

# **Effect of Plyometric Training on Speed, Agility and Explosive Power among Adolescent Boys**

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## **Abstract**

The aim of the present study was to find out the effect of Plyometric Training on speed, agility and explosive power among adolescent boys. For achieving the purpose of the study total of 30 subjects were selected as samples from the age group of 15 to 17 years school boys. The selected subjects were divided into two groups equally with 15 each as experimental group with plyometric training and control group. The experimental group was given plyometric training for a period of six weeks in a schedule of weekly three days for the duration of one hour each. The pre and posttest were conducted on speed, agility and explosive power before and after the eight weeks experimental training. Analysis of covariance was used as a statistical tool to determine the significant difference, if any existing between pre and post test data on Speed, Agility and Explosive power. The level of significance was fixed at 0.05 levels. The statistical findings of the study revealed that the experimental group done the plyometric training significantly improved the performance of speed, agility and explosive power.

**Keywords:** Plyometric Training, Speed, Agility and Explosive power.

## **Introduction**

The word plyometrics is actually a derivation from the Greek words plythein or plyo, which means to increase and metric, which means to measure. Plyometrics are training techniques used by athletes in all types of sports to increase strength and explosiveness (Chu, 1998). Plyometric drills usually involve stopping, starting, and changing directions in an explosive manner. Plyometrics may be defined as “jumping exercises that involve a rapid deceleration of body mass followed immediately by rapid acceleration of that body mass in an opposite direction” (Wathen, 1993). Plyometric described that any type of explosive movement for a series of repetitions at high speeds and high levels of intensity. It increases typically increase strength, speed and build power. Plyometric are exercises that aim to develop explosive ability by conditioning the neuromuscular and elastic characteristics of the muscle. It is a training modality which often requires the trainees to jump, hop, bound and skips.

Maamer Slimani et al. (2016) found short-term Plyometric Training improves jump height, sprint and agility performances in team sport players. Kasetsart, J. (2015) found 4-week plyometric training can be an effective training program to improve agility, speed, and leg muscle power in basketball players. TarikOzmen et al. (2017) found six week plyometric training improved agility and vertical jump in adolescent badminton players. Siddhi, S Tendulkar (2018) found that plyometric training is helpful in improving agility and speed of Football players. ChhayaVerma (2014) found that plyometric training brought significant change in untrained students and improved jump height. Michal Lehnert et al. (2009) found that eight weeks of plyometric training increased explosive power significantly. Singh Harmandeep et al. (2015) found that plyometric training program as more beneficial and effective than general training program and have more positive effect on vertical jump performance of state Volleyball players. Michael G. Miller et al. (2006) found that six weeks plyometric training improved the agility of athletes. Emilija Stojanović et al. (2017) found Plyometric training is an effective form of training to improve vertical jump performance in female athletes.

### **Purpose of the Study**

The present study was intended to found out the effect of Plyometric Training on speed, agility and explosive power among adolescent boys.

### **Methodology**

For achieving the purpose of the study total of thirty subjects were selected as samples from the school boys. Their age group between 15 to 17 years and the selected subjects were divided in to two groups equally with 15 each as experimental group with plyometric practice and Control Group. The experimental group practiced Plyometric Training for a period of six weeks in a schedule of weekly three days for the duration of one hour each. The pre and posttest were conducted on selected physical fitness variables of speed, agility and [explosive power](#). The speed was assessed through 50 meter dash, agility was assessed through 4x10 meter shuttle run and explosive power was assessed through vertical jump. Analysis of covariance (ANCOVA) was used as a statistical tool to determine the significant difference, if any exciting between pre and post test data on speed, agility and explosive power. The level of significance was fixed at 0.05 levels.

