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Effect of plyometric training program on agility in football players

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Abstract
Background: The aim of the study was to evaluate effectiveness of plyometric training program on agility in football players.
Methodology: This experiment study was carried out using Agility t-test in football players across Pune. A total of 30 samples aged between 15-25 years were included in the study. The plyometric training program was given to the football players. The protocol was of three weeks which consisted four sessions per week.
Results: When plyometric training was given to the football players the result showed Mean of time duration before plyometric training was 10.94 with standard deviation of 1.360 and post plyometric training mean was 10.25 with standard deviation of 1.007. The mean difference which was calculated as 0.6933. Paired t-test was used to analyze the data with p value 0.003, which is considered as extremely significant. Hence plyometric training improve agility in football players.
Conclusion: From the above study we can conclude that 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

1. Introduction
Plyometric training is popular among individuals involve in dynamic sports and plyometric exercises such as jumping, hopping, skipping and bounding are executed with a goal to increase dynamic muscular performance. Plyometric are techniques used by the athletes in all types of sports to increase strength and explosiveness plyometrics consists of rapid stretching of muscle followed by a concentric or stortening action of the same muscle and connective tissue. The stored elastic energy within the muscle is used to produce more force than can be provided by a concentric action alone. Plyometric training when used with a periodized strength training program can contribute to improvement in vertical jump performance, acceleration, leg strength, muscular power, increased joint awareness and overall proprioception [1].
Plyometrics drills usually involed stopping, starting and changing directions in an explosive manner these movements are components that can assist in developing agility. By enhancing balance and control of body positions during movement agility theoretically should improve. Plyometric training program for pubescent athletes should be introduced into warm ups then added to sport specific skills. When designing the program an effective program accomplishes specific goals through manipulation of four variables; intensity, volume, frequency, and recovery [1].
The ability to maintain and control correct body position while quicly changing direction through a series of movement is called agility. Agility is very important when it comes to an sports players they use in the opposition but it also helps in preventing injuries optimal activation and inhibition of muscle fibers can prevent muscle tears and even more prevent the joins from injuries.
Agility is a complex quality and in recognizing this it has been stated that agility permits an athlete to react to a stimulus start quickly and efficiently move in the correct direction or stop quickly to make a play in a fast smooth efficient and repeatable manner. Agility has classically been defined as simply the agility to change direction rapidly and accurately some authors

have defined agility to include whole body change of direction as well as rapid movement and direction change of limbs. Agility may be classified as simple temporal spatial and universal skills [1].

2. Materials and Methodology

2.1 Study design: Experimental
2.2 Sample population: Football players.
2.3 Sample size: 30
2.4 Inclusion criteria: Males and females age (15-25)
Willing to participate in study
Regular football players
2.5 Exclusion criteria: Recent injury, trauma to lower limb
Non regular players
Not willing to participate
Ligament reconstruction
2.6 Materials required: Stop watch
Measuring tape
Cones
Pen
Document sheet

Procedure

- The study is designed as a pre and post intervention, where the measurement of the agility before training and after training has been done
- T- Agility test

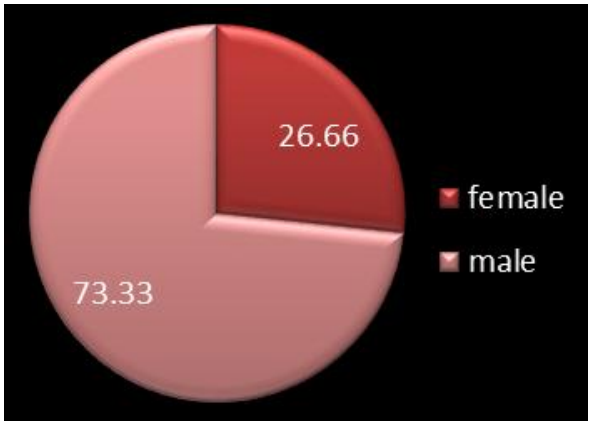
4 cones in the form of T placed (5 yards=4.57m, 10 yards=9.14m) the subject stand at cone A, on getting command of the timer the subject run to cone B, and touched the base of cone with their right hand. They then turned left and shuffle sideways to cone C and also touched its base this time with their left hand. Then shuffling sideways to the right to cone D and touching the base with the right hand they then shuffled back to cone B touched with the left hand and run backwards to cone A. the stop watch was stopped as they pass cone A.

