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Effect of Different Loads of Weight Training on Arm Strength and Leg Strength among College Men

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Abstract

The purpose of the study was to find out the effect of varied intensities of weight training on arm strength and leg strength. To achieve this purpose of the study 60 college men students studying in the Perunthalaivar Kamarajar Arts College, Puducherry were selected as subjects at random. Their age ranged between 18 to 25 years. The selected subjects were divided into four equal groups of 15 each. The experimental group- I underwent high intensity weight training, group-II underwent medium intensity weight training, group-III underwent low intensity weight training for three days per week for 6 weeks whereas the group-IV act as control group. The following variable namely arm strength and leg strength was selected as criterion variable. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to fund 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 0.5 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 exists among high, medium, low intensity weight training groups and control group on arm strength and leg strength. And also high intensity weight training group, medium intensity weight training group and low intensity weight training group showed significant improvement on arm strength and leg strength when compared to control group.

Keywords: Weight Training, Arm Strength, Leg Strength.

Introduction

Training is a systematic process of repetitive progressive exercise of work involving learning and acclimatization. Training is the net summation of adaptations induced by regular exercise. Students on the exercises with reference to fitness state that it enables the bear more effectively, subsequently stresses of similar nature. The process of stressing the sports-man and his adaptation to these stress is called sports training and it is the mean by which sports performance is improved. Strength training is the use of resistance to muscular contraction to build the strength, anaerobic endurance, and size of skeletal muscles. Sports training is a pedagogical process, based on scientific principles, aiming at preparing a sportsman for higher performances in sports competition. Some experts understand that sports' training is basically doing physical exercise. For performing these physical exercises, the following factors are essentials such as sports equipment and implements, verbal instructions, means of recovery, means of assessment of performance capacity, nutrition, psychological means etc. Further advanced training of sports persons significantly supported by several sports disciplines like sports medicine sports psychology, nutrition, physiotherapy sports physiology, sports biomechanics and other allied sciences.

In addition, personality of the sportsman has to be improved in order to improve his performance. The personality of a person has several dimensions like physical, physiological, social and psychological. Hence, to improve sports performance in addition to physical and physiological characteristics the social and psychic capacities of the sports person also have to be improved. Tudor Bompa consider resistance training as an exercise programme where free or stationary weights are needed for the purpose of increasing muscular strength, muscular endurance and power through which skills can be improved. For several years athletes have lifted weights to gain strength. For the muscles to gain weight, the principle of progressive resistance are followed. The investigator makes an attempt to study the effects of different intensities of weight trainings on selected strength parameters.

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Methodology

The purpose of the study was to find out the effect of varied intensities of weight training on arm strength and leg strength. To achieve this purpose of the study 60 college men students studying in the

Perunthalaivar Kamarajar Arts College, Puducherry were selected as subjects at random. Their age ranged between 18 to 25 years. The selected subjects were divided into four equal groups of 15 each. The experimental group- I underwent high intensity weight training, group- II underwent medium intensity weight training, group-III underwent low intensity weight training for three days per week for twelve weeks. Every day the workout lasted for 45 to 60 minutes approximately including warming up and warming down periods. Group- IV acted as control who did not participate in any strenuous physical exercises and specific training throughout the training period. The following variable namely arm strength and leg strength was selected as criterion variable. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to fund 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 0.5 level of confidence was fixed to test the level of significance which was considered as an appropriate.

