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## Effect of plyometric training on the jumping performance of college men athletes

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### Abstract

The purpose of the present study was to investigate the effect of plyometric circuit training on the jumping performance of college men athletes. To achieve the purpose of the study thirty students were selected from GDC Jindrah. The subject's age ranges from 21 to 25 years. The selected players were divided into two equal groups consists of 15 students each namely experimental group and control group. The experimental group underwent plyometric circuit training for six weeks. The control group was not taking part in any exercise during the course of the study. Vertical jump and standing broad Jump were taken as criterion variables in this study. Pre-test was taken before the exercise period and posttest was measured immediately after the six week exercise period. Statistical technique 't' ratio was used to analyze the means of the pre-test and post test data of experimental group and control group. The results revealed that there was a significant difference found on the criterion variables. The difference found is due to plyometric circuit training given to the experimental group on vertical jump and standing broad jump when compared to control group.

**Keywords:** plyometric circuit training, vertical jump and standing broad jump

### Introduction

The improvement in jumping records in various international competitions (Asian and Olympic) in the past thirty years has witnessed a dramatic change in the positive direction. This has attracted the attention of various physical educationists and sports scientists to analyze the causes for this boom. As the performance in jumping events is largely determined by ones muscular strength and also to a number of other related strength factors the training of athletes therefore, is mainly directed to improve the strength ability of the athletes. Old traditional techniques include the weight training and run jumps. These training techniques are no doubt very effective methods used world over for the training of athletes, but with the recent advent of plyometric which is based on the principle of overload, an improvement of much greater magnitude in the jumping performance has been reported by the research as is also reflected in the improvement in jumping records of athletes in the past 30-40 years. Plyometric drills produce explosive re-active movements since it trains the eccentric part of muscle contraction. The fundamental research in the area was conducted by Russians in the mid and late 1960s. This has unveiled a great potential in the plyometric. Advanced countries which are dominating in the field of sports have been using these techniques (plyometric) for the training of their athletes since the sixties. However, in India which has great genetic potential, very little effort has been made to make use of plyometric method of training. Strong and consistent steps in this direction are the need of the time, but before it is actually applied on Indian athletes/sportsmen, there is a need to prepare a plyometric circuit suitable for Indian athletes. Unfortunately no scientifically prepared and tried Circuit Training Programme is available in our country.

### Methodology

For the purpose of the study was to find out the effect of plyometric training on selected vertical jump among University physical education students. To achieve this purpose of the study, thirty students were selected from Jammu University. The age of the subjects were ranged from 21 to 25 years.

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The selected subjects were divided into two equal groups of fifteen subjects each, such as plyometric training group (Experimental Group) and control group. The experimental group underwent plyometric training for three days per week for four weeks. Control group which they did not undergo any special exercise programme apart from their regular physical activities as per their curriculum. The following variables namely vertical jump was selected as criterion variables. Vertical jump was measured by centimeters/meters. All the subjects of two groups were tested on selected criterion variables at prior to and immediately after the exercise programme. The ‘t’ test was used to analysis the significant differences if any in between the groups respectively. The 0.05 level of confidence was fixed to test the level of significance which was considered as an appropriate.

**4 week training programme**

Training week	Plyometric drill	Sets x	Training intensity
Week1	Two foot ankle hops	2 x 15	Low
	Forward skip	2 x 15	Low
	Double leg vertical jump	5 x 5	Low
Week2	Two foot ankle hops	2 x 15	Low
	Standing long jump	5 x 6	Low
	Lateral cone hops	2 x 15	Medium
	Double leg tuck jumps	2 x 10	Medium
Week3	Two foot ankle hops	2 x 12	Low
	Standing long jump	4 x 6	Low
	Lateral cone hops	2 x 12	Medium
	Double leg tuck jumps	2 x 10	Medium
	Double butt kick	3 x 8	Medium
Week4	Diagonal hops	4 x 8	Low
	Double tuck jumps	2 x 10	Medium
	Lateral cone hops	2 x 10	Medium
	Double leg butt kick	3 x 6	Medium
	Single leg vertical jump	3 x 5	High

**Experimental Design**

This study was formulated as posttest group design. One group was assigned plyometric training programmed. The other group acted control group no training programmed.

**Selection of Variables**

Variable	Test	Items scoring
Jumping performance	Standing Broad Jump	Centimeters/meters

**Statistical Technique**

The following statistical procedures were used. The ‘t’ ratio was calculated to find out the significance of the difference between the mean of the initial and final test of the experimental group.

**Analysis of the data**

The significance of the difference among the means of experimental group was found out by pre-test. The data were analyzed and dependent ‘t’ test was used with 0.05 levels as confidence.

**Table 1:** Analysis of ‘t’-ratio for the pre and posttests of experimental and control group on vertical jump

Variable	Group	Mean		SD		‘t’ ratio
		Pre	Post	Pre	Post	
Vertical jump	Control	0.52	0.54	2.5	2.83	1.21
	Experimental	0.53	0.61	3.4	3.6	12.84*

\*Significance at .05 level of confidence. (The table value required for 0.05 level of significant)

The Table-I shows that the mean values of pre-test and post-test of control group on vertical jump were 0.52 and 0.53 respectively. The obtained ‘t’ ratio was 1.21, it was found to be statistically insignificant between difference pre-test and post-test values of control group. The mean values of pre-test and post-test of experimental group on vertical jump were 0.52 and 0.53 respectively. The obtained ‘t’ ratio was 12.84\* which indicate significant difference in pre and post values of experimental group. The result of the study showed that there was a significant difference between control group and experimental group in vertical jump. It may be concluded from the result of the study that experimental group improved in vertical jump due to four weeks of plyometrics circuit training.

**Discussions on Findings**

The result of the study indicates that the experimental group namely plyometric training group had significantly improved the selected dependent variables namely vertical jump, when compared to the control group. It is also found that the improvement caused by plyometric circuit training when compared to the control group. The results are in conformity with the study carried out by Kumar, V. (2016) [5].

**Conclusions**

1. There was a significant difference between experimental and control group on vertical jump and standing broad jump after the exercise period.
2. There was a significant improvement in vertical jump and standing broad jump. However the improvement was in favour of experimental group due to six weeks of plyometric circuit training.

**References**

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