Research Paper Physical Education

Effects of Power Training with Varied Intensity on Selected Motor Fitness Variables among College Men Volleyball Players

* Dr. A. Palanisamy ** M. Franklin *** Mr. S. Dhanaraj

* Associate Professor, Department of Physical Education, Bharadhidasan University, Trichy.

** Research Scholar, Alagappa University, Karaikudi

*** Assistant Professor, College of Physical Education, Alagappa University, Karaikudi.

ABSTRACT

The purpose of this study was to find out the effects of power training with varied intensity on selected motor fitness variables among college men volleyball players. The study was conducted on thirty men volley ball players from various Education Colleges in Kanyakumari District whom were randomly selected as subjects. Then they were randomly assigned equally into three groups. Group - I underwent low intensity power Training Group (n = 10), Group -II underwent high intensity power training Group (n = 10) and Group – III acted as control Group (n = 10). The experimental groups were subjected to the training for three days in a week for a period of 6 weeks. The dependent variables namely leg explosive power and agility were selected and measured by vertical jump and shuttle run test. The Data was collected from each subject before and after the training period and statistically analyzed by dependent't' test and analysis of covariance (ANCOVA). Whenever the 'F' ratio for adjusted post test means was found to be significant, the Scheffe's test was applied as post-hoc test to determine the paired mean differences. The level of confidence was fixed at 0.05 levels for all the cases. It was found that there was a significant improvement in motor fitness variables due to the effects of low intensity power training and high intensity power training.

Keywords : Power Training, Low Intensity, High Intensity, Shuttle Run, Agility and Standing Broad Jump.

INTRODUCTION

Sports training is a planned and controlled process in which, achieving a goal, change in complete sports motor performance, ability to act an behavior are modular made through measures of content, methods and organization.

A new form of "Isotonic training", power training become popular during the late 1970's and early 1980's proposed to bridge the gap between speed and strength. "Power Training" uses the 'Stretch reflex' to facilitate the recruitment of additional motor skills units and loads both the elastic and contractile components of muscle (Wilmore and Costil, 1988).

Power training may be called as Plyometric, which is derived from Latin word Plyometrics. It means "measurable increases", which refers to the exercises that enable the muscle to reach maximum strength in a short a time as possible.

For many years coaches and athletes have sought to improve power in order to enhance performance. Throughout this century and no doubt long before, jumping, bounding and hopping exercise have been used in various ways to enhance Athletic performance. In recent years this distant method of training for power or explosiveness has been termed Plyometrics.

Most jumping and power activities involve a counter movement during which the muscles involved are first stretched rapidly and shortened to accelerate the body or limb. This type of muscle action is known as "Plyometric Contraction".

STATEMENT OF THE PROBLEM

The purpose of the study is to find out the effects of power training with varied intensity on selected motor fitness variables among college men volleyball players.

HYPOTHESIS

1. It was hypothesized that there would be significant improvement on leg explosive power and agility due to the effect of power training with varied intensity.
2. It was hypothesized that there would be a significant difference among low intensity power training, high intensity power training and control groups on leg explosive power and agility of college men volleyball players.

Methodology

The study was conducted on thirty men volleyball players from various Education College in Kanyakumari District whom were randomly selected as subjects. They were randomly assigned equally into three groups, Group - I underwent low intensity power Training Group (n = 10), Group -II underwent high intensity power training Group (n = 10) and Group – III acted as control Group (n = 10). The experimental group was subjected to the training for three days in a week for a period of 6 weeks. The dependent variables namely leg explosive power and agility were selected and measured by shuttle run and standing broad jump. The Data was collected from each subject before and after the training period and statistically analyzed by dependent't' test and analysis of covariance (ANCOVA). Whenever the 'F' ratio for adjusted post test means was found to be significant, the scheffe's test was applied as post-hoc test to determine the paired mean differences. The level of confidence was fixed at 0.05 levels for all the cases. It was found that there was a significant improvement in motor fitness variables due to the effects of low intensity power training and high intensity power training.

ANALYSIS OF THE DATA

The effects of independent variables on selected motor fitness variables were determined through the collected data by using appropriate statistical techniques and the results are presented below.

The analysis of dependent't' test on the data obtained for leg explosive power and agility of the pre and post-test means of low intensity power training, high intensity power training and control groups have been analysed and presented in table I.

TABLE –I
THE SUMMARY OF MEAN AND DEPENDENT't' TEST FOR THE PRE AND POST TESTS ON LEG EXPLOSIVE POWER AND AGILITY OF EXPERIMENTAL GROUPS AND CONTROL GROUP

Variables	Mean	Low Intensity Power Training Group	High Intensity Power Training Group	Control group
Leg Explosive power	Pre test	43.1	42.9	43
	Post test	47.6	50	43.2
	't' test	14.64	6.64	0.41
Agility	Pre test	17.6	17.43	17.61
	Post test	17.14	16.42	17.62
	't' test	17.25	14.63	0.21

*** Significant at 0.05 level. (The table value required for .05 level of significance with df 9 is 2.26).**

The Table I show that the pre-test mean value of leg explosive power in low intensity power training, high intensity power training and control groups are 43.1, 42.9 and 43 respectively. The post test means are 47.6, 50 and 43.2 respectively. The obtained dependent t-ratio values between the pre and post test means of low intensity power training, high intensity power training and control groups are 14.64, 6.64 and 0.41 respectively. The table value required for significant difference with df 9 at 0.05 level is 2.26. Since, the obtained 't' ratio value of experimental groups are greater than the table value, it is understood that low intensity power training, and high intensity power training had significantly improved the leg explosive power performance. However, the control group has not improved significantly. The obtained't' value is less than the table value, as they were not subjected to any specific training.

