Effect of Varied Loads of Weight Training on Selected Strength Parameters

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Abstract

The purpose of the study was to find out the effects of varied loads of weight training on selected strength parameters namely leg strength and strength endurance. To achieve this purpose of the study, forty five men students studying in the Department of Physical Education and Sports Sciences, Annamalai University, Annamalai Nagar, Tamil Nadu and India were selected as subjects at random. Their age ranged between 18 to 24 years. The selected subjects were divided into three equal groups of fifteen each namely progressive weight training group, fluctuated weight training group and control group. The experimental group I underwent progressive weight training, group II underwent fluctuated weight training for three days per week for twelve weeks whereas the control group maintained their daily routine activities and no special training was given to them. The following strength parameters namely leg strength and strength endurance were selected as criterion variables. The subjects of the three groups were tested on selected strength parameters namely leg strength and strength endurance using standardized tests namely leg lift with dynamometer and bent knee sit-ups at prior and immediate after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significant difference, if any among the groups. Whenever the obtained "F" ratio was found to be significant, the scheffe's test was applied as post hoc test to find out the paired mean difference,, if any. The .05 level of confidence was fixed to test the level of significance which was considered as an appropriate. The results of the study showed that there was a significant difference exist among progressive weight training group, fluctuated weight training group and control group on selected strength parameters namely leg strength and strength endurance. And also progressive weight training group and fluctuated weight training group showed significant improvement on leg strength and strength endurance when compared to control group.

Key Words: Progressive weight training, fluctuated weight training, leg Strength, strength endurance, analysis of covariance (ANCOVA).

Introduction

The word physical refers to the body. It is often used in reference to various bodily characteristics such as physical strength, physical development, physical powers, physical health, and physical appearance. It refers to the body as contrasted to the mind. Therefore, when you add the word education to the word physical and use the words physical education, you are referring to the process of education that concerns activities that develop and maintain the human body. When an individual is playing a game, swimming, marching, working out on the parallel bars, skating, or performing in any one of the gamut of physical education

activities that aid in the development and maintenance of his body, education is taking place at the same time. This education may be conducive to the enrichment of the individual's life or it may be detrimental. It may be an unhappy one. It may help in the building of a strong and cohesive society or it may have antisocial outcomes for the participant. Whether or not physical educational objectives will depend to a great extent upon the leadership responsible for its direction.

Methodology

The purpose of the study was to find out the effects of varied loads of weight training on selected strength parameters namely leg strength and strength endurance. To achieve this purpose of the study, forty five men students studying in the Department of Physical Education and Sports Sciences, Annamalai University, Annamalai Nagar, Tamil Nadu and India were selected as subjects at random. Their age ranged between 18 to 24 years. The selected subjects were divided into three equal groups of fifteen each namely progressive weight training group, fluctuated weight training group and control group. The experimental group I underwent progressive weight training, group II underwent fluctuated weight training for three days per week for twelve weeks whereas the control group maintained their daily routine activities and no special training was given to them. The following strength parameters namely leg strength and strength endurance were selected as criterion variables. The subjects of the three groups were tested on selected strength parameters namely leg strength and strength endurance using standardized tests namely leg lift with dynamometer and bent knee sit-ups at prior and immediate after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significant difference, if any among the groups. Whenever the obtained "F" ratio was found to be significant, the scheffe's test was applied as post hoc test to find out the paired mean difference,, if any. The .05 level of confidence was fixed to test the level of significance which was considered as an appropriate.

Training Programme

During the training period, the Group I underwent progressive weight training and Group II underwent fluctuated weight training for three days per week (alternative days) for twelve weeks. Every day the workout lasted for 45 to 60 minutes approximately including warming up and warming down periods. Group III acted as control who did not participate in any strenuous physical exercises and specific training throughout the training period. However, they performed activities as per their curriculum.

Analysis of the Data

The analysis of covariance on selected strength parameters of progressive weight training group and fluctuated weight training group and control group have been analyzed and presented below.

Leg Strength

The analysis of covariance on leg strength of the pre and post test scores of progressive weight training group, fluctuated weight training group and control group have been analyzed and presented in Table I.

