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Impact of Specific Speed and Agility Training on Dribbling Ability and Defensive Movement of Male Basketball Players

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ABSTRACT

The purpose of the study was to find out the impact of specific speed and agility training on dribbling ability and defensive movement of male basketball players. For this purpose, thirty male basketball players were randomly selected as subjects. The age of the subjects were ranged between 15 to 17 years. They were divided into two equal groups and each group consisted of 15 subjects. Group I underwent specific speed and agility training for three days per week for twelve weeks and group II acted as control. The dribbling ability and defensive movement were selected as criterion variables. The specific speed and agility training was selected as independent variable. The dribbling ability and defensive movement were assessed by control dribble test and defensive movement test respectively. All the subjects of two groups were tested on selected dependent variables at prior to and immediately after the training programme. The analysis of covariance (ANCOVA) was used to analyze the significant difference, if any among the groups. The .05 level of confidence was fixed as the level of significance to test the "F" ratio obtained by the analysis of covariance, which was considered as an appropriate. The results of the study showed that the specific speed and agility training had significantly improved the dribbling ability and defensive movement of male basketball players.

KEYWORDS : Specific Speed and Agility Training, Dribbling Ability and Defensive Movemen

Introduction

Basketball is played by both men and women of all ages and fitness level. Successful game of basketball needs ability of the players to generate good speed, agility and tremendous power during the play of game. Skills like dribbling, shooting and passing are of utmost importance for a player at any level of play. Not merely skills but also physical and physiological characteristic of a player will contribute to the success of the player as well as of the team **(Yograj Thani, 1997).** It is the fastest–growing sport in the world for many reasons. Basketball is a team game, individual execution of fundamental skills is essential for team success **(Hal Wissel, 2012)**. The skills required of today's players are incredibly different than those of yesterday. Basketball now allows for individual athletes to exhibit physical aptitude within the context of an offense or defense. The attributes of speed, change of direction and power rule the game **(Donald A. Chu, 2013)**.

Speed and agility training is crucial for basketball to improve skills as well as improve fitness. Speed and agility training is also key in decreasing injury for basketball players. Increasing interest in basketball in the world requires from specialists to continuously discover new means and methods in working with basketball players. The complexity and sensitivity of training of basketball players are undeniable; hence, the scientific and professional approaches are very important in developing the process and controlling the effects of training **(Magma, 2009).** Basketball is an extremely dynamic sport that requires movements in multiple planes of motion as well as rapid transitions from jogging to sprinting to jumping. The ability to quickly elude defenders, rapidly decelerate to take a jump shot, or explosively jump up to grab a rebound are all skills required to effectively play the sport. It is equally important for the athlete to be able to perform these skills in a variety of directions and in a controlled manner to ensure injuries do not ensue. Due to the myriad of physical demands that come with the sport makes speed and agility training a crucial component to incorporate into basketball training program (**Scott Lucett, 2013).**

Methods

Subjects

Thirty male basketball players were selected as subjects at random. The age of the subjects were ranged between 15 to 17 years. They were divided into two equal groups and each group consisted of 15 subjects. Group-I underwent specific speed and agility training for three days per week for twelve weeks and Group-II acted as control who did not participate any special training apart from the regular curricular activities.

Variables

The dribbling ability and defensive movement were selected as criterion variables. The specific speed and agility training was selected as independent variable. The dribbling ability and defensive movement were assessed by control dribble test and defensive movement test respectively.

Training Programme

During the training period, the experimental group (Group-I) underwent (n = 15) specific speed and agility training for three days per week (alternative days) for twelve weeks and subjects in Group II as control were instructed not to participate in any strenuous physical exercise and specific training throughout the training programme apart from the regular curricular activities. Everyday the workout lasted for 30 to 45 minutes approximately including warming up and warming down periods. The subjects underwent the respective programmes as per the schedules under the supervision of the investigator. Each training session was conducted only in the morning time. Specific speed and agility training was performed three days per week for twelve weeks.

