

EFFECT OF PLYOMETRIC TRAINING ON SELECTED PHYSICAL FITNESS VARIABLES AMONG SPRINTERS OF HYDERABAD ATHLETES

*P.B. Aditya Varma, **Prof. V. Satyanarayana & *** Prof. N.S. Dileep

*Research scholar, Jawaharlal Nehru Technological University, Hyderabad

** Dean Faculty of Education, Osmania University, Hyderabad

***Professor of Physical Education Jawaharlal Nehru Technological University, Hyderabad

Abstract

Sprinting is running over a short distance in a limited period of time. It is used in many sports that incorporate running, typically as a way of quickly reaching a target or goal, Plyometrics is defined as exercises that enable a muscle to reach maximum strength in as short as possible. Systematic plyometric exercises follow a specific pattern of muscle contractions. These exercises use movements that develop the ability to generate a large amount of force quickly. The purpose of the study was to investigate the effect of plyometric training on selected physical fitness variables among sprinters of Hyderabad athletes. Hypothesis There may not be any significant difference between pre test and post test among sprinters of Hyderabad athletes in relation to Physical fitness i.e. Muscular Endurance and speed. Methods & Materials For the present study 30 male sprinters from Hyderabad district were selected as subjects at random and their age ranged from 18 to 22 years. Finding of the study The Plyometric Training Group physical fitness of muscular endurance pre test mean value is 29.76 and the post test mean value is 33.52. The physical fitness of speed pre test mean value is 13.31 and the post test mean value is 12.63. The control Training Group physical fitness of muscular endurance pre test mean value is 28.87 and the post test mean value is 29.91. The physical fitness of speed pre test mean value is 13.31 and the post test mean value is 13.24. It is concluded that plyometric training has more potential to improve sprint performance when compared with pre test and post and the significant difference was found between pre test and post test among sprinters of Hyderabad athletes in relation to Muscular Endurance and Speed. Keywords: plyometric, Physical Fitness, Muscular Endurance and Speed

Introduction

In athletics and track and field, sprints (or dashes) are races over short distances. They are among the oldest running competitions. At the professional level, sprinters begin the race by assuming a crouching position in the starting blocks before leaning forward and gradually moving into an upright position as the race progresses and momentum is gained. The set position differs depending on the start. Body alignment is of key importance in producing the optimal amount of force. Ideally the athlete should begin in a 4-point stance and push off using both legs for maximum force production. Athletes remain in the same lane on the running track throughout all sprinting events, with the sole exception of the 400 m indoors. Races up to 100 m are largely focused upon acceleration to an athlete's maximum speed. All sprints beyond this distance increasingly incorporate an element of endurance

Sprinting is running over a short distance in a limited period of time. It is used in many sports that incorporate running, typically as a way of quickly reaching a target or goal, or avoiding or

catching an opponent. Human physiology dictates that a runner's near-top speed cannot be maintained for more than 30–35 seconds due to the depletion of phosphocreatine stores in muscles, and perhaps secondarily to excessive metabolic acidosis as a result of anaerobic glycolysis

The word plyometric is derived from the Greek word pleythein meaning, "to increase". Plyometrics refers to exercises that enable a muscle to reach maximal strength in as short a time as possible (power) by eliciting the stretch-shorten cycle of a muscle fiber. This sequence of events begins by having the muscle stretch and therefore store elastic energy prior to firing. The harder and faster that the pre-stretch phase of the muscle is, results in a harder and faster muscle contraction and therefore a more powerful movement! Plyometric exercises are a vital component in aiding an athlete's maximal speed and should be included in any conditioning program for sprinters.

Plyometrics is defined as exercises that enable a muscle to reach maximum strength in as short as possible. Systematic plyometric exercises follow a specific pattern of muscle contractions. These exercises use movements that develop the ability to generate a large amount of force quickly. Plyometrics began being used in the late 1960s by Russian track and field athletes.

Objective Of The Study

The purpose of the study was to investigate the effect of plyometric training on selected physical fitness variables among sprinters of Hyderabad athletes.

Hypothesis

There may not be any significant difference between pre test and post test among sprinters of Hyderabad athletes in relation to Physical fitness i.e. Muscular Endurance.

There may not be any significant difference between pre test and post test among sprinters of Hyderabad athletes to Physical fitness i.e. speed.

Methods & Materials

For the present study 30 male sprinters from Hyderabad district were selected as subjects at random and their age ranged from 18 to 12 years. For the present study pre test – post test randomized group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B'. Group 'A' underwent plyometric training and Group 'B' underwent no training. The data was collected before and after six weeks of training. The data was analyzed by applying Dependent 't' test technique to find out the impact of plyometric training on selected physical fitness variables among sprinters of Hyderabad athletes. The level of significance was set at 0.05.

Results & Discussions

The findings pertaining to 't' test between experimental group and control group on selected physical fitness variables among sprinters of Hyderabad athletes for pre-post test respectively have been presented in table No. I and II.

