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EFFECT OF PLYOMETRIC TRAINING ON EXPLOSIVE POWER OF PONDICHERRY UNIVERSITY MEN STUDENTS

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Abstract:

The purpose of this study was to find out the effect of plyometric training on explosive power of Pondicherry university men students. It was hypothesized that there would be significant improvement on explosive strength due to influence of plyometric training. This study may provide help to society in gaining knowledge about explosive power and opportunity for awareness about explosive power. The subjects were selected thirty students studying at Pondicherry University their age ranged from 18-22 years, The selected subjects were randomly assigned to experimental Group 'A' and control Group 'B'. Each group consisted of 15 subjects. Analysis of variance statics test was used to examine the collected data from the two groups before and after training program the level of significance was fixed at 0.05. The statics analysis for this study was carried out using SPSS version 20. The study were concluded that there was significant improvement in experimental group than control group in upper and lower body explosive strength

Key Words: Plyometric Training, Explosive Power

Introduction:

Plyometric:

Plyometric is known as jump training. It is a training technique designed to increase muscular power and explosiveness. Originally developed for Olympic athletes, plyometric training has become a popular workout routine for people of all ages, including children and adolescents. Plyometric training conditions the body with dynamic resistance exercises that rapidly stretch a muscle (eccentric phase) and then rapidly shorten it (concentric phase). Hopping and jumping exercises, for example, subject the quadriceps to a stretch-shortening cycle that can strengthen these muscles, increase vertical jump, and reduce the force of impact on the joints

Explosive Power:

Muscular power is the ability to release maximum muscular force in an explosive manner that is in one shortest possible time

Statement of the Problem:

The purpose of this study was to find out the effect of plyometric training on explosive power of Pondicherry university men students

Hypothesis:

It was hypothesised that there would be significant improvement on explosive strength due to influence of plyometric training.

Significance of the Study:

- This study may provide help to society in gaining knowledge about explosive power
- This study might provide opportunity for awareness about explosive power
- This study might provide opportunity for ways of improving the explosive power components during regular exercises.

Methodology:

In this chapter the selection of subjects, selection of variables, criterion and description of test, criterion variable, independent variables, reliability of equipment, test and subject reliability of equipment, administration of test and collection of data are explained with sufficient details in this chapter.

Selection of Subjects:

The purpose of the study was to find out the effect of plyometric training on explosive power. Thirty male students studying at Pondicherry University were randomly selected and their age ranged from 18-22 years. The selected subjects were randomly assigned to experimental Group 'A' and control Group 'B'. Each group consisted of 15 subjects.

Selection of Variable:

The selected subjects were randomly divided into two groups of fifteen each (n=15). Group I treated as experimental group and group II was considered as control group. The subjects were tested on explosive power using 2kg medicine ball throw test and leg explosive power using standing broad jump and the collected data was considered as pre-test data. Group I was given plyometric training. Group II acted as control group which did not underwent any training. The experimental group were given training for the period of 6 weeks. For the

first three weeks the subjects were trained for three days per week and for the next three weeks the subjects were trained for five days per week. The subjects were tested on selected criterion variables immediately after the six weeks of the training programme for post-tests data. The results of pre and post-test were statistically treated by using ANOVA analysis of variance

Analysis and Interpretation of Data:

In this chapter the data collected were analysed statically to reveal the purpose only. They do not serve the purpose unless and otherwise they were carefully processed, systematically arranged, scientifically calculated and analysed brilliantly interpreted and rationally concluded. In this study influence of independent variables namely plyometric upper body and lower body explosive power investigated. To find out the variances in the selected criterion variable due to the application of independent variable. Analysis of co-variance (ANOVA) was applied on each criterion variables

Results and Statistical Analysis:

Analysis of Variance was used to analysis the collected data. The obtained scores in pre and post-test of the experimental and control groups have been presented in tables.

Table 1: Analysis of variance for the control and experimental groups
On Medicine Ball Throw

	Control Group	Experimental Group	SOV	SS	df	M.Sq	'F'Ratio
Pre Test Mean S.D±	8.40 0.33	8.40 0.27	B W	0.00 2.58	1 28	0.00 0.92	0.00
Post Test Mean S.D±	8.39 0.31	8.93 0.21	B W	2.15 1.98	1 28	2.15 0.71	30.45*

* Significant at .05 level of confidence.

