³ reported that the effect of myofascial release on piriformis flexibility is a more effective than passive stretching, however, significant improvement in flexibility of Piriformis muscle was found post intervention compared to pre-intervention in both the groups ($p < 0.001$).

Exercising muscles by stretching them may increase their flexibility, range of motion, and range of motion, as well as reduce muscular tension. Additionally, stretching helps to enhance blood flow and alleviate muscular aches and pains. Soft tissue mobilisation was included to the assessment and therapy of articular dysfunctions. It is essential that the soft tissue system be evaluated and treatment methods to standardise soft tissue dysfunction be used. This is the core of a thorough soft tissue mobilizations evaluation. This kind of treatment is referred to as functional mobilisation.⁷ Several manual techniques, including ischemic compression and myofascial release, are often used. In recent years, rigid foam rollers and other small-handed self-massage tools have gained popularity.⁸ It imitates the advantages of physical therapy and massage in the home environment. Despite the fact that it is unclear whether SMR affects muscle or connective tissue, numerous therapeutic effects have been discovered. Also recommended for reducing trigger point discomfort and enhancing range of motion and recovery time following sports exercise. Although this is the case, there is a dearth of study examining the validity of these assertions. An experiment was conducted to see if the foam roller technique of static or dynamic myofascial release had any effect on latent sensitivity.⁹

Piriformis syndrome may be treated with physical therapy and corticosteroid injections into the Piriformis belly, muscle sheath, or sciatic nerve sheath. Using fluoroscopy, CT scanning, MRI scanning, and ultrasound imaging, injections can be precisely guided in the body.^{7,10,11} Sciatic nerve compression and Piriformis muscle discomfort, both of which

run in families, may be relieved by injections of the botulin toxin Botox. According to some research, corticosteroid injections may be ineffective in treating specific types of myofascial pain, hence BTX injections are becoming more popular for treating it. This means that many Piriformis syndrome diagnosis need unnecessary imaging tests and wasted time searching for the reason of buttock or lower back discomfort.⁸ The combination of functional electromyography and the FAIR approach (flexion, adduction, and internal rotation) was found to be extremely effective. When the Piriformis muscle was injected into patients with chronic buttock and low back pain, the FAIR and league markers revealed discomfort in the muscles around the Piriformis.⁹

CONCLUSION

The effect of stretching on piriformis syndrome is more effective than myofascial release. The intensity of the pain reported a significant decrease after stretching. The participants gained more range of motion in hip movements especially in lateral rotation of hip and abduction of hip. The stretching improved low back function and provided more comfort during long drives. Finally, it was discovered that the two groups varied significantly.

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