Results

Table I. Computation of Analysis of Covariance on Arm Strength and leg Strength

Variables	**Test**	**HIWTG**	**LIWTG**	**MIWTG**	**CG**	**Sum of variance**	**Sum of squares**	**Df**	**Mean square**	**F**
Arm Strength	Pre test	23.72	23.53	23.07	23.53	B	5.73	3	1.91	2.01
						W	53.60	56	0.95	
	Post test	35.13	29.80	24.87	23.13	B	1311.13	3	437.04	224.12*
						W	109.60	56	1.95	
	Adjusted post test	34.79	29.63	25.10	23.42	B	1060.37	3	353.46	280.51*
						W	69.66	55	1.26	
Leg Strength	Pre test	92.80	92.87	93.27	92.87	B	1.92	3	0.64	0.96
						W	37.07	56	0.66	
	Post test	97.33	95.07	94.33	93.13	B	140.60	3	46.86	74.38*
						W	35.33	56	0.63	
	Adjusted post test	97.49	95.16	94.10	93.12	B	154.92	3	51.64	303.76*
						W	9.74	55	0.17	

(The table values required for significance at .05 level of confidence for 3 and 56and 3 and 55 are 2.776 and 2.78 respectively).

The table I shows the adjusted post-test means high intensity weight training, medium intensity weight training, low intensity weight training and control groups on arm strength are 34.79, 29.63, 25.10 and 23.42 respectively. The obtained "F" ratio of 280.51 for adjusted post-test means is greater than the table value of 2.78 for df 3 and 55 required for significance at .05 level of confidence on arm strength and leg strength are 97.49, 95.16, 94.10 and 93.12 respectively. The obtained "F" ratio of 303.76 for adjusted post-test means is greater than the table value of 2.78 for df 3 and 55 required for significance at .05 level of confidence on leg strength.

The results of the study indicated that there was a significant difference between the adjusted post-test means of high intensity weight training, medium intensity weight training, low intensity weight training and control groups on arm strength and leg strength. Since, four groups were compared, whenever the obtained 'F' ratio for adjusted posttest 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. Scheffe'S Paired Mean Test Scores on Arm Strength and Leg Strength

Variables	High Intensity Weight Training Group	Medium Intensity Weight Training Group	Low Intensity Weight Training Group	Control Group	Mean Differences	Confidence Interval Value
Arm Strength	34.79	29.63	-	-	5.16*	1.19
	34.79	-	25.10	-	9.69*	
	34.79	-	-	23.42	11.37*	
	-	29.63	25.10	-	4.53*	
	-	29.63	-	23.42	6.21*	
	-	-	25.10	23.42	1.68*	

Leg Strength	97.49	95.16	-	-	2.33*	0.44
	97.49	-	94.10	-	3.39*	
	97.49	-	-	93.12	4.37*	
	-	95.16	94.10	-	1.06*	
	-	95.16	-	93.12	2.04*	
	-	-	94.10	93.12	0.98*	

* Significant at .05 level of confidence.

The table-II shows that the mean difference values between high intensity weight training group and medium intensity weight training group, high intensity weight training group and low intensity weight training group, high intensity weight training group and control group, medium intensity weight training group and low intensity weight training group, medium intensity weight training group and control group and low intensity weight training group and control group on arm strength 5.16, 9.69, 11.37, 4.53, 6.21 and 1.68 respectively which were greater than the required confidence interval value 1.19 for significance at .05 level of confidence and leg strength 2.33, 3.39, 4.37, 1.06, 2.04 and 0.98 respectively which were greater than the required confidence interval value 0.44 for significance at .05 level of confidence.

The results of this study showed that there was a significant difference between high intensity weight training group and medium intensity weight training group, high intensity weight training group and low intensity weight training group, high intensity weight training group and control group, medium intensity weight training group and low intensity weight training group, medium intensity weight training group and control group and low intensity weight training group and control group on arm strength and leg strength.

Conclusion

1. There was a significant difference among high intensity weight training, medium intensity weight training, low intensity weight training and control groups on arm strength and leg strength.

2. There was a significant difference between high intensity weight training group and medium intensity weight training group, high intensity weight training group and low intensity weight training group, high intensity weight training group and control group, medium intensity weight training group and low intensity weight training group, medium intensity weight training group and control group and low intensity weight training group and control group on arm strength and leg strength.

3. And also it was found that there was a significant improvement on arm strength and leg strength due to high intensity weight training, medium intensity weight training and low intensity weight training.

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