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Dr. Babasab Ramachandra Tole
Physical Education Director,
Divekar College of Commerce
Karwar, Karnataka, India

Virendra Singh
Sports Officer, Raja Harpalsingh
Government College, Harpalpur,
Madhya Pradesh, India

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Role of plyometric training on agility among university soccer players of intermediate level

Dr. Babasab Ramachandra Tole and Virendra Singh

Abstract

The study's objective was to assess how well a plyometric training regimen improved football players' agility. The agility t-test was used in this experiment research of football players in Karwar. The study comprised 26 samples in all, with ages ranging from 17 to 24. The male football players received the plyometric training regimen. There were four sessions each week for the course of the four-week program. The outcome of the football players' plyometric training was evident. Before to plyometric training, the meantime length was 9.79, and after training, the mean was 9.75. The data were analyzed using the paired t-test, with a p value of 0.07, which is regarded as insignificant. The insignificant results might be a factor of small number of subjects in sample size, although with 0.02 the study showed insignificant result. Thus, plyometric training is helpful in improving agility in football players. So, these training methods are recommended to football players for improving speed and skilled performances.

Keywords: Plyometric training, football players, agility

Introduction

Plyometric exercises like leaping, hopping, skipping, and bounding are done with the aim of improving dynamic muscle performance. Plyometric training is popular among those who participate in dynamic sports. Plyometric exercises are methods used by athletes in various sports to improve their strength and explosiveness. In plyometrics, the same muscle and connective tissue are rapidly stretched, then contracted or contracted in a concentric motion. More force is generated than can be given by a concentric motion alone because to the elastic energy that has been stored within the muscle. When combined with a periodized strength training regimen, plyometric exercise can help athletes perform better in the vertical leap, accelerate more quickly, have stronger legs and muscles, have better joint awareness, and have better general proprioception. (Michael Miller G *et al.*, 2006)^[13]

Plyometric exercises often entail abruptly stopping, starting, and changing directions; these actions are essential to the development of agility. Agility should ideally increase via improving balance and control of body postures during movement. Teenage players should begin a plyometric training program during warm-ups before adding it to their sport-specific talents. While creating the program, a successful program manipulates four variables—intensity, volume, frequency, and recovery—to achieve specified goals. (Michael Miller G *et al.*, 2006)^[13].

Agility is the capacity to swiftly change direction through a sequence of movements while maintaining and controlling proper body posture. When it comes to a sports player, agility is crucial since they utilize it to outwit their opponents, but it also helps to prevent injuries. The best possible activation and inhibition of muscle fibers can stop muscle tears and much more so, can stop damage to the joints. One of the most crucial psychomotor traits is the capacity for rapid response. (Rahul Yadav & Arnav Sharma, 2022)^[14].

It has been argued that agility, which is a complicated trait, allows an athlete to react to a stimulus by starting swiftly and effectively, moving in the right direction, or stopping quickly to produce a play in a rapid, fluid, efficient, and repeatable manner. While the traditional definition of agility is merely the ability to change directions quickly and accurately, several writers have expanded the definition to include whole-body direction changes in addition to quick limb movements and limb-direction changes.

Corresponding Author:
Dr. Babasab Ramachandra Tole
Physical Education Director,
Divekar College of Commerce
Karwar, Karnataka, India

Agility may be categorized as basic temporal-spatial-universal abilities. (Michael Miller G *et al.*, 2006)^[13].

Methodology

The study was conducted with an experimental approach among university soccer's of intermediate level. A total number of 26 male footballers were selected for the study.

13 in each group, i.e., control and experimental was divided where the control group experienced only normal football schedule. The study is designed as a pre and post intervention, where the measurement of the agility before training and after training has been done with T- Agility test.

The T-Test is a simple running test of agility, involving forward, lateral, and backward movements, appropriate to a wide range of sports.

