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RESEARCH ARTICLE

IMMEDIATE EFFECTS OF KINESIOTAPING ON AGILITY IN PROFESSIONAL FOOTBALL PLAYERS WITH GRADE 1 HAMSTRING STRAIN

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ABSTRACT

[Purpose] The aim of this study was to evaluate the immediate effect of Kinesiotaping on Agility of Football Players with Grade 1 Hamstring Strain. [Subjects and Method] Sixty professional football players with grade 1 hamstring strain were selected. The subjects were randomly allotted into experimental and control group (n=30 each). The experimental group received facilitation type of Y Taping to Hamstring muscle in stretched position while the Control group received sham taping to hamstring muscle. Agility was assessed pre and post taping for both groups using Agility T-Test. [Results] Experimental group showed significant improvement in T-Test when compared to the control group. [Conclusion] Kinesiotaping was found to be effective in improving Agility of football players with grade 1 Hamstring Strain.

INTRODUCTION

A modern day footballer requires a special set of skills to be recognized as world class. For a successful football performance, one is required to accelerate, decelerate and change directions to deceive his or her opponent. This dynamic multi-directional change of movement by an athlete can turn the outcome of a game in a mere fraction of a second. Agility itself has a few components like change of direction, avoiding obstacles and complicated footwork requiring balance, decision making, recognition and reaction. Hamstrings are a group of muscles (Semitendinosus, Semimembranosus, Biceps Femoris, and Adductor Magnus). They are a multi joint muscle crossing the hip and the knee joint. Since they cross the hip and the knee joints they play an important role in decelerating and slowing down the lower leg in preparation for contact with the ground, they also simultaneously help extend the hip for propulsion in order to sprint. Studies have shown that grade 1 Hamstring strain is very common in professional football players which affects their performance. Grade 1 hamstring strain has the following signs: minimal swelling, tightness in the back of thigh, normal gait with some discomfort, and pain on resistance to knee flexion (Samuel et al., 2016). Players with grade 1 hamstring strain usually continue to play either because they are unaware of the strain or tend to ignore it. This results in decreased agility and the overall performance of players. There are competitive and economic concerns associated with professional athletes, and that is why time taken for return to activity is of particular importance to the

athlete and the team. There is burden on the medical staff and athletic trainers to return an athlete to competition as soon as possible. Failing to properly rehabilitate or returning to competition prematurely can result in further injury and or chronic strain and thus, prolonged return to play. Football players with grade 1 hamstring strain are either unaware of the strain or because of fear of lack of game time tend to ignore it, which effectively decreases their agility and overall performance (Pauole Kiano et al., 2000). Kinesiotaping was first introduced by Kenzo Kaze. Currently Kinesiotaping is used in a wide range of clinical and sports related conditions. The tape is made of thin elastic cotton with an acrylic adhesive that is heat activated. There are many benefits of Kinesiotaping like: correct alignment of weak muscles, improving joint function, increasing blood flow and circulation of lymph by lifting the skin below the tape, improving joint proprioception, reduce muscle fatigue, better quality of muscle contraction (Julio Fernandes de Jesus et al., 2017; Lumbroso et al., 2013).

SUBJECTS AND METHOD

Institutional Ethical Committee consent was taken. 60 professional football players between the ages of 18-20 years, participated in the study. Subjects for the study were selected based on the following inclusion criteria, having Grade 1 Hamstring Strain and representing football at state level. Exclusion criteria consists of skin allergies, history of lower limb surgeries, recent lower limb injuries and Grade 2 or 3 Hamstring Strain. Subjects were assessed for Grade 1

Hamstring Strain using Resisted Isometric Testing for Hamstring muscle group in prone position and for Agility using T-Test. A written informed consent was taken from each subject and they were randomly allocated by using chit method of Purposive Random Sampling into Experimental or Control groups. Both groups were Post warm up session tape was applied to both groups. Group A (Experimental group) - Facilitation Type Y-taping for Hamstring Muscle with hamstring in 100% stretched position. Group B (Control group) – Sham Taping for Hamstring muscle without muscle or tape in stretched position. Both groups were then assessed immediately post taping for Agility using T-Test.

RESULTS

Pre and Post taping T-Test score analysis was done using One Tailed Paired T-Test for Experimental and Control group which showed significant improvement in the Post taping T-Test score of Experimental group (P value 0.0001) and Statistical comparison between the Experimental and Control group was done using One Tailed Unpaired-T Test which showed that there was significant improvement in the experimental group (P value 0.0001) than the control group.