Speed and Agility Drills for Basketball

Speed can be defined as the amount of velocity a person has in any given direction **(Enoka, 2002).** This refers to how fast someone can run in a forward directed, straight path of motion. Speed is the straight-ahead velocity of a person or how fast a person can run forward. Speed drills would include those in which the athlete is required to run in a linear path. Speed drills for a basketball player would include:

(i) 10-in-1 Drill (sprint from one baseline to the opposite baseline and back to the original baseline, repeating five times for a total of 10 lengths of the court) (1-2 sets, 60 seconds rest between / within sets)
(ii) 30-yard sprint: acceleration and maximal speed
(iii) ¾-court sprint (sprint from the baseline at one end of the court to the free throw line on the opposite end of the court).

Agility is the ability to start (accelerate), stop (decelerate and stabilize), and quickly change direction while maintaining proper postural alignment **(Parsons & Jones, 1998).** This requires high levels of neuromuscular efficiency (movement coordination) because the athlete is constantly regaining their center of gravity over their base of support while changing directions at various speeds. All of these elements are very common in basketball and will be important to train for. Agility drills for basketball include:

(i) Pro-lane Agility Drill (sprint around cones following the below pattern).

(ii) Agility Ladder Drills - One –ins, Two-ins, Out-Out- in-in (3 sets of each drill and rest 30 seconds).
(iii) T-Drill - sprint around cones following the patterns (4 sets and 30 seconds rest b /w sets).

These drills are designed to help improve deceleration capabilities, change in direction and foot work skills required for basketball. Both the speed and agility drills can be performed on the court. Care should be taken when performing agility ladder drills on a basketball court to ensure the athlete does not slip on the ladder due to the slick floor surface.

Statistical Procedures

All the subjects of two groups were tested on selected dependent variables at prior to and immediately after the training programme. The analysis of covariance (ANCOVA) was used to analyze the significant difference if any, between the groups on each selected criterion variables separately. In all the cases, .05 level of confidence was fixed to test the significance, which was considered as an appropriate.

Results

It is clear from Table - 1 that there is no significant difference between specific speed and agility training group and control group on dribbling ability and defensive movement before commencement of training, as obtained *F* ratio of 0.89 and 0.12 are less than the required table value of 4.20 at 0.05 for the df of 1 and 28. It denotes that the random assignment of subjects for the two groups is successful; however initial difference is not elicited in dribbling ability and defensive movement.

Table - 1
ANCOVA on Dribbling Ability and Defensive Movement

Variables	Testing Conditions	Specific Speed and Agility Training Group	Control Group	SOV	SS	df	MS	'F' Ratio
Dribbling Ability (Sec)	Pre (M ± SD)	15.79 ± 1.51	16.39 ± 1.83	B	2.69	1	2.69	0.89
				W	84.32	28	3.01	
	Post (M ± SD)	14.49 ± 0.999	16.30 ± 1.92	B	23.36	1	23.36	9.13*
				W	71.73	28	2.56	
	Adjusted (M)	14.74	16.05	B	31.36	1	31.36	10.02*
				W	84.39	27	3.13	
Defensive Movement (Sec)	Pre (M ± SD)	20.36 ± 0.89	20.47 ± 0.87	B	0.10	1	0.10	0.12
				W	23.16	28	0.83	
	Post (M ± SD)	18.97 ± 18.97	20.26 ± 0.78	B	12.33	1	12.33	19.89*
				W	17.35	28	0.62	
	Adjusted (M)	19.02	20.22	B	10.74	1	10.74	51.14*
				W	5.65	27	0.21	

