ISSN: 2349 - 4891

International
Journal of Recent Research and Applied Studies

Effect of Weight Training and Plyometric Training on Explosive Power and Speed

R. Lakshmikrishnan[1] & Dr. K. Sivakumar[2]

[1] *Ph.D. Research Scholar, Department of Physical Education and Sports Sciences, Annamalai University, Chidambaram, Tamilnadu, India.*
[2]*Associate Professor, Department of Physical Education and Sports Sciences, Annamalai University, Chidambaram, Tamilnadu, India.*

Received 25th June 2014, Accepted 10th July 2014

Abstract

The purpose of the present study was to find the effect of weight training and plyometric training on explosive power and speed. For this purpose, thirty male students studying in various classes in the faculty of Agriculture of Annamalai University in the age group of 19 – 25 years were selected. They were divided into three equal groups, each group consisted of ten subjects, in which group – I underwent weight training, group – II underwent plyometric training and group – III acted as control group who did not participate in any special training. The training period for this study was three days in a week for twelve weeks. Prior to and after the training period the subjects were tested for explosive power by conducting Sergeant Jump test and speed was assessed by administering 50 meters dash. The statistical toll used for this study is analysis of covariance (ANCOVA). Whenever the 'F' ratio was significant, the Scheffé S was applied as post-hoc test. It was concluded after the weight training and plyometric training periods, both the training groups were improved all the criterion variables (P < 0.05), such as, explosive power in terms of vertical distances and speed significantly. Moreover there was a significant difference (P > 0.05) was found between the training groups, in which, plyometric training group improved the explosive power in terms of vertical distances and speed than the weight training group.

Keywords: Weight Training, Plyometric Training, Explosive Power, Speed.

© Copy Right, IJRRAS, 2014. All Rights Reserved.

Introduction

'Sports' is a popular spectacle and a mass social movement of contemporary times. In the process of historical development sports has occupied a prominent place both in the moral culture of a society. Its social significance continues to soar. In the modern days 'sports for all' become a very popular slogan. Participation in sports will yield optimum physical fitness and positive health for all. In the hurry scenario of modern life people need more exercise to keep their body and mind fit to execute the day-to-day activities effectively.

The word training means difference things in different fields. In sports the word training is generally understand to be a synonyms doing physical exercise. In a narrow sense, training is doing physical exercise for the improvement of performance. This concept is reflected in worlds for terms which give a separate methods of procedures of doing physical exercise. Sports medicine and exercise physiology also understand training to be doing physical exercise for improvement of performance. Training is a systematic process of repetitive progressive exercise of work involving, learning and acclimatization. Sports training is a scientifically based and pedagogically organized process which through planned and systematic effect on performance ability and performance readiness aims at sports perfection and performance improvement as well as at the contest in sports competition.

Plyometrics is a popular training technique used by many coaches today. It has been tested as a way to bridge the gap between sheer strength and power. The term plyometrics can be used to describe any exercise that allows the athletes to take advantage of the stretch-shortening cycle to produce an explosive movement. Although plyometric training has been around for many years, there is still debate on it effectiveness and safety. This literature review seeks to review all relevant information on plyometric training so that its value can be assessed as a training technique.

Weight training is use of resistance other than the weight of the body to develop specific areas of the body. Generally, it is used to develop explosive power and power. It also develops muscular endurance, elasticity and co-ordination. Explosive power can be increased, either by increasing the amount of work or by decreasing the amount of time. Throwing and jumping events, serving in tennis are some of the sticking examples for power.

Speed is the ability of an individual to make

Correspondence
Dr. K.Sivakumar,
Annamalai University
E-mail: shivameyy@gmail.com, Ph. 098658 08889

successive movement of the same kind in the shortest possible time. "Speed is the performance prerequisite to do motor actions under given conditions (movement task, external factors, individual prerequisites) in minimum of time".

Methods

This study under investigation involves the experimentation of weight training and plyometric training on explosive power and speed. Only male students those who were studying in various classes from the faculty of Agriculture of Annamalai University and aged between 19 and 25 years were selected. The selected thirty subjects were randomly divided into three groups of ten each, out of which group - I (n = 10) underwent weight training, group - II (n = 10) underwent plyometric training and group - III (n = 10) remained as control. The training programme was carried out for three days per week for twelve weeks. Explosive power in terms of vertical distances was assessed by administering Sergeant Jump and speed was assessed by administering 50 meters dash.

Results and Discussion

The data collected prior to and after the experimental periods on explosive power and speed on weight training group, plyometric training group and control group were analysed and presented in the following table -I.