Table I. Significance of Mean value between Pre and Post Test Scores on Selected Variables of Plyometric Training Group

S.No	Variables	Pre-Test Mean	Post-Test Mean	Mean difference	Std. Dev (±)	σ DM	't' Ratio
1	Muscular Endurance	29.76	33.52	3.76	3.07	0.79	3.12*
2	Speed	13.31	12.63	0.68	0.47	0.11	2.93*

The results of table I indicates that the obtained 't' ratios were 3.12 and 2.93 for muscular endurance and speed respectively. The obtained 't' ratios on the selected variables were found to be greater than the required table value of 2.14 at 0.05 level of significance for 14 degrees of freedom. So it was found to be significant. The results of this study showed that statistically significant and explained its effects positively.

Graph showing the Comparisons of Pre – Test Means Post – Test Means for Experimental Group in Physical Fitness Variables

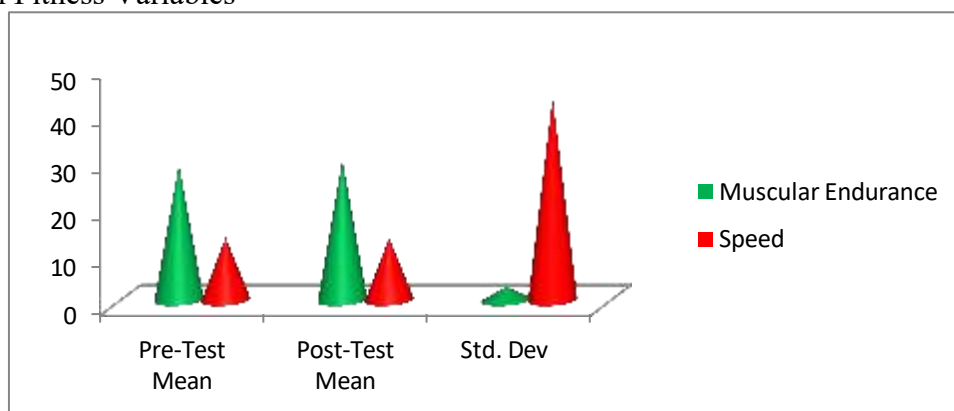
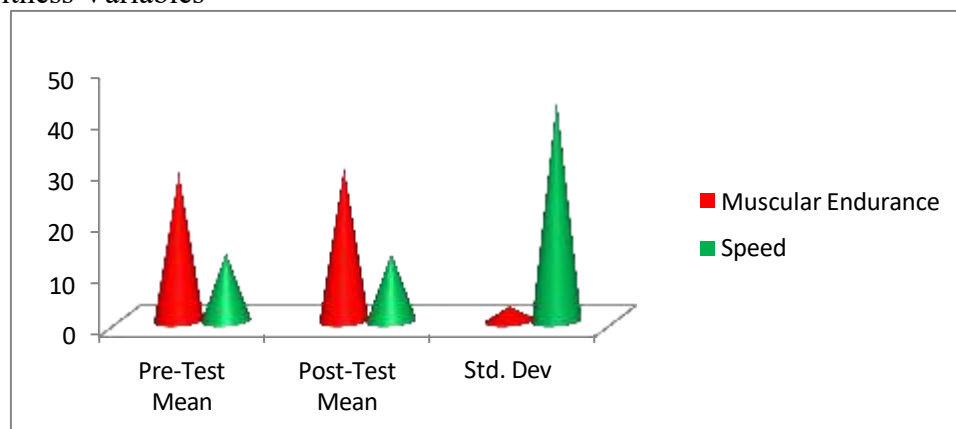


Table II. Significance of Mean value between Pre and Post Test Scores on Selected Variables of Control Group

S.No	Variables	Pre-Test Mean	Post-Test Mean	Mean difference	Std. Dev (±)	σ DM	't' Ratio
1	Muscular Endurance	28.87	29.91	0.04	2.87	0.69	1.35
2	Speed	13.31	13.24	0.07	0.43	0.14	0.99

An results of table II indicates that the obtained 't' ratios were 1.35 and 0.99 for muscular endurance and speed respectively. The obtained 't' ratios on the selected variables were found to be lesser than the required table value of 2.14 at 0.05 level of significance for 14 degrees of freedom. So it was found to be insignificant.

Graph showing the Comparisons of Pre – Test Means Post – Test Means for Control Group in Physical Fitness Variables



Finding of the study

The Plyometric Training Group physical fitness of muscular endurance pre test mean value is 29.76 and the post test mean value is 33.52. The physical fitness of speed pre test mean value is 13.31 and the post test mean value is 12.63. The control Training Group physical fitness of muscular endurance pre test mean value is 28.87 and the post test mean value is 29.91. The physical fitness of speed pre test mean value is 13.31 and the post test mean value is 13.24. In the study of physical fitness variables i.e. Muscular Endurance and Speed the results between pre and post (6 weeks) test has been found significantly higher in experimental group in comparison to control group. This is possible because plyometric training is currently one of the most commonly practiced fitness activities which directly contribute to performance enhancement among sprinters of Hyderabad athletes.

Conclusions

It is concluded that plyometric training has more potential to improve sprint performance when compared with pre test and post and the significant difference was found between pre test and post test among sprinters of Hyderabad athletes in relation to Muscular Endurance and Speed.

References

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