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Effect of plyometric exercises on agility among the netball players

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Abstract

The aim of the study was to determine the effect of plyometric training on agility. Sixty Netball players N=60 were randomly selected as subjects and their age ranged between 16 and 18 years. The selected subjects were randomly assigned into two equal groups with thirty subjects each (N=30). Group I experimental, Group II Control group the experimental groups underwent their respective experimental treatment for twelve weeks 3 days per week and a session on each day. Control group was not exposed to any specific training apart from their curriculum. Agility was taken as variable for this investigation. The pre and posttest were conducted one day before and after the experimental treatment. Analysis of covariance (ANCOVA) was used to analysis the collected data. Scheffe's test was used as a post hoc test to determine which of the paired mean differed significantly. The results revealed that There was also a significant difference between experimental groups on speed ($P \leq 0.05$) Further it related that the plyometric training and plyometric training produced significant improvement ($P \leq 0.05$) on agility as compared to control group.

Keywords: Plyometric training, agility

1. Introduction

Sport has been a part of civilized societies throughout history. In some cases, as in Greece in the fifth century B.C, sport was of central importance to culture and has been studied and analyzed by scholars on many disciplines over the past 50 years. Most scholars agree that sport is a manifestation of play and that sports are institutionalized forms of play. Sport involves ritual and it involves tradition.

The very elaborations of sport, its internal conventions of all kinds, its ceremonies, its endless meshes entangling itself for the purpose of training, testing and rewarding the rousing emotion within an individual to find a moment of freedom. Freedom is that state where energy and order merge and all complexity is purified into a simple coherence of parts and purpose and passions that cannot be surpassed and whose goal could only be to be itself.

It is the ability of the body or the parts of the body to change direction rapidly and accurately Generally, agility can be defined by the ability to explosively start, decelerate, change direction, and accelerate again quickly while maintaining body control and minimizing a reduction in speed Agility is the ability to be quick and graceful. You might have agility on the basketball court or in the courtroom, or even with your gaming remote. The noun agility can be used for both mental and physical skills in speed and grace. Your mental agility might allow you to follow both conversations at once. Speed and agility training drills are designed to work all your leg and core muscles, as well as the tendons in your body. It is important to train at a level that is equal to your game intensity to help increase your performance and to minimize injury. Agility is the ability to move quickly and change direction with ease. This describes both physical and mental agility. As we age, or just become complacent in our daily routines, both our mental and physical agility suffers The word Plyometrics is derived from the Greek word *pleythyein* meaning "to increase" or from the Greek roots *plio* and *metric* meaning 'More' and 'Means'. Plyometrics refers to exercises that enable a muscle to reach maximal strength in as shorter time as possible. Plyometrics exercises are important in sports requiring high levels of speed strength (ability to exert maximum force during high speed activity) to complete movement such as sprinting, jumping and throwing.

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2. Methodology

For the purpose of this study, 60 Male Netball players who have played in the senior state championships from different districts of Kerala were selected as the subjects. The age of the subjects ranged between 17 to 25 years. The subjects were informed about the nature of the study and their consent were also taken before involving them as subjects of the study. The subjects were later randomly assigned to a control group and to an experimental group of equal sizes. Sixty male Netball Players (N=60) were randomly selected as subjects and their age ranged between 17 and 25 years. The selected subjects

were randomly assigned into four equal groups with thirty subjects each (N=30). Group I experimental, Group II Control group. The experimental groups underwent their respective experimental treatment for twelve weeks 3 days per week and a session on each day. Control group was not exposed to any specific training apart from their curriculum. Agility was taken as variable for this investigation. The pre and post-test were conducted one day before and after the experimental treatment.

