

Enhancement of Isolated, Concurrent, Resistance and Plyometric Training on Selected Strength Parameters Among College Level Court Game Players



Physical Education

KEYWORDS : Concurrent Training, Resistance Training, Plyometric Training, Explosive power

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ABSTRACT

The purpose of the study was to find out the effect of Concurrent, Resistance and Plyometric Training on selected strength parameters among college level court game player. For this purpose Forty five (N=40) court games players (Volleyball & Basketball) studying in Yadava College Madurai, Tamilnadu were selected as subjects during the academic year 2013-2014. They were randomly divided into four groups of 10 each, Group I underwent Concurrent Training, Group II underwent Resistance Training, Group III underwent Plyometric Training and Group-IV acted as Control. The Experimental groups underwent the respective training for twelve weeks duration. Among various strength parameters only Explosive strength was selected as a dependent variable, and it was assessed through sergeant Jump test. The data obtained from the experimental groups and control groups before and after the experimental period were statistically analyzed with Analysis of covariance (ANCOVA). Whenever the 'F' ratio for adjusted post test means was found to be significant, the Scheffe's test was applied as post-hoc test to determine the paired mean differences. The level of confidence was fixed at 0.05 level for all the cases. Explosive power showed significant difference among the groups, further the results suggested that plyometric training was showed better performance when compare to other experimental and control group.

INTRODUCTION

Concurrent training is types of training (for example, aerobic training and strength training) carried out during the same training session or within a few hours of one another. Concurrent training sessions need to be well designed to maximize the beneficial effects of each type of training and to minimize interference.

Resistance training is a form of exercise for the development of strength and size of skeletal muscles. Resistance training, also known as weight training or strength training, is for everyone. According to the American Sports Medicine Institute (ASMI) resistance training is a "specialized method of conditioning designed to increase muscle strength, muscle endurance, and muscle power". Resistance training can be performed in a variety of ways; with resistance machines, free-weights (dumbbells and barbells), rubber tubing, or own body weight, as in doing push-ups, squats or abdominal crunches (Singh, 1984).

For many years coaches and athletes have sought to improve power in order to enhance performance. Throughout this century and no doubt during the times before, jumping, bounding and hopping exercises were especially used in various ways to enhance athletic performance. In recent years this distinct method of training for power or explosiveness has been termed Plyometrics. Plyometrics by definition is, a type of exercise using explosive movements to develop muscular power, esp. bounding, hopping and jumping. It is a term that describes exercises that help to bridge the gap between strength and speed, and refers to human movement that involves an eccentric muscle contraction

immediately and rapidly followed by concentric contraction. When a muscle is lengthened, energy is released as heat, but some energy is stored in the muscles and tendons to be used in its subsequent contraction. The goal is to decrease the amount of time it takes for the muscle to contract in a movement. Again the focus is on time. If the muscle is stretched for too long, useable energy is lost as heat (McArdle and Katch 2007).

METHODOLOGY

For this purpose Forty five (N=40) court games players (Volleyball & Basketball) studying in Yadava College Madurai, Tamilnadu were selected as subjects during the academic year 2013-2014 They were randomly divided into four groups of 10 each, Group I underwent Concurrent Training, Group II underwent Resistance Training, Group III underwent Plyometric Training and Group-IV acted as Control. The Experimental groups underwent the respective training for twelve weeks duration. Among various strength parameters only Explosive strength was selected as a dependent variable (Edward and Franks 1997), and it was assessed through sergeant Jump test.

RESULTS AND DISCUSSION

The data collected from the Experimental groups and Control group prior and after experimentation on selected variables were statistically examined by analysis of covariance (ANCOVA) was used to determine differences, if any among the adjusted post test means on selected criterion variables separately. Scheffe's test was applied as post-hoc test to determine the paired mean differences. The level of confidence was fixed at 0.05 level for all the cases.

Table – 1 Values of Analysis of Covariance for Experimental Groups on Explosive Power

Dependent Variable	Adjusted Post test Means				Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
	Concurrent Training Group (I)	Resistance Training Group (II)	Plyometric Training Group (III)	Control Group (IV)					
Explosive Power	41.14	41.28	43.72	39.65	Between With in	85.25 43.31	3 35	28.42 1.24	22.96*

* Significant at.05 level of confidence

(The table value required for Significance at 0 .05 level with df 3 and 35 is 2.87)

Table-1 shows that the adjusted post test mean value of Explosive Power for Concurrent training, Resistance training, Plyometric training and control group are 41.14, 41.28, 43.72 and 39.65 respectively. The obtained F-ratio 22.96 for the adjusted post test mean is more than the table value 2.87 for df 3 and 35 required for significance at 0.05 level of confidence.

The results of the study indicate that there are significant differences among the adjusted post test means of Experimental Groups on the increase of Explosive power.

To determine which of the paired means had a significant difference, Scheffe's test was applied as Post hoc test and the results are presented in Table 2.

Table - 2 The Scheffe's test for the differences between the adjusted post tests paired means on Explosive Power

Dependent Variables	Adjusted Post test Means				Mean Difference	Confidence Interval
	Concurrent Training Group (I)	Resistance Training Group (II)	Plyometric Training Group (III)	Control Group (IV)		
Explosive Power	41.14	41.28	--	--	0.14	1.11
	41.14	--	43.72	--	2.58*	1.11
	41.14	--	--	39.65	1.49*	1.11
	--	41.28	43.72	--	2.44*	1.11
	--	41.28	--	39.65	1.63*	1.11
	--	--	43.72	39.65	4.07*	1.11

* Significant at.05 level of confidence

Table 2 shows that the adjusted post test mean difference of Explosive Power on Concurrent Training and Resistance training, Concurrent training and Plyometric training, Concurrent training and Control group, Resistance training and Plyometric training, Resistance training and Control group and Plyometric training and Control group are 0.14, 2.58, 1.49, 2.44, 1.63 and 4.07 respectively and they are greater than the confidence interval value 0.36, which shows significant differences at 0.05 level of confidence.

It may be concluded from the results of the study that there is a significant difference in Explosive Power between the adjusted post test means of Concurrent Training and Resistance training, Concurrent training and Plyometric training, Concurrent training and Control group, Resistance training and Plyometric training, Resistance training and Control group and Plyometric training and Control group. However, the increase in Explosive Power was significantly higher for Plyometric training group than other Experimental groups.

It may be concluded that the Plyometric training group is better than the other Experimental groups in increasing Explosive Power.

The adjusted post test mean values of Experimental groups on Explosive Power is graphically represented in the Figure -1.

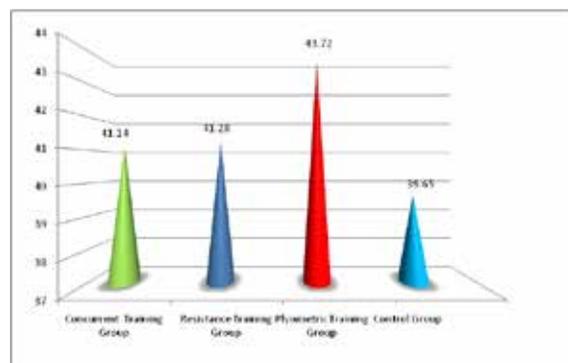


Figure-1: The Adjusted Post Tests Mean values of Experimental Groups on Explosive Power

CONCLUSION

From the analysis of the data, the following conclusions were drawn.

1. The experimental groups namely, Concurrent training, Resistance training and Plyometric training had significantly improved in Explosive Power.
2. The Plyometric training was found to be better than the Concurrent training, Resistance training in increase Explosive power.

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