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Effects of varied intensities of plyometric training on selected speed and power parameters

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ABSTRACT

The purpose of this study was to find out the relative effects of varied intensities of power training on speed and explosive power in terms of vertical of university men students. To achieve the purpose of this study, forty five men students studying bachelors degree in the Department of Physical Education and Sports Sciences, Annamalai University were selected as subjects and they were divided into three equal groups of fifteen each. Group I underwent power training with high intensity, Group II underwent power training with low intensity. Group I and Group II underwent their respective training programmes for three days per week for twelve weeks and Group III acted as control in which they didn't undergo any special training programme apart from their daily curricular activities. The selected subjects were tested on the selected criterion variables such as speed and explosive power in terms of vertical at prior and immediately after the training programme. The analysis of covariance was used to find out the significant differences, if any, at prior and immediately after the training programme among groups on selected criterion variables separately. Whenever the obtained 'F' ratio for adjusted post test was found to be significant, the Scheffe's test was applied as post hoc test to determine the paired men differences, if any. The level of confidence was fixed at .05 level which was considered as an appropriate. The results of the study showed that there was a significant difference among progressive weight training group and fluctuated weight training group, and control group on anaerobic power and explosive power in terms of vertical distance. And also it showed that there was a significant improvement on anaerobic power and explosive power in terms of vertical distance due to progressive weight training and fluctuated weight training.

INTRODUCTION

Fitness has become a national concern. Basically, fitness means being in physical condition and being able to function at one's best level. But more than the body is involved. Total fitness for living necessarily involves spiritual, mental, emotional and social as well as physical qualities. Plyometric training can take many forms, including jump training for the lower extremities and medicine ball exercises for the upper extremities. Each jump training exercises were classified according to the relative demands they placed on the athlete. All the exercises are progressive in nature, with a range of low to high intensity in each type of exercise. The classifications of exercises are jumps in place; standing jumps; multiple hops and jumps, bounding, box drills and depth jumps.

METHODOLOGY

The purpose of the study was to find out the effects of progressive and fluctuated weight training on selected power parameters. To achieve this purpose of the study, forty-five men students studying in the Department of Physical Education and Sports Sciences, Annamalai University, Annamalainagar, Chidambaram were selected as subjects at random. The selected subjects were divided into three equal groups of fifteen subjects each, such as progressive weight training group, fluctuated weight training group and control group. The group I underwent progressive weight training programme and group II underwent fluctuated weight training programme for three days per week for twelve weeks. Group III acted as control who did not participate any special training programmes apart from their regular physical education activities as per their curriculum. Among the power parameters, the following variables namely anaerobic power and explosive power in terms of vertical distance were selected as criterion variables. All the subjects of three groups were tested on selected dependent variables

at prior to and immediately after the training programme. The analysis of covariance was used to analyze the significant difference, if any among the groups. The .05 level of confidence was fixed as the level of significance to test the "F" ratio obtained by the analysis of covariance, which was considered as an appropriate. The Scheffe's test was applied as post hoc test to find out the paired mean difference, if any,

TRAINING PROGRAMME

For progressive weight training group and fluctuated weight training group underwent their respective training programme for twelve weeks for three days per week. Training was given in the morning session. The training session includes warming up and limbering down. Every day the workout lasted for 45 to 60 minutes approximately. The subjects underwent their respective training programmes as per the schedules under the strict supervision of the investigator. During experimental period control group did not participate in any of the special training.

ANALYSIS OF THE DATA

The influence of progressive weight training and fluctuated weight training on each criterion variables were analysed separately and presented below.

The analysis of covariance on anaerobic power of the pre and post test scores of progressive plyometric training group and fluctuated plyometric training group and control group have been analyzed and presented in Table I.

TABLE I

ANALYSIS OF COVARIANCE OF THE DATA ON ANAEROBIC POWER OF PRE AND POST TESTS SCORES OF PROGRESSIVE PLYOMETRIC TRAINING, FLUCTUATED PLYOMETRIC TRAINING AND CONTROL GROUPS

Test	Progressive plyometric Training Group	Fluctuated Plyometric Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test								
Mean	94.54	94.63	94.62	Between	0.098	2	0.049	2.45
S.D.	0.08	0.06	0.08	Within	0.89	42	0.02	
Post Test								
Mean	96.72	95.12	94.63	Between	0.92	2	0.46	11.50*****
S.D.	0.09	0.11	0.08	Within	1.81	42	0.04	
Adjusted Post Test								
Mean	96.14	95.41	94.66	Between	0.892	2	0.446	11.15*****
				Within	1.48	41	0.04	

* Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 2 and 42 and 2 and 41 are 3.222 and 3.226 respectively).

