

ORIGINAL RESEARCH

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A COMPARATIVE STUDY ON EFFECTIVENESS OF STATIC STRETCH AND HOLD RELAX TECHNIQUES OVER HAMSTRING FLEXIBILITY

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ABSTRACT

Background: Flexibility is important in prevention of injury, muscular and postural imbalance more over the Hamstring flexibility has a lion share in sports performances and preventing DOMS. Stretching procedures increases the ROM by embarking on biomechanics and Neurologic and molecular mechanics. Hamstrings, the two joint muscle plays a crucial role in two joints integrity and also spine as they are in closed kinematic chain. The hamstring muscles represent the primary flexors of Knee. Hamstrings tightness results in Limits Knee extension when hip is flexed, Posterior Pelvic tilt, and flatten the lumbar spine.

Methods: The subjects selected randomly and divided into two groups (Experimental group and control group). 30 samples in One group applied with Static Stretch once a day for 3 repetitions 5 days a week for six weeks and 30 samples in other group applied with Hold relax technique once a day for 4 repetitions 5 days a week for six weeks. The knee joint range of motion was measured at the end of every week with Universal goniometer.

Results: By comparing the means of Group - I, given Static Stretch and Group - II, given Hold relax Technique for six weeks implied that there is improvement of flexibility in Group - II and the 'P' value < 0.01 shows the difference is highly significant.

Conclusion: This study concludes that the hold relax Technique method has proved to be better technique then the static stretch for improving hamstring flexibility.

Keywords: Static stretch, Hold relax, Hamstring flexibility.

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INTRODUCTION

Flexibility is important in prevention of injury, muscular and postural imbalance more over the Hamstring flexibility has a lion share in sports performances and preventing DOMS.¹ Stretching procedures increases the ROM by embarking on biomechanics and Neurologic and molecular mechanics.^{2,3} It is defined by Gummerson⁴ as "The absolute range of movement in a joint or series of joints that is attainable in momentary efforts with the help of partner or a piece of equipment. The Flexibility is specific to particular muscle and joint but not general. According to Kurz⁵ there are three types of Flexibility like Dynamic, active, and Passive.

Dynamic flexibility (Kinetic flexibility) - Is the ability to perform dynamic movements of the muscles to bring limb thorough full Range of motion. Active flexibility is the ability to assume and maintain extended positions using only the tension of agonists and synergists while antagonists are being stretched. Example like lifting leg and keeping it high without external support. Passive flexibility is the ability to assume extended and then maintain them using only your weight the support your limbs, or other apparatus. Research has shown that active flexibility is more closely related to sports achievement than passive flexibility. Hamstrings are the two joint muscles play a crucial role in two joints integrity and also spine as they are in closed kinematic chain. The hamstring muscles represent the primary flexors of Knee, they comprise Biceps femoris forming lateral mass of hamstrings and semimembranosus and semitendinosus making up medial mass.⁶ According to M.Alter Static stretch consists of Stretching muscles to its farthest point and maintaining the position⁷. Hold Relax consists of initial passive stretch of the muscle then isometric contraction followed by passive stretch.

METHODOLOGY

Samples are selected randomly, the test sample consists of 60 volunteers with age group of 18-28 years were selected from Narayana college of physiotherapy, Nellore. The purpose of the study was explained to all the subjects. An informed consent was taken, followed by demographic data from each subjects. Study design used was Simple Experimental Design. Subjects are capable of understanding the instructions given by the therapist. Subjects are excluded with fracture lower limbs, decreased muscle power, normal flexibility, yogics, and Sports person. The subjects selected randomly and divided into two groups (Experimental group and control group). One group applied with Static Stretch and other groups with hold relax technique. The Range of motion of Knee extension that is popliteal angle⁹ is measured and the subjects with $> 45^{\circ}$ are selected for study. Group-A (Static stretch) the subject was made to lie supine on medium sized couch with pelvis stabilized (neutral). The selected limb with tightness is passively flexed at Hip to 90° and Knee 90° then able to gradually extend the Knee up till the subject feel pain. Then the subjects were applied static stretch for 30 sec and 10 sec rest between repetitions done once day for 3 repetitions 5 days a week for six weeks. The knee joint range of motion was measured at the end of every week for 6 weeks. Group-2 (Hold-relax) The selected limb was passively stretched and ask the subject to contract isometric for 15 sec and relax for 3 sec then passively stretched for 15 sec then relax for 20 sec once a day for 4 repetitions 5 days a week for six weeks. The knee joint range of motion was measured at the end of every week with goniometer.

DATA ANALYSIS

RESULTS: By comparing the means of Group - I, given Static Stretch and Group - II, given Hold Relax for six weeks implied that there is improvement of flexibility in Group - II and the 'P' value < 0.01 shows the difference is highly significant.

