Research Paper

Volume : 4 | Issue : 9 | Sept 2015 • ISSN No 2277 - 8179

Differrent Trainings on Power of Sprinters

Physical Education

KEYWORDS : Complex Training, combined Training and power

M.KALIDASAN Research Scholar, Dept of Physical Education ,H.H.The Rajah's College, Pudukkottai

Dr. A.S. NAGESWARAN Associate Professor, Dept of Physical Education, H.H.The.Rajah's College, Pududukkottai.

ABSTRACT

The purpose of the study is to find out the effect of different trainings on power of sprinters, twenty male college participants from bharathidasan university was selected as participants and they were ranged from 19 to 23 years. The selected participants were randomly assigned to one of Two groups of ten each (n=10). The Group I underwent combined training and Group II underwent complex training for duration of 8 week of 24 morning sessions with alternative three days per week in addition to the regular training programme. The Criterion variable explosive power (Horizondal) and explosive power (vertical) were selected as a dependent variables and the selected dependent variables were assessed by the standardized test items. Explosive power (horizondal) was assessed by standing broad jump unit of measurement in meters and explosive power (vertical) was assessed by sargent jump unit of measurement in meters. The experimental design selected for this study was pre and post test random group design. The data were collected from each participant before and after the training period and statistically analyzed by using dependent 't' test and analysis of covariance (ANCOVA) was applied to find out significant difference if any between the experimental group. It was found that there was a significant improvement and significant different exist due to the effect of combined training, complex training on explosive power of sprinters.

INTRODUCTION

Athletic performance has dramatically progressed over the past few years. Performance levels unimaginable before are now commonplace and the number of athletes capable of outstanding result is increasing. Why such dramatic improvements? There is no simple answer because sports is a challenging field, and intense motivation has encouraged long, hard hours of work. Also, coaching has become more sophisticated, partially from the assistance of sports specialists and scientists. A broader base of knowledge about athletes now exists, which is reflected in methodology of training **(Bomba, 1999).**

In today's modern trend, sports depends heavily upon the athletes muscular strength and explosive leg power for jumping, throwing, team games and other sports activities. The athlete must be able to use strength as quickly and forcefully as possible. This display comes in the form of speed - strength.

A combination of weight training and plyometric training yields greater results than either done alone (**Adams et al., 1992**). One needs to train with both heavy and light loads to develop speed-strength, maximum strength and power are not distinct entities, that influenced by train to combine both the strength and speed components for maximum power most of physical activity requires a combination of strength and speed.

Complex training is a training which activates and works the nervous system and fast twitch muscle fibers simultaneously within same training session. The weight training exercise activates the fast twitch muscle fibers (responsible for explosive power). Then, the plyometric movement stresses those muscle fibers that have been activated by the weight training movement. i.e., Fatigue associated with heavy weight training may increase motor unit recruitment during subsequent plyometrics exercise. During this activated state, the muscles have a tremendous ability to adapt.

Power is the determinant ability of achieving a good performance and also defined as the optimal combination of speed and strength to produce movement **(Chu, 1998).** Power is the ability to project the body or an object through space (or to do work against time). Power is basic to jumping activities (projecting the body) and to throwing and putting activities (projecting an object). Power is also the basic element in maximum striking and sprinting against increased strength causes increases ability to apply force. Therefore, if velocity remains constant increased strength contributes to power **(Jensen, Schultz, and Bangerter, 1984).**

The necessity for power development in sports needs no debate. As such, coaches, athletes and strength and conditioning specialists dedicate a significant amount of their time working on muscular power development. Present training programs to improve power are comprised of resistance or plyometric training, a combination of training (weight training and plyometric training) and modified methods of combined training into complex training **(Mihalik, Libby, Battaglini and McMurray, 2008).**

METHODOLOGY

To achieve the purpose of the present study, twenty male college participants from bharathidasan university was selected as participants and they were ranged from 19 to 23 years. The selected participants were randomly assigned to one of Two groups of ten each (n=10). The Group I underwent combined training and Group II underwent complex training for duration of 8 week of 24 morning sessions with alternative three days per week in addition to the regular training programme. The Criterion variable explosive power (Horizondal) and explosive power (vertical) were selected as a dependent variables and the selected dependent variables were assessed by the standardized test items. Explosive power (horizondal) was assessed by standing broad jump unit of measurement in meters and explosive power (vertical) was assessed by sargent jump unit of measurement in meters. The experimental design selected for this study was pre and post test random group design. The data were collected from each participant before and after the training period and statistically analyzed by using dependent 't' test and analysis of covariance (ANCOVA) was applied to find out significant difference if any between the experimental group.

RESULTS AND DISCUSSIONS

Table – I

PAIRED SAMPLE 't' TEST OF COMBINED AND COMPLEX TRAINING GROUP ON SELECTED DEPENDENT VARIABLES

Name of training groups	Name of dependent variables	Pre test mean	Post test mean	't'
COMBINED	Explosive Power (Horizontal)	206	216	10.58*
	Explosive Power (Vertical)	45.20	52.1	19.83*

COMPLEX				
	Explosive Power (Horizontal)	205	220	16.54*
	Explosive Power (Vertical)	45.40	53.50	21.40*

*Significant of 0.05 level

Table value for level of significant df 9 was 2.262.

