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POST ISOMETRIC HAMSTRING STRETCHING;

EFFICACY OF POST ISOMETRIC HAMSTRING STRETCHING WITH AND WITHOUT CROSS FRICTIONAL MASSAGE FOOTBALL PLAYERS

Farooq Islam[1], Kanwal Arshad[2], Muhammad Asim Arif[3], Muhammad Salman Bashir[4]

1. PT, MS-OMPT, T-DPT, BSPT
   Assistant Profession /
   Physical Therapist
   University Institute of Physical Therapy, University of Lahore.
2. PT, MPHIL PT, PP-DPT, BSPT
   Senior Lecturer/Physical Therapist
   University Institute of Physical Therapy, University of Lahore.
3. MS-OMPT
   Senior Lecturer
   University of Lahore.
4. PT, Ph.D, M.Phil PT, PP-DPT, BSPT
   Associate Professor
   UIPT, FAHS, UOL

Correspondence Address:
Muhammad Salman Bashir
Associate Professor
UIPT, FAHS, UOL
chistisalman@yahoo.com

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ABSTRACT… Objectives: Muscles and skeleton work together if any human being wants to roam around. If muscles and joint move to their full range then a free and purposeful action is achieved and goal is met for which movement was performed. If movement abnormality is seen then its underlying cause can be tight muscle especially the hamstring in the lower extremity. Tight hamstring is quite common in normal individuals. This tightness is not desirable and needs to be treated particularly when somebody needs to perform full range of motion without any difficulty. There are numerous choices to achieve this purpose. Different researchers use different choices according to their own thinking. The main theme underlying this research is to find out evidence based treatment option to treat the tight hamstring group. **Study Design:** randomized controlled trial. **Place and Duration:** different football clubs of Lahore from March 2015 to June 2015. **Methodology:** For this research two groups of football players were utilized. One group was selected for post isometric relaxation technique alone while other group received a combination therapy containing post isometric relaxation and cross frictional massage. **Result:** the p-value for the group 1 was 0.51 while for group 2 was 0.000. **Conclusion:** After conducting this research a conclusion was drawn that a combination of post isometric relaxation and cross frictional massage showed better results in releasing the tightness of hamstring than alone therapy. So a combination therapy comprising post isometric relaxation and cross frictional massage was a better choice to treat tight hamstring.

Key words: Post Isomteric Relaxation, Straight Leg Raise, SLR, Cross Frictional Massage.

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INTRODUCTION

One of the prerequisite for smooth movement of an individual is his or her flexibility. Safe and good physical activities require flexibility. Activities of any individual becomes problematic if any of the structure involved in movement become short or tight. Different treatment protocols are used to make these structures normal or near normal. One of such protocols is cyclic stretching. Hamstrings can be one of the tight structures. This tight hamstrings can be the cause of paterllofemoral pain syndrome.[1] It is not uncommon that tight ligaments can be the cause in addition to tight hamstrings.[2] Tight hamstring is not the only cause for such issues but it can be present in other ailments like Scheuermann's disease. This disease is characterized by rapid growth in the spine, nerve compression and thoracic vertebra becomes wedge shaped. Lower thoracic region and lower part of primary curves are more prone to this disease.[3] In a study conducted on adolescents disc bulge or protrusion was closely related with tight hamstrings.[4] A condition known as spondylolisthesis there is a bilateral fracture of pars interarticularis which a part where superior and inferior articular facets join with each other. In spondylolisthersis an individual can have very tight hamstring group.[5] There are some predisposing factors that can produce hamstring tightness or its injury. Improper warm up, tight or weak muscles, training problems, imbalanced agonists or antagonists, improper drug usage and many more are the factors that can contribute in developing spondylosisthesis.[6] This tightness of hamstring is not only present alone but it can cause other problems as well that can produce movement disturbances. For example tight hamstring can produce abnormal pelvic

tilt in sitting position. And this in turn produce decreased lumbar curve.[7] The tight hamstring can be bone of contention for disc herniation and sciatic pain as well.[8]

A number of treatments are there manage tightness of hamstrings, like painkiller drugs, local or central acting muscle relaxants, massage or even stretching techniques. To treat this condition above mention techniques can be used in combination and such combination can produce remarkable outcomes. These combination regimes can be massage plus dynamic stretching and static stretching and prays technique. There is a huge variety of combination of treatments to improve the function of the muscle and make it more flexible. Another method for this condition is positioning.[9] Active knee extension test is used to check whether hamstrings is whether short or not.[10] Cerebral palsy is a condition in which there is a delay in mental development and a child can have mental retardation or physical disabilities or both. In such a child hamstring can be tight. Due to this tightness there is decreased knee extension during swing phase.[11] The objective of this study was to find out the efficacy of post isometric relaxation with cross frictional massage.

