EFFECT OF PROGRESSIVE AND REGRESSIVE RESISTANCE TRAINING ON SELECTED BIO-CHEMICAL COMPONENTS OF UNIVERSITY WEIGHT LIFTERS

N. Rakkesh	**Dr. A. Palanisamy**
Part Time Ph.D Research Scholar Alagappa University College of Physical Education, Karaikudi, Tamilnadu.	Formerly Assistant Professor, Alagappa University College of Physical Education, Karaikudi, & Associate Professor, Department of Physical Education, Bharathidasan University, Tiruchirappalli, Tamilnadu,

ABSTRACT   **Purpose:** The present study was designed to find out the effect of Progressive and Regressive Resistance Training on selected Bio-chemical Components of University weight lifters **Subjects:** For this purpose forty five(N=45) men weight lifters studying various Engineering Colleges Affiliated to Anna University Chennai, Tamilnadu, India, during the year 2014-2015 were selected as subjects. The subjects were divided at random into three groups of fifteen each (n=15). Group-I underwent Progressive Resistance Training, Group-II underwent Regressive Resistance Training and Group III acted as control. **Training Protocol:** Group-I underwent Progressive Resistance Training, Group-II underwent Regressive Resistance Training, and Group-III acted as Control. The duration of the training period for all the three Experimental groups was restricted to twelve weeks and the number of sessions per week was confined to three in a week. **Variables:** The dependent variable selected for this study was Total Cholesterol (TC) and it was assessed through Blood samples test (Calorismetric Method). **Statically Procedure:** All the subjects were tested prior to and immediately after the training for all the selected variables. Data were collected and statistically analyzed using ANCOVA. Scheffe's post hoc test was applied to determine the significant difference between the paired means. In all the cases 0.05 level of significance was fixed. Results: The results of the study showed that there was a significant difference was found among all the Experimental groups namely Progressive Resistance Training programme group and Regressive Resistance Training programme had significantly decrease in the Total Cholesterol (TC). When the Experimental groups were compared with each other, the Progressive Resistance Training programme was found to be greater than the Regressive Resistance Training programmes on the decrease of Total Cholesterol (TC).

INTRODUCTION

For the maintenance of good health, participation in daily physical activities is an indispensable one. The high level of physical fitness comes from years of daily experience in a selected variety of vigorous physical activities. It is a biological principle that function builds structure and structure decides function. Man needs vigorous exercises for growth and development. To perform the daily activities in an efficient manner, muscles in good condition, their strength and endurance are essential to man. It is rightly said the muscle must be overloaded in order to be strengthened *(Govindarajulu, 1991).*

The word —training‖ means different things in different fields. In sports the word —training‖ is generally understood to be synonym of doing exercise. In a narrow sense training is physical exercise for the improvement of performance. Training involves constructing an exercise programme to develop an athlete for a particular event. This increasing skill and energy capacities need equal consideration *(Singh, 1991).*

Success in competitive sports and games can be attributed to many factors; training being one of the most important factors. Different training methods have been commonly used to improve physical fitness and its related standard of performance of athletes. The training methods which have been used by the athletes for higher performance are interval training, fartlek training, circuit training, weight training, plyometrics training, continuous method, variable pace method, technique training, speed training, Resistance training etcetera.

Resistance training is a method of improving muscular strength by gradually increasing the ability to resist force through the use of free weights, machines, or by using the person's own body weight. Strength training sessions are designed to impose increasingly greater resistance, which in turn stimulates development of muscle strength to meet the added demand.

METHODOLOGY

The purpose of the study is to find out the effect of Progressive and Regressive Resistance Training on selected Bio-chemical components of University Weight Lifters. To achieve this purpose forty five(N=45) men weight lifters studying various Engineering Colleges Affiliated to Anna University Chennai, Tamilnadu, India, during the year 2014-2015 were randomly as subjects. The selected subjects were divided into three equal groups of fifteen such as Progressive resistance training group, Regressive resistance training group and Control group. Group-I underwent Progressive Resistance Training programme, group-II Regressive Resistance Training programme for three days per week for twelve weeks, group-III acted as Control. Among various Bio-chemical variables Total Cholesterol (TC) only selected for this study and it was assessed through Blood samples test (Calorismetric Method). All the subjects of the three groups were tested on selected criterion variables at prior to and immediately after the training programme.

