

Original Article

Plyometric Training on Agility and Leg Explosive Power among University Level Basketball Players: An Effective Study



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N. R. Ramkumar*Department of Physical Education, AMET University, Chennai, Tamil Nadu, India***ABSTRACT**

The purpose of the study is to find out the effect of plyometric training on agility and leg explosive power on university level basketball players. 40 male participants were selected randomly from Anna University, Madras University, and AMET University, Chennai. The participant's age ranged from 18 to 25 years. The selected participants were divided into two equal groups of 20 participants each. Experimental group (Group I) plyometric training and control group (Group II). Pre-test was conducted for the two groups on agility and leg explosive power. The experimental group underwent plyometric training for 6 weeks, per week for the duration of the training was given for 5 days per week 45 min every day. The control group did not undergo any training program. After 6 weeks of training period the posttest was conducted for all the two groups. The data were analyzed by applying analysis of variance technique to find out the effect of plyometric training on agility and leg explosive power among university level basketball players. Then, the obtained "f" ratio is tested at 0.05 level of significant.

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Received: 20th June 2017**Accepted:** 25th July 2017**Published:** 25th July 2017**INTRODUCTION**

Development of lower-body explosive power is important for virtually every sport.^[1] Effective plyometric training can lead to rapid improvements in explosive power.^[2] When done incorrectly, fatigue, may lead to incorrect technique, unnecessary exposure to injury overreaching, and overtraining.^[3] Establishing a training volume for explosive power development is a complex task and the best approach is often debated among strength and conditioning coaches,^[4,5] for both short-^[6] and long-term power improvements.^[7] Training volume can be altered in a number of ways: varying reps in a set, resistance in rep, number of sets, and frequency of training.^[8] Several investigators have examined the number of sets for resistance training to develop strength.^[7,9] Set number has also been studied with plyometric training for developing power.^[1,10] However, training volume varied by set number has not been investigated for resistance-loaded plyometric training in novice athletes.

METHODOLOGY

The purpose of the study is to find out the effect of plyometric training on agility and leg explosive power among university level basketball players. 40 male participants were selected randomly from Anna University, Madras University, and AMET University, Chennai. The participant's age ranged

from 40 to 45 years. The participant's age ranged from 18 to 25 years. The selected participants were divided into two equal groups of 20 participants each. Experimental group (Group I) Plyometric Training and Control group (Group II). Pre-test was conducted for the two groups on selected agility and leg explosive power variables. The experimental group underwent Plyometric Training for 6 weeks, per week for the duration of the training was given for 5 days per week 45 min every day. The control group did not undergo any training program. After 6 weeks of training period, the posttest was conducted for all the two groups. The data were analyzed by applying analysis of variance technique to find out the effect of plyometric training on agility and leg explosive power among Anna University, Madras University, and AMET University, Chennai. Then, the obtained "f" ratio is tested at 0.05 level of significant.

Table 1 shows that the pretest means on agility and leg explosive power and the control group was 11.20 ± 11.37 and 2.02 ± 2.02 , respectively. The obtained "f" ratio value 1.669 ± 0.017 for the pre-test scores of plyometric training and control group on agility and leg explosive power is lesser than required table value 4.41 for significance at 0.05 levels. Hence, it is not significant and it revealed that there is no significant difference between the plyometric training and control group on agility and leg explosive power before the

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Table 1: Analysis of covariance for pre- and post-test data on agility and leg explosive power of experimental group and control group

Mean	Experimental group	Control group	SOV	Sum of squares	df	Mean square	"f" ratio
Agility							
Pre-test (mean)	11.20	11.37	B	0.296	1	0.296	1.669
			W	6.735	38	19.33	
Post-test (mean)	10.63	11.50	B	7.405	1	7.405	5.975*
			W	5.520	38	16.18	
Adjusted (mean)	10.63	11.50	B	5.286	1	5.286	82.630*
			W	2.367	37	0.064	
Leg explosive power							
Pre-test (mean)	2.02	2.02	B	0.000	1	0.000	0.017
			W	0.569	38	0.015	
Post-test (mean)	2.16	1.95	B	0.431	1	0.431	20.35*
			W	0.841	38	0.021	
Adjusted (mean)	2.16	1.95	B	0.453	1	0.453	113.99*
			W	0.147	37	0.004	

*Significant at 0.05 level. The table value for significance at 0.05 level with 1 and 38 and 1 and 37 degrees of freedom are=4.41 and 4.45, respectively

commencement of experimental group. It is inferred that the random selection of the participants for the two groups are successful.

The post-test means on agility and leg explosive power of the plyometric training and control group was 10.63 ± 11.50 and 2.16 ± 1.95 , respectively. The obtained "f" ratio value 5.975 ± 2035 for the post-test score is greater than required table value 4.41 for 1 and 38 degrees of freedom at 0.05 level of significant. It shows that there is a significant difference between the plyometric training and control group on agility and leg explosive power.

The adjusted post-test mean on the agility and leg explosive power of the plyometric training and control group are 10.63 ± 11.50 and 2.16 ± 1.95 , respectively. The obtained "f" ratio value of 20.35 ± 113.99 for the adjusted post-test data is greater than required table value 4.45 for 1 and 37 degrees of freedom at 0.05 level of significant. It shows that there is a significant change on the agility and leg explosive power as a result of the plyometric training of Pondicherry University south zone inter university volleyball men team. Since the result has revealed that there is significant difference between plyometric training and control group [Figures 1 and 2].

DISCUSSION

After the collection of data, appropriate statistical analysis has been done to present the discussion of findings. The results of the study showed that there was significant improvement on agility and leg explosive power due to the effect of plyometric training among university basketball players. The finding is in conformity with the results of Kotzamanidis, Markovic, and Martel.

CONCLUSIONS

Plyometric training group increases agility and leg explosive power when compare to control group.

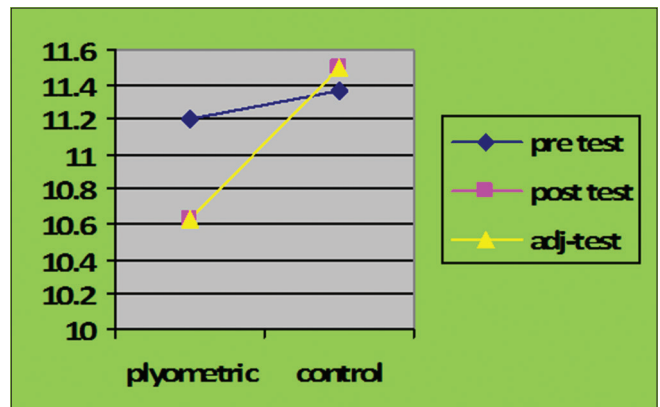


Figure 1: Agility

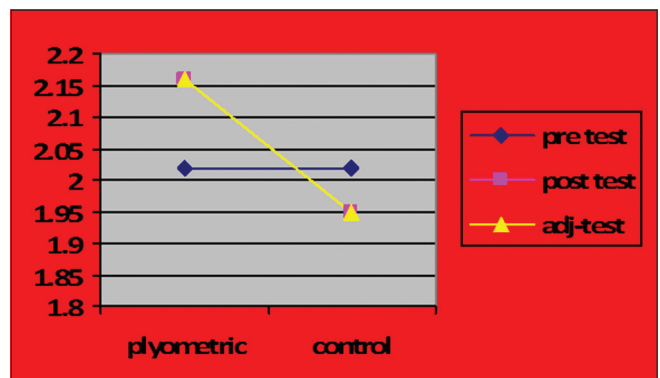


Figure 2: Leg explosive power

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