The table value required for significance at 0.05 level of confidence with df 1and 28 was 4.20. The Table I shows that the pretest means on medicine ball throw of the control and experimental groups are 8.40 and 8.40. The obtained 'F' ratio value 0.00 for the pretest mean is lesser than the required table value 4.20 for significance at 0.05 level. Hence it is not significant and it reveals that there is no significance difference between the control and experimental groups on medicine ball throw before the commencement of experimental training.

The posttest means on medicine ball throw of the control and experimental groups are 8.39 and 8.93. The obtained 'F' ratio value 30.45 for the post test mean is greater than the required table value 4.20 for significance at 0.05 level. Hence it is significant and it reveals that there is significance difference between the control and experimental groups on medicine ball throw after experimental training.

Figure 1

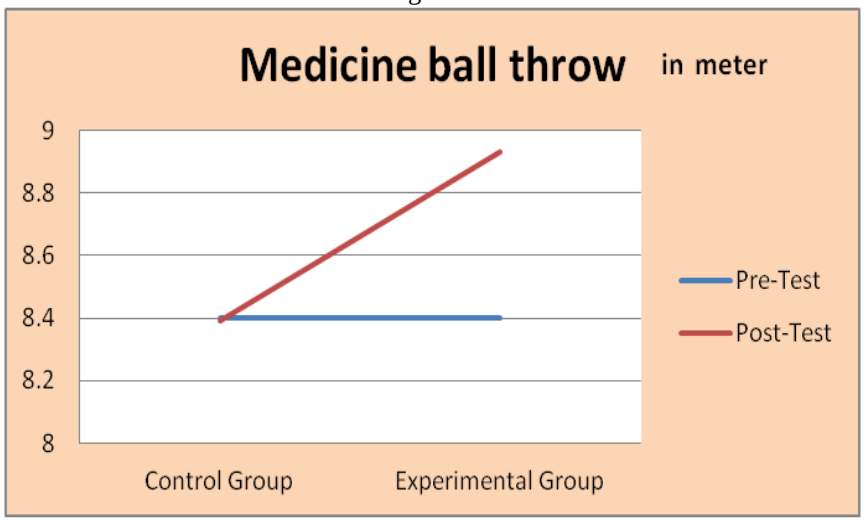


Table 2: Analysis of variance for the control and experimental groups
On Standing Broad Jump

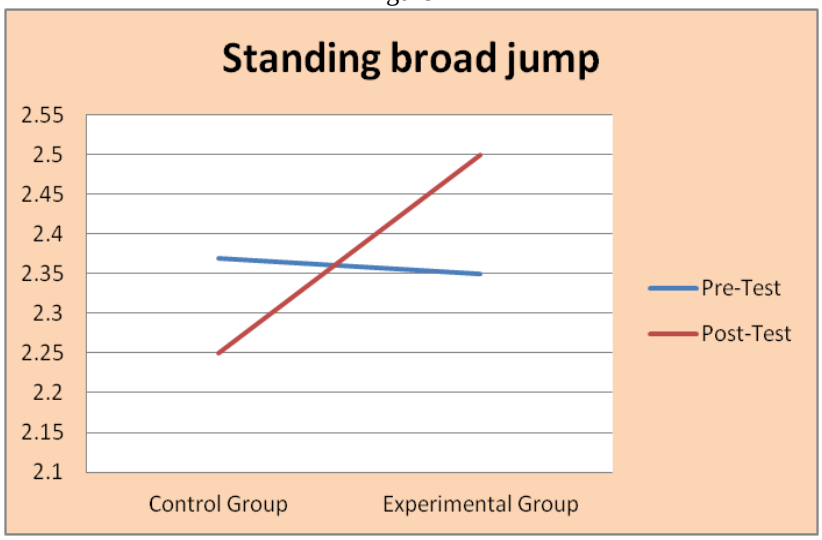
	Control Group	Experimental Group	SOV	SS	df	M. Sq.	'F' Ratio
Pre Test Mean S.D±	2.37 0.18	2.35 0.21	B W	0.11 1.09	1 28	0.11 0.04	2.797
Post-test Mean S.D±	2.25 0.17	2.50 0.20	B W	0.16 0.93	1 28	0.16 0.03	4.858*

* Significant at .05 level of confidence

The table value required for significance at 0.05 level of confidence with df 1and 28 was 4.20. The Table II shows that the pretest means on standing broad jump of the control and experimental groups are 2.37 and 2.35. The obtained 'F' ratio value 2.797 for the pretest mean is lesser than the required table value 4.20 for significance at 0.05 level. Hence it is not significant and it reveals that there is no significance difference between the control and experimental groups on standing broad jump before the commencement of experimental training.

