

## EFFECTS OF DIFFERENT TRAINING MODALITIES ON ACCELERATION SPEED ABILITY OF MALE FOOTBALL PLAYERS

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### ABSTRACT

The purpose of the study was to assess the Comparative effect of different training modalities on acceleration speed of male football players. The subjects for present study were 60 male football players between the age of 16 – 20 years from different districts of Madhya Pradesh, who regularly participate in training and represented their districts in inter district competitions. Random group design was used to evaluate the effect of different training modalities. All the subjects were randomly assigned to three groups (N=20), out of which two group were experimental and one group served as a control group. To determine acceleration speed of football players, 30 Meter Sprint Test with Flying Start was administered upon all the respondents of experimental and control groups. The training programme for the experimental groups were administered on thrice a week on alternate days for 12 weeks . . The control group was not given any treatment other than playing regularly. In order to compare the effectiveness of plyometric training, competition exercise training, the Mean, SD and ANCOVA were computed. To find out the specific group differences among football players, L.S.D Test of Post hoc Comparison was applied. The results of study revealed that acceleration speed indicated significant differences among three group's acceleration speed of football players. Plyometric exercise did improve the acceleration speed of football players followed by specific competitive exercise group, but the effect was statistically insignificant.

Keywords: Speed, Acceleration, Plyometric exercise, Specific training , football players

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## INTRODUCTION

The word football applies to whichever form of football is the most popular in the regional context in which the word appears, including association football, as well as American football, Australian rules football, Canadian football, Gaelic football, rugby league, rugby union, and other related games. These variations of football are known as football codes.

It is a game in which two opposing teams attempt to score goal by moving an inflated oval or round ball past a goal line or into a goal. Differing greatly in their rules, these include soccer (association football) and rugby. In addition to these the other part of the world different games are being played such as: American football, Canadian football, Gaelic football, and Australian football. In the United States, the word football generally refers only to the American game; in other parts of the world it usually means soccer (Csanadi, 1978.)

As far as speed is concern one requires acceleration speed, the ability to accelerate is fundamental to on-field success in football. Football incorporates sprinting, walking, jogging and frequent changes of direction that require optimum power and strength. Typically called "first-step quickness," acceleration allows a player to reach top speed faster and beat out other players to reach the ball.

Several types of speed are demonstrated in the game of Football but as far as speed is concern, performance largely depend three different types of Soccer speed: sprint speed, technical speed and quickness. Sprint speed (pure speed) is the ability to run fast over relatively short distances. To a large extent sprint speed is genetically determined, but sprint training often results in great improvements in speed ability. Technical speed is the combination of physical speed with soccer skills, with this ability a player is able to control the ball, make decisions and create offensive opportunities. Players with good technical speed can receive ball and also able to deliver at varying heights, angles and velocity.

Acceleration involves a change in velocity over a certain period of time or to quickly attain maximum speed from stationary or slow moving pace. Increasing acceleration means either increasing velocity or decreasing the time it takes to change speed. A player who would like to develop acceleration ability must possess the strength necessary to move his body against the forces of gravity. In fact, it is not how fast the athlete moves his/her feet while running (stride frequency) but rather the amount of force a player can exert onto the ground with each step that gives him the ability to accelerate quickly. Further this ability is largely depends on explosive strength of athlete.

The modern concept of speed embraces those abilities which make it possible for football player to execute the most suitable action for a given situation as rapidly as possible. The ability to run fast is, of course, an indispensable weapon in a player's armory. (Singh, 1995.)

Little et.al., (2005) concluded that acceleration, maximum speed, and agility are specific qualities and relatively unrelated to one another. The findings suggest that specific testing and training procedures for each speed component should be utilized when working with elite players. Surhat (2013) showed that while speed function does affect the agility competency, it had no effect on slalom and dribbling competency. The other findings showed that slalom and dribbling competencies affect each other positively. Rosch et.al., (2000), Stated to develop a standardized test battery to evaluate physical performance in football

players. The F-MARC test battery was designed to closely relate to the football player's normal activity and comprised a functional, structured training session of approximately 2.5 hours. It included a "quality rating" of the warm-up procedure, tests of flexibility, football skills, power, speed, and endurance. The players finished with a cool-down. A total of 588 football players underwent the F-MARC test battery. Mean values for performance on each test are presented for groups of differing age and skill levels. The test battery proved to be a feasible instrument to assess both physical performance and football skills.

