The prevalence of hamstring tightness among the male athletes of University of Peradeniya in 2010


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Abstract

Hamstring tightness is caused by a decrease in the ability of the muscle to deform, resulting in a decrease in the range of motion at the joint on which it acts. This is a limiting factor for optimal physical performance and an intrinsic factor for hamstring injury; the most common type of injury among athletes. The purpose of this study is to evaluate the prevalence of the hamstring tightness among certain categories of the sports (athletics, contact sports, pivoting sports, swimming and weight lifting). In addition, this study aims to find out whether there are any relationships hamstring tightness with body height; femur length; duration of warm-up period and duration of cool down period. The criterion for subject inclusion was tight hamstrings as defined by a knee extension range of motion less than 160°. Prevalence of hamstring tightness is present at significantly higher rates among athletes who engaged in contact sports rather than athletes who engaged in athletics, martial arts and other sports. Within the confines of this study, there is no significant association between hamstring tightness and body height, femoral length, duration of warm up period and duration of cool down periods of the athletes who were engaged in each category of sports.

Keywords: Hamstring tightness, Active Knee Extension angle, Warm up duration, Cool down duration, femoral length

1. Introduction

The ability of an individual to move smoothly depends on his flexibility, an attribute that enhances both safety and optimal physical activity. The hamstrings are examples of muscle groups that have a tendency to get shorten (Turner, et al., 1988). Three muscles that are known collectively as the hamstring muscle cover the posterior thigh consist of the semitendinosus, the semimembranosus, and the biceps femoris muscles. Muscle tightness is caused by a decrease in the ability of the muscle to deform, resulting in a decrease in the range of motion at the joint on which it acts (Akinpelu, 2005). Inability to achieve greater than 160° of knee extension with hip at 90° of flexion is considered as hamstring tightness (Waseem, et al., 2009). Hamstring tightness leads to hamstring injuries and hamstring injuries are
the most common type of injury among athletes. These injuries are slow to recover, make high health expenditure and decrease the performance level of the athlete.

As it is preventable, education on the condition and awareness of the prevalence of hamstring tightness will help the athlete and other responsible persons to be alert about a proper method of training. Then it will assist in reducing health expenditure and build a healthy competitive young population in the country. Athletes will benefit with more time to compete, improved peak performance levels and balanced academic life. If they know the prevalence of hamstring tightness and have awareness about it, they may get a feedback to switch in to a better training program.

Up to the present, only a scant number of researches have been conducted in other countries related to this topic, and to the best of our knowledge no research has been conducted in Sri Lanka. The studies conducted in foreign countries on this topic may not fit our country as there are differences in genetic and socio-economic backgrounds. With the increasing tendency of students in involving sports; having an idea about the prevalence of hamstring tightness will be important to them in preventing hamstring tightness, which may lead to risk of hamstring injuries in future.

2. Methods
This research was conducted as a descriptive study. Data was collected through a self-administered questionnaire and a clinical examination from the consented subjects. There were four examination stations with two examiners in each for every subject to obtain following measurements and to conduct tests. In the first examination station all height and weight measurements, examinations for scoliosis/ congenital hip dislocation/ ligament laxity/ limb length discrepancy were measured. In the second station all the lumbar spine movements, hip movements and hip examination were carried out. Then in the third station knee examination were performed. Active knee extension test was carried out at the fourth station.

128 athletes, ranging in age from 20 to 28 years volunteered to participate in this study. Subjects were limited to male athletes with "normal" muscle strength and range of motion who had no history of orthopedic or neurological disorders of the hips, knees and spine, generalized ligament laxity, limb length discrepancy, scoliosis, hip dislocation and other deformities. Out of 128 athletes 25 subjects were excluded as they were within the exclusion criteria. There were 16 participants from the contact sports, 20 from athletics, 31 from martial arts and 36 from the other sports. All data were gathered at the Department of Physical Education of the University of Peradeniya.

3. Results and Discussion
The criterion for subject inclusion was tight hamstrings as defined by a knee extension range of motion less than 160°. Active knee extension was measured using a goniometer, in 128 male athletes before starting their practice sessions.

Prevalence of hamstring tightness was measured on both legs of athletes participating in various
categories of sports. Prevalence of hamstring tightness is present at significantly higher rates among athletes who engaged in contact sports rather than athletes who engaged in athletics, martial arts and other sports respectively.

The statistical significance was set at $p<0.05$. The analysis showed no significant difference ($p<0.05$) between body height vs. the hamstring tightness, femur length vs. the hamstring tightness, warm-up duration vs. hamstring tightness and Cool down duration vs. hamstring tightness.

4. Conclusions

On the basis of this study it can be concluded that prevalence of hamstring tightness is present at significantly higher rates among athletes engaged with contact sports rather than athletes who are engaged in other sports, athletics and martial arts, respectively.

Within the confines of this study it was found that there is no significant association between hamstring tightness and body height; femoral length; and duration of warm up and cool down periods of the athletes who are engaged in each category of sports. Most Possible contributing factors for these results may be that the body height and length of the femur of the athletes do not much vary, and the athletes’ insufficient exposure to the techniques, subjects attitudes and perception and low statistical power.

References:


