



EFFECT OF BASKETBALL SPECIFIC PLYOMETRIC TRAINING ON SELECTED OFFENSIVE AND DEFENSIVE SKILLS IN BASKETBALL

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Abstract

The purpose of the study is to find out the effect of basketball specific plyometric training protocol on selected offensive and defensive skills in basketball. To achieve the purpose, thirty women basketball players were randomly selected as subjects. The age of the subjects were ranged between 18 to 25 years. The selected subjects were assigned into two groups of 15 subjects each. Group I underwent specific plyometric training for three days per week for twelve weeks and group II acted as control. Among the offensive and defensive skills in basketball, shooting ability and defensive movement were selected as criterion variables. The plyometric training was selected as independent variable. The shooting ability and defensive movement were assessed by speed spot shooting 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 data was analyzed using Analysis of covariance (ANCOVA). 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 basketball specific plyometric training for twelve weeks is more effective in increasing the shooting ability and defensive movement of male basketball players.

Keywords: Specific Plyometric Training, Shooting ability and Defensive movement.

INTRODUCTION

Basketball is one of the most popular teams based sports played and watched throughout the world. 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). 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 (Scott Lucett, 2013). 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).

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). 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). In order to improve the basic physical components, specific training procedures should be incorporated during the basketball training sessions (Vamvakoudis, 2007). Participation on a systematic and well-designed basketball training program to improve muscle strength levels (Tsimaras, 2009). The key to any comprehensive sport-specific condition programme is to train the appropriate energy system to the appropriate will use it in performing that sport (Chip Sigmon, 2003). The Purpose of this study is to assess the effect of basketball specific footwork training protocol on selected offensive and defensive skills in basketball.

METHODS

SUBJECTS

Thirty women basketball players were selected as subjects at random. The age of the subjects were ranged between 18 to 25 years. They were divided into two equal groups and each group consisted of 15 subjects. Group-I underwent basketball plyometric 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

Among the offensive and defensive skills in basketball, shooting ability and defensive movement

were selected as criterion variables. The basketball specific foot work training was selected as independent variable. The shooting ability and defensive movement were assessed by speed spot shooting test and defensive movement test respectively.

TRAINING PROGRAMME

During the training period, the experimental group (Group-I) underwent ($n = 15$) basketball plyometric 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. Every day 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. Basketball plyometric training was performed three days per week for twelve weeks. They perform 3 sets and each set constitutes of 6 repetition totally they perform 18 repetitions. They were given 20 seconds of passive recovery between the repetitions and 120 seconds rest between the set. The players were instructed to perform at high intensity. The following basketball plyometric training exercises are given in the Training Programme in Table I.

TABLE I
SPECIFIC PLYOMETRIC DRILLS

Sl.No	Exercises
1.	Jump-The-Boxes Drill
2.	Jump Rope
3.	Reaction Drill
4.	Jump-Spot-Drill
5.	Sprint-Shuffle-Back Pedal Drill
6.	Foot Fire Drill
7.	Sprint-Back Pedal-Drill
8.	Pivot Drill

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 2 that there is no significant difference between basketball plyometric training group and control group on shooting ability and defensive movement before commencement of training, as obtained F ratio of 0.11 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 shooting ability and defensive movement

TABLE 2
ANCOVA ON SHOOTING ABILITY AND EXPLOSIVE POWER

Variables	Test	Specific Plyometric Training Group	Control Group	'F' ratio
Shooting Ability	Pre-test	13.27 \pm 3.59	13.73 \pm 3.86	0.11
	Post-test	17.13 \pm 3.44	14.73 \pm 4.46	2.45
	Adjusted	17.36	14.50	21.25*
Defensive Movement	Pre-test	20.36 \pm 0.89	20.47 \pm 0.87	0.12
	Post-test	18.97 \pm 18.97	20.26 \pm 0.78	19.89*
	Adjusted	19.02	20.22	51.14*

Table 2 also reveals that there is no significant difference on shooting ability and there is a significant difference on defensive movement during post test. The obtained "F" ratio of 2.45 for post test scores is less than

the table value of 4.20 for df 1 and 28 required for significance at .05 level of confidence on shooting ability. The obtained "F" ratio of 19.89 for post test scores is greater than the table value of 4.20 for df 1 and

28 required for significance at .05 level of confidence on defensive movement.

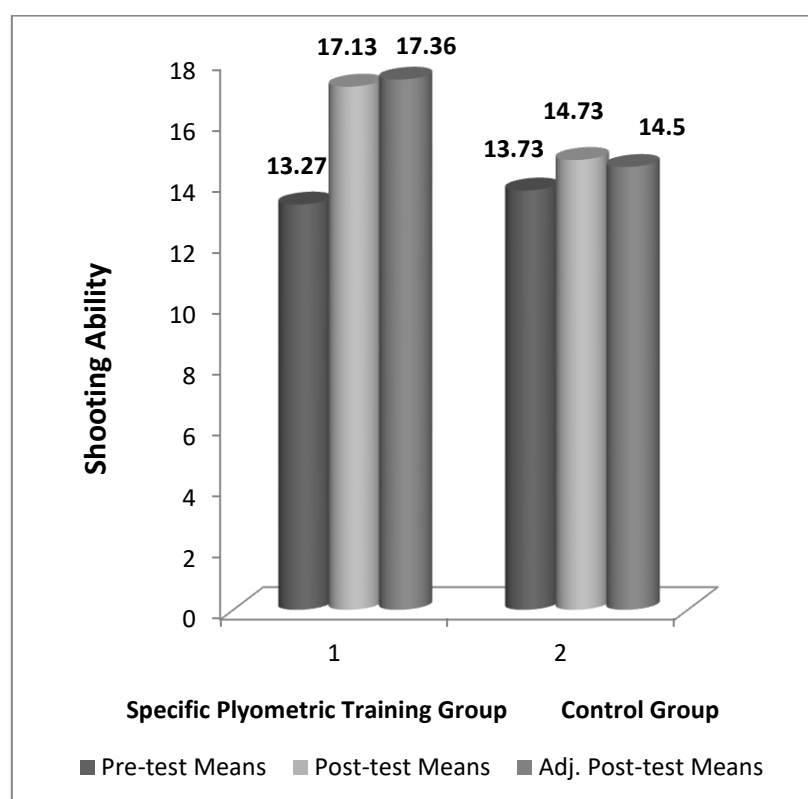
Further, table 2 clearly shows that shooting ability and defensive movement differ between the groups after adjusting the pre test scores, as obtained F ratio of 21.25 and 51.14 are greater than the required table value of 4.21 at 0.05 for the df of 1 and 27, indicating that after adjusting pre-test scores, there was a significant difference between the two groups on adjusted post test scores on shooting ability and

defensive movement. Thus, it is concluded that twelve weeks of basketball specific plyometric training significantly increased both shooting ability and defensive movement.

DISCUSSION

In the present study, twelve weeks of basketball specific plyometric training significantly increased shooting ability and defensive movement are presented in Figure 1 & 2.

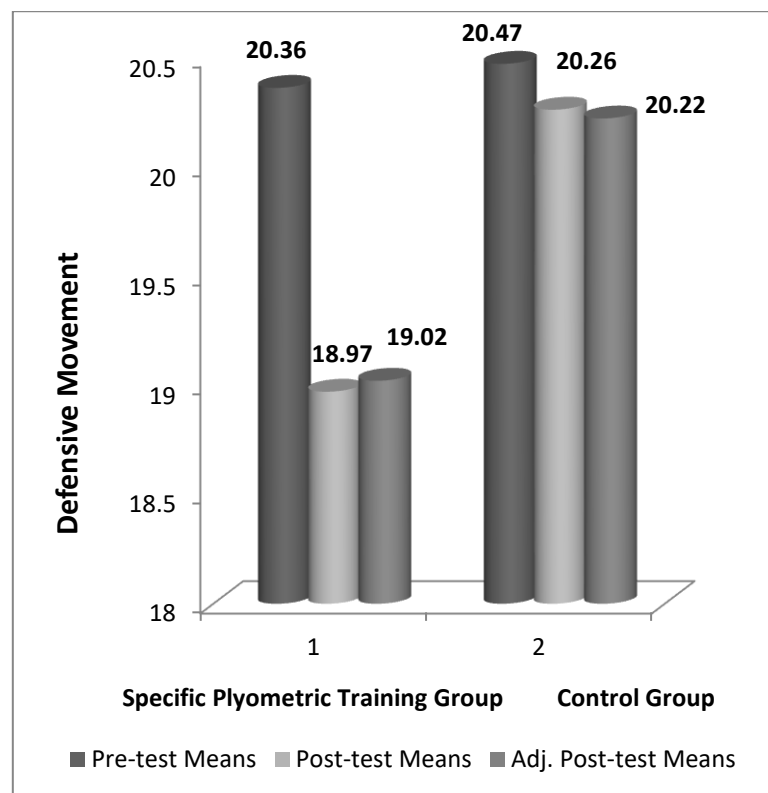
FIGURE 1
MEAN VALUES OF SPECIFIC PLYOMETRIC TRAINING GROUP AND CONTROL GROUP ON SHOOTING ABILITY



The specific basketball plyometric training was significantly improved the physical variable 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 (Kilinc, F.,2008). The present study results support the conclusions of

Franciosi, et al., (2010), that greater explosive leg power had significant positive contribution in shooting (64%, $p = 0.01$). Moreover, the greater explosive leg power had significant contribution in level II (46%, $p < 0.05$), in level III (52%, $p < 0.05$), and in global score (60%, $p < 0.05$). And also the study showed the possibility to determine the contribution of selected fundamental factors to basketball performance. Therefore, the basketball coach could improve a selected fundamental factor to increase specific basketball ability. This should be addressed in a specific training to help players to perform successfully in their competitions.

FIGURE 1
MEAN VALUES OF SPECIFIC PLYOMETRIC 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 foot work to achieve high level performance. Studies have proved that the ability to use the proper foot work 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 plyometric training is efficient enough to improve shooting ability and defensive movement. And also the specific foot work training is very essential and inter related to selected offensive and defensive skills in basketball.

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