The pre-test mean values of agility in low intensity power training, high intensity power training and control groups are 17.6, 17.43 and 17.61 respectively. The post test means are 17.14, 16.42 and 17.62 respectively. The obtained dependent t-ratio values between the pre and post test means of low intensity power training, high intensity power training and control groups are 17.25, 14.63 and 0.21 respectively. The table value required for significant difference with df 9 at 0.05 level is 2.26. Since, the obtained 't' ratio value of experimental groups are greater than the table value, it is understood that low intensity power training and high intensity power training had significantly improved the agility performance. However, the control group has not improved significantly. The obtained't' value is less than the table value, as they were not subjected to any specific training.

The analysis of covariance on leg explosive power and agility of low intensity power training, high intensity power training and control groups have been analysed and presented in Table II.

TABLE - II
ANALYSIS OF COVARIANCE ON LEG EXPLOSIVE POWER AND AGILITY OF LOW INTENSITY POWER TRAINING, HIGH INTENSITY POWER TRAINING AND CONTROL GROUPS

Variables	Adjusted post test means			Source of variance	Sum of squares	DF	Mean squares	Obtained F-Ratio
	Low Intensity Power-Training	High Intensity Power-Training	Control group					
Leg Explosive power	47.56	50.04	43.2	Between	239.69	2	119.85	31.84*
				Within	97.88	26	3.76	
Agility	16.93	16.33	17.56	Between	5.18	2	2.59	99.84*
				Within	0.68	26	0.26	

*** Significant at .05 level of confidence (The table value required for Significance at .05 level with df 2 and 26 is 3.37)**

The table II shows that the adjusted post test means of leg explosive power and agility on low intensity power training, high intensity power training and control groups are 47.56, 50.04 and 43.2, and 16.93, 16.33 and 17.56 respectively. The obtained 'F' ratio value is 31.84 and 99.14, which is higher than the table value of 3.37 with df 2 and 26 required for significance at 0.05 level. Since the value of F- ratio is higher than the table value of 3.37 for df 2 and 26 required for significance at .05 level of confidence. It indicates that there is significant difference among the adjusted post test means of low intensity power training, high intensity power training and control groups on leg explosive power and agility.

To find out which of the three paired means had a significant difference, the Scheffe's post-hoc test was applied and the results are presented in Table III.

TABLE III
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED POST TEST PAIRED MEANS OF LEG EXPLOSIVE POWER AND AGILITY

Variables	Adjusted Post Test Mean			Mean Difference	Confidence Interval
	Low intensity power training	High intensity power training	Control Group		
Leg explosive power	47.56	50.04		2.48	2.25
	47.56		43.2	4.36	
		50.04	43.2	6.84	
Agility	16.93	16.33		0.60	0.59
	16.93		17.56	0.63	
		16.33	17.56	1.23	

The table III shows that the adjusted post test mean difference in leg explosive power between low intensity power training and high intensity power training, low intensity power training and control group, and high intensity power training and control groups are 2.48, 4.36 and 6.84 respectively, which are higher than the confidence interval value of 2.25 at .05 level of confidence. This shows that there is significant difference between the three group's namely low intensity power training, high intensity power training and control groups.

The adjusted post test mean difference in agility between low intensity power training and high intensity power training, low intensity power training and control group, and high intensity power training and control groups are 0.60, 0.63 and 1.23 respectively, which are higher than the confidence interval value of 0.59 at .05 level of confidence. This shows that there is significant difference between the three group's namely low intensity power training, intensity power training and control groups.

The result of the study indicates that, there is significant difference between the three group's namely low intensity power training, high intensity power training and control groups on the performance of leg explosive power and agility. It is revealed that the experimental group's namely low intensity power training and high intensity power training improved the leg explosive power and agility when compared to the control group. Hence the researcher hypothesis was accepted and null hypothesis were rejected.

CONCLUSIONS

1. The experimental group's namely low intensity power training and high intensity power training had achieved significant improvement on the performance of leg explosive power and agility of college men volleyball players.
2. It was concluded that there was a significant difference among low intensity power training group, high intensity power training group and control groups on leg explosive power and agility of college men volleyball players.
3. It was concluded that high intensity power training group is better than low intensity power training group and control group in improving agility and leg explosive power performance.

REFERENCES

1. Baker D, Wilson G, Carluon R(1994) periodizutan : the effect on strength of manipulating volume and intensity of strength Research quarterly 8(4):235236,241 | | 2. Harrison H.Clarke "Application of measurement to Health and physical Education" (5 th Ed); Englewood cliffs: N.J.prentic Inc 1976. | | 3. Sethu.S (2004) "Effect of maximal power Training on speed, Explosive power and leg strength" journal of studies in physical education and sport sciences, | Vol.3No.1 - 65 | 4. Bourchers and R.M.Malinam.,"Genetics of Physical Fitness and Motor Performance" Exercise and sports sciences Reviews, 11, 1999. | | |