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Effect of Plyometric Training with and without Functional Training on Selected Physical Fitness Variables of Inter Collegiate Male Football Players

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Abstract

Football or Soccer is one of the most popular sports in the world in terms of spectator sports and participation of players. It has the highest television audience in sport, making it the most popular in the world. Sports commonly called 'football' in certain places include: association football (known as soccer in some countries); gridiron football (specifically American football or Canadian football); Australian Rules football; rugby football (either rugby league or rugby union) and Gaelic football. These different variations of football are known as football codes. Soccer, commonly known as football is played by more than 250 million players in over 200 countries around the globe. The purpose of the study was find out effect of plyometric training with and without functional training on selected physical fitness physiological and skill performance variables of inter collegiate male football players. To achieve the purpose of the study, the study was delimited to sixty male intercollegiate football players selected randomly from Visakhapatnam district, Andhra Pradesh. The age of the subjects were from 18 to 25 years from the academic year 2023-2024. The selected subjects were divided randomly into three groups each group consist of 30 subjects Group I-Core Strength training group (n=30), Group II-Weight training group (n=30) and Group III-Control group (n=30). 4. The study was restricted to elected Physical fitness variables namely Speed. The training period was 14 weeks 3 alternate days per week, one and a half-hour in the evening session. For the pre and post-test randomized control group design was followed for this study. The collected data were statistically analyzed to check whether any significant difference exists. This will be done by applying the dependent 't' test, analysis of covariance (ANCOVA) and Scheffe's post hoc test. The level of significance was fixed at 0.05 level. It was found that there was a significant improvement and significant different exist due to the effect of plyometric training and with and without functional training on speed.

Keywords: Plyometric training and functional training and speed

Introduction

Plyometric training can take many forms, including jump training for the lower extremities and medicine ball exercises for the upper extremities. Jump training exercises were classified according to the relative demands they placed on the athlete. All the exercises are progressive in nature, with a range of low to high intensity in each type of exercise. The classification of exercises is jumps in place; standing jumps; multiple hops and jumps, bounding, box drills and depth jumps. (Haghighi et al, 2012).

Methodology

For this study, 60 inter collegiate were randomly selected from Kurnool district, Andhara Pradesh. The subjects were divided into three equal groups in which each group consisted of twenty subjects (n=20). Group-I and Group-II were the experimental groups such as Plyometric Group with Functional Training PGF and Plyometric Group without Functional Training-PG and Group-III served as control

group (CG). The experimental group PGF underwent plyometric training along with their Functional Training for 12 weeks while the Plyometric group PG underwent only Plyometric Training and control group was not engaged in any training other than their routine football training. The training period was 14 weeks 3 alternate days per week, one and a half-hour in the evening session. For the pre and post-test randomized control group design was followed for this study.

Training Schedule

All tests were administered to the subjects in the Inter collegiate, ground. The necessary marking was done before the start of the tests. All the tests were demonstrated and explained to the subjects by the scholar. They were given a chance to practice and become familiar with the test and to know exactly what was to be done. All the subjects were informed to put their maximum effort.

Statistical Technique

All the subjects were tested on the criterion variables. The data pertaining to the variables were examined by using “t” ratio, ANCOVA and Scheffe's post hoc test for every factor to decide the distinction among the methods. The degree of significance was fixed at 0.05 level of certainty for all the cases. It was considered sufficient for the present study. Thus the acquired results were presented in this chapter along with the graphical presentation.

Results and Discussions

The data pertaining to the variables in this study were examined by using dependent ‘t’ test to find out the significant improvement and analysis of covariance (ANCOVA) for each variables separately in order to determine the difference and tested at .05 level of significance. The analysis of dependent ‘t’ test on data obtained for speed of the pretest and posttest means of experimental group and control group have been analyzed and presented in Table I.

Table 1: Analysis of covariance for the pretest posttest and adjusted posttest means on speed of plyometric with and without functional training and control group

	PFG	PG	CG	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio
Pre-Test Means	7.53	7.55	7.54	BG	0.002	2	0.001	0.51
				WG	0.137	57	0.002	
Post-Test Means	6.41	6.53	7.74	BG	13.22	2	6.611	109.51*
				WG	3.44	57	0.06	
Adjusted Post-Test Means	6.42	6.53	7.73	BG	13.04	2	6.52	110.27*
				WG	3.31	56	0.059	

*Significant at 0.05 level of confidence

The table I shows that the pre-test mean values on Speed of Plyometric training with functional training group, Plyometric training without functional training group and control group are 7.53, 7.55 and 7.54 respectively. The obtained F ratio 0.51 for pre test scores is lesser than the table value 3.16 for df 2 and 57 required for significance at 0.05 level of confidence on speed. The results of the study indicate that there is no significant difference among the pre-test means of Plyometric with and without functional training groups and control group on speed.