Table No.1 (Static Stretch)

Group 1	N	Mean + SD	SE Mean	t-value	p-value
Pretest	30	120.00 + 2.26	0.78	-37.134	0.001
Post test	30	135.83 + 4.04	0.74		

On comparing means of pretest and post test of group 1, which was applied static stretch showed an improvement with a difference of 15.83 and the P value is < 0.01 implying the difference is highly significant.

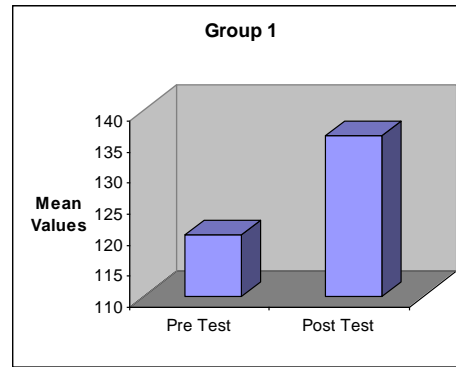


Table No.2 (Hold Relax)

	N	Mean + SD	SE Mean	t-value	p-value
Pretest	30	120.93 + 5.54	1.01	41.354	0.001
Post test	30	139.50 + 5.56	1.02		

On comparing the means of post test and pretest group 2, which was applied hold relax showed an improvement with a difference of 18.57 and the P value is < 0.01 implying the difference is highly significant.

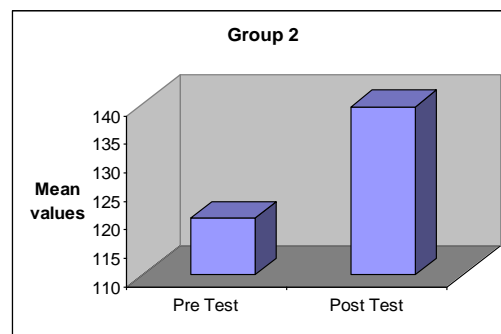


Table No.3 (Static Stretch and Hold Relax)

		N	Mean + SD	SE Mean	t-value	p-value
Group 1	Post test	30	135.83 + 4.04	1.01	41.354	0.001
Group 2	Post test	30	139.50 + 5.56	1.02		

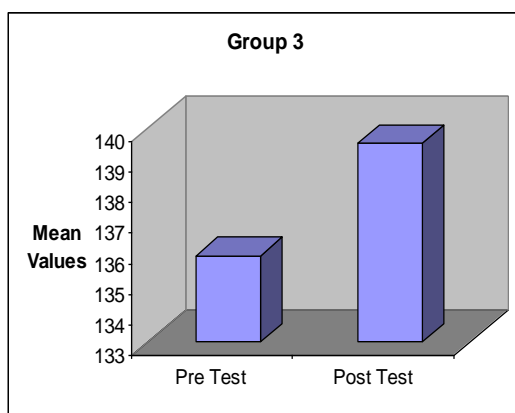
On observing the means of post tests of both group I and group II, showed that there is a difference of 3.67, proving that the group 2 showed remarkable increases inflexibility. And the P value < 0.01 so the difference is highly significant.

DISCUSSION

The Static stretch conducted in this study showed a very significant increase in the range of motion after a 30 seconds hold which is statistically evident with a mean difference (15). This is supported by the study of J Brent Feland¹⁰ which was proved in Table No.1 Pretest mean 120.00 and Post test Mean 135.83.

This difference would have been more if there would be increase in the frequency of the method followed which this method has not adopted going with the study of William D. Bandy.¹¹ There is no increase in the duration of the static stretch more than 30 sec because increase in the duration has not shown significant difference according to the study of William D.Bandy¹¹ (1997).

The Other method followed is the Hold Relax Method which showed a remarkable improvement in the ROM evidenced and exhibited by the statistical analysis with a more mean difference, which was proved in Table NO.2 pretest Mean 120.93 and Post test Mean 139.50.



On observing the Means of Post tests of Both Group-I and Group -II showed there is difference of 3.67, providing that the Group -II showed remarkable increases in flexibility.

This study reflects the results of the study conducted by the Birgit Schuback¹² and the same results have been pronounced by the study of Ian Shrier in Myths and truths of stretching. A common method has been adopted in the performance of the both the techniques in both the groups i.e., common frequency to exclude any difference the strategy which enabled more reliable collection of information and for statistical analysis.

This study concludes that the Hold relax method has proven to be a superior method than static stretching, as proved by the study of Ian Shrier MD, Ph. D in Myths and truths of stretching which was shown in Table No.3 Post test Mean of Group -I 135.83 and Post test Mean of Group-II 139.50.

CONCLUSION

This study concludes that the hold relax method has proved to be better technique than static stretch for improving hamstring flexibility. A larger samples study may be needed for a reliable and standardization of technique to improve Hamstrings flexibility. Combination therapy may be needed to decrease the duration of treatment. A double blinded study to as to be conducted for having significant reliability. Study may be conducted by comparing flexibility of hamstrings between males and females. Study can be limited to a selective type of professional students.

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Citation

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