Table-I

Analysis of Covariance of the Data on Leg Strength of Pre and Post Tests Scores of Progressive Weight Training Fluctuated

Test	Progressive Weight Training group	Fluctuated Weight Training group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test								
Mean	94.33	94.60	94.87	Between	2.13	2	0.71	0.30
S.D.	1.58	1.54	1.36	Within	100.67	42	2.40	
Post Test								
Mean	98.60	96.67	95.07	Between	93.91	2	31.30	21.25*
S.D.	0.61	1.45	1.29	Within	61.87	42	1.47	
Adjusted Post Test								
Mean	98.77	96.67	94.89	Between	103.36	2	34.45	52.10*
				Within	27.11	41	0.66	

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 adjusted post-test means of progressive weight training group, fluctuated weight training group and control group are 98.77, 96.67 and 94.67 respectively. The obtained "F" ratio of 52.10 for adjusted post-test means is greater than the table value of 3.226 for df 1 and 42 required for significance at .05 level of confidence on leg strength.

Since, three groups were compared whenever the obtained "F" ratio for the adjusted post test was found to be significant, the scheffe's test was applied as post hoc test to find out the paired mean differences, if any and it was presented in table I- A.

Table I - A
The Scheffe's Test for the Differences between Paired Means on Leg Stength

Progressive Weight Training Group	Fluctuated Weight Training Group	Control Group	Mean differences	Confidence interval value
98.77	96.67	-	2.10*	1.12
98.77	-	94.67	4.10*	1.12
-	96.67	94.67	2.00*	1.12

* Significant at .05 level of confidence.

The table I- A showed that the mean difference values between progressive weight training group and fluctuated weight training group, progressive weight training group and control group and fluctuated weight training group and control group on leg strength were 2.10, 4.10 and 2.00 respectively which were greater than the required confidence interval value 1.12. The results of the study showed that there was a significant difference between progressive weight training group and fluctuated weight training group, progressive weight training group and control group and fluctuated weight training group and control group on leg strength.

Strength Endurance

The analysis of covariance on strength endurance of the pre and post test scores of progressive weight training group, fluctuated weight training group and control group have been analyzed and presented in Table II.

Table-II
Ancova for the Pre and Post Tests Scores on Strength Endurance among Progressive Weight, Fluctuated Weight and Control Group

Test	Progressive Weight Training group	Fluctuated Weight Training group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test								
Mean	35.40	35.27	35.13	Between	0.53	2	0.18	0.13
S.D.	0.80	1.12	1.41	Within	58.27	42	1.39	
Post Test								
Mean	40.13	36.33	35.33	Between	192.40	2	64.13	55.65*
S.D.	0.50	1.01	1.40	Within	48.40	42	1.15	
Adjusted Post Test								
Mean	40.02	36.63	35.45	Between	173.00	2	57.67	262.83*
				Within	9.00	41	0.22	

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 adjusted post-test means of progressive weight training group fluctuated weight training group and control group are 40.02, 36.63 and 35.45 respectively. The obtained "F" ratio of 262.83 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 strength endurance.

Since, three groups were compared whenever the obtained "F" ratio for the adjusted post test was found to be significant, the scheffe's test was applied as post hoc test to find out the paired mean differences, if any and it was presented in table II- A

Table-II - A

The Scheffe's Test for the Differences Between Paired Means on Strength Endurance

Progressive Weight Training Group	Fluctuated Weight Training Group	Control Group	Mean differences	Confidence interval value
40.02	36.63	-	3.39*	1.29
40.02	-	35.45	4.57*	1.29
-	36.63	35.45	1.18*	1.29

Significant at .05 level of confidence.

The table II- A showed that the mean difference values between progressive weight training group and fluctuated weight training group, progressive weight training group and control group and fluctuated weight training group and control group on strength endurance were 3.39, 4.57 and 1.18 respectively which were greater than the required confidence interval value 1.29. The results of the study showed that there was a significant difference between progressive weight training group and fluctuated weight training group, progressive weight training group and control group and fluctuated weight training group and control group on strength endurance.

Results

1. The results of the study showed that there was a significant difference among progressive weight training group, fluctuated weight training group and control group on leg strength and strength endurance.

2. And also it was showed that there was a significant improvement on leg strength and strength endurance due to progressive and fluctuated weight training. Progressive weight training was better than fluctuated weight training.

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