EFFECT OF PLYOMETRIC TRAINING ON SELECTED PHYSICAL VARIABLES OF BASKETBALL PLAYERS

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Abstract

Since plyometric put great stress on the muscular-skeletal system, it is better to practice after developing the basic strength through weight training. The purpose of the study was to investigate the effect of plyometric training on selected physical variables of handball players. Thirty out of players were randomly selected from Coimbatore district, the selected players were divided into two groups consisting of 15 players. No attempt was made equate the groups. The age of the subjects ranged between 18 to 25 years. The influence of the plyometric training was assessed on selected variables. The training load was increased from the maximum working capacity of the subject doing pilot study. The duration of the training period was restricted to eight weeks and the number of sessions per week was confined to three. The data obtained from all the groups before and after the experimental period were statistically analyzed by dependent't' test to find out the significant improvement if any, 0.05 level of confidence was fixed to the level of significance between pre and posttest means of all groups. Pre and post test was conducted on separate days with warm up. The agility measured by 4x10meter shuttle run in seconds, Leg explosive power measured by standing broad jump in meters. Further, the findings confirmed the plyometric training is suitable protocol to bring out the desirable changes over the agility, breath holding time and Serving Ability of volleyball players.

***Key words**: Plyometric Training, Footballers, Agility, and Leg Explosive Power.*

INTRODUCTION

Plyometrics is one of the primary tools for developing athletic power and speed. It is not surprising that training exercises such as plyometrics, which are performed with high movement speeds, would improve the performance of activities requiring speed, such as jumping, running, and agility. The technical term for this idea is "specificity." In other words, training that is "specific" or similar to the activity to be performed is believed to be optimal. As a result, recreational athletes, as well as those who desire to increase their overall fitness and add variety to their training, often incorporate plyometrics training into their programs **(Ebben, 2013**). Plyometrics exercise refers to those activities that enable a muscle to reach maximal force in the shortest possible time. "Plyometrics" is a combination of Greek words that literally means to increase measurement (plio = more; metric

= measure). Practically defined, plyometrics exercise is a quick, powerful movement using a pre-stretch, or countermovement, that involves the stretch-shortening cycle (SSC). The purpose of plyometrics exercise is to increase the power of subsequent movements by using both the natural elastic components of muscle and tendon and the stretch reflex. To effectively use plyometrics as part of a training program, it is important to understand: (1) The mechanics and physiology of plyometrics exercise, (2) Principles of plyometrics program design, and (3) Methods of safely and effectively performing specific plyometrics exercises **(Baechle et al., 2000).**

Basketball is one of the most popular and widely viewed sports in the world. The object of the game is to throw the ball through the baskets at either end of the court. When the game was first invented, actual baskets were used. **Dr. James Naismith's** original rules specified that " A goal shall be made when the ball is thrown or batted from the founds into the basket and stays there, providing those defending the goal do no touch or disturb the goal." As it is proved to be inconvenient to continually retrieve the ball from the baskets, the baskets were soon replaced with metal hoops (usually with dangling netting attached to direct the ball straight down). The hoops are attached to rectangular backboards. **(Goyal, 2008).** The player requires the ability to oppose, gain better speed, explosive strength, agility, balance, vertical jump, good movement with the ball and without, the precision throwing the ball into the basket, the performance of technical and tactical tasks, and above all intelligence.

Methodology

Experimental Approach to the Problem

In order to address the hypothesis presented herein, we selected 30 basketball players from, Coimbatore District. Their age ranged from 18 to 23 years. The subjects were randomly assigned in to two equal groups namely, plyometric training Group *(CPG)* (n=15) and Control group (CG) (n=15). The respective training was given to the experimental group the 6 days of the weeks for the training period of eight weeks. The control group was not given any sort of training except their routine.

DESIGN

The evaluated fitness variables were agility was assessed by 4x10meter shuttle run the unit of measurement was in seconds, leg explosive power was assessed by standing broad jump the unit of measurement in meters. The parameters were measured at baseline and after 8 weeks of plyometric training were examined. The intensity was increased once in two weeks based on the variation of the exercises.

