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Original Research Paper

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A STUDY TO FIND OUT IMMEDIATE EFFECT OF SELF-MYOFASCIAL RELEASE ON HAMSTRING FLEXIBILITY IN COLLEGE GOING STUDENTS

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ABSTRACT

Context: flexibility is the ability to move a single or series of joints smoothly and easily through an unrestricted, pain free range of motion. The purpose of this study to find out immediate effect of self-myofascial release in hamstring flexibility.

Aim: This study aimed to identify the area with greatest effect of using self-myofascial release technique (self-MFR) in the sub-occipital, hamstring, planter region.

Setting and *Design*: A cross sectional study

Methods and material: thirty collages going healthy adult's subjects were evaluated for flexibility and hamstring tightness after self-MFR. Based on superficial back line, the self MFR application areas were the suboccipital region, hamstring and planter region. Self-MFR was applied to each area using a wooden pole for a total of 4 minutes. Self-MFR was applied for 3 days at the same time of the day. which was randomly assigned for each subject. Treatment was applied to one area each day. The active range of motion were used to determine change in flexibility and tightness of muscle pre/post-self-MFR effectiveness was tested using a paired t test. Repeated measurement was used to compare self-MFR effects in the suboccipital hamstring and planter region.

Results: statistically is significant ($p<0.05$) the results showed high significant when the self-MFR technique was applied to the 3 areas, the active knee extension test showed significant improvements over baseline.

Conclusion: our findings suggest that indirect application based on the anatomy trains could be effective for those who need to improve hamstring flexibility. And hamstring tightness easily improve effect of self-MFR immediate effect as well as can be performed at any time and any place.

KEYWORDS : Hamstring muscle, self-myofascial release, fascia, flexibility, active knee extension test.

INTRODUCTION

Myofascial release (MFR) is one of the commonly utilized manual techniques to facilitate the stretching of corresponding tissue continuously or enhance the extensibility of soft tissue though compression while restoring restricted fascia or normal muscular strength[1]. Self-myofascial release (SMR) techniques have become highly popularized within the fitness and rehabilitation communities as a holistic means both prevent and treat pathology. Self-myofascial release methods including foam roller and roller massager sticks have not only been shown to increase flexibility but also to reduce arterial stiffness, improve arterial function and reduce soreness, and vascular function self- MFR increase flexibility, reduce delayed on set muscle soreness, adjusts arterial function and hemangioendothelial function, adjust autonomic nervous system on continuous basis. Which makes their use particularly interesting for both athletes and the general population.[3]

MFR is generally to apply slow and continued pressure to restricted fascial layers for 120 to 300 seconds. Self-MFR is a type of MFR implemented by each individual using a tool instead of therapist. Self-MFR is an affordable and easily available methods to help maintain flexibility.

Hamstring muscle is a two joints muscle spanning both hip joints and knee joints, functioning as a major muscle for hip extension, knee flexion, pelvic posterior tilt movements. Interaction with hamstring ProView correct knee movements and stability. Also, in the dynamic movements of sagittal plane abduction and adduction, hamstring muscle provide stability. Hamstring flexibility is important role to maintain full range of motion (ROM) of joints and musculoskeletal function while preventing damages.

In Myers "anatomy trains". Fascia connected from planter fascia to epicardial fascia is called as superficial back line (SBL). based on the SBL, to enhance hamstrings flexibility; studies have examined its effect by applying to sub occipital region hamstrings, and planter region of the feet. As a result, it was found that muscle tone could decrease indirectly even without directly adjusting hamstrings. When suboccipital muscle inhibition and self-MFR are applied to suboccipital region, hamstring flexibility instantly increased in self-MFR group. Kim at al, in their study directly applied to hamstring and found significant changes in flexibility as well as muscle strength related to the interaction between quadriceps and hamstrings flexibility and knee joints ROM. grieve at el, in their study, applied to planter region of the feet for hamstring flexibility and proved its effectiveness[6,7].

AIM OF THE STUDY

The main purpose of this study is to investigate instant effect on hamstring flexibility increase by applying self-MFR to three areas (suboccipital region, hamstring, and planter region). The aim of the study was to find out an immediate effect of self – myofascial release on hamstring flexibility in collage going students.

OBJECTIVES OF THE STUDY

1. To assess the pre and post self- myofascial release on collage going students with hamstrings tightness and flexibility.
2. To assess the difference between pre and post self-MFR giving in collage going students.
3. To find out immediate effect of self-MFR on hamstring flexibility.

HYPOTHESIS

- **NULL HYPOTHESIS:** self-myofascial release is not an

effective increase hamstring flexibility in collage going students.
- **EXPERIMENTAL HYPOTHESIS**: self-MFR is an effective in increase flexibility of hamstring flexibility in collage going students.

MATERIAL AND METHODOLOGY:
STUDY SETTINGS: Shri U.S.B collage of physiotherapy, Abu road

SOURCE OF DATA: various collages in RAJASTHAN.

METHOD OF DATA COLLECTION:
STUDY POPULATION: collage going students with hamstring flexibility and hamstring tightness.