ANALYSIS OF THE DATA

The data collected from the Experimental groups and control group on prior and after experimentation on selected variables were statistically examined by analysis of covariance (ANCOVA) was used to determine differences, if any among the adjusted post test means on selected criterion variables separately. Whenever they obtained f-ratio value in the simple effect was significant the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases 0.05 level of significance was fixed.

Thenalysis of covariance (ANCOVA) on Total Cholesterol (TC) of Experimental Groups and Control group have been analyzed and presented in Table -1.

Table- 4.1 shows that the adjusted post test mean value of Total Cholesterol (TC) for Progressive Resistance Training group, Regressive Resistance Training group, and Control group is 176.59, 181.55 and 189.01 respectively. The obtained F-ratio of 192.39 for the adjusted post test mean is more than the table value of 3.23 for df 2 and 41 required for significance at 0.05 level of confidence.

TABLE – 4.1

VALUES OF ANALYSIS OF COVARIANCE FOR EXPERIMENTAL GROUPS ON TOTAL CHOLESTEROL (TC)

Adjusted Post test Means			Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
Progressive Resistance Training Group – (I)	Regressive Resistance Training Group – (II)	Control Group (III)					
176.59	181.55	189.01	Between Within	1239.12 131.94	2 41	619.50 3.22	

*Significant at. 0.05 level of confidence

(Total Cholesterol (TC) Scores in mg/dL)

(The Table value required for Significance at 0.05 level with df 2 and 41 is 3.23)

The results of the study indicate that there are significant differences among the adjusted post test means of Experimental groups on the decrease of Total Cholesterol (TC).

To determine which of the paired means had a significant difference, Scheffe's test was applied as Post hoc test and the results are presented in Table-4.2.

TABLE – 4.2

THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED POST TESTS PAIRED MEANS ON TOTAL CHOLESTEROL (TC)

Adjusted Post Test Mean			Mean Difference	Confident Interval Value
Progressive Resistance Training Group – (I)	Regressive Resistance Training Group – (II)	Control Group – (III)		•
176.59	181.55	---	4.96*	1.04
176.59	---	189.01	12.42*	
---	181.55	189.01	7.46*	

* Significant at .05 level of confidence

Table - 4.2 shows that the adjusted post test means differences on Progressive Resistance Training group and Regressive Resistance Training group, Progressive Resistance Training group and Control group and Regressive Resistance Training group and Control group, are 4.96, 12.42 and 7.46 respectively and they are greater than the confidence interval value 1.04, which shows significant differences at 0.05 level of confidence.

The results of the study further have revealed that there is a significant difference in Total Cholesterol (TC) between the adjusted post test means of Progressive Resistance Training group and Regressive Resistance Training group, Progressive Resistance Training group and Control group and Regressive Resistance Training group and Control group.

However, the improvement in Total Cholesterol (TC) was significantly higher for Progressive Resistance Training group than Regressive Resistance Training group and Control group. It may be concluded that the Progressive Resistance Training group has exhibited better than the Regressive Resistance Training group and Control group in improving Total Cholesterol (TC).

The adjusted post test mean values of Progressive Resistance Training group, Regressive Resistance Training group and Control group on Total Cholesterol (TC) are graphically represented in the Figure - 4.1.
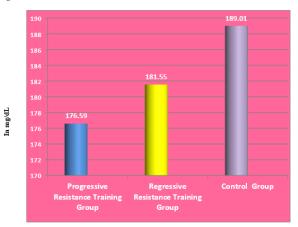

FIGURE- 4.1: THE ADJUSTED POST TEST MEAN VALUES OF PROGRESSIVE RESISTANCE TRAINING GROUP, REGRESSIVE RESISTANCE TRAINING GROUP AND CONTROL GROUP ON TOTAL CHOLESTEROL (TC)

CONCLUSION

From the analysis of the data, the following conclusions were drawn.

1. The Progressive Resistance Training programme had registered significant improvement on the selected Bio-chemical components namely Total Cholesterol (TC).

2. The Regressive Resistance Training programme had registered significant improvement on the selected Bio-chemical components namely Total Cholesterol (TC).

3. When the Experimental groups were compared with each other, the Progressive Resistance Training programme was found to be greater than the Regressive Resistance Training programmes on the decrease of selected criterion variable namely Total Cholesterol (TC).

REFERENCES
1. Govindarajulu, N.(1991), "The Importance of Health-related Physical Fitness Through Physical Activities", Paper Presented at the 3rd All India Physical Education Congress, Madras, 8-11 October.
2. Singh Hardayal (1984) "Sports Training", Netaji Subhas National Institute of Sports, Patiala.