The purpose of the study was to assess the Comparative effect of different training modalities on acceleration speed of football players. It was also hypothesized that there will be no significance difference in effect of Plyometric training and specific competition exercise training on acceleration speed component of physical fitness among football players.

## **METHODOLOGY**

### **Selection of Subjects**

The subjects for present study were 60 male football players between the age of 16 – 20 years from Jabalpur, Chhindwara and Tikamgarh (M.P.), who regularly participate in training and represented their districts in inter district competitions. All the subjects were randomly assigned to three groups (N=20), out of which two group were experimental and one group served as a control group. All the subjects voluntarily agreed to co-operate in training and testing procedure explained to them on the interest of promotion of performance and knowledge in the game of football. The requirement of testing procedure was explained to them in detail so that there will be no ambiguity or vagueness in their mind regarding efforts required on their part.

### **Criterion Measure**

Acceleration speed: Time taken to run a distance of 30 meters as fast as possible, with flying start, recorded to the 1/10 of a second.

### **Research Design**

Random group design was used to evaluate the effect of different training modalities. The selected subjects (N=60) were randomly divided into three groups with subjects in each group out of which experimental group-I underwent the plyometric training. Experimental group II underwent specific training thrice in a week along with two days match practice. Group-III (control group) participated in their regular game for 12 weeks the 80 minutes to 90 minutes training was devoted towards warming up and stretching.

### **Training Programme**

The training programme for the experimental groups were administered on thrice a week on alternate days for 12 weeks. The control group played their regular football on non training days. The control group was not given any treatment other than playing regularly. The plyometric exercise programme consisted of Specific competitive exercise. Training programme was conducted on interval training principle. The intensity of training was constant for four weeks period. The training intensity was subsequently increased. the first for 5 to 8 weeks and there for into 12 in weeks of training. The training load with respect to number of repetitions and sets was progressively increased during phases the sets were performed With complete recovery between sets.

### Administration Of Test

The pre and post tests were administered to the subjects at the play grounds and tracks of DSO Chhindwara, Deptt. Physical Education, R.D.V.V., Jabalpur of before the starting of and DSO Tikamgarh at the end of experiment. Before administering the tests the subjects were given proper warming up under the supervision of the research scholar. 30 Meter sprint test with flying start was administered on all the subjects.

#### 30 Meter Sprint Test with Flying Start

**Purpose:** The aim of this test is to determine acceleration speed of the subject.

**Equipment Required:** measuring tape or marked track, stopwatch, cone markers, flat and clear surface of at least 50 meters.

**Procedure:** The test involves running a single maximum sprint over 30 meters, with the time recorded. A thorough warm up should be given, including some practice starts and accelerations. Start from a stationary position, with one foot in front of the other. The front foot must be on or behind the starting line. This starting position should be held for 2 seconds prior to starting, and no rocking movements are allowed. The tester should provide hints for maximizing speed (such as keeping low, driving hard with the arms and legs) and encouraged to continue running hard through the finish line. The timing starts from the first movement (if using a stopwatch) or when the timing system is triggered, and finishes when the chest crosses the finish line and/or the finishing timing gate is triggered.

**Scoring:** Two trials were allowed, and the best time is recorded to the nearest two decimal places.

### RESULTS

In order to compare the effectiveness of plyometric training, competition exercise training. The data were subjected to one way Analysis of Co-Variance (ANCOVA). In case of significant F-ratios, the Least Significant Difference (L.S.D) Test of Post hoc Comparison was used to find out the specific group differences. The level of significance was set at 0.05 level of confidence and data pertaining to this have been presented in Table 1 and 2.

