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Immediate effect of plane medium density foam roller v/s rumbled medium density foam roller to increase flexibility of hamstrings in club level fast bowlers (comparative study)

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Abstract
Background: Hamstring flexibility is highly desirable in fast bowling as it involves sprint, vertical jump and many more activities. There are different methods of technique to improve the length of musculotendinous unit. Such as static stretching, dynamic stretching, PNF and myofascial release techniques. One technique known as self myofascial release is foam rolling. The foam roll is a solid foam cylinder available in different degrees of hardness and size. Very few studies are available on comparison of density of foam roller and their effectiveness on hamstring flexibility.
Objectives: Compare immediate effects of plane medium density foam roller versus rumbled medium density foam roller to increase flexibility of hamstring in club level fast bowlers.
Methods: Various cricket clubs will be visited in around the city. The subjects were selected on the basis of their inclusion and exclusion criteria. Group of subjects were divided into half i.e. Group A and Group B by random allocation (chit method). Both the groups were assessed for hamstring flexibility by SIT REACH TEST and data was recorded. Group A and group B subjects was given the protocol with the plane medium density foam roller and rumbled medium density foam roller respectively. Hamstring flexibility of subjects in both the groups was assessed by SIT REACH TEST immediately after 10 min. The data was recorded and data analysis will be done.
Results: Statistical analysis showed that immediate effect of plane medium density foam roller and medium density rumbled foam roller showed p value <0.001 which was highly effective using paired t test. The Post comparison of both foam roller showed p value >0.5 which was not effective using unpaired t test.
Conclusion: This study shows that both Medium Density Plane Foam Roller and Medium Density Rumbled Foam Roller are equally effective to increase flexibility of hamstring in club level fast bowlers.

Keywords: flexibility, hamstrings, fast bowlers, medium density plane foam roller, medium density rumbled foam roller

Introduction

Hamstring flexibility is highly desirable in fast bowling as it involves sprint and vertical jump [1].
Hamstring injuries have been highest frequency injuries in cricket and incidence has been increased since 2006 [1]
Fast Bowling has highest incidence of hamstring injury compare to other roles in first class cricket [1].
Spin bowlers had lower incidence of injury compare to fast bowlers, which appeared to be related to speed of run-ups indicated by GPS data in previous studies [1].
Running with tight hamstrings is analogous to driving a car with the hand brake partly engaged- the vehicle still moves forward but performance is impaired, fuel [energy] efficiency is reduced and there is increased friction between moving parts which leads to early and preventable breakdown [7].
Hamstring flexibility is running sports is primarily aimed at reducing muscle tear or strain and improve running efficiency, agility and speed.
There are different methods of technique to improve the length of musculotendinous unit. Such as static stretching, dynamic stretching, PNF and myofascial release techniques.
One such device that has been shown to increase flexibility prior to physical activity is a foam roller. The foam roller is a dense foam cylinder that a person rolls their bodyweight over to increase ROM for a specific body region, as a type of self-massage. During foam rolling the direct and sweeping pressure is exerted on the soft tissue causing the fascia to stretch and increase ROM [5].

Need of Study

Hamstring flexibility is important in a fast bowler to achieve proper bowling stance and deliver the ball with good pace.
The overall hamstring injury incidence in cricket was 22.5% per season and among fast bowlers it is 35%.
Very few studies are available on comparison of density of foam roller and their effectiveness on hamstring flexibility.
The use of a Roller-Massager i.e. regular plane foam roller on the hamstrings muscles can provide significant sit and reach ROM increases. During foam rolling the direct and sweeping pressure is exerted on the soft tissue causing the fascia to stretch and increase ROM [6, 5].
The Rumble Roller is a type of foam roller designed to massage your body in such a way that it releases muscular tightness and knots (trigger points) in the body. When Trigger point is released it helps to increase flexibility of the muscle [10].
There are no studies on comparison of texture of foam roller to increase flexibility.

Therefore, the purpose of this study is as effort to compare effectiveness of medium density plane foam roller and medium density rumbled foam roller to increase flexibility of hamstring in fast bowlers.

Subjects

Included: Age – 18 to 25, Fast bowlers, Males, Bowlers playing cricket in the past for 2 years at least and have hamstring tightness issues. Sit Reach test value below average i.e. <26.5 cm.

Excluded

Any kind of musculoskeletal and neurological impairment. Any pathology like fracture, dislocation of spine, hip, knee and ankle. Any traumatic condition in past 6 months. Sit Reach test value above average i.e. >26.5 cm.

Method

Various cricket clubs were visited in around the city.

