



IMPACT OF PLYOMETRIC TRAINING ON LEG EXPLOSIVE POWER AMONG COLLEGE WOMEN STUDENTS

C.Vijayalakshmi¹ Dr.S.Saroja²

¹Research scholar (Full time), Alagappa University College of Physical Education,
Alagappa University, Karaikud

²Associate Professor, Alagappa University College of Physical Education, Alagappa
University, Karaikud.

Email: vijayalakshmi95@gmail.com

Corresponding Author- C.Vijayalakshmi

DOI- 10.5281/zenodo.7189491

Abstract

The purpose of the study was to find out the Impact of Plyometric Training on Leg explosive power among College Women Students. For the purpose of the study thirty college women students from Dr.Umayal Ramanadhan College for women, Karaikudi. The subjects were aged between twenty one to twenty seven years. The subjects chosen for the study were divided into two equal groups called control and experimental group consisting of thirty students, each group consists of fifteen students. Plyometric training was given to the experimental group. The control group was not allowed to participate in any of the special training programme except their routine practices. Data for the selected variables were taken at the beginning (pre-test) and at the end of the experimental period (post-test). Leg explosive power was selected as criterion variable and measured with the reliable test namely standing broad jump test to assess changes due to the influence of plyometric training. Analysis of covariance (ANCOVA) was used for interpreting the results. On the basis of the results it is concluded that plyometric training may significantly contribute to the improvement of leg explosive power.

Key words: Plyometric Training, leg explosive Power, standing broad jump and college students.

Introduction

Physical training entails exposing the organism to a training load or work stress of sufficient intensity, duration and frequency to produce a noticeable or measurable training effect, that is, to improve the functions for which one is training. To achieve such a training effect, it is necessary to expose the organism to an overload (i.e., a stress) that is larger than the one regularly encountered during everyday life. It is a common conception in training environments that “to build up, one must first break down”. Admittedly, exposure to the training stress is associated with some catabolic processes, such as break down of glycogen, followed by an overshoot or

anabolic response that cause an increased deposition of the molecules that were mobilized or broken down during training. As to the effect on other cellular components, this is at best an imprecise statement (Astrand, 2003)

Plyometric Training

Plyometric training is specific work for the enhancement of explosive power. It improves the relationship between maximum strength and explosive the elastic energy and myotic reflex in the development of power. The muscle will resist overstretching and the kinetic energy developed in the amortization phase will be utilized in the cause a powerful contraction to prevent overstretching of the

affected muscle. Thus the momentum generated by the athlete acts as the overload to eccentrically stretch the muscle before concentric contraction a greater amount of elastic energy is stored in the muscle.

Plyometric exercise evoke the elastic properties of the muscle fibers and connective tissue in a way that allows the muscle to store energy during the deceleration phase and release that energy during the acceleration period (Asmussen, 1974; Bosco, et.al., 1982; Kaneko,et.al., 1983; Stone & O Bryant, 1986).

Methodology

To achieve the purpose, of this study thirty college women students from Dr.Umayal Ramanadhan College for Women, Karaikudi. The age of the subjects ranged from 21 to 27 years. They were assigned randomly into two groups (group I

underwent Plyometric training and (group II) acted as control group of fifteen subjects each. The experimental group was subjected to the training during morning hours for five days for six weeks and group II acted as control. The plyometric training was selected as independent variable and the criterion variable leg explosive power was selected as dependent variable and the selected dependent variable was assessed by the standardized test items. Leg explosive power was assessed by standing broad jump and the unit of measurement in meters. The experimental design selected for this study was pre and post test randomized design. The data were collected from each subject before and after the training period and statistically analyzed by using analysis of covariance (ANCOVA)

RESULTS AND DISCUSSIONS ON LEG EXPLOSIVE POWER

TABLE - I

Analysis of Covariance of Pre-test Post Test and Adjusted Post Test on Leg Explosive Power of Different Groups (Scores in Meters)

Test	Plyometric Training group	Control Group	SV	SS	Df	MS	F-Value
			Pre test				
Mean	1.86	1.86	Between	0.01	1	0.005	0.28
S.D	0.07	0.07	Within	0.75	28	0.018	
			Post test				
Mean	2.08	1.89	Between	0.54	1	0.27	10.96*
S.D	0.21	0.06	Within	1.03	28	0.025	
			Adj-Post test				
Mean	2.07	1.89	Between	0.54	1	0.27	10.77*
			Within	1.33	27	0.02	