Table 1. Analysis of Covariance and 'F' ratio for Explosive power and Speed for Weight training Group, Plyometric training Group and Control Groups

Variable Name	Group Name	Weight Training Group	Plyometric Training Group	Control Group	'F' Ratio
Explosive power (in cms)	**Pre-test Mean ± S.D**	23.7 ± 1.337	23.0 ± 1.491	23.8 ± 1.317	0.992
	Post-test Mean ± S.D.	25.8 ± 1.989	26.7 ± 2.111	22.9 ± 1.524	11.02*
	Adj. Post-test Mean	25.614	27.166	22.620	25.599*
Speed (in sec.)	**Pre-test Mean ± S.D**	7.701 ± 0.099	7.68 ± 0.087	7.723 ± 0.103	0.496
	Post-test Mean ± S.D.	7.622 ± 0.093	7.533 ± 0.063	7.746 ± 0.094	16.11*
	Adj. Post-test Mean	7.622	7.547	7.731	27.824*

* Significant at .05 level of confidence.
(The table value required for significance at .05 level of confidence with df 2 and 43 and 2 and 42 were 3.21 and 3.22 respectively).

Table 1. Scheffĕ S Test for the Difference Between the Adjusted Post-Test Mean of Explosive power, Self-concept and Blood Pressure (systolic and diastolic)

Adjusted Post-test Means of Explosive power (in cms.)				
Weight training Group	**Plyometric training Group**	**Control Group**	**Mean Difference**	**Confidence interval at .05 level**
25.164		22.620	2.544*	1.63661
25.164	27.166		2.002*	1.63661
	27.166	22.620	4.546*	1.63661
Speed (in sec.)				
7.622		7.731	0.109*	0.0631798
7.622	7.547		0.075*	0.0631798
	7.547	7.731	0.184*	0.0631798

Table – II shows that the Scheffĕ *S* test on speed for the difference between adjusted post-test mean of weight training group and control group was 2.544, plyometric training group and control group was 2.002 and weight training group and plyometric training group was 4.546 which was significant at .05 level of confidence on explosive power in terms of vertical distances.

Table – II shows that the Scheffĕ *S* test on speed for the difference between adjusted post-test mean difference of weight training and control groups was 0.109, plyometric training group and control group was 0.184 and weight training and plyometric training group was 0.184, which were significant at .05 level of confidence.

Conclusions

The result of the study also shows that there was a significant improvement in explosive power in terms of vertical and horizontal distances after weight training and plyometric training. Gopionath (2000) quoted that there was a significant improvement in explosive power after the resistance training. Sedano, Matheu, Redondo and Cuadrado (2011) and Fatouros *et al* (2000) found that there was a significant improvement in explosive strength after the plyometric training programme.

Both, weight training group and plyometric training group have significantly improved their speed performance when compared with the control group. Sathyanaryana Reddy (1993) and Gopinath (2000) found that there was a significant improvement in speed after the weight training and plyometric training programme. In the present study, plyometric training group have significantly improved the explosive power and speed when compared with the weight training group. Weight training group have also significantly improved speed when compared with the control group.

References

1. Hardayal Singh, *Sports Training: General Theory Methods*, (Patiala: N.I.S. Publishing, 1986), p.45.
2. Daniel D. Arnheim and Carl E. Klafs, *Modern Principles of Athletic Training*, (St. Louis: The C.V. Mosby Publishers, 1963), p. 93.
3. Hardayal Singh, *Science of Sports Training*, (New Delhi: D.V.S. Publications, 1991), p.14.
4. Robert W. Anderson, "The Effect of Weight Training on Total Body Reaction Time", *Unpublished Master Thesis*, University of Illinois, (1957).
5. Frank W. Dick, Carl Johnson and Walf Paish, *Strength Training for Athletics*, (London: British Amateur Athletic Board, 1978), p.6.
6. R. Gopinath, "Effect of Resistance Training, Plyometric Training and Combined Resistance and Plyometric Training on Strength, Power and Speed Parameters", *Unpublished Doctoral Thesis*, Annamalai University, (2000).
7. S. Sedano, A. Matheu, J.C. Redondo and G. Cuadrado, "Effects of Plyometric Training on Explosive Strength, Acceleration Capacity and Kicking Speed in Young Elite Soccer Players", *J Sports Med Phys Fitness*, 51:1, (March 2011), 50 – 8.
8. Ioannis G. Fatouros, Athnasios Z. Jamurtas, Taxildaris D. Leontsini, Aggelousis N. Kyriakos and Philip Buckenmeyer, "Evaluation of Plyometric Exercise Training, Weight Training and Their Combination on Vertical Jumping Performance and Leg Strength", *Journal of Strength and Conditioning Research*, 14:4, (2000), 470-476.
9. P. Sathyanaryana Reddy, "Relative Effects of Plyometric and Weight Training Followed by Plyometric Training on Power, Speed, Stride Length and Stride Frequency", *Unpublished Doctoral Dissertation*, Annamalai University, Annamalainagar, (1993).

Please cite this article as: . Lakshmikrishnan & Dr. K. Sivakumar. Effect of Weight Training and Plyometric Training on Explosive Power and Speed**.** *International Journal of Recent Research and Applied Studies*, 2014, 2 (4), 16 -18.