The post-test mean values on Speed of Plyometric training with functional training group, Plyometric training without functional training group and control group are 6.41, 6.53 and 7.74 respectively. The obtained F ratio 109.51 for post test scores is greater than the table value 3.16 for df 2 and 57 required for significance at 0.05 level of confidence on speed. The results of the study indicate that there is a significant difference among the post-test means of Plyometric with and without functional training groups and control group on speed.

The adjusted post-test means values on Speed of Plyometric training with functional training group, Plyometric training without functional training group and control group are 6.42, 6.53 and 7.73 respectively. The obtained F ratio was 110.27 for adjusted post-test means is greater than the table value of 3.17 for df 2 and 56 required for significance at 0.05 level of confidence on speed. The results of the study indicate that there is a significant difference among the adjusted post-test

means of Plyometric with and without functional training groups and control group on speed. Since the obtained F ratio value is significant and further to find out the paired mean difference. The Scheffe” s post hoc test was employed and presented in table 2

Table 2: Computation of scheffe’s post hoc test between adjusted post-test scores of experimental groups and control group on speed

Group I	Group II	Group III	Mean Difference	CI value
6.42	6.53	-	0.11*	0.194*
6.42	-	7.73	1.31*	
-	6.53	7.73	1.2*	

*Significant at 0.05 level of confidence.

The post hoc analysis of obtained ordered adjusted means proved that to be significant at 0.05 level confidence the required confidence interval was 0.194. The following paired mean comparisons were greater than the required confidence interval and were significant at 0.05 level. The pretest, posttest and adjusted means were presented through line graph for better understanding of the results of this study in Figure I.

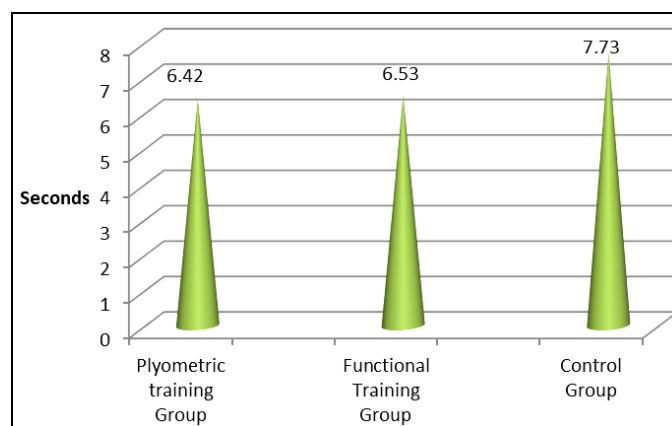


Fig 1: Bar diagram showing the pre-test post-test mean and adjusted posttest mean values of experimental groups and control group on speed

Discussion and Findings

The results of the findings were discussed under the following pertinent areas of effect of plyometric training with and without functional training on selected physical fitness variables of inter collegiate male football players. The results of the present study indicate that the plyometric training and functional training on selected physical fitness variables of inter collegiate male football players had deflection the selected physical fitness variables speed due to 12 weeks of training.

Speed

The results of the paired samples t-test reveal that there is a significant difference in the speed of Plyometric with functional training Group (experimental group I) between the pre-test and post-test; There is also a significant difference in the speed of Plyometric without functional training Group (experimental group II) between the pre-test and post-test; There is no significant difference in the speed of Control Group between the pre-test and post-test. Regarding statistical analysis of covariance, it is observed that there is a significant difference on the speed between the adjusted posttest means of experimental group I, experimental group II and control group.

However the schefee's post hoc test indicates that's is a significant difference between Plyometric with functional training Group and control group on speed; there is a significant difference between Plyometric without functional training Group and control group on speed; there is a significant difference between Plyometric with functional training Group and Plyometric without functional training on speed among football players. These findings show that speed of the intercollegiate male football players was improved in both the experimental groups but better improvement was found in experimental group I (Plyometric with functional training group). The results of the study are supported by the following author Booth (2016), Hammami (2016) and Ramesh (2015) proved that there is an improvement on speed of football players.

Conclusions

From the analysis of the data, the following conclusions were drawn:

- i). The plyometric training group significantly improved the selected physical fitness variables among College level football players.
- ii). The functional training group significantly improved the physical fitness variables among College level football players.
- iii). From the findings of the study it was concluded that the plyometric training group and the functional training group had better improvement than the control group in selected physical fitness variables among College level football players.
- iv). From the findings of the study it was concluded that the plyometric training group had better improvement than the functional training group in selected physical fitness variables among College level football players.

Recommendations

- i). It is recommended that coaches and Physical Educators in the game of football should give due to include plyometric training group and functional training group in their training schedules.
- ii). In the physical exercise, while designing the training programme the effect of varied training modalities is explained on positively on performance related components of football players, the Physical Education Teachers and coaches can prefer this type of training so as to achieve aim in time.
- iii). It was also recommended that football team to reach any level should have knowledge training group to train the players for enhancing their performance.

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