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Effect of Continuous Set of Multiple Exercise Resistance Training on Strength Variables

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Abstract

The purpose of the study was to find out the effect of continuous set of multiple exercise resistance training on strength variables. To achieve the purpose of the present study, forty five college male students were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into two equal groups. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (n=30) were randomly assigned to two equal groups as continuous set of multiple exercise resistance training (CSMERTG) and control group (CG) in an equivalent manner. The continuous set of multiple exercise resistance training group participated for a period of twelve weeks for alternate three days in a week and the post-tests were taken. Explosive strength and strength endurance were assessed using vertical jump and 30 second endurance jump. To find out the difference between the two groups analysis of covariance (ANCOVA) was used. The experimental group showed significant differences on explosive strength and strength endurance than the control group owing to the training effects of training.

Keywords: Resistance Training, Explosive Strength, Muscular Strength, Male Students.

Introduction

Resistance exercise is a type of exercise that has gained popularity over the last decade. Resistance training is any exercise that causes the muscles to contract against an external resistance with the expectation of increases in strength, tone, mass and endurance. Resistance training increases muscle strength by pitting muscles against a resistance. Resistance training is well established effective methods of exercise for developing muscular fitness. The goal of resistance training, is to gradually and progressively overload the musculoskeletal system so it gets stronger and also recommends that resistance training should be progressive in nature, individualized and provide a stimulus to all the major muscle groups. Traditionally, resistance training was performed by few individuals (e.g., strength athletes and those who strived to gain muscle hypertrophy such as body builders). Resistance training is now a popular form of exercise that is recommended by national health organizations such as the American College of Sports Medicine and the American Heart Association (American College of Sports Medicine, 1998, 2002) for most populations including adolescents, healthy adults, the elderly, and clinical populations. According to the several benefits of resistance training; the data about the design of resistance training is no unequivocal vote. The single-set system, the performance of each exercise for one set, is one of the oldest resistance training systems, whereas a multiple-set system can involve performing multiple sets (e.g., 3 sets) with the same resistance. Keeping this objective in mind the investigator formulated the study.

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Methodology

The purpose of the study was to find out the effect of continuous set of multiple exercise resistance training on strength variables. To achieve the purpose of the present study, forty five college male students were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into two equal groups. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (n=30) were randomly assigned to two equal groups as continuous set of multiple exercise resistance training (CSMERTG) and control group (CG) in an equivalent manner. The continuous set of multiple exercise resistance training group participated for a period of twelve weeks for alternate three days in a week and the post-tests were taken. Explosive strength and strength endurance were assessed using vertical jump and 30 second endurance jump. To find out the difference between the two groups analysis of covariance (ANCOVA) was used.

Results and Discussion

The detailed procedure of analysis of data and interpretation were given below,

Table I. Summary of mean for the pre and post tests on strength variables

Sl.No	Variables	CSMERTG				CG			
		Pre	SD (±)	Post	SD (±)	Pre	SD (±)