The post test means on standing broad jump of the control and experimental groups are 2.25 and 2.50. The obtained 'F' ratio value 4.858 for the post test mean is greater than the required table value 4.20 for significance at 0.05 level. Hence it is significant and it reveals that there is significance difference between the control and experimental groups on standing broad jump after experimental training.

Figure 2



Discussion:

The purpose of the present study was to analyze the effect of six weeks plyometric training program of college men students. The finding of the study revealed that there was significant improvement on explosive power of the experimental group than the control group after six weeks of plyometric training. The present result have support the findings of several researchers who have found that the explosive power in general can be improved through plyometric jumps like Adam, T.M. (1984). Blanter, S. E. Noble (1979). Bosco, C-J-Tihany; P. V Komi: Apor (1982).Ludin, P(1985). Polhemus, R. and E. Buckhardt (1980). There are numerous other studies that have established the same effectiveness of the plyometric drills is improving explosive power.

Results:

The study were concluded that there was significant improvement in experimental group than control group in upper and lower body explosive strength

References:

1. Adams, T.M.(1984) "An investigation of Plyometric Training Exercise on Muscular leg Strength and Power"-Track and Field Quarterly Review-84(4) 36-40.
2. Augustsson, S. (2009). Strength training for physical performance and injury prevention in sports. Individualised and supervised training for female athletes, Institute of Neuroscience and Physiology. Department of Clinical Neuroscience and Rehabilitation.
3. Blattner, S. E and C. Noble (1979)," Relative Effects of Isokitic and Plyometric Training on vertical jumping Performance";Research Quarterly 583 to 588
4. Bosco. C-J-Tihany; P.V Komi; Apor (1982),"Store and Recoil of Elastic Energy in Slow and Fast Types of Human Skelatal Muscle"342-349
5. Clevidence, M. W. (2008). The Acute Effects of Differing Conditioning Loads on Counter-Movement Jump Performance in the Recreational Athlete (Doctoral dissertation, Ohio University).
6. Fatouros, I. G., Jamurtas, A. Z., Leontsini, D., Taxildaris, K., Aggelousis, N., Kostopoulos, N., & Buckenmeyer, P. (2000). Evaluation of plyometric exercise training, weight training, and their combination on vertical jumping performance and leg strength. The Journal of Strength & Conditioning Research, 14(4), 470-476.
7. Gopinath, R. (2000). Effect of Resistance Training, Plyometric Training and Combined Resistance and Plyometric Training on Strength, Power and Speed Parameters. Unpublished Doctoral Thesis.
8. Hopper, B., Grey J & Maude, P. (2005). Teaching physical education in the primary school. Routledge.
9. Kotzamanidis, C. (2006). Effect of plyometric training on running performance and vertical jumping in prepubertal boys. The Journal of Strength & Conditioning Research, 20(2), 441-445.

10. Ludin,P(1985),"A Review of Plyometric Training, National strength and conditioning Association, Journal 69-79
11. Luebbers, P. E., Potteiger, J. A., Hulver, M. W., Thyfault, J. P., Carper, M. J., & Lockwood, Effects of plyometric training and recovery on vertical jump performance and anaerobic power. The Journal of Strength & Conditioning Research, 17(4), 704-709, 2003
12. Markovic, G. (2007). Does plyometric training improve vertical jump height? A meta-analytical review. British journal of sports medicine, 41(6), 349-355.
13. Markovic, G., Jukic, I., Milanovic, D., & Metikos, D. (2007). Effects of sprint and plyometric training on muscle function and athletic performance. The Journal of Strength & Conditioning Research, 21(2), 543-549
14. Matavulj, D., Kukolj, M., Ugarkovic, D., Tihanyi, J., & Jaric, S. (2001). Effects of plyometric training on jumping performance in junior basketball players. Journal of sports medicine and physical fitness, 41(2), 159.
15. Polhemus, R.and E.Buckhardt(1980),"The Effect of Plyometric Training Drills on the Physical Strength Gains of Collegiate Football Players", Track and Field Quarterly Review-14-40.
16. Sae, E., De Villarreal, A. E. Z., Kellis, E., Kraemer, W. J., & Izquierdo, M. (2009). Determining variables of plyometric training for improving vertical jump height performance: ameta-analysis.
17. Thomas, K., French, D., & Hayes, P. R. (2009). The effect of two plyometric training techniques on muscular power and agility in youth soccer players. The Journal of Strength & Conditioning Research, 23(1), 332-335.