TRAINING PROGRAMME

The training programme was lasted for 30 minutes for session in a day, 6 days in a week for a period of 8 weeks duration. These 30 minutes included warm up for 5 minutes, 20 minutes plyometric training and 5 minutes warm down. The equivalent in plyometric training is the length of the time each action in total 6 day per weeks.

TABLE - I

COMPUTATION OF 'T' RATIO ON AGILITY ON EXPERIMENTAL GROUP AND CONTROL GROUP

(Scores in Numbers/seconds)

GROUPS	PRE TEST	POST TEST	NUMBERS	SD	"T" RATIO
Experimental Group	11.32	10.43	15	0.35	73.84*
Control group	11.29	11.26	15	0.35	0.71

*significant level 0.05 level (degree of freedom 2.14, 1 and 14)

Table I reveals the computation of mean, standard deviation and't' ratio on selected variables namely agility of experimental group. The obtained't' ratio on agility were 73.84 respectively. The required table value was 2.14 for the degrees of freedom 1 and 14 at the 0.05 level of significance. Since the obtained't' values were greater than the table value it was found to be statistically significant.

Further the computation of mean, standard deviation and't' ratio on selected variables parameters namely agility of control group. The obtained't' ratio on agility were 0.71 respectively. The required table value was 2.14 for the degrees of freedom 1 and 14 at the 0.05 level of significance. Since the obtained't' values were lesser than the table value it was found to be statistically not significant.

FIGURE- 1

BAR DIAGRAM SHOWING THE MEAN VALUE ON AGILITY OF BASKETBALL PLAYERS ON EXPERIMENTAL AND CONTROL GROUP

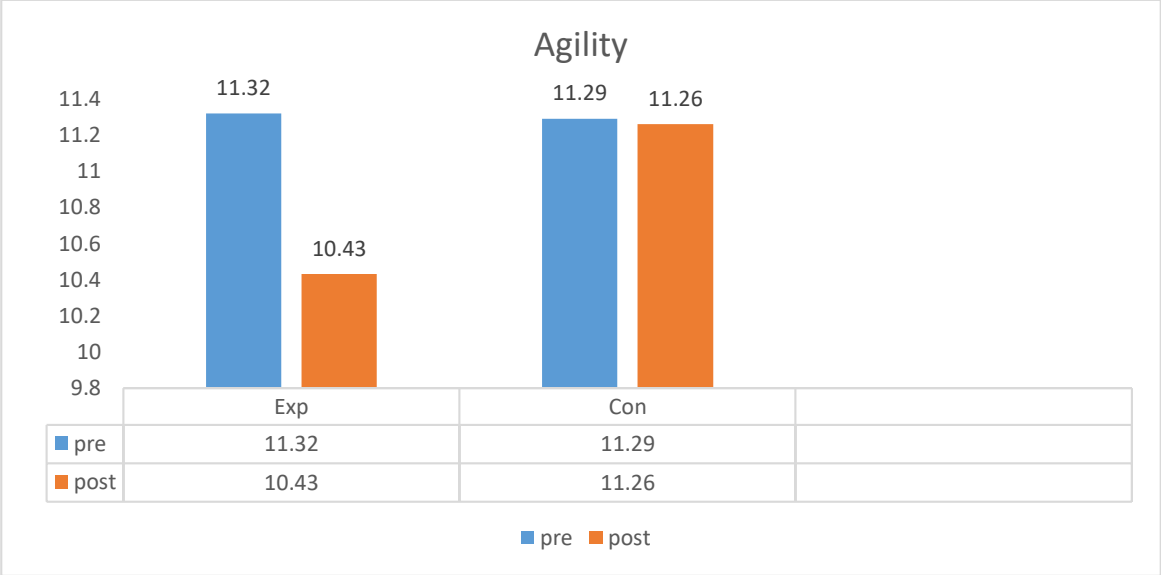


TABLE - II

COMPUTATION OF 'T' RATIO ON LEG EXPLOSIVE POWER ON EXPERIMENTAL GROUP AND CONTROL GROUP

(Scores in Numbers/seconds)

GROUPS	PRE TEST	POST TEST	NUMBERS	SEM	"T" RATIO
Experimental Group	1.87	1.99	15	0.002	10.21*
Control group	1.84	1.78	15	0.01	0.61

*significant level 0.05 level (degree of freedom 2.14, 1 and 14)

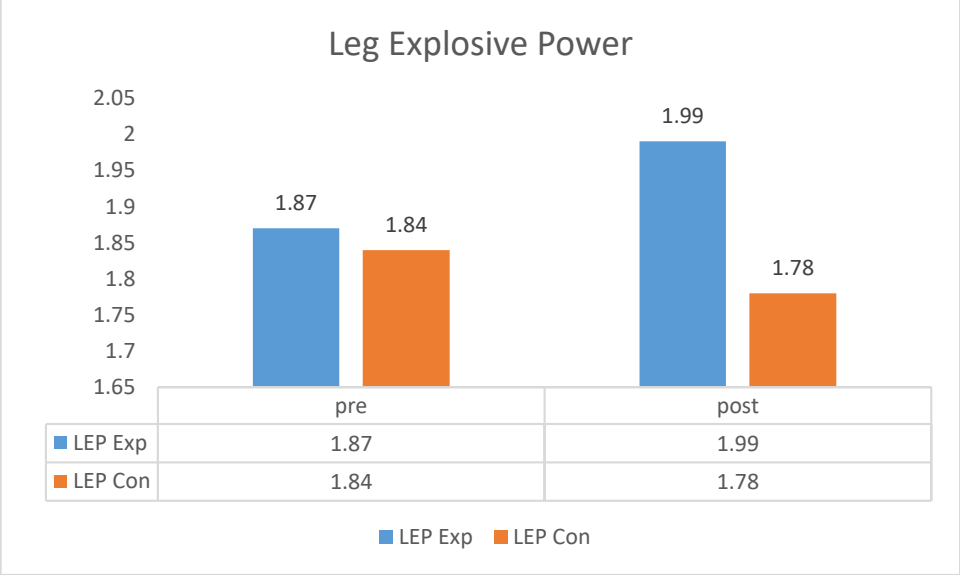
Table I reveals the computation of mean, standard deviation and't' ratio on selected variables namely leg explosive power of experimental group. The obtained't' ratio on leg explosive power were 10.12 respectively. The required table value was 2.14 for the degrees of freedom 1 and 14 at the 0.05 level of significance. Since the obtained't' values were greater than the table value it was found to be statistically significant.

Further the computation of mean, standard deviation and't' ratio on selected variables parameters namely leg explosive power of control group. The obtained't' ratio on leg explosive power were 0.61 respectively. The

required table value was 2.14 for the degrees of freedom 1 and 14 at the 0.05 level of significance. Since the obtained‘t’ values were lesser than the table value it was found to be statistically not significant.

FIGURE- 1I

BAR DIAGRAM SHOWING THE MEAN VALUE ON LEG EXPLOSIVE POWER OF BASKETBALL PLAYERS ON EXPERIMENTAL AND CONTROL GROUP



DISCUSSION AND FINDINGS

The present study experimented the influence of twelve week’s plyometric training on the selected the fitness variables of basketball players. The results of this study indicated that plyometric training is more efficient to bring out desirable changes over the ability of basketball players. It appears that loads added to standard plyometric training program may result in greater vertical and horizontal-jump performances in basketball players. **(Khlifa** *et al.*, **2010)** Acute plyometric exercise with weight exercise may induce a substantial decline in jumping performance for as long as 72 hours but not in other forms of muscle strength. **(Beneka** *et al.*, **2012).** Hence, it was concluded that for fitness components of improvement on plyometric training of basketball players.

CONCLUSIONS

1. Based on the findings and within the limitation of the study it is noticed that practice of plyometric training helped to improve performance of basketball players.
2. It was concluded that the significant improvement in the performance on the training session.
3. Finally, the Game specific plyometric training due to the influence on performance of agility, and leg explosive power significant improvement of basketball players.

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