**TABLE 1**  
**DESCRIPTIVE STATISTICS OF PRE AND POST TEST SCORES OF**  
**ACCELERATION SPEED ABILITY OF FOOTBALL PLAYERS.**

| Variable | Test      | Mean | Standard Deviation |
|----------|-----------|------|--------------------|
| Speed    | Pre-test  | 5.74 | 0.81               |
|          | Post-test | 4.88 | 0.48               |

The pre-test and post-test data of the experimental group and the control were analyzed using analysis of co-variance-as the subject of the experimental and control groups were selected at random and were not equated with reference to the parameters examined, therefore the difference between the initial means of the groups at the pre-test level had to be taken on to account during analysis of post-test difference between the means. The final means were adjusted for the difference in initial means and adjusted means were tested for significance of difference.

**TABLE 2**  
**ANALYSIS OF CO-VARIANCE FOR EXPERIMENTAL GROUP**  
**AND CONTROL GROUP ON ACCELERATION**  
**SPEEDABILITY (SECONDS)**

| Means          | Plyometric Group | Specific Training Group | Control Group | Source of Variance | Sum of Squares | d.f. | Means Sum of Squares | F      |
|----------------|------------------|-------------------------|---------------|--------------------|----------------|------|----------------------|--------|
| Pre Means      | 4.97             | 5.95                    | 6.30          | Between Groups     | 19.04          | 2    | 9.52                 | 27.20* |
|                |                  |                         |               | Within Group       | 19.94          | 57   | 0.35                 |        |
| Post Means     | 4.59             | 4.89                    | 5.15          | Between Groups     | 3.13           | 2.00 | 1.56                 | 8.33*  |
|                |                  |                         |               | Within Group       | 10.70          | 57   | 0.19                 |        |
| Adjusted Means | 4.74             | 4.85                    | 5.04          | Between Groups     | 0.57           | 2    | 0.28                 | 1.59   |
|                |                  |                         |               | Within Group       | 9.97           | 56   | 0.18                 |        |

\* Significant at .05 level  $F_{.05}(2,56)=3.15$

The finding concerning pre test and post test mean scores on acceleration speed presented in table 2 indicated significant difference among different groups, as the obtained F-value of 27.20 and 8.33 on pre-test and post-test mean scores respectively were higher than the required F-value of 3.15 to be significant at .05 level of significance.

The analysis of adjusted post mean scores of different groups on acceleration speed indicated insignificant difference among the experimental –I , Experimental-II and control groups, as the obtained F-value of 1.59 was much lower than the required F value (3.15) to be significant on .05 level with (2,56) df. The data has been depicted in figure 1 and 2.