3. Results and Discussion

3.1 Result

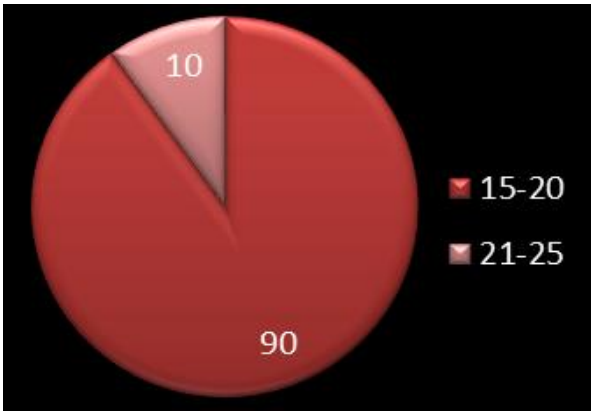
3.1.1 Gender Wise Distribution of Samples

Gender	Female	Male
	8(26.66%)	22(73.33%)



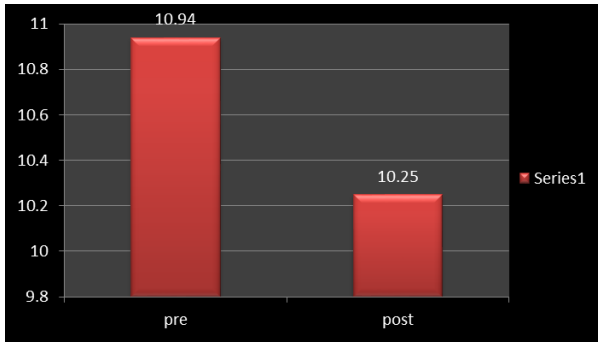
3.1.2 Age Wise Distribution of Samples

AGE	15-20 years	21-25 years
No. Of Participants	27(90%)	3(10%)



3.3.3 Effect of plyometric training on agility

Agility T test	Mean	Standard deviation	P Value
Pre	10.94	1.360	0.0003
Post	10.25	1.007	



3.2 Discussion

The aim of this study was to determine the effectiveness of plyomertric training of agility in football players. The age of the participants included in this study was 15-25years. Both males and females football players were included in this study.

In this study total 30 football players were selected in which both males and females football players were included 8 (26.66%) were females and 22(73.33%) were males which showed improvement in agility. The improvement in agility was tested in terms of time duration the players took to complete the agility t-test. The agility was measure pre and post. After analysis of the data there was significant difference in pre and post training time duration. The plyometric training program was for 3 weeks.

According to Rodrigo Ramirez Campillo, *et al* (2015) [13], plyometric training on maximal intensity exercise and endurance performance were compared in male and female. Two groups were included, plyometric training group and control group. Intervention induced higher maximal intensity exercise and endurance performance improvements compare to soccer training and the improvement induced by plyometric training were not affected by gender in practical terms gender should not be seen a special concern while applying plyoetric training in adult soccer players at least when the target is improving specific physical performance therefore male and female soccer players with similar competitive for plyometric training [13]. In this study both male and female football players were included.

Mean of time duration before plyometric training was 10.94 with standard deviation of 1.360 and post plyometric training mean was 10.25 with standard deviation of 1.007. The mean difference which was calculated as 0.6933. Paired t-test was

used to analyze the data with p value 0.003, which is considered as extremely significant. Measuring agility could be more specific in the evaluation of the physical status of the football players as accelersation and deceleration, sudden stops and direction changes occur frequently during games.

4. Conclusion

- From the above study we can conclude that 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.

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