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Effect of Cross Training Program on Leg Strength and Leg Explosive Power among Football Players

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Abstract

The purpose of the present study was to find out the effect of cross training program on leg strength and leg explosive power among male football players. For this purpose, twenty male football players from Annamalai University, Annamalainagar, Chidambaram, Cuddalore District, Tamilnadu in the age group of 19 – 25 years were selected. They were divided into two equal groups, each group consisted of ten subjects, in which group – I underwent football training with plyometric exercise and group – II acted as control that did not participate in any special activities apart from their regular day-to-day activities. The training period for this study was three days in a week for twelve weeks. Prior to and after the training period the subjects were tested on leg strength and leg explosive power. Leg strength was measured by using dynamometer and explosive power in terms of horizontal distance was measured by administering standing broad jump. The Analysis of Covariance (ANCOVA) was used to find out any significant difference between the pre-test mean and post-test means and significant difference that exists between the football training with plyometric exercise group and control group on selected criterion variables. It was concluded from the results of the study that leg strength and explosive power in terms of horizontal distances significantly increased (P > .05) after football training with plyometric exercises. It was found that there was a significant difference between the football training with plyometric exercises and control group on leg strength and explosive power in terms of horizontal distances.

Keywords: Football Training, Plyometric Exercises, Leg Strength, Explosive Power, Horizontal Distances, ANCOVA.

Introduction

Training is a programme of exercise designed to improve the skills and to increase the energy capacity of an athlete for a particular event, therefore training is essential for the development of physical fitness components [1]. Cross-training refers to an athlete training in sports other than the one that the athlete competes in, with a goal of improving overall performance.[2] Cross training refers to a training routine that involves several different forms of exercise.[3] Cross training takes into consideration the fact that many muscles in different parts of the body contribute to a single activity. So to get the most out of any activity, and to do it safely, you must pay attention to all the muscles in your body that are involved, not just the ones directly related to that activity.[4]

There are several factors to consider when positioning players in a soccer team; this may include the player's endurance and stamina, the sprinting speed, their physique, personal orientation such as left or right-handedness among many more.[5] The activity of performing drills is a tool that can be used throughout a soccer practice session to re-enforce good technique through repetition.[6]

Plyometric training enhances the tolerance of the muscle for increased stretch loads. This increased tolerance develops efficiency in the stretch shortening cycle of muscle action. During the stretching (eccentric lengthening phase) of muscle action a greater amount of elastic energy is stored in the muscle.[7]

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Methodology

Twenty male football players from Annamalai University, Annamalainagar, Chidamabram were selected as subjects and their age ranged between 19 and 25 years. They were divided into two equal groups, Group - I underwent football training with plyometric exercise (n = 10) and Group - II acted as control (n = 10), which did not undergo any special exercises apart from their regular football training. The football training with plyometric exercise was three days (alternative days from Monday) per week for twelve weeks. The researcher consulted with the football trainers and selected the following as criterion variables: 1. leg strength and 2. explosive power in terms of horizontal distances. Leg strength was measured by using

dynamometer and explosive power in terms of horizontal distance was measured by administering standing broad jump. For the purpose of collection of data the subjects in both the groups (experimental group and control group) were asked to report early morning, one day prior and one day after the experimental period.

Results

The data collected prior to and after the football training with plyometric exercise group and control group on leg strength and explosive power in terms of horizontal distances were analysed and presented in the following Table – I.

Table I. Analysis of Covariance and 'F' ratio for Leg strength and Explosive power for Football training with Plyometric Exercise Group and Control Group

Variable Name	Group Name	Football Training with Plyometric Exercise Group	Control Group	'F' Ratio
Leg Strength (Kgs.)	Pre-test Mean ± S.D	70.88 ± 2.883	70.36 ± 2.55	0.9321
	Post-test Mean ± S.D.	73.732 ± 3.583	70.81 ± 2.43	8.694*
	Adj. Post-test Mean	74.168	70.553	19.436*
Explosive Power in terms of horizontal distances (in cms.)	Pre-test Mean ± S.D	2.17 ± 0.352	2.09 ± 0.22	0.559
	Post-test Mean ± S.D.	2.45 ± 0.261	2.07 ± 0.39	5.339*
	Adj. Post-test Mean	2.488	2.02	22.863*

* Significant at .05 level of confidence. (The table values required for significance at .05 level of confidence with df 1 and 28 and 1 and 27 were 4.20 and 4.21 respectively).

The analysis of covariance (ANCOVA) was used to find out the significant difference if any, among the experimental group and control group on selected criterion variables separately. In all the cases, .05 level of confidence was fixed to test the significance, which was considered as an appropriate. After applying the analysis of covariance, the result of the study shows that there was a significant improvement in leg strength and explosive power in terms of horizontal distances for the football training with plyometric exercise group after the experimental period. Further, comparing the adjusted post-test means of the criterion variables, such as the leg strength (F- ratio – 19.436 $p > 0.05$) and explosive power in terms of horizontal distances (F-ratio – 22.863 $p > 0.05$) there was a significant improvement occurred after the football training with plyometric exercises. The result of the study also shows that there was a significant difference in leg strength and explosive power in terms of horizontal distances between the football training with plyometric exercise group and control group.

Conclusions

1. It was concluded from the results of the study, that there was a significant increase in leg strength[10] and explosive power in terms of horizontal distances [8,9,11] after the football training with plyometric exercise.
2. It was also concluded from the results of the present study that there was a significant difference between the football training with plyometric exercise group and control group on leg strength and explosive power in terms of horizontal distances.

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