The subjects were selected based on their inclusion and exclusion criteria.

The subjects were explained about the study before starting the procedure. Consent will be taken from the subjects who wish to participate.

Group of subjects were divided into half i.e. Group A and Group B by random allocation (chit method).

Both the groups were assessed for hamstring flexibility by SIT REACH TEST and data will be recorded.

Group A: subjects were given the protocol with the plane medium density foam roller.

Group B: subjects were given the protocol with the rumbled medium density foam roller.

Hamstring flexibility of subjects in both the groups was assessed by SIT

REACH TEST immediately after 10 min. The data was recorded, and data analysis was be done.

Protocol

The protocol will start with warm up consisting of jogging, lower limb warm up. Foam rolling for Group A with medium density plane foam roller and Group B with medium density rumbled foam roller.

Sit on the ground with your foam roller under your thighs. Placing your hands on the ground behind, pushing up so that your weight is supported by your hands and the roller that's under the thighs. Slowly roll back and forth. 3 sets of 10 seconds each set.

Fig 1

Outcome Measures

Sit Reach Test

The Sit and reach test is one of the linear flexibility tests which helps to measure the extensibility of the hamstrings and lower back. It was initially described by Wells and Dillon in 1952 and is probably the mostly used flexibility test. It has a simple procedure, is easy to administer, requires minimal skills training for its application, and the equipment necessary to perform the test is affordable. With Reliability = 0.92

Fig 2

Data Analysis

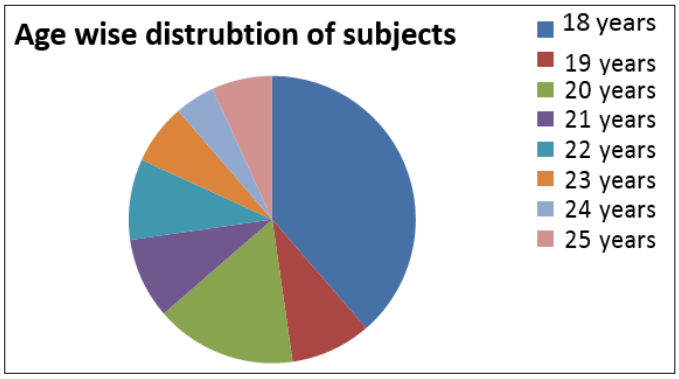

Fig 3

Medium Density Plane Foam Roller

Table 1

Outcome Measure (sit reach test)	Mean	t-value	p-value	Significance
Pre Post	23.28 29.03	7.3149	<0.001	Highly significant

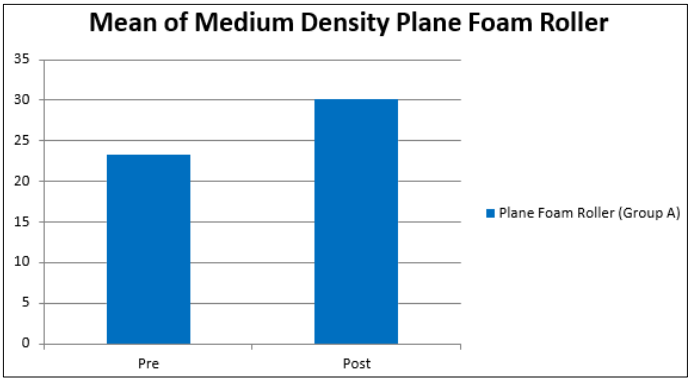

Fig 4

Medium Density Rumbled Foam Roller

Table 2

Outcome Measure (sit reach test)	Mean	t-value	p-value	Significance
Pre Post	24.16 29.08	10.8078	<0.001	Highly significant

