



LUMBAR POSTURAL SYNDROME; EFFECTIVENESS OF PIRIFORMIS STRETCHING WITH HIP ROTATION

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Article received on:

20/02/2016

Accepted for publication:

01/08/2016

Received after proof reading:

07/10/2016

INTRODUCTION

The low backache is the most prevalent in the population and this is one of the high cost disability and gradually increasing in the developed nations.¹ Low back pain (LBP) is usually associated with a change in the mobility of the LS and hip and leading to disability.^{2,3} In 70% of cases, low back pain has no obvious etiology or pathogenesis.⁴ It has been observed that most cases of LBP are non-specific, but a specific cause is identified in about 10% of cases. Evidence showed that most back pain is actually muscular or ligamentous in origin rather than skeletal.⁴

The 80% population experiences the low back

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ABSTRACT... Background: The most prevalent disabling condition in clinical practice is low back pain. The poor posture has highest risk for the development of low back pain in young population. There is different conservative treatment approaches used to treat lumbar postural syndrome. **Purpose of The Study:** The objective was to determine the effectiveness of Piriformis stretching with hip external rotation in the treatment of lumbar postural syndrome.

Study Design: Randomized control. **Setting:** District Headquarter hospital Faisalabad. **Period:** 06 month from 01st January- 30th June 2014. **Materials and Methods:** The purposive sampling technique was used to collect sample of 30 patients and then assigned to 2 groups randomly (Hip external rotation HER and Hip Internal rotation HIR group). Standardized treatment protocol include heating modality, hamstring stretching, back strengthening & stretching exercises and postural education was implemented to all patients. Participants in the hip external rotation (HER) group received Piriformis stretch with hip external rotation and participants in Hip Internal rotation (HIR) group received piriformis stretch with hip internal rotation as an additional treatment in order to compare both stretch positions. The changes in the symptoms were measured in the form of pain and Modified Oswestry Disability Index (MODI). **Results:** The statistical analysis showed the *P* value for total score of Modified Oswestry Disability Index (MODI) was (0.00<0.05). So there is a significant difference in both group showing that the piriformis stretching with hip external rotation is effective than hip internal rotation combined with conventional physical therapy in subjects with lumbar postural syndrome. **Conclusions:** It is concluded that piriformis stretching with hip external rotation together with conventional treatment is an effective treatment approach in treating lumbar postural syndrome.

Key words: Lumbar Postural Syndrome, Piriformis Stretching, Modified Oswestry Disability Index

Article Citation: Irshad S, Malik AN, Anwar S Lumbar postural syndrome; Effectiveness of piriformis stretching with hip rotation. Professional Med J 2016;23(10):1232-1236. DOI: 10.17957/TPMJ/16.2971

pain episode once in life.⁶ Lifetime prevalence of LBP is 60–85%.⁷ The gradually increase in prevalence directly raise the economic burden on society and indirectly there is loss of work and other related costs.⁸ Numerous office workers and students spend their time in sitting posture, and then relax in the evening with same poor posture which leads to the development of imbalance in the activity of musculature.⁹

There are different condition related with pathology of low back pain, the postural syndrome mostly occur in young population and it is frequent in those who have poor posture during their activities.¹⁰ The stress on the muscles and other soft tissue determines the efficacy

and performance of musculature, the poor imbalance posture lead to the development of some pathological conditions. The literature revealed that among many other factor most predominant factors for low back pain is poor posture. The most important variables that have an effect on an individual are related to sustained postures.⁹ There are number of studies that have documented a strong link between sustained flexed postures and back pain in populations with or without existing back pain.¹¹⁻¹⁶

