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## Effect of high intensity plyometric training on selected motor fitness variables among soccer players

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### Abstract

The purpose of the study was to find out effect of 6 weeks of high intensity plyometric training on speed and agility among soccer players. To achieve the purpose of the study thirty subjects (N=30) were randomly selected as a subjects from Chennai. The subjects age ranged between 18 to 25 years. The selected subjects were randomly divided into two equal groups of 15 each, such as experimental and control group. The experimental group participated in the high intensity plyometric training for thrice in a week for 6 weeks, one session per day, each section lasted 45minutes, The control group did not participate in any kind of special training programme apart from the daily physical activities. The speed and agility was measured by 30m dash and shuttle run test. The subjects of two groups were tested on selected variables prior and immediately after the training period. The collected data were analysed statistically through analyze of covariance (ANCOVA) to find the significance difference. The 0.05 level of confidence was fixed to test the level of significance difference, the result of the study showed that systematic practice of high intensity plyometric training improved the speed and agility among soccer players.

**Keywords:** High intensity plyometric training, speed and agility

### Introduction

Sports have a very important role in modern society. It is important for an individual, a group, a nation and indeed the world. Sports performance is the result and expression of the total personality of a sports man. The development of a sports man enabling him to achieve high level of performance is usually concerned in four areas namely physical power, social adjustment, psychological development and physiological efficiency.

Plyometric exercise are the rapid deceleration and acceleration of muscles that create a stretch shortening cycle. The exercise train the muscles, connective tissue and nervous system to effectively carry out the stretch – shortening cycle, thereby improving an athlete's performance.

An essential for successful performance in many motor activity is speed and agility. The frequency of sprints in football players is 11% of their total movement in a full game. The frequency of sprint tends to be greater in strikers and midfielders than on backs. They tend to sprint often to collect the ball or to defend the ball.

### Methodology

To achieve the purpose of the study thirty subjects (N=30) were randomly selected as a subjects from Chennai. The subjects age ranged between 18 to 25 years. The selected subjects were randomly divided into two equal groups of 15 each, such as experimental and control group. The experimental group participated in the high intensity plyometric training for thrice in a week for 6 weeks, one session per day, each section lasted 45minutes, The control group did not participate in any kind of special training programme apart from the daily physical activities. The speed and agility was measured by 30m dash and shuttle run test. The subjects of two groups were tested on selected variables prior and immediately after the training period.

### Training Programme

During the training period the experimental group I (HIPT) underwent 6 weeks of high intensity plyometric training programmes on Mondays, Wednesdays and Fridays, in addition to

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their daily routine activities as per the schedule. The duration of training were planned for 45 minutes that is from 7.00am to 7.45am. All the subjects involved in this study were carefully monitored throughout the training programmes. intensity of the experimental training was based on difficulty of the exercise, sets, repetitions and recovery time. Intensity effort level was exerted while performing an exercise. The intensity of workout can be changed by changing the exercise order, or increasing or decreasing the number of exercise, repetitions, or rest period.

### Statistical Technique

The collected data were analysed statistically through analyze of covariance (ANCOVA) to find the significance difference.

### Analysis of Data

The data collected prior and after the experimental periods on speed and agility experimental group (SMIT) and control group (CG) were analysed and presented in table – 1 and 2.

**Table I:** Analysis of Covariance for Pre and Post Data on Speed

Test	HIPT	CG	Source variance	Sum of Squares	df	Mean square	F
Pre-test mean	8.24	8.28	Between	0.02	1	0.02	0.12
			Within	3.74	28	0.13	
Post-test mean	7.94	8.29	Between	0.91	1	0.91	6.71*
			Within	3.78	28	0.14	
Adjusted mean	7.96	8.27	Between	0.69	1	0.69	69.57*
			Within	0.27	27	0.01	

\*significant.at 0.05 level.

The obtained F value on pre test scores 0.12 was lesser than the required F value of 4.21 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal. The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 6.71 was greater than the required F value at 4.21. This proved that the differences between the post-test

mean at the subjects were significant. Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 69.57 was greater than the required F value at 4.20 to be significant at 0.05 level and hence it was accepted that there was significant difference among the adjusted post-test means on speed of the subjects.

**Table II:** Analysis of Covariance for Pre and Post Data on Agility

Test	HIPT	CG	Source variance	Sum of Squares	df	Mean square	F
Pre-test mean	19.15	19.04	Between	0.102	1	0.10	0.39
			Within	7.342	28	0.26	
Post-test mean	17.20	18.99	Between	24.031	1	24.03	92.06*
			Within	7.309	28	0.26	
Adjusted mean	17.18	19.00	Between	24.533	1	24.53	97.61*
			Within	6.786	27	0.25	

\*significant.at 0.05 level.

The obtained F value on pre test scores 0.39 was lesser than the required F value of 4.21 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal. The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 92.06 was greater than the required F value at 4.21. This proved that the differences between the post-test mean at the subjects were significant. Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 97.61 was greater than the required F value at 4.20 to be significant at 0.05 level and hence it was accepted that there was significant difference among the adjusted post-test means on agility of the subjects.

### Conclusion

1. The speed was significantly increased due to six weeks of high intensity plyometric training among soccer players while comparing to the control group.
2. The agility was significantly increased due to six weeks of high intensity plyometric training among soccer players while comparing to the control group.

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