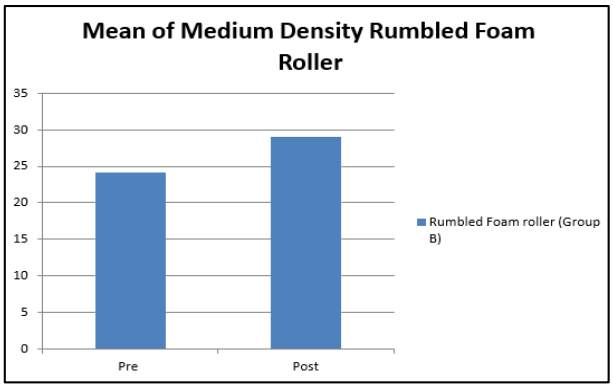

Fig 5

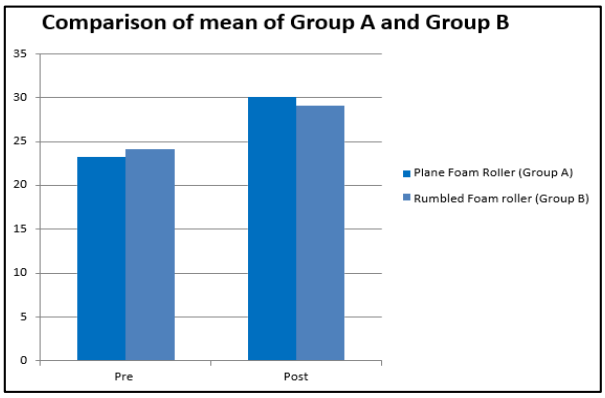

Fig 6

Comparisons of post mean values of Group A and Group B

Table 3

Outcome Measure (sit reach test)	Mean	t-value	p-value	Significance
Post (Group A) Post (Group B)	29.03 29.08	0.0886	0.9298	Not statistically significant (>0.0001)

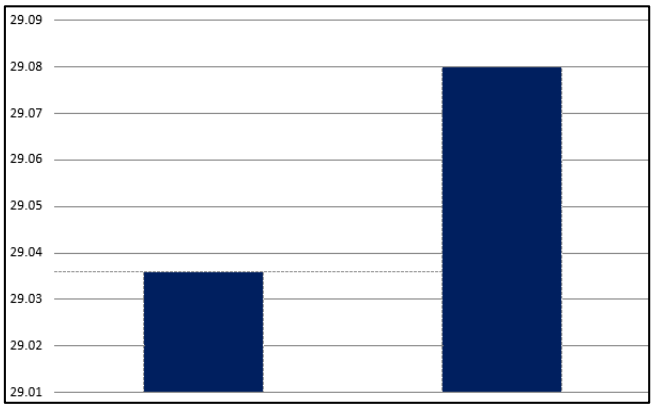

Fig 7

Results

The comparative technique used in the study are foam rolling with Medium Density Plane Foam Roller (Group A) and Medium Density Rumbled Foam Roller (Group B).

Pre and post mean value of medium density plane foam roller is 23.28 and 29.03 respectively.

Pre and post mean value of medium density rumbled foam roller is 24.16 and 29.08 respectively.

The difference between the pre and post sit reach test were compared in both the groups and analyzed using paired t test.

Sit reach test values in Group A using medium density plane foam roller shows p value <0.001 which is statistically significant and thus using Medium Density Plane Foam Roller is effective in increasing the flexibility of hamstring with an immediate effect.

Sit reach test values in Group B using medium density plane foam roller shows p value <0.001 which is statistically significant and thus using Medium Density Rumbled Foam Roller is effective in increasing the flexibility of hamstring with an immediate effect.

Comparing the post values of Group A and Group B shows p value >0.001 which is not statically significant.

Discussion

The present study was done to compare immediate effect of Medium Density Rumbled Foam Roller and Medium Density Plane Foam Roller to increase flexibility of hamstring in club lever fast bowlers. In this study 50 males of age groups 18-25 are taken and randomly divided into 2 groups i.e. Group A and Group B. Sit reach test values in Group A using medium density plane foam roller shows is statistically significance in increasing the flexibility of hamstring with an immediate effect. Sit reach test values in Group B using medium density plane foam roller shows statistically significance in increasing the flexibility of hamstring with an immediate effect. Comparing Group A and Group B post values there is no statically significance in between them. In this study we found that both the technique are equally effective is between Medium Density Plane Foam Roller and Medium Density Rumbled Foam Roller to increase flexibility of hamstring in club level fast bowlers. The present study was done to compare immediate effect of Medium Density Rumbled Foam Roller and Medium Density Plane Foam Roller to increase flexibility of hamstring in club lever fast bowlers. In this study 50 males of age groups 18-25 are taken and randomly divided into 2 groups i.e. Group A and Group B. Sit reach test values in Group A using medium density plane foam roller shows is statistically significance in increasing the flexibility of hamstring with an immediate effect. Sit reach test values in Group B using medium density plane foam roller shows statistically significance in increasing the flexibility of hamstring with an immediate effect. Comparing Group A and Group B post values there is no statically significance in between them. In this study we found that both the technique are equally effective is between Medium Density Plane Foam Roller and Medium Density Rumbled Foam Roller to increase flexibility of hamstring in club level fast bowlers.

Conclusion

This study shows that both Medium Density Plane Foam Roller and Medium Density Rumbled Foam Roller are equally effective to increase flexibility of hamstring in club level fast bowlers.

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