Purpose: The T-Test is a test of agility for athletes, and includes forward, lateral, and backwards running equipment required: tape measure, marking cones, stopwatch, timing gates (Optional)

Test setup: Set out four cones as (5 yards = 4.57 m, 10 yards = 9.14 m).

Procedure: The subject starts at cone A. On the command of the timer, the subject sprints to cone B and touches the base of the cone with their right hand. They then turn left and shuffle sideways to cone C, and also touches its base, this time with their left hand. Then shuffling sideways to the right to cone D and touching the base with the right hand. They then shuffle back to cone B touching with the left hand, and run backwards to cone A. The stopwatch is stopped as they pass cone A.

Scoring: The trial will not be counted if the subject crosses one foot in front of the other while shuffling, fails to touch the base of the cones, or fails to face forward throughout the test. Take the best time of three successful trials to the nearest 0.1 seconds. The table below shows some scores for adult team sport athletes.

Males	Seconds
Excellent	< 9.5
Good	9.5 to 10.5
Average	10.5 to 11.5
Poor	> 11.5

The statistical analysis was done with Paired T-Test for Pre and Post for the control and experimental group. For analysis, First, normality assumption of data was checked by Shapiro-Wilk test, after that Levene's test was used to test the Homogeneity of Variances between experimental and Control Group (Sharma, A., & Prasad, B.K., 2023; Das & Jhajharia, 2022)^[14, 18].

Results

Table 1: Descriptive statistics of Experimental Group

	Test	N	Mean
Experimental	Pre agility t-test	13	9.79
Experimental	Post agility t-test	13	9.75

Here, in the above-mentioned table, the descriptive statistics has been represented regarding the experimental group where pre and post agility t test has been recorded with mean value of the group.

Table 2: Inferential Statistics of Experimental Group

Experimental Pre-Post	N	t-Value	P-Value
Experimental	13	1.986	0.07

Here, in the above-mentioned table, the inferential statistics has been represented regarding the experimental group where pre and post agility t test has been recorded with t-value and p-value of the group. As, the p-value is not below, 0.05 level of significance, it shows no significance difference in the improving agility among the experimental group after four weeks of training.

Table 3: Descriptive Statistics of Control Group

	Test	N	Mean
Control	Pre agility t-test	13	9.82
Control	Post agility t-test	13	9.87

Here, in the above-mentioned table, the descriptive statistics has been represented regarding the Control group where pre and post agility t test has been recorded with mean value of the group.

Table 4: Inferential Statistics of Control Group

Control Pre-Post	N	t-Value	P-Value
Control	13	1.765	0.103

Here, in the above-mentioned table, the inferential statistics has been represented regarding the experimental group where pre and post agility t test has been recorded with t-value and p-value of the group. As, the p-value is not below, 0.05 level of significance, it shows no significance difference in the control group after four weeks of normal schedule.

Discussion

The purpose of this study was to evaluate the value of plyometric agility training in football players. The study's participants ranged in age from 17 to 24. In this study, only male soccer players were included.

In all, 26 football players were chosen for this study, 13 male football players from each category. The length of time it took the participants to complete the agility t-test was used to measure the players' increased agility. Before and after agility tests were conducted. The pre- and post-training time length showed no statistically significant change after data analysis. The four-week plyometric training course was conducted. When plyometric training was given to the football players the result showed Mean of time duration before plyometric training was 9.79 and post plyometric training mean was 9.75. Paired t-test was used to analyze the data with p value, which was 0.07, which is considered as insignificant. Hence plyometric training showed no improvement in agility among football players.

Conclusion

From the above study we can conclude that in order to get significant amount of improved agility, four weeks of training in not enough, the training must focus on a greater number of days plus, the insignificant results might be a factor of small number of subjects in sample size, although with only 0.02 the study showed insignificant result. Still plyometric training is helpful in improving agility in football players. So, these training methods are recommended to football players for improving speed and skilled performances.

Conflict of Interest

Authors declare no conflict of interest.

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