The table I shows that the adjusted post-test means of progressive plyometric training group, fluctuated plyometric training group and control group on anaerobic power are 96.14, 95.41 and 94.66 respectively. the obtained "F" ratio of 11.15 for adjusted post-test means is greater than the table value of 3.226 for df 2 and 41 required for significance at .05 level of confidence on anaerobic power. The results of the study indicated that there was a significant difference between the adjusted post-test means of progressive plyometric training group, fluctuated plyometric training group and control group on anaerobic power. Since, three groups were compared, whenever the obtained 'F' ratio for adjusted post test was found to be significant, the Scheffe's test to find out the

paired mean differences and it was presented in Table II

TABLE II

THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN PAIRED MEANS ON ANAEROBIC POWER

Progressive Plyometric Training Group	Fluctuated Plyometric Training Group	Control Group	Mean Differences	Confidence Interval Value
96.14	95.41	-	0.73*	0.71
96.14	-	94.66	1.48*	0.71
-	95.41	94.66	0.75*	0.71

* Significant at .05 level of confidence.

The table II shows that the mean difference values between progressive plyometric training group and fluctuated plyometric training group, progressive plyometric training group and control group and fluctuated plyometric training group and control group 0.73, 1.48 and 0.71 respectively on anaerobic power which were greater than the required confidence interval value 0.71 for significance.

The results of this study showed that there was a significant difference between progressive plyometric training group and fluctuated plyometric training group, progressive plyometric training group and control group and fluctuated plyometric training group and control group on anaerobic power.

The analysis of covariance on explosive power in terms of vertical distance of the pre and post test scores of progressive plyometric training group and fluctuated plyometric training group and control group have been analyzed and presented in Table III.

TABLE III

ANALYSIS OF COVARIANCE OF THE DATA ON EXPLOSIVE POWER IN TERMS OF VERTICAL DISTANCE OF PRE AND POST TESTS SCORES OF PROGRESSIVE PLYOMETRIC TRAINING, FLUCTUATED PLYOMETRIC TRAINING AND CONTROL GROUPS

Test	Progressive plyometric Training Group	Fluctuated Plyometric Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test								
Mean	46.88	46.81	46.82	Between	0.0088	2	0.0044	0.22
S.D.	1.14	1.12	1.16	Within	0.99	49	0.02	
Post Test								
Mean	48.12	47.22	46.83	Between	0.82	2	0.41	6.31*
S.D.	0.09	0.11	0.08	Within	2.71	42	0.065	
Adjusted Post Test								
Mean	47.99	47.15	46.54	Between	0.762	2	0.381	9.525*
				Within	1.48	41	0.04	

* Significant at .05 level of confidence. (The table values required for significance at .05 level of confidence for 2 and 42 and 2 and 41 are 3.222 and 3.226 respectively).

The table III shows that the adjusted post-test means of progressive plyometric training group, fluctuated plyometric training group and control group on explosive power in terms of vertical distance are 47.99, 47.15 and 46.54 respectively. the obtained "F" ratio of 9.525 for adjusted post-test means is greater than the table value of 3.226 for df 2 and 41 required for significance at .05 level of

confidence on explosive power in terms of vertical distance. The results of the study indicated that there was a significant difference between the adjusted post-test means of progressive plyometric training group, fluctuated plyometric training group and control group on explosive power in terms of vertical distance.Since, three groups were compared, whenever the obtained 'F' ratio for adjusted post test was found to be significant, the Scheffe's test to find out the paired mean differences and it was presented in Table IV.

TABLE IV

THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN PAIRED MEANS ON EXPLOSIVE POWER IN TERMS OF VERTICAL DISTANCE

Progressive Plyometric Training Group	Fluctuated Plyometric Training Group	Control Group	Mean Differences	Confidence Interval Value
8.31	8.17	-	0.14*****	0.05
8.31	-	8.37	0.06*****	0.05
-	8.17	8.37	0.20*****	0.05

* Significant at .05 level of confidence.

The table IV shows that the mean difference values between progressive plyometric training group and fluctuated plyometric training group, progressive plyometric training group and control group and fluctuated plyometric training group and control group 0.14, 0.06 and 0.20 respectively on explosive power in terms of vertical distance which were greater than the required confidence interval value 0.05 for significance. The results of this study showed that there was a significant difference between progressive plyometric training group and fluctuated plyometric training group, progressive plyometric training group and control group and fluctuated plyometric training group and control group on explosive power in terms of vertical distance.

RESULTS

1. There was a significant difference among progressive weight training group and fluctuated weight training group, and control group on anaerobic power and explosive power in terms of vertical distance.
2. There was a significant improvement on anaerobic power and explosive power in terms of vertical distance due to progressive weight training and fluctuated weight training.

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