The paired sample 't' was compute on selected dependent variables. The results were presented in the above Table I. All the 't' values are significantly higher than the required table value of df 9 at 0.05 level of confidence was 2.262. The result of the study shows that the combined (weight and plyometrics) training and complex training group significantly improved the performance of all the selected dependent variables. The results of the study shows that all selected dependent variables explosive power (horizondal) and explosive power (vertical) significantly improve the performance due to the 8 week combined training and complex training program.

Explosive Power (Horizontal)

Table II Presents the results of the ANCOVA combined training and complex training group on Explosive Power (Horizontal)

Table –II

ANALYSIS OF COVARIANCE COMPUTE FOR COMBINED TRAINING AND COMPLEX TRAINING GROUP FOR EXPLOSIVE POWER (HORIZONTAL)

Source	SS	df	ms	F
Groups	89.087	1	89.087	10.617*
Error	142.653	17	8.391	

*Significant at 0.05 level of confidence

Table value required for significance at 0.05 level of 1 & 17 was 3.59

One way analysis of covariance (ANCOVA) was computed for A Explosive Power (horizontal). The independent variables included two training groups, namely combined training, and complex training. The dependent variable was explosive power (horizontal) and the covariate was an initial performance of the standing broad jump. The ANCOVA 'F' ratio was significant for df (1, 17) = 10.62, p <0.05 (See Table II). In order to find out which of the paired means significantly differ scheffe's post hoc test is applied and effect size were present in the Table III for two training groups.

Table – III

SCHEFFE'S POST HOC PAIRED MEANS COMPARISONS AND EFFECT SIZE ON EXPLOSIVE POWER (HORIZONTAL) OF EXPERIMENTAL GROUPS

Group	Adjusted mean	Adjusted mean differences (Effect size are indicated in parentheses)	
		1	2
Combined	2.163	----	
Complex	2.206	3.809	----

*Significant at 0.05 level of confidence Scheffe's C.I value 4.16;

Follow-up was conducted to evaluate pairwise differences among the adjusted means for experimental groups. The results showed that complex training group (M = 2.206) had significantly better than the combined training group (M = 2.163). Complex training group and combined training group did not show any significant differences in Explosive Power (horizontal) performance.

Explosive Power (Vertical)

Table VI Presents the results of the ANCOVA for combined training and complex resistance training group on Explosive Power (Vertical)

Table –VI

ANALYSIS OF COVARIANCE COMPUTED FOR COMBINED TRAINING AND COMPLEX TRAINING GROUP FOR EXPLOSIVE POWER (VERTICAL)

Source	SS	df	ms	F
Groups	7.035	1	7.035	5.088*
Error	23.505	17	1.383	

*Significant at 0.05 level of confidence

Table value required for significance at 0.05 level of 1 & 17 was 3.59

One way analysis of covariance (ANCOVA) was computed for Explosive Power (vertical). The independent variables included two training groups, namely combined training, and complex training. The dependent variable was Explosive Power (vertical) and the covariate was an initial performance of the sargent jump. The ANCOVA 'F' ratio was significant for df (1, 17) = 5.088, p <0.05 (See Table VI). In order to find out which of the paired means significantly differ scheffe's post hoc test is applied and effect size were present in the Table V for four training groups.

Table – V

SCHEFFE'S POST HOC PAIRED MEANS COMPARISONS AND EFFECT SIZE ON EXPLOSIVE POWER (VERTICAL) OF EXPERIMENTAL GROUPS

Group	Adjusted mean	Adjusted mean differences (Effect size are indicated in parentheses)	
		1	2
Combined	52.175	----	
Complex	53.375	1.54	----

*Significant at 0.05 level of confidence Scheffe's C.I value 1.68;

Follow-up was conducted to evaluate pairwise differences among the adjusted means for experimental groups. The results showed that complex training group (M = 53.375) had significantly better than the combined training group (M = 52.175). Complex training group and combined training group did not show any significant differences in Explosive Power (vertical) performance.

CONCLUSIONS

From the study the following conclusions were arrived at.

1. There was significant improvement in combined training group and complex resistance training group participants in explosive power (horizondal) and explosive power (vertical).
2. The experimental groups namely combined training and complex training groups had significant difference towards improving the participants explosive power (horizondal) and explosive power (vertical).
3. Complex training group and combined training group did not show any significant differences in explosive power (horizondal) and explosive power (vertical).

Volume : 4 | Issue : 9 | Sept 2015 • ISSN No 2277 - 8179

REFERENCE

1. Adams, K, O'Shea, JP, O'Shea, KL, and Climstein, M.(1992) The effect of six weeks of squat, plyometric and squat-plyometric training on power production. The Journal of Strength & Conditioning Research, 6, 36–41. | | 2. Bomba, Tudor O. (1999). Periodation: Theory and Methodology of Training (4th ed). Champaign, IL: Human Kinetics. | | 3. Chu, D, A. (1998). Jumping into Plyometric (2nd ed). Champaign, IL: Human Kinetics. | | 4. Jensen, R. L., & Ebben, W. P. (2003). Kinetic analysis of complex training rest interval effect on vertical jump performance. The Journal of strength and conditioning research, 17(2), 345-349.doi: 10.1519/1533-4287(2003)017<0345:KAOCTR>2.0.CO;2 | | 5. Mihalik, J. P., Libby, J. J., Battaglini, C. L., & McMurray, R. G. (2008). Comparing short-term complex and compound training programs on vertical jump height and power output. The Journal of Strength & Conditioning Research, 22(1), 47-53 doi: 10.1519/JSC.0b013e31815eee9e