*Significant at 0.05 level of confidence

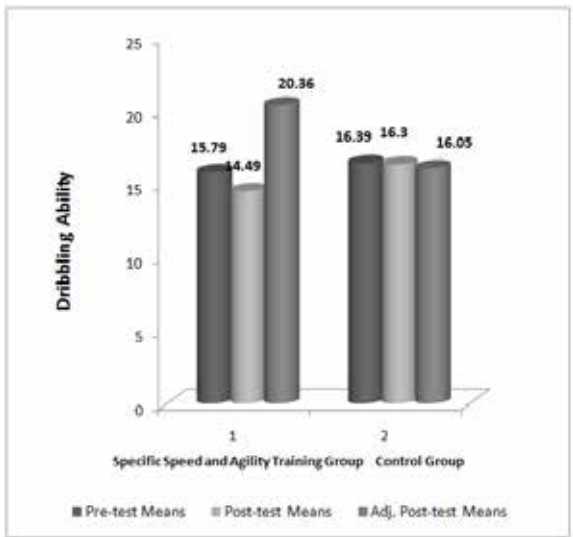
Table - 1 also reveals that there is a significant difference on dribbling ability and defensive movement during post test. The obtained *F* ratio of 9.13 and 19.89 are greater than the required table value of 4.20 at 0.05 for the df of 1 and 28. Thereby it infers that the dribbling ability and defensive movement found to change significantly before and after twelve weeks of training.

Further, Table - 1 clearly shows that dribbling ability and defensive movement differ between the groups after adjusting the pre test scores, as obtained *F* ratio of 10.02 and 51.14 are greater than the required table value of 4.21 at 0.05 for the df of 1 and 27, indicating that after adjusting pre-test scores, there was a significant difference between the two groups on adjusted post test scores on dribbling ability and defensive movement. Thus, it is concluded that twelve weeks of specific speed and agility training significantly increased both dribbling ability and defensive movement.

Discussion

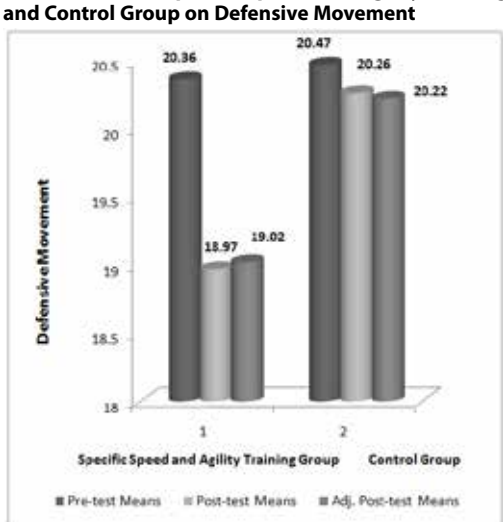
In the present study, twelve weeks specific speed and agility training significantly increased dribbling ability and defensive movement are presented in Figure 1 & 2.

Figure - 1
Mean Values of Specific Speed and Agility Training Group and Control Group on Dribbling Ability



Skill-based conditioning games offer a specific training stimulus to stimulate the physiological demands of competition and combination training and skill-based conditioning games is likely to confer the greatest improvements in fitness and skill in junior elite players **(Santos, Ejam and Janeira, 2012).** Subjects setting specific goals performed significantly better on defensive footwork, ball handling drills and dribbling drills **(Burton, Damon, 1989).** A supervised training program improved skill based athletic performance such as acceleration, speed, coordination, dynamic balance, agility, lateral movement and explosive power **(Dean et al., 1998).** The specific basketball training program was significantly improved the physical variables and skill performance of basketball players **(Parimalam and Pushparajan, 2013)**. The sports-specific training program could improve neuromuscular and performance indices in high school basketball players **(Noyes et al., 2012)**. These findings support the theory that a 10-week intensive combined training program performed on university women basketball players had a significant effect on improving their physical, physiological, biomotor, and skill- technical features **(Kilinç, F.,2008)**.

Figure - 2
Mean Values of Specific Speed and Agility Training Group and Control Group on Defensive Movement



Conclusions

The game of basketball needs sudden burst of speed, unexpected stops, jumps, turns, changes in direction and pace with and without the ball,

in response to the direct action of the opponent. All fundamental skills in basketball namely dribbling, passing & receiving, shooting, rebounding and defensive movements need a sound specific speed and agility to achieve high level performance. Studies have proved that the ability to use the proper specific speed and agility drills has the greater impact in performing defense, rebounding, handling the ball or moving in to different offensive and defensive positions. Hence, it was concluded from the results of the study, that twelve week basketball specific speed and agility protocol is efficient enough to improve dribbling ability and defensive movement.

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