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**Dr. Vijay Singh**  
H.O.D., Department of Physical  
Education, University of Kota,  
Rajasthan, India

## Impact of plyometric exercises for development of speed among basketball players of Kota District in Rajasthan

**Dr. Vijay Singh**

### Abstract

The main aim of the study is to determine the impact of plyometric exercises for the development of speed among Basketball players of Kota District in Rajasthan between the age group of 21 and 24 years. The sample for the present study consists of 20 male Basketball players, out of which ten are Experimental Group and ten are Controlled Group. Plyometric exercises training were given to the Experimental Group along with general Basketball training and Control Group has doing general weight training for 6 weeks. To assess the speed 50 m run were used in the pre-test and post-test of the study. This study shows that the Experiment Group increases the speed compare to the Control Group. It is concluded that due to plyometric exercises there is an improvement of speed among Basketball players.

**Keywords:** Basketball players, plyometric exercises, speed

### Introduction

Plyometrics is defined as the exercises that enable a muscle to reach maximum force in a short period of time. Plyometric training is a series of explosive body weight resistance exercises using the stretch-shortening cycle (SSC) of the muscle fibre to enhance physical capacity such as increasing musculotendinous stiffness and power. It is a quick, powerful movement involving pre-stretching the muscle tendon unit followed by a subsequent stronger concentric contraction. This process of muscle lengthening followed by rapid shortening during the SSC is integral to plyometric exercise. The SSC process significantly enhances the ability of the muscle-tendon unit to produce maximal force in the shortest amount of time. These benefits have prompted the use of plyometric exercise as a bridge between pure strength and sport-related power and speed. Plyometric exercise is a popular form of training used to improve athletic performance.

Plyometrics is a type of exercise training that uses speed and force of different movements to build muscle power. Plyometrics training can improve your physical performance and ability to do different activities.

Plyometrics can include different types of exercises, like pushups, throwing, running, jumping, and kicking. Athletes often use plyometrics as part of their training, but anyone can do these workouts. People who are in physical rehab after an accident or injury use plyometrics to get back into good shape and physical function.

If you're in good shape and looking to ramp up your workout, you may enjoy the challenge of plyometrics. It's a great way to train if you're into high-impact sports that involve a lot of running or jumping, like tennis, skiing, or basketball.

When you're getting started, work with an experienced trainer who can show you how to safely jump and land. Start slow and low. Mix a few plyometric moves into your regular workout.

Because plyometrics is high-impact and intense exercise, check with your doctor first if you aren't active now or if you have any health problems.

Plyometrics isn't the workout for you if you don't like to sweat or are just looking to strengthen your core.

**Corresponding Author:**  
**Dr. Vijay Singh**  
H.O.D., Department of Physical  
Education, University of Kota,  
Rajasthan, India

### How plyometrics works

Remember the fun you had as a kid, hopping, skipping, and jumping around the playground? The exercises you do with plyometrics mimic those dynamic moves.

Plyometrics ("plyo," for short) used to be called "jump training." It's a technique you can use in many different ways. For instance, you can do plyometrics to help train for basketball, volleyball, tennis, or any other activity that uses explosive movements.

You'll do a series of jumps and hops, like jump squats or one-leg hops. You might jump up and onto a box or bench, or jump over cones. Some moves will be faster than others.

Every time you land from a jump, your muscles get a stretch. That gives your next jump even more power. The combination of stretching and contracting your muscles whips them into shape.

You won't do plyometrics every day, because your muscles will need a break from all that jumping. If you aren't active now, you may need to start working on your basic fitness first and later have a pro show you how to do the moves, so you don't get injured.

It's a fun alternative to an everyday strength training workout that boosts your muscle power, strength, balance, and agility. You can either do a workout based on plyometrics, or add some plyo moves to your usual routine without giving it an entire session.

### Intensity of Plyometrics

This workout uses maximum power to strengthen your

muscles. The moves are quick and explosive, so prepare to use a lot more energy than you do in a typical strength training session.

Plyometrics, also known as "jump training" or "plyos," are exercises based around having muscles exert maximum force in short intervals of time, with the goal of increasing both speed and power. This training focuses on learning to move from a muscle extension to a contraction in a rapid or "explosive" manner, for example, with specialized repeated jumping.

Prof. Rajesh Kumar (2020) studied about the effect of Plyometric and Circuit Training on selected Physical Variables among Sprinters of Kota District of Rajasthan State. To achieve this purpose, 45 Sprinters in the age group of 16–20 years those who have participated in the Rajasthan Inter-State (Sprints) Athletics Championships at Maharaj Ganga Singh Stadium, Shri Ganganagar, Rajasthan for the year 2019 taken as subjects.

### Purpose of Research

The purpose of the research is to determine the effect of plyometric exercises for the development of speed among Basketball players of Kota District between the age group of 21 and 24 years.

### Population and Sample Group

**Sample of the Study:** For the present study, 20 male Basketball players have taken for the study between the age group of 21 and 24 years of Kota District, Rajasthan.

S. No.	Name of the District	Sample	Total number of subjects
1.	Kota	Basketball Players Experimental Group-10 5 Forward + 5 Defenders Basketball Players Control Group-10 5 Forward + 5 Defenders	20

### Methodology

Plyometric exercises such as hopping, bounding, depth jumps, tuck jumps, and Pushups were given to Experimental Group on alternate days, i.e., three sessions per week and Controlled

Group were given the general training for 6 weeks. Pre-test and post-test were conducted in 50 M Run among Experimental Group and Controlled Group of Basketball players of Kota District, Rajasthan.

### Experimental Group 1

#### Plyometric Training [Table 1]

**Table 1:** Test Description of Week 1 and week 6 Training Intensity up to 70–100%

Day	Name of the Exercises	Repetitions and Sets
Monday	Hopping, bounding, squat jumps and jumps	20 M × 3 reps × 3 sets
Wednesday	Depth jumps, box jumps, hurdle jumps	12 Jumps × 3 reps × 3 sets
Friday	Standing broad jumps, squat jumps, Alternate leg bounding's	12 Jumps × 3 reps × 3 sets 30 M × 3 reps × 3 sets

### Results and Discussion

The independent samples t-test statistics is applied for the study. The comparison was made among Experimental Group and Control Group in pre-test and post-test mean. In Table 2, the mean values of Experimental Group of Basketball players in pre-test are 7.41 and Control Group Basketball players are

7.54. Due to plyometric training, the Experimental Group has decreased that the mean values in post-test are 7.13 and due to general training the Control Group has increased the mean values to 7.63. The results of the study show that Experimental Group of Basketball has increased in the performance 50 M Run.

**Table 2:** The Mean Values and Independent Samples test of 50 M test between Experimental and Control Groups of Basketball players

Variables	Group	Pre-test Mean ± SD	Post-test Mean ± SD	t	P value
50 M Run test	Experimental	7.41 ± 0.294	7.13 ± 0.262	4.58	0.000
	Control	7.54 ± 0.376	7.63 ± 0.408		

\*Significant at 0.05 level

**Conclusion**

It is concluded that due to plyometric training there will be improvement in speed among Basketball players. In this study due to the plyometrics exercises there is an improvement in speed among Basketball players.

**Recommendations**

It is recommended that similar studies can be conducted on other events in other events and also female Basketball players. This type of study is useful to coaches to give proper coaching for development of motor qualities for improvement of performance in weight lifting.

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