



UNLOCKING RELIEF: THE MAGIC OF MANUAL MUSCLE RELEASE AND STRETCHING WITH HOT PACKS FOR PIRIFORMIS SYNDROME

Physiotherapy

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ABSTRACT

Sciatica, or buttock discomfort, is another name for the condition known as piriformis syndrome, in which the piriformis muscle irritates the sciatic nerve, resulting in tingling, numbness, and pain. Various physiotherapy treatments, including manual muscle release and stretching exercises, have shown promise in addressing this condition. However, there is limited literature comparing the effects of these techniques on piriformis syndrome. Therefore, this quasi-experimental study aimed to compare the influence of manual muscle release and stretching exercise, both accompanied by hot packs, on the visual analog scale (VAS) scores in patients with piriformis syndrome. A total of 30 patients with piriformis syndrome, aged between 18 to 55 years, were randomly assigned to two groups: Group A (treated with manual muscle release and hot packs) and Group B (treated with stretching exercise and hot packs). VAS scores were measured at the beginning (week 0) and after 3 weeks of treatment (week 3). Statistical analysis using t-tests revealed significant differences in VAS scores between the two groups at 3 weeks. Notably, manual muscle release with hot packs was found to be more effective in improving the condition compared to stretching exercises with hot packs. These findings shed light on the potential benefits of manual muscle release in conjunction with hot packs for piriformis syndrome patients. Future research can further explore longer treatment durations, follow-up assessments, and additional outcome variables to enhance our understanding of this condition.

KEYWORDS

Piriformis syndrome, manual muscle release, piriformis stretching exercise, hot pack

INTRODUCTION

The flat piriformis muscle is located underneath and parallel to the gluteus medius' posterior border. The greater trochanter is where the piriformis muscle inserts after emerging from the sacral vertebrae 2 through 4. It is a crucial internal rotator because it rotates the hip externally below 60 degrees and internally above that angle. (Kukadia et al., 2019) When the piriformis muscle irritates and compresses the proximal sciatic nerve, it causes the painful neuromuscular condition known as piriformis syndrome (PS). The nerve pierces the piriformis muscle and travels above, below and between it. (Siraj & Dadgal, 2022) The piriformis muscles, which compress and obstruct the sciatic nerve, are to blame for its stiffness and dysfunction. (Rajendran and Sundaram, 2020). When this nerve is compressed, patients most frequently experience tingling, numbness and pain. (Siraj & Dadgal, 2022) If the syndrome is not treated, imbalances may result in a gait with the hip in external rotation. (Fronter et al., 2014). The most common causes of piriformis muscle spasms include overuse, lumbar and sacroiliac joint diseases, direct trauma, and postsurgical damage. (Tonely et al., 2010) Beatty's test and FAIR (Flexion, Adduction, Internal Rotation) test are a few of the manual procedures used to diagnose piriformis syndrome. (Hicks, (2017).

In order to effectively treat piriformis syndrome, physical therapy is essential. Regular stretching and manual treatment, such as soft tissue mobilization methods, are usually effective in reducing and curing piriformis syndrome in sports medicine. (Awan et al., 2012) Stretching primarily has two effects: it lengthens the muscle at rest and lessens the compressive stress on the sciatic nerve. Myofascial release is a type of manual therapy that has recently attracted a lot of interest, acquired widespread acceptance, and is commonly used by practitioners. The method entails applying a low-load, long-duration stretch to the myofascial complex with the goal of restoring the muscle's ideal length, reducing discomfort, and enhancing functional mobility. (Kakadia et al., 2019) However, stretching and myofascial release methods are typically regarded as successful therapies for piriformis syndrome, it remains unclear which method is more effective. Additionally, there is a lack of research comparing the outcomes of these two approaches when combined with a heat pack. To fill this information gap, the study seeks to investigate and compare the effects of manual muscle release and stretching exercises with a heat pack in individuals with piriformis syndrome. By performing this research, the study hopes to offer insightful information about the most appropriate and effective course of treatment for this ailment, thereby assisting medical professionals in making knowledgeable choices regarding the management of piriformis syndrome. Therefore, the purpose of this

study was to compare the influence of manual muscle release and stretching exercise on piriformis muscle along with hot packs on visual analog scale (VAS) score in patients with piriformis syndrome.

Methodology

The study was a quasi-experimental design that aimed to evaluate the effectiveness of two different interventions for treating piriformis syndrome. The research was conducted at the Physiotherapy OPD of Maharaja Agrasen Medical College, Agroha. The study used a simple random sampling method to select a total of 30 patients, aged between 18 and 55 years, to participate in the research. These 30 patients were divided into two groups, Group A and Group B, with each group consisting of 15 patients.

The two interventions tested in the study were as follows:

1. Group A: Manual muscle release along with hot pack therapy.
2. Group B: Stretching exercises along with hot pack therapy.

To assess the effectiveness of the interventions, pre and post-evaluations were conducted using the Visual Analog Scale (VAS) score. The VAS score is a common pain assessment tool that allows patients to rate their pain on a scale from 0 to 10, with 0 being no pain and 10 being the worst pain imaginable. The evaluations were conducted at week 0 (baseline) and week 3 after the treatment was administered.

Procedure

Group A

The patient is in a prone posture while the therapist is standing perpendicular at the patient's side to physically release the muscle. The therapist uses the palm of the hand to gently push in the approximate area of the mid-belly of the piriformis muscle, which is situated in the mid buttock. Gently externally rotate the leg till the piriformis level is reached, then gradually increase the pressure to release the piriformis. If applying force does not enhance the tone, it is done again. As the piriformis releases, pressure can be progressively increased. Once a week for four weeks, three to four repetitions were performed in each session.