SAMPLE SIZE: 90 Students
SAMPLING METHOD: purposive sampling
STUDY DESIGN: a cross sectional experimental study

MATERIAL
- Plinth
- Foam mattress
- Goniometer
- Inch tape
- Weighing machine
- Straps (for stabilization)
- Stop watch
- Consent form
- Foam roller (wooden pole)
- Assessment foam
- Pen and paper

CRITERIA FOR SELECTION
INCLUSION CRIERIA
- Age :18 to 25 years young healthy individuals
- Gender: both male and female
- Hamstrings tightness (minimum degree < 150 degrees)
- Normal students

EXCLUSION CRITERIA:
- Regular sports player
- Low joints mobility
- History of low back pain
- Past pathology
- Metabolic disease
- Acute joint pain with exercise or muscle extension
- Hamstrings tear

MEASUREMENT PROCEDURE
After the approval of the study from the ethical committee,90 participants from Shri U.S.B collages Abu road, who fulfilled the inclusion and exclusion criteria were taken for the study purpose, written informed consent was signed by the class coordinator of each subject before procedure. Before starting the study of a brief assessment was taken, subject was explained about the test and procedure to be conducted. Total 90 subject with tight hamstring were selected.[7]

Before data collection procedure begun, each subject received a verbal explanation and demonstration of the movements to be performed and practiced trial were performed by them.

METHODS
Subject
For this study,90 participants were recruited through a 2- week verbal promotion among adult's women and men enrolled at various collage of Rajasthan. of these 30 consented to the study after learning the purpose, significance, and methodology. among the 30 participants, those scoring less than 4 points of 9 points on the bright on score were selected for this study. The Brighton score evaluates hypermobility of the joints. It is widely used tool with high validity.[5] of 30 subjects, 5 scored greater than 4 points, and were exclude from this study.

PROCEDURE
This study had a cross sectional design. To determine the effectiveness of self-MFR, data on 30 subjects meeting the selection criteria were collected, all subjects wore stretchable and Lose-fitting pants that did not affected ROM, primary test active ROM hip joints in supine position and passive hip joints ROM[6].

Self-MFR was applied for 3 days at the same time of the day 24 hours interval. The application areas were applied to one of the areas each day.

Performance, hip joints active ROM passive ROM, and hamstring flexibility in the same manner as in the post-test.

APPLICATION OF SMR TECHNIQUE
SELF-MFR was applied as follow(fig.1).
(1) For the suboccipital region, subject was comfortably supine. A wooden pole (diameter 8 cm and length 40 cm) was placed under the area, and the head was slowly and gently turned to the left and right for 4 minutes.

(2) For hamstring, the subject assumed a long sitting position on a firm and even surface by placing the arms backward and loading body weight on the palms. wooden pole was placed under the hamstrings and slowly moved back and fourth from the ischial tuberosity to the popliteus, by applying pressure for 4 minutes.

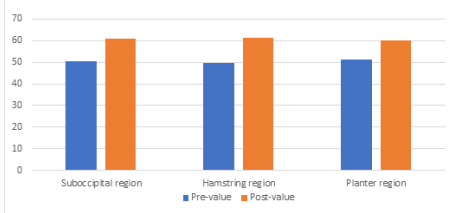
(3) For the planter region, subject stood in the front of the a 1-m -high support. Wooden pole was placed under the side the sole. And cantered on the meta tarsals and inner side the heel. With support from the other limb. The pole was rolled back and forth slowly for 2 minutes on each side by applying pressure, with a total application time of 4 minutes.

RESULT
all statistical analysis was done by SPSS statistics version 20.0 for windows software. Descriptive statistics were used to analyse subject general characteristics. pre/post self-MFR effectiveness was tested using a paired t-test. Repeated measurement was used to compare self-MFR effects in suboccipital, hamstring and planter regions. Statistical significance was set at 0.05.

TABLE -1 Change of ROM of hip joint by self- myofascial release

		MEAN	SD	't'-value
Suboccipital Region	Pre- test	50.53	7.61	12.8211
	Post-test	60.80	7.07	
Hamstring Region	Pre-test	49.50	7.34	19.1509
	Post-test	61.33	6.87	
Planter Region	Pre-test	51.13	5.41	18.9464
	Post-test	60.23	5.54	

Value are presented as mean (SD)
$p<0.05$ was presented to significant difference between pre-test and post-test.



From the above results it is observed that the mean value is found to be increased indicating and increase in hamstring ROM, the p- value ($p<0.001$) there is significant improvement in post-test because of the training programme.

DISCUSSION

In this study, self-MFR was applied 3 areas (suboccipital, hamstring, and planter region) and all induced significant improvements of hamstring flexibility. The intent of the study was find out an immediate effect of self-myofascial release on hamstring tightness.

Macdonald, et al. (2013) performing myofascial release may be done through massages or through tools, usually done by a therapist, but more commonly, self-myofascial release(SMR) is performed. This is by using body weight or force into an object such as a foam roller to place pressure along a muscle with the intent to target the adhesion in fascia to improve movement.

Grace couture, et al. (2015) self-administered foam rolling for a total duration of up to 2 minutes is not adequate to include the amount of pressure imparted by the commercial roller as well as duration of treatment.

CLINICAL IMPLICATION

The results suggest that the self-myofascial release is effective technique is proved to be effective in improving hamstring flexibility hence improving the range of motion of the hip joints.

LIMITATIONS

1. Subjects with 18 to 25 years of age were considered for the study thus results cannot be generalized to all age group.
2. Only immediate effect was studied, short and long-term effect were not studied that would helped to find the maintains of the improved outcome measure.
3. Study was done on normal subject.
4. A limitation of this study was that total time for self-MFR was equal for each region.

FURTHER RECOMMENDATIONS

1. Further study on other technique in combination with self-MFR needed to find the effect for children and older adults with hamstring flexibility.
2. Further study is needed to find the effect of this study in condition with secondary hamstring tightness.
3. Further study can use other outcome, measurement.
4. Further study can be done with larger sample size.

CONCLUSION

The present study concludes that self-MFR is effectiveness in improving hamstring flexibility and hence range of motion of the joint. Hence the self-MFR is an effective option in the treatment of hamstring tightness along with other conventional technique.

Conflict of interest: Nil.
Source of found: No fund was needed.
Ethical Clearance: From Shri USB collage of physiotherapy, Abu road.

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