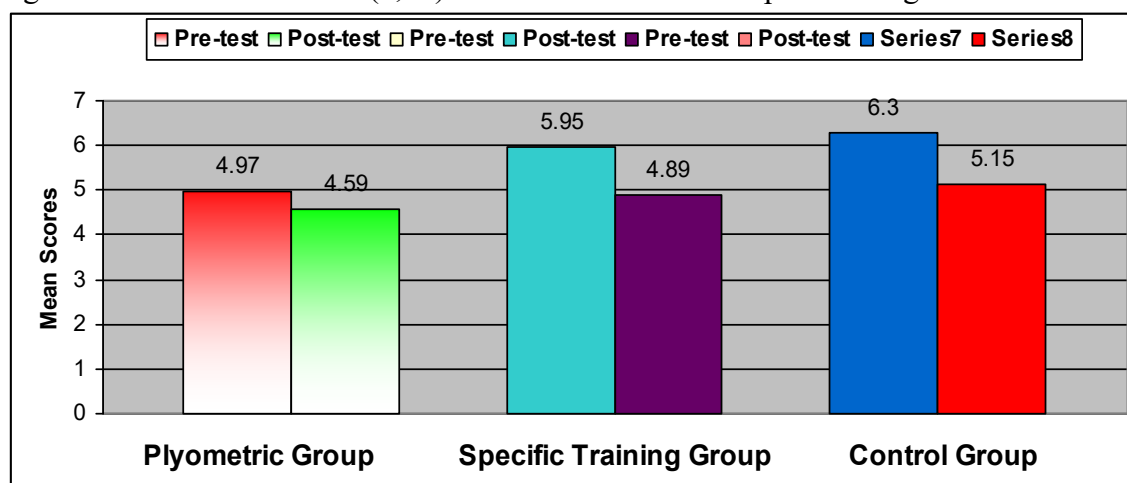


**Figure 1: Pre and Post Test Mean for Experimental Group and Control Group on Acceleration Speed**

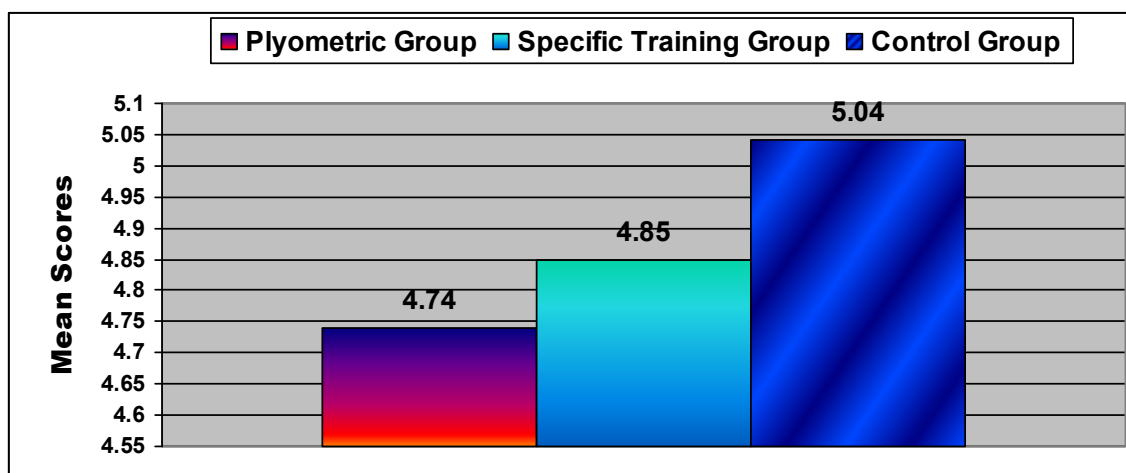


**Figure 2: Adjusted Mean for Experimental Group and Control Group on Acceleration Speed.**

## DISCUSSION

The purpose of present investigation was to assess the relative contribution of plyometric training and specific competitive exercises programme on acceleration speed, of football players. Analysis of data on acceleration speed indicated significant differences among groups. Pre-test ( $F=7.20$ ) and post-test ( $F=8.33$ ) mean scores where as the difference among adjusted post mean scores was found to be statistically insignificant ( $F=1.59$ ) at 0.05 level. Plyometric exercise did improve the acceleration speed of football players followed by specific competitive exercise group, but the effect was statistically insignificant. Finding of the present investigation concerning speed are in line with the finding of Watson, (1995). Researchers have shown that plyometric training when used with a periodized strength training programme can contribute to improvement in acceleration speed and overall performance (Harrison and Gattney, 2001; Hennessy and Kotly, 2001. Mitter et.al 2002; Passuke et.al, 2001).

## CONCLUSIONS

1. The plyometric exercise did improve the acceleration ability but the improvement was statistically insignificant
2. Twelve week planned and systematic regular game practice is most effective in improving selected football skills.

## IMPLICATION

The effectiveness of football training is principally depends upon scientific knowledge and experience of coach and players along with their willingness to get positive results from training. Some more factors responsible for effective training are the coaches execution, explanation, expectations, communication with the players and time spend on training. However, the most important piece of making an effective football training session is to make it competitive and game like situation. The results of the study may be helpful for the preparation of football teams. The findings may also suggest the ways and means to improve the components which are responsible for better performance. It may also provide the information that, at what extent the training modules are beneficial for the players. Finally the

results of the study may suggest which training method is more effective while preparing a football team.

## **FUTURE DIRECTION**

In football performance of acyclic speed and affected by performance of cyclic speed. As the action is limited to a limited area/field, acyclic speed is more important in taking out the play and gaining advantage. Future research should focus on effect of speed drills formatted with acyclic. Similar study may undertaken by verifying the training phase duration, exercise/ drills and load parameters. Similar study may be replicated on female football players.

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