There are few deep muscles around lower lumbar region which always protect the uneven load on lumbar and maintain the core stability. The Piriformis is one of important deep muscles which is prone to get tightness in pathological conditions of low back region. There is multiple way to diagnose the involvement of Piriformis muscle in literature. Hallin suggested that buttock pain is usually due to piriformis pathology that was exacerbated by sitting and no other symptoms.¹⁷ Beatty described that when affected flexed hip is in forced adduction with the patient lying on the painful side, lower lumbar pain is produced as a diagnostic criterion of piriformis syndrome. The hip in flexion and few degree adductions with internally rotation, a position commonly FAIR position (Flexion, Adduction, and Internal Rotation) is important to diagnose the Piriformis muscle syndrome.¹⁷

The function of Piriformis is always crucial to explain and understand, the same muscle is external rotator in hip extension while internal rotator in hip flexion more than 60 degree.¹⁸ The external rotation is considered the most important function of those muscles among all other functions.¹⁹ Function of the piriformis is External Rotation of the femur during hip ext, ABD during hip flex and Internal Rotation during hip flexion is recently considered the important not for diagnosis but for treatment.²⁰ The specific designed stretching techniques are effective to improve the function and manage pain in piriformis syndrome.²³ The stretching enhances the elasticity and length of muscle to improve the ranges around the joint.²⁴

There are different types of Piriformis stretches. It is crucial to find specific and effective stretch of piriformis muscle to gain maximum therapeutic effects. A very little evidence is present about the optimal piriformis stretching. There is lack of consensus regarding stretch position. There is little research regarding sequencing of stretch components. In clinical practice, piriformis stretches are chosen on the basis of clinical expertise rather than evidence-based practice.¹⁹ There is need to identify the best stretching methods for Piriformis to provide quality care and cost effective management to patients.²³ The main focus of the study is to find out effectiveness of specific piriformis stretching in lumbar postural syndrome, to find out the position which optimally stretches piriformis and to determine improvement in functional status by specific piriformis stretching.

MATERIAL AND METHODS

The study design was a randomized control trial and conducted from 01st January- 30th June 2014. The purposive sampling technique was used to collect sample of 30 patients and then assigned to 2 groups randomly (Hip external rotation HER and Hip Internal rotation HIR group). The data was collected from District Headquarter hospital Faisalabad and the inclusion criteria was patient aged from 20-60 years and with postural impairments and the radiculopathy, inflammatory disease, disc lesion and hip pathology was excluded. All the participants with lumbar postural syndrome that reported to physiotherapy Departments were screened after finding their suitability as per the inclusion and exclusion criteria, they were requested to participate in the study. Before recruiting a written informed consent was taken from the patients and described the detail of management. The HER group received back strengthening and stretching exercises, hamstring stretching, heating modality, postural education followed by piriformis stretching with hip external rotation with 10-15 repetition and 15 sec hold for each on alternate days for 15 days. The HIR group received all treatment followed by piriformis stretching with hip internal rotation with 10-15 repetition and 15 sec hold for each on alternate days for 15 days. The measurements

were taken in the form of Modified Oswestery Disability Index (MODI). The Hypothesis was “Piriformis stretch with hip external rotation is more effective than hip internal rotation stretch.

RESULTS

The sample were composed of 34 patients and mean age was 31-40 years.

The p value of pain intensity is (P<0.05) so there is a significant difference in both groups.

The P value of total MODI score is (P<0.05) so there is a significant difference in both groups. Hence it is stated that “Piriformis stretch with hip external rotation is more effective than hip internal rotation stretch”.

Variable	Mean ±SD (n=30)	P value
Pain Intensity Interventional Group (n=15) Control Group(n=15)	1.05±0.82 1.70±1.21	0.002
MODI Modified Oswestery Disability Index (Total Score) Interventional Group(n=15) Control Group(n=15)	1.23±0.43 2.05±0.65	0.003
Post-Social Life Interventional Group(n=15) Control Group(n=15)	1.0588±.82694 1.7059±.58787	0.013
Post travelling Interventional Group(n=15) Control Group(n=15)	1.0000±.61237 1.6471±.60634	0.004