Group B

The patient is positioned in the supine position, resting on the back with both legs bent and feet flat on the ground to stretch the piriformis muscle. Put the ankle of the right leg on top of the knee of the left leg. Hold the stretch while the therapist pushes the patient's left thigh toward the chest. This exercise is repeated 5 times with 20 sec. hold of

each repetition.

Statistical Analysis

The data analysis was carried out using the SPSS statistical software (version 25.0). The mean and standard deviation were calculated using descriptive statistics. The mean value of VAS between week 0 and week 3 of both groups was compared using a paired t-test. The p-value was deemed to be equal to or less than 0.05 as the significance threshold. The mean VAS scores at weeks 0 and 3 were compared between groups A and B using an unpaired t-test.

RESULT

Table 1 shows pre and post treatment mean values of VAS at 0 wk & 3 wks in both groups. Paired t-test shows that there was significant difference between pre and post treatment means values of both groups at 0 wk and 3 wks. Table 2 shows mean values of post treatment at 0 wk and 3 wks in both groups. Unpaired t-test shows that there was no significant difference between Group A & B at 0 wk but there was a significant difference between Group A & B at 3 wks.

Table 1 Shows Pre And Post Mean Values Of Group A & B At 0 Wk And 3 Wks And Their Comparison By Using Paired T Test.

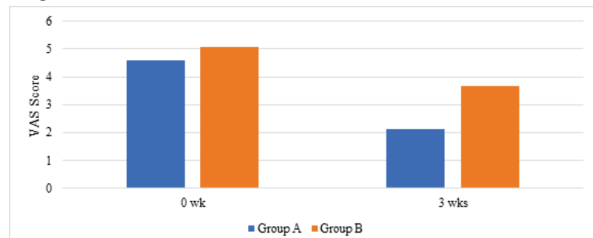
GROUP		Mean \pm SD		t-value	p-value
		PRE	POST		
A	0 wk	6.00 \pm 1.60	4.60 \pm 1.64	10.69	0.00*
	3 wks	3.20 \pm 1.78	2.13 \pm 1.68	16.00	0.00*
B	0 wk	6.00 \pm 1.89	5.07 \pm 2.05	7.90	0.00*
	3 wks	4.60 \pm 2.10	3.67 \pm 2.02	7.90	0.00*

*Significant difference

Table 2 Shows The Mean Value Of VAS In Group A & B At 0 Wk & 3 Wks And Their Comparison By Using Unpaired T Test

Time Duration (POST)	Mean \pm SD		t-value	p-value
	Group A	Group B		
0 wk	4.60 \pm 1.64	5.07 \pm 2.05	0.69	0.50
3 wks	2.13 \pm 1.68	3.67 \pm 2.02	2.26	0.03*

*Significant difference



Graph-1 Shows Post-treatment Mean Values Of VAS Score At 0 Wk And 3 Wks In Both The Groups

DISCUSSION

Regular stretching and manual therapy, such as soft tissue mobilization techniques, are typically used in sports medicine to tell a greater decline and removal of the piriformis syndrome. Heating therapy is typically used most efficiently prior to physical sessions of counseling or home therapy since it reduces the discomfort caused by direct treatment for a piriformis that is aggravated or tense exercise. For the decline of the syndrome, deep friction massage is also beneficial, with passive internal rotation of the piriformis muscle hip. Physical therapy's ultimate objective is the eradication of symptoms by a planned program intended to increase relaxation by the mobilization of surrounding joints and muscle groups, as well as to boost these muscles' sustaining power. (Awan et al., 2012). Data comparing manual muscle release with hot packs and stretching exercises with hot packs revealed that the former technique was more effective at reversing the condition. According to Castro-Sánchez et al. (2011), who states that muscle release is a very effective approach that helps to reduce pain and enhance physical function and postural stability in patients, the manual muscle release technique is useful in lowering pain. According to Dey et al. (2013), nerve compression can also be relieved with the aid of stretching exercises. Both supine and standing positions are used for piriformis muscle stretching. According to Mitra et al. (2014), stretching exercises combined with a heat pack are particularly effective at reducing pain. He added that using heat packs to relieve pain-related discomfort is also helpful. According to Gullede et al. (2013), stretching exercises for the piriformis muscles

can aid in relieving sciatica pain. According to Velappanchavadi et al. (2019), the muscular release technique is more beneficial than extending the piriformis muscle in the treatment of piriformis syndrome. Data analysis showed that at all four weeks, there was a significant difference between the two groups. Because heat has a brief calming effect, patients who have received hot packs have also seen some improvement. In order to treat illnesses that require quick and temporary improvement, hot packs can also be used to reduce discomfort and relax the muscles. Thus, the experimental premise that "There will be a significant difference between the effect of Manual Muscle Release technique and stretching exercise along with hot pack in piriformis syndrome" is accepted. Notably, manual muscle release with hot packs was found to be more effective in improving the condition compared to stretching exercises with hot packs.

CONCLUSION

This study advances the research by comparing the effectiveness of hot pack therapy, stretching exercises, and manual muscle release on piriformis syndrome patients. The use of manual muscle release was found to be more effective in treating the problem.

Limitations

A very small sample size, absence of a control group, short follow-up period, lack of blinding, and the use of subjective outcome measures were all limiting factors in the study.

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