## Procedure of Plyometric Training

The one hour plyometric training included Squat jump (jumping squat, jump squat), Tuck jump, Tuck squat jump, Power skipping, Alternate leg bounding, Box jumps, Lunge jump, Vertical depth jump: starting from the top of a box, jump down and back up as fast as possible, Broad jump, Straddle jump, single and double leg hops up to 20 meters, double footed jump over hurdles. The intensity of training was increased as low, medium and high in each two weeks in a progressive manner.

## Results and Discussions

The analysis of covariance on the data obtained on speed, agility and explosive power of pre and post tests are tabulated and presented in the tables I, II and III.

**Table-I**  
**Computation of Analysis of Covariance on Speed**

Test	Group		SV	Sum of Squares	df	Mean Square	F value
	Exp.	Con.					
Pre test	8.17	8.26	B	0.0512	1	0.0512	0.133
			W	10.7883	28	0.3852	
Post test	7.61	8.1	B	1.7569	1	1.7569	7.10*
			W	6.9263	28	0.2473	
Adjusted Mean	7.64	8.07	B	1.361	1	1.3609	20.45*
			W	1.796	27	0.0665	

\*Significant at 0.05 level of confidence

It was observed from the Table-I that there was no significant difference in the pretest ( $F=0.133 < 4.20$ ) and posttest ( $F=7.10 < 4.20$ ) for df 1 and 28. However a significant difference was observed in adjusted posttest ( $F=20.45 > 4.21$ ) for df 1 and 27 at 0.05 level of confidence. This discussion clearly indicated that there was an influence on speed through Plyometric Training among adolescent boys. The mean value clearly indicated that the experimental group was higher improvement on speed due to six weeks Plyometric Training

**Table-II****Computation of Analysis of Covariance on Agility**

Test	Group		S V	Sum of Squares	df	Mean Square	F value
	Exp.	Con.					
Pre test	10.64	11.18	B	2.2468	1	2.246	2.38
			W	26.4223	28	0.943	
Post test	9.81	11.13	B	13.1076	1	13.107	9.17*
			W	40.0075	28	1.428	
Adjusted Mean	10.07	10.87	B	4.343	1	4.343	7.66*

\*Significant at 0.05 level of confidence

It was observed from the Table-II that there were no significant difference in the pretest ( $F=2.38 < 4.20$ ). The significant differences were observed in posttest ( $F=9.17 < 4.20$ ) for df 1 and 28 at 0.05 level of confidence and adjusted posttest ( $F=7.66 < 4.21$ ) for df 1 and 27 at 0.05 level of confidence. This discussion clearly indicated that there was a significant improvement in agility due to six weeks Plyometric Training among adolescent boys. The mean value clearly indicated that the experimental group was higher improvement on agility due to six weeks Plyometric Training

**Table-III****Computation of Analysis of Covariance on Explosive Power**

Test	Group		SV	Sum of Squares	df	Mean Square	F value
	Exp.	Con.					
Pre test	33.6	34.4	B	4.8	1	4.8	0.16
			W	831.2	28	29.685	
Post test	39.33	35.4	B	116.033	1	116.033	4.59*
			W	706.933	28	25.247	
Adjusted Mean	39.65	35.07	B	156.861	1	156.861	27.69*
			W	152.918	27	5.663	

\*Significant at 0.05 level of confidence

It was observed from the Table-III that there was no significant difference in the pretest ( $F=0.16 < 4.20$ ). A significant difference in the post test ( $F=4.59 < 4.20$ ) for df 1 and 28 and adjusted posttest ( $F=27.69 > 4.21$ ) for df 1 and 27 at 0.05 level of confidence. This discussion clearly indicated that there was an influence on explosive power through six weeks Plyometric Training among adolescent boys. The mean value clearly indicated that the experimental

group was higher improvement on explosive power due to six weeks Plyometric Training.

## **Conclusions**

From the analysis and discussions of the present study, the following conclusions were drawn:

- The Plyometric Training is useful to improve the physical fitness qualities of a speed, agility and explosive power of adolescent boys.
- Further the result of the study indicated that the Plyometric Training can be included Physical fitness programme of the school students.

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