3. Result and Discussion

Table 1: Analysis of Co-Variance Done Among The Two Groups On Agility

	Control group	Experimental group	Source of Variance	Sum of Squares	df	Mean Squares	F-ratio	P-value
Pre-test Mean	10.193	10.178	Between	0.004	1	0.004	0.099	0.754
S.D.	0.163	0.211	Within	2.066	58	0.036		
Post-test Mean	10.153	9.943	Between	0.659	1	0.659	38.017**	0.000 P<.001
S.D.	0.117	0.145	Within	1.006	58	0.017		
Adjusted Post-test Mean	10.149	9.947	Between	0.610	1	0.610	75.028**	0.000 P<.001
S.D.	0.016	0.016	Within	0.463	57	0.008		

** significant at 0.01 level as the P-value is < 0.01

The Table-1 contains all the relevant factors related to analysis of co-variance done on the variable Agility. The post-test values are the values of the variable Agility, while the pre-test variable is taken as the co-variate. The P-value of 0.754 associated with the pre-test scores indicates that, there is no significant difference between the mean of the pre scores of control and experimental group. Again a P-value of 0.001 associated with the post scores implies that, the post mean scores are significantly different. Further, the said table do indicates an F-ratio of 75.028 on the adjusted post-test means and this do implies that there existed mean difference on the variable Agility between the control and experimental group, as the P-value obtained has been 0.001 which is much less than 0.05, the level of significance set for this study. Since, the F-ratio was found to be significant, the LSD post-hoc test was done, to find out whether there existed significant differences among the adjusted post-test means or not on the

variable Agility and the details are presented in Table-2.

Table 2: LSD Post-HOC Test Done On the Two Groups for Difference between Adjusted Post-Test Paired Means on Agility

Adjusted Post-test means		Mean Difference	Std. Error	P-value
Control group	Experimental group			
10.15	9.94	0.21*	0.023	P<.000**

* The mean difference is significant at 0.05 level

** Based on estimated marginal means.

Adjustment for multiple comparisons least significant difference (equivalent to no adjustment)
The above table do indicates a mean difference of 0.21 and a P-value of 0.000. This do clearly shows that, there existed significant differences in the adjusted post-hoc paired means among the control group and the experimental group.

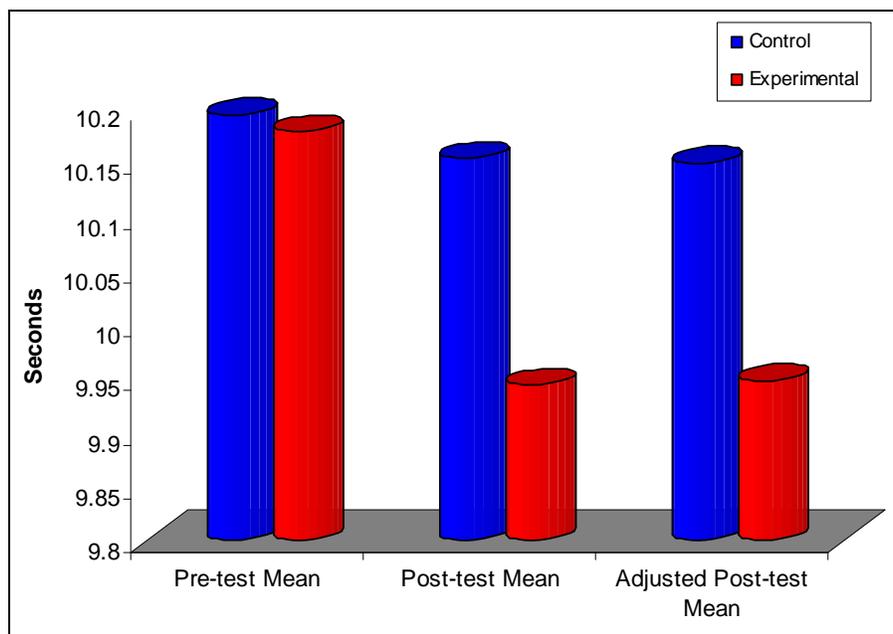


Fig 1: Graphical Representation of the Pre-test, Post-test and Adjusted Post-test Means on Agility of the two different groups

4. Conclusion

There was significant difference between the two groups on Agility. This indicates that the plyometric training programme does have had significant effect, so as to improve Agility.

Plyometrics is a method of developing explosive power, an important component of most Netball performances. As coaches and netball have recognized the potential improvements which Plyometrics can bring about in performance, they have integrated it into the overall training programme in many sports and made it a significant factor in planning the scope of netball development.

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