Table 1. Shows and Pre and Post Taping Analysis of Experimental and Control Group

Demographic data			
Experimental group		Control group	
Mean age	Mean BMI	Mean age	Mean BMI
23.5	22.7	22.5	23.6

Table 2. Shows and Pre and Post Taping Analysis Of Experimental and Control Group

	Experimental group			Control group		
	Pre	Post	Difference	Pre	Post	Difference
Mean	13.61	11.71	1.9	13.65	13.58	0.068
Standard deviation	1.207	1.061	0.146	1.129	1.147	0.018
P value	0.0001- Significant at confidence interval 95%			0.1298- Not Significant at confidence interval 95%		

Table 3. Demographic Data

	Experimental	Control	Difference
Mean	11.713	13.587	1.874
Standard Deviation	1.061	1.147	0.086
P VALUE	0.0001-SIGNIFICANT at confidence interval 95%		

DISCUSSION

The present study was done to check the immediate effects of Kinesiotaping on the agility of professional football players with grade 1 hamstring strain using the T-test as outcome measure. The mean age group of the study population is 23.5 years and mean BMI of 22.7. All males who were professional football players with grade 1 hamstring strain were included in the study as seen in Table 1. The T-TEST score significantly decreased in the experimental group post taping and there was no significant decrease in the post taping T-TEST Score of the control group as seen in Table 2. Post taping the Mean Difference of the experimental group was higher than that of the control group as seen in Table 3. The average post training outcome measure (T-Test) are significantly (P Value: 0.001<0.05) higher in Experimental group when compared to Control Group (P Value: 0.1298) as seen in Table 2 and Table

3. Kinesiotape has stretch properties of about 140%-180% and these stretch properties are similar to those of muscle and connective tissue, which helps in stability and awareness of stretch to muscles, ligaments and tendons (Julio Fernandes de Jesus *et al.*, 2017; Lumbroso *et al.*, 2013). And the improvement in Agility due to Kinesiotaping can be because of improvement of joint function, increasing blood flow and circulation of lymph by lifting the skin below the tape, improve joint proprioception, and reduce muscle fatigue, better quality of muscle contraction (Lumbroso *et al.*, 2013). It can also be attributed to the generation of tactile stimuli that alters the excitability of motor neurons and reduction in amount of time required to reach the peak torque of the muscles submitted to the application (Lumbroso *et al.*, 2013; Vercilli *et al.*, 2012). Flavia Gomes Martinez, Rafael Gobo Bohrer et al studied the effect of Kinesiotaping on the strength production and proprioception in football players.

The tape was applied with the Rectus Femoris and Vastus Medialis in stretched position and muscle function was assessed using isokinetic dynamometer. The results showed no significant differences in the perception of position of knee post taping (Flavia Gomes Martinez *et al.*, 2013). Lumbroso *et al.* (2013) in his research tested the effect of Kinesiotape application on hamstring and gastrocnemius muscles in healthy young adults. The results showed that there was significant improvement of the peak force of the gastrocnemius muscle group immediately and after 2 days, significant improvement in the peak force of hamstring muscle group 2 days later. They concluded that certain muscle group react differently when a K tape is applied and its effect subsequently detected (Lumbroso *et al.*, 2013). Moises de Hoyo, Alejandro Alvarez Messa *et al.* (2012) studied the effect of Kinesiotaping on muscle response in soccer players. In this study the tape was applied to the rectus Femoris of the dominant leg with the muscle in stretched position and assessment was done using TMG (Tension Myographic Response) and performance test. The results showed increase in power output and increase in 10 meter sprint test. They concluded that this effect may be due to an increase in the number of motor units recruited during maximal contraction and therefore may facilitate the strength of the underlying muscle (Moises *et al.*, 2012). Bicici, Karatas N, and Baltaci G studied the effect of athletic taping and Kinesiotaping on measurement s of functional performance in basketball players with chronic inversion ankle sprains. 15 male basketball players between the age group of 18-22 participated in the study. Functional performance test (Hopping Test by Amanda et al, Single limb hurdle test, Standing Heel Rise Test, Vertical jump Test, Star excursion balance test and Kinesthetic ability trainer) were used to quantify agility, endurance, balance and coordination. Faster performance times were measured with KT and athletic tape in single limb hurdle test when compared to placebo and non-taped conditions (Bicici *et al.*, 2012).

The results obtained from our study were favoring the research hypothesis (H1) which concludes that Kinesiotaping is effective in improving the agility of football players with grade 1 hamstring strain.

Conclusion

From the above study conducted we can conclude that Kinesiotaping can be used to improve Agility in Football Players with Grade 1 Hamstring Strain.

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