



Category: Science of Sports Training



EFFECT OF TWO DIFFERENT PERIODS OF PLYOMETRIC TRAINING ON HIGH JUMP PERFORMANCE AMONG SCHOOL ATHLETES

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ABSTRACT

The purpose of this study was to compare the effect of two different periods of plyometric training on high jump performance of Higher secondary school athletes. Total 45 male students were selected randomly as subjects who used to play regularly in the games and sports from Kendriya vidyalaya school, Pondicherry University, Pondicherry in the month of July 2015. The age group of the subjects were between 16-17 years old. The subjects were divided into three groups, each group consisting of 15 subjects. Group A was experimented and restricted to 8 weeks of training. Group B was experimented and restricted to 4 weeks of training and Group C was control group. This study was restricted to selected performance variable which was chosen as high jump. High Jump performance was tested by testing high jump by using belly roll on foam pit. The data was examined by applying analysis of Co-variance and the level of significance was set at 0.05 level. Based on the analysis of statistical results, it was clearly evident that group A (8 weeks of plyometric training) only improved high jump performance than Group B (4 weeks of plyometric training) and control group when comparing to prior and after experimental performance. There were no significant difference in group B and group C (control group) to prior and after experimental training related selected variable.

Key words: High Jump, Plyometric training for 4 weeks, Plyometric training for 8 weeks and higher secondary school athletes.

INTRODUCTION

Plyometric training is a type of training that develops the ability of muscles to produce force at high speeds in dynamic movements; these movements involve a stretch of the muscle immediately followed by an explosive contraction of the muscle. plyometric refers to exercises that enable a muscle to reach maximal strength in as short a time as possible. such exercises usually involve some form of jumping and other modes of exercises exist. Plyometric exercise utilize the force of the gravity to store energy in the muscles (potential energy). This energy is then utilized immediately in an opposite reaction, so the natural elastic properties of the muscle will produce kinetic energy. The purpose of plyometric training is to maximize the utilization of this stored energy thus producing a faster contraction. This is done by training in such a way that the transition between the concentric and eccentric contraction as fast as possible thus training the body to make most use of the stretch-shortening cycle.

The high jump is a track and field event in which competitors must jump unaided over a horizontal bar placed at measured heights without dislodging it. In its modern most practised format, a bar is placed between two standards with a crash mat for landing. To improve the performance in high jump, we need to have all kind of fitness mostly having well leg explosive power which is gained by plyometric training for all kind of age group.

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Statement of the problem:

The purpose of the study was to compare the effect of two different periods of plyometric training on high jump performance of higher secondary school athletes.

Methodology:

Selection of subjects: Forty five(45) subjects were chosen from Kendriya vidyalaya school, Pondicherry university, Pondicherry in the month of June 2015. The subjects were randomly assigned to three groups. Group A and Group B were experimental groups. Group C was control group. Each group consisted of 15 subjects. The age of the subjects were 16-17 years. All the subjects had good physical fitness and had been participated in regular school sports activities. The training program was employed for 8 weeks for group A and 4 weeks for group B, 60 minutes per session, three days in a week. The control group did not participate in any special training program apart from their day to day activities.

Selection of the Variables: Here two different periods of Plyometric training were selected as independent variables and high jump performance were selected as dependent variables.

Test Administration:

S.NO	VARIABLE	TEST
1.	High Jump Performance	High Jump (centimeters)

Results & Discussion of the study:

To find out the difference in each group due to application of different training menu, Analysis of Covariance was applied.

Table1. Analysis of Covariance among Three groups A, B and Control group on High jump Performance.

Test	Group A	Group B	Control Group	SOV& d.f	Sum of Squares	Mean Squares	F-ratio
Pre mean	152	152	151	B 2 W 42	52.57 965.76	52.57 41.68	1.58
Post Mean	158	154	152	B 2 W 42	54.35 984.18	54.35 55.23	4.72*
Adjusted Mean	157	153	152	B 2 W 41	58.65 995.12	58.65 57.65	6.85 *

Table value at 0.05 level of significance for 2 and 42 degree is 3.16

It is evident from above table that pre-tests means of Control group, group A, group B and control group were 152, 152, 151 respectively which resulted an F-ratio of 1.58 which was found to be insignificant at 0.05 level. The post-test means were 158, 154, 152 for three groups A, B; C respectively with an F ratio of 4.72 was significant at level of 0.05. The Adjusted final means of group A, B and group C were 157, 153, and 152 respectively and were found to be significant with an F value of 6.85 at the table value 3.16. Therefore Scheffe's post hoc test was applied.

Table2. Scheffe's Post Hoc Test for Difference between Paired Means of groups high jump performance

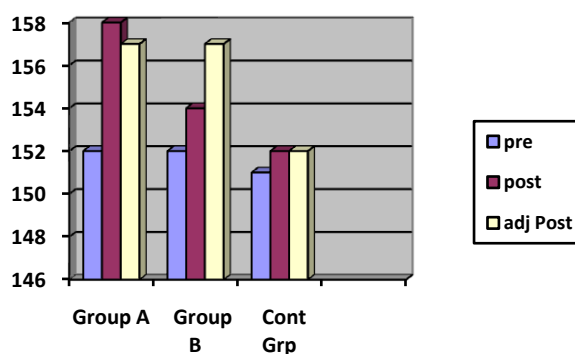
Group A	Group B	Control Group	Mean Differences	C.I
157	153	—	4*	3.25
157	—	152	5*	3.25
—	153	152	1	3.25

** Significance at 0.05 levels, confidence interval level is 3.25.

It is evident that from above table, the mean differences of group A and control group was lesser than the table value. Hence there was no significant improvement in group A. The mean difference of group B



and control group, group A and control group were 5 and 4 were higher than the confidence interval value 3.25. Hence there was a significant improvement in group C. So it was resulted that group C (8 week plyometric training) only improved the high jump performance. Group B (4 week plyometric training) and control group did not improve the high jump performance. The details of pre, post and Adjusted Mean values are shown graphically in the following Figure.



Conclusions:

1. The results clearly showed that Training Program A only was effected to improving the high jump performance.
2. Training program B and C were not be effected to improving high jump performance.
3. Hence this study clearly proved that 8 weeks of plyometric is preferable to improve the high jump performance. It means minimum training period of plyometric training is 8 weeks to influence the high jump performance.

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