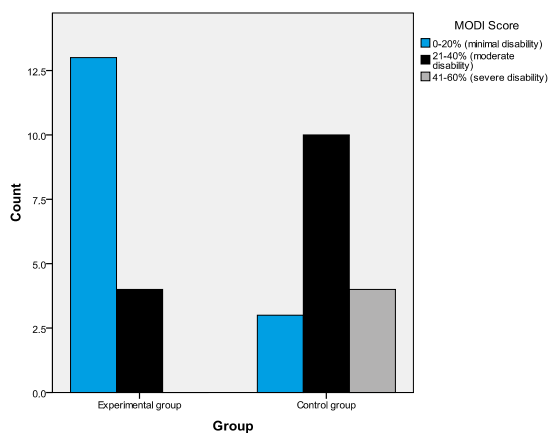
Table-I. Inferential analysis through t independent test

There was significant difference regarding the different activities in both interventional and control groups. The (P<0.05) was in personal care, walking, sitting, standing and employment. There was no significant effect on some component of inventory and the (P>0.05) in social life, travelling and sleeping, which explains that there is no change in these activities by alteration of the type of stretch.

DISCUSSION

Piriformis stretching plays crucial impact for the relief of pain and other symptoms in lowe backache. There are different types of Piriformis stretches. It is crucial to find specific and effective stretch of piriformis muscle to gain maximum therapeutic effects.

The specificity and effectiveness of type of stretching is very important to find out. A very little evidence is present about the optimal piriformis stretching. There is lack of consensus regarding stretch position. There is little research regarding sequencing of stretch components. In clinical practice, piriformis stretches are chosen on the basis of clinical expertise rather than evidence-based practice. A study pilot conducted in 2006 to assess the Piriformis stretching efficacy through pelvic fluoroscopy. In this study different position of Piriformis were compared and the change in the anatomical length was measured through fluoroscopy. The summary of the findings of the study showed greatest stretch in upper sacral fibers with 90° Hip Flexion and 50° External Rotation and least separation at both upper and



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lower sacral fibers with 90° Hip Flexion and 40° Internal Rotation. The results are correlated with this study about the effectiveness of external rotation in Piriformis stretch.²³ The study showed the importance of sequence of external rotation with combination of other movements, a study showed the detail description of sequence through CT scan findings. The summary of the findings showed that both stretch positions (90° hip Flex, ADD, ER) and (90° hip Flex, ER, ADD) resulted in an increase in piriformis length from supine and Stretch ADD from supine showed statistical significance while stretch ER from supine was not significant.¹⁹ Taking into account the literature review different researcher explored different aspects of the treatment techniques. More were aimed towards the general stretching of back muscles in lumbar postural syndrome. Some studies regarding the treatment aspects of the specific stretching technique were focused specifically to piriformis syndrome.²⁴

CONCLUSIONS AND RECOMMENDATIONS

The results suggest that the addition of specific piriformis stretch to a multimodal treatment program of generalized strengthening and stretching exercise yields significant additional benefit to pain, function, or disability in patients with lumbar postural syndrome. On the basis of the findings in the research work, the piriformis stretch with hip external rotation is an effective treatment in lumbar postural syndrome.

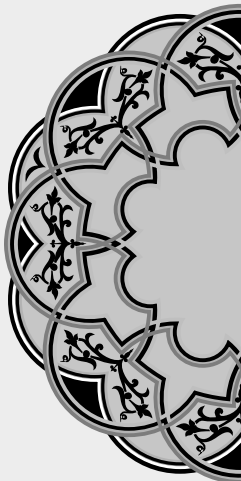
It is recommended that conservative management incorporating piriformis stretching with hip rotation and postural education can be effective in addressing musculoskeletal presentations of low back pain

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*“The richest man is not he who has the most,
but the who needs the least.”*

Unknown

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. Sameha Irshad	Data collection / Introduction Procedure	
2	Dr. Arshad Nawaz Malik	Study design/Statistical analysis	
3	Dr. Sahreen Anwar	Result/Conclusion/ Article writing	