MATERIAL AND METHODS

Study Design
For improving the ROM in football players with tight hamstring; a randomized clinical trial was conducted to find out the efficacy of post isometric relaxation with or without cross frictional massage

Setting
Football players from different clubs of Lahore were under this study.

Duration of Study
The included subjects were given treatment on alternate days which continued for the span of four months (March, 2015- June, 2015). During this study first ready was taken before the first treatment session while the final reading was taken after thirty days.

Sample Size
A total of 70 subjects were included in this study. There were two groups with 35 subjects each.

Sampling Technique
Non probability convenient sampling

SAMPLE SELECTION

Inclusion Criteria
Subjects with hamstring tightness and having SLR less than sixty degrees were included. Both the genders were recruited for this study.

Exclusion Criteria
Individuals suffering from any injury related to hip, knee or back were not selected for this study.

Data Collection Procedure
All the Individuals were measured for hamstring tightness using goniometer. Those individual who showed range of motion less than 60 degrees were included in the study. Then the individuals were grouped into two separate groups. Group G1 included individuals receiving post isometric relaxation alone while group G2 included individuals receiving post isometric relaxation along with cross frictional massage. The individuals were grouped according to even and odd numbers. Odd numbered individuals were put into G1 while even numbered individuals were put in G2. Purposive sampling was used in this study. There were two phases of data collection.

Firstly, the subjects who were included in the study were interviewed in order to check if they had hamstring tightness. The hamstring tightness was seen by measuring the SLR (straight leg raise) using a goniometer. After this step the subjects were included in the study who had SLR less than 60 degrees.

The subjects were segregated into two groups. In group 1 only post isometric relaxation technique was applied. Post isometric relaxation along with cross frictional massage were used in group 2.

The treatment session was given after taking the

first reading of SLR while the second reading was taken at the end of the month.

Data Analysis Procedure

SPSS 16 was used for data analysis. For quantitative data mean and standard deviations were calculated. Percentages and proportions were used to describe the qualitative data. Independent sample t-test was used to compare the means of two groups with a p value ≤ 0.05.

RESULTS

Post isometric relaxation alone	N	35
	Mean	47.00
	Std. Deviation	9.120
	Minimum	28
	Maximum	59
Post isometric relaxation with cross frictional massage	N	35
	Mean	45.74
	Std. Deviation	6.491
	Minimum	20
	Maximum	55

Table-I. Flexion.1

Post isometric relaxation alone = Group 1
Post isometric relaxation along with cross frictional massage = Group 2

In group 1 mean flexion was 47 degrees while minimum range was 28 and max range was 59. In group 2 mean flexion was 45.74 degrees with minimum 20 degrees range and max 55 degrees.

Post isometric relaxation alone	N	35
	Mean	60.60
	Std. Deviation	8.576
	Minimum	43
	Maximum	75
Post isometric relaxation with cross frictional massage	N	35
	Mean	71.91
	Std. Deviation	7.815
	Minimum	49
	Maximum	86

Table-II. Flexion 2

Post isometric relaxation alone = Group 1
Post isometric relaxation along with cross frictional massage = Group 2

In group 1 mean flexion 2 after treatment was 60.60 with minimum range 43 and maximum range 75 while in group 2 mean flexion was 71.91 and minimum range was 49 and maximum range was 86.

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Flexion.1	Post isometric relaxation alone	35	47.00	9.120	1.542
	Post isometric relaxation with cross frictional massage	35	45.74	6.491	1.097

Table-III. t- Test Flexion.1
T-statistics= 0.66 P-value= 0.51
the t value for flexion 1 is 0.66 and p-value is 0.51, that is not significant

	Group	N	Mean	Std. deviation	Std. error
Flexion.2	Post isometric relaxation alone	35	60.60	8.576	1.450
	Post isometric relaxation with cross frictional massage	35	71.91	7.815	1.321

Table-IV. t-Test Flexion.2
T-statistics=-5.7 P-value=0.000
there is a significant difference among flexion for both the groups as p-value is 0.000

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Flexion.1	46.37	70	7.884	.942
	Flexion.2	66.26	70	9.940	1.188

Table-V. Paired Sample t-Test

Paired sample t-test T=-21.76 P-value=0.000.

DISCUSSION

Flexibility of any individual is one of the most important factors that is used for proper mobility, comfortable and independent working. Both muscular and skeletal systems need to be flexible for proper functioning. As both muscular and skeletal systems are interlinked, stiffness in any of the two will produce stiffness in other. It is not uncommon that people have very flexible muscular and skeletal system. But some are very stiff. Such individuals face difficulty in performing full range of movement or may develop injury. Great amount of flexibility is required for military personals for training.[48] In football, flexibility is very important as if any player is stiffer, he may develop injury.[29]

Issues that arise due to muscle tightness are not only present in the vicinity but also in some farther areas. Like any tightness in the hamstring dose not only produce its effects in hip and knee but also in the plantar fascia.[49]

Different doctors or therapist treated this tightness differently. According to some stretching is important.[50] Many suggest combination of different treatments. According to Glory pre-stretching heating produced impressive results. Furthermore stretching for shorter time did not produce optimal results.[38] Combination of massage, warm up and stretching was used by Margareta. It was concluded that stretching produced the best results as compared to massage or warm up alone or in their combination.[51] In delayed onset of muscle soreness massage improved the condition but the function of hamstring was not improved with this treatment option.[52] According to Marques and his colleague soft tissue mobilization was also a better option for hamstring tightness.[39] Distal elongation improved the gait pattern according to Hsu.[40]

Lee J conducted a study on massage on the back side of hamstring and concluded that 9-12 minutes of massage significantly improved the range of motion due to tight hamstring.[41]

Single bout of stretching was not enough for hamstring tightness but there should be at least 3 sessions of stretching if someone wants optimal results.[39] Soft tissue mobilization studied by D Hopper was helpful for hamstring tightness.[53] Massage was done at different region of muscle but Huan inferred that when this massage was done at musculoskeletal junction, it gave good results. This study was done on women.[54] According to Lee J it was seen that 9 – 12 minutes of massage in a single session was effective in attaining hamstring length. The restless leg syndrome was effectively treated according to Meg Russel.[41] Different practitioners used different treatment options to treat tight hamstrings.[55]

Foam roller was used as a treatment option in one of the study. Katherine and colleagues used this option. This foam roller had effects which were quite similar to those of myofascial release and this was used by different therapists, trainers and even players.[56]

Jan P.K. did research on sports stretch on sixteen students. Stretch was used for 10 min and gave excellent results in improving the range of motion as well as stretch tolerance.[56,57]

A pilot study was conducted by James. W. George on active release technique for tight. Application of the technique showed improvements in the range of motion.[58]

RamizArabaci studied that pre-event massage showed better results in athletes. The athletes were given massage, stretching and rest which improved the muscle compliance.[59]

Efflurage was effective in hamstring flexibility in rugby players which was studied by Dursley. It was added in training programmes of every athlete.[60]

Deep stripping massage on hamstring proved to be of no use on hamstring strength but improved its length. This study was conducted by J. Forman.[61]

Muscle energy technique immediately improved the hamstring tightness. This work was done by Fiona.[62] Madeleine studied the effects of muscle energy techniques in two groups in which they used post isometric relaxation for thirty and three seconds respectively which proved to be effective in both the groups.[63]

According to Mohammad Reza muscle energy technique and static stretch had same results.[64] Improvement in glenohumeral joint adduction and internal rotation were also achieved by muscle energy technique according to Stephanie.[65]

In elderly population prolonged static stretch produced more effective results in hamstring tightness.[66]

This study included the prevalence of individuals with hamstring tightness who sit for more than four hours. Static hamstring stretching alone was applied on one group while the other received a combination of cross frictional massage with static hamstring stretching. The results proved that combination gave more effective results.

CONCLUSION

This study was conducted to find out the efficacy of post isometric relaxation with cross frictional massage. It was concluded that the combination therapy of post isometric relaxation along with cross frictional massage showed better results in relieving hamstring tightness.

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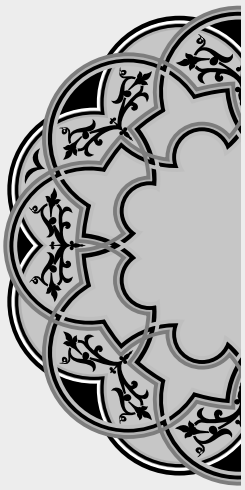

"We do not see things as they are,
We see things as we are."

Nietzsche

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Farooq Islam	Data collection and formating	
2	Kanwal Arshad	Data collection and formating	
3	Muhammad Asim Arif	Proof reading	
4	Muhammad Salman Bashir	Corresponding author	