*Significant at .05 level of confidence

Table-I shows that the pre-test means in leg explosive power of plyometric training group was 1.86 ± 0.07 and control group was 1.86 ± 0.07 , resulted in an 'F' ratio of 0.28 which indicates statistically no significant difference between the pre-test means at 0.05 level of confidence. The post-test means in leg explosive power of plyometric training group was 2.08 ± 0.21 and control group was 1.89 ± 0.06 , resulted in an 'F' ratio of 10.96 which indicates statistically significant difference

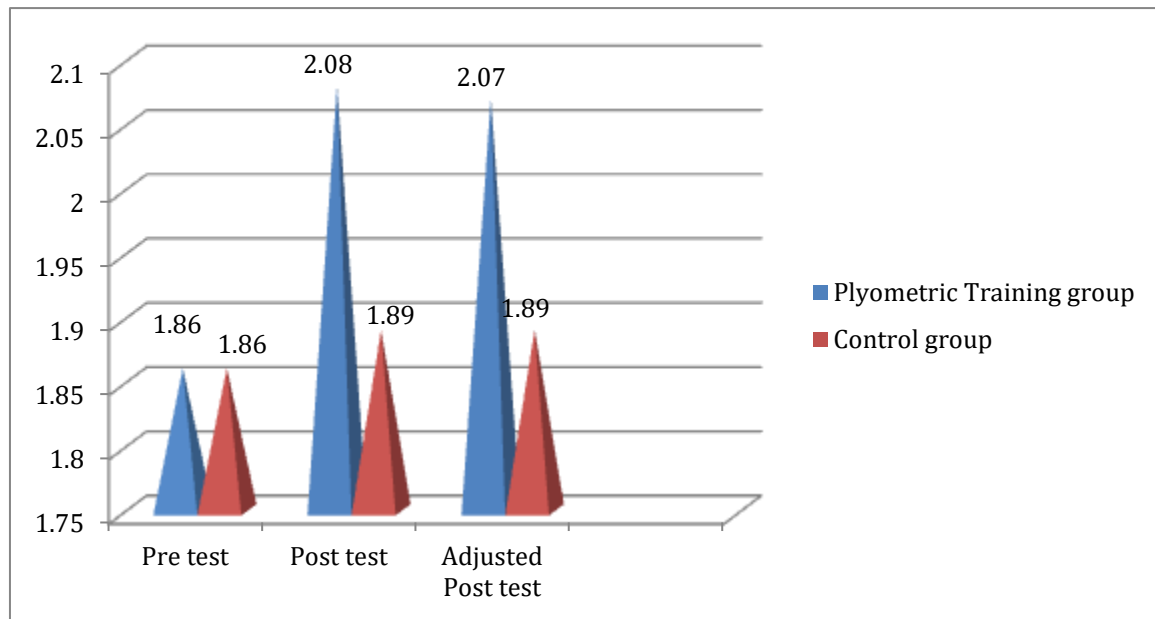
between the post-test means at 0.05 level of confidence. The adjusted post-test means in leg explosive power plyometric training group was 2.07 and control group was 1.89 resulted in an 'F' ratio of 10.77. Hence the adjusted post-test was significant at 0.05 level of confidence for the degrees of freedom 1 and 27. Since, two groups were compared, and whenever they obtained 'F' ratio for adjusted post test was found to be significant. The results of the study showed that there was a

significant different between the adjusted post test mean of Plyometric Training group

and Control group on Leg explosive power.

Figure I

Pyramid diagram of the data on Explosive Power of Experimental and Control group



Discussion And Findings

The results of the study indicated that there was a significant improvement in the Plyometric Training group in leg explosive power as compared with the control group.

Conclusion

On the basis of the result obtained from the statistically analyzed data on leg explosive power it is concluded that plyometric training may significantly contribute to the improvement leg explosive power.

References

1. Asmussen, E.(1974). Apparent efficiency and storage of elastic energy in skeletal muscles in man. *Acta Phys.Scand.*,91,385-392.
2. Adams,K.,O shea, J.P., O'shea,K.L.,& Climstein (1992). "The Effect of Six weeks of Squat, Plyometric & Squat Plyometric training on Power Production" . *Journal of Applied Sport Science & Research*. Vol.6, pp 159-164
3. Polhemus, R., Burkhart, E., Osina, M.& Patterson, M.(1981). "The Effects of Plyometric Training with Ankle & Vest Weights on Conventional Weight Training Programs for Men & Women". *National Strength & Conditioning Association Journal*. Vol 2, pp13-15.
4. Kassem, H. (2010). The Effect of Plyometric Exercises use on the Physical and Skillful Performance of Basketball players. *World Journal of Sport Sciences* 3 (4): 316-324, 2010.1pp.