

## EFFECT OF EIGHT WEEKS PLYOMETRIC TRAINING ON THE PERFORMANCE OF NATIONAL LEVEL FEMALE BASKETBALL PLAYERS

(Received on: 10 July 2013, Reviewed on: 09 Aug 2013 and Accepted on: 15 September 2013)

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### Abstract

The purpose of the study was to investigate the effect of eight weeks plyometric training on the performance of school national level female basketball players. A total of thirty female (N=30) school national level female basketball players ranging between 16-19 years of age were taken as subjects for the purpose of the study. The subjects were randomly selected and training was conducted at Government Senior Secondary Girls School, Mall Road, Amritsar. The subjects were further separated into two groups i.e. Group-A (N=15) as experimental group and Group-B (N=15) as control group. The performance variables were selected for the purpose of the study: Performance (Johnson Basketball Test, C. Meyers, 1974) namely Dribble Test, Field Goal Speed Test & Basketball Throw for Accuracy. To compare the mean difference between the data, t test was computed with the help of SPSS Software and level of significance chosen was 0.05. The findings of the present study have strongly indicates that Plyometric training of eight weeks have significant effect on the performance of school national level female basketball players.

**Keywords:** Plyometric Training, Performance, Female, National Level, Basketball Players.

### Introduction

Sports coaches and sports scientists always look for new, better or different ways to improve performance. What is now popularly known as Plyometrics was discovered and refined over the past 30 or so years. Plyometric Exercises are specialized high intensity training technique used to develop strength and speed. Plyometric movements are those in which a muscle is loaded and then contracted in rapid sequence, use the strength, elasticity and innervations of muscle and surrounding tissues to jump higher, run faster or hit harder, depending on desired training goal. Plyometrics in the form of dynamic depth jumps, where an individual steps of a box 20 to 80 cms in height and performs an explosive vertical jump has been reported to enhance an

individual's ability to rapidly develop force. Plyometrics was first known as "Jump training"? Fredwit, an American track and field coach first coined the term Plyometrics. Basketball is one of the sports characterized by many of the basic and variable skills. The basketball player perfection to do such skills, defensive or offensive, needs developed in the physical qualities of the basketball player, which enable him to do the required duties throughout the match. Special physical participation in the basketball is the main pillar for the players to carry out the special requirements (physical, skillful and tactical). Without these requirements, the player cannot achieve the objectives set up for the training or competition. Physical adaption of the player to perform the sport activities is one of the particular functions of the training which improve the training of the player to reach the higher level in sports activities. The skillful performance is relevantly associated with the special physical motor abilities as the perfection of the skillful performance depends on the range the development of the special physical abilities to perform such requirements, such as muscular power, endurance, agility and others. The skillful performance is often measured by the level of the player to acquire physical abilities.

In the field of training there is a new techniques emerged similar to the nature of performance basketball skills by developing the ability fitness by means of plyometric training. The importance of this study lies in demonstrating an important aspect of special preparation and training for the competition as through the matches the matter that enables the author to determine the problems of that study as a scientific attempt directed to study that effect of using the plyometric training on developing the physical fitness abilities and performance of the basketball players.

It has been suggested that increases in power and efficiency due to plyometrics may increase agility training objectives (Stone and O'Bryant, 1984) and plyometric activities have been used in sports such as basketball,

football, tennis, or other sporting events that agility may be useful for their athletes (Parsons and Jones, 1998; Renfro, 1999; Robinson and Owens, 2004; Roper, 1998; Yap and Brown, 2000). Although plyometric training has been shown to increase performance variables, little scientific information is available to determine if plyometric training actually enhances agility. Marked evidence indicates that regular participation in a plyometric training programme can improve measures of strength and power in adults (Chu, 1998; Fleck and Kraemer, 2004).

It was observed that subjects who added plyometric training to their conditioning programme were able to achieve greater improvements in upper and lower body power as compared with subjects who participated in a conditioning programme without plyometric training. Although the acute and chronic effects of static stretching on performance need to be considered, such improvements in upper and lower body power are likely due to the addition of plyometric training to the resistance training program. Results from several investigations involving adults suggest that combining plyometric training with resistance training may be useful for enhancing muscular performance (Adams et al., 1992; Fatouros et al., 2000).

**Procedure and Methodology**

For the purpose of the study a total of thirty female (N=30) school national level female basketball players ranging between 16-19 years of age were taken as subjects. The subjects were randomly selected and training was conducted at Government Senior Secondary Girls School, Mall Road, Amritsar. The subjects were further separated into two groups i.e. Group-A (N=15) as experimental group and Group-B (N=15) as control group. Measurements for variables were taken at the beginning (pretest) and at the end of experimental training period after eight weeks (post-test). During data collection period, the subjects were not allowed to participate in any competition except daily training schedule.

The following variables were selected for the purpose of the study (Johnson Basketball Test, C. Meyers, 1974).

Performance in Dribble Test: Total numbers of zones covered in 30 Seconds were recorded.

Performance in Field Goal Speed Test: The total number of successful baskets converted in 30 seconds was recorded.

Performance in Basketball Throw for Accuracy: The total score of hitting in rectangle were recorded.

To compare the mean difference between pre-test and post-test, 't' test was computed with the help of SPSS Software and level of significance chosen was 0.05.

**Results and Discussions of the Findings**

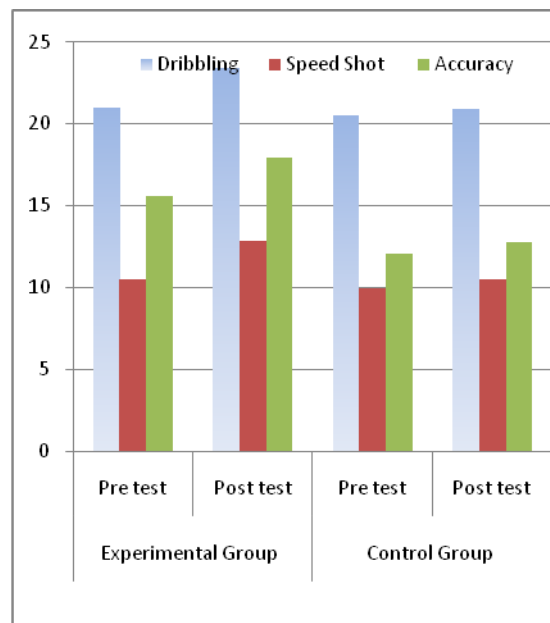
For the variables, the statistical analysis revealed significant differences between the pre-test and post-test of experimental group regarding performance in dribble, field goal speed test and Basketball throw for accuracy. The t-value was found to be statistically significant in case of Dribble and field goal speed test. This means that Plyometric training positively affected the performance of the national level basketball players. But in case of throw for accuracy, t-value was not found to be statistically significant as the value obtained was 1.91, whereas the tabulated value was 2.04 with 28 degrees of freedom at 0.05 level of significant, which means plyometric training does not provide positive effect on throw for accuracy.

Table-1  
Mean Comparison of dribble, speed shot and accuracy of Exp. And Control Group

Variable	Experimental Group (N=15)		t'	Control Group (N=15)		t'	
	Pre Test	Post Test		Pre Test	Post Test		
Dribbling	Mean	21.00	23.40	5.67*	20.47	20.87	1.47
	SD	1.0	1.30		0.743	0.743	
Speed Shot	Mean	10.47	12.87	4.85*	9.93	10.47	1.16
	SD	1.41	1.30		1.62	0.743	
Accuracy	Mean	15.60	17.93	1.91	12.06	12.80	.536
	SD	3.56	3.10		4.061	3.41	

\*Significant at .05 level of significance = 2.04

Table 1 showed the mean values (± SD) of Experimental group on Dribbling were as 21.00 ± 1.0 and 23.40± 1.30, speed shot values as 10.47 ± 1.41 and 12.87± 1.30 and for Accuracy values as 15.60 ± 3.56 and 17.93 ± 3.10. Analysis of data revealed significant differences between pre-test and post-test of experimental group, since the computed values of 't' on Dribbling (5.67), Speed shot values (4.85) were found to be greater than the tabulated value of 't' =2.04. It is evident from Table 1 that pre-test and post-test mean values (± SD) of control group on Dribbling as 20.47 (± .743) and 20.87 (± .861), Speed shot values as 9.93(± 1.62) and 10.47 (± .975) and for Accuracy values as 12.067 (± 4.061) and 12.80 (± 3.621). Analysis of data revealed no significant differences between pre-test and post-test of control group, since the computed values of 't' on Dribbling (1.47), Speed shot values (1.16) and for Accuracy values (.536) as these all are found to be less than the tabulated value of 't' =2.04. The graphical representations of experimental group and control group have been shown in figure 1.



### Discussion

From the above analysis, it revealed that there were significant differences found on the performance (dribbling and speed shot) of school national level basketball players. In case of control group, there was no significant difference found. But in experimental group, the plyometric training significantly affected the performance of school national level basketball players. The probable reason could be due to neuro-muscular adaptations, such as increased inhibition of antagonist muscles as well as a better activation and contraction of synergistic muscle or increase in muscle fiber size (Gollnick, 1981; Thorstensson, 1976).

This study is supported by Riadh et.al (2010) proving that plyometric training with or without added load significantly improve vertical jumping ability in male basketball players. Similar findings were recently reported by Myer et al (2005) who observed that a six week, multi-component training program which included resistance training, plyometric training and speed training significantly enhanced strength, jumping ability and speed in female adolescent athletes as compared to a non-exercising control group. Therefore, the findings of the present study have strongly indicates that Plyometric training of eight weeks have significant effect on the performance of school national level female basketball players.

### Conclusion

On the basis of findings and within the limitations of the study, it is concluded that plyometric training have

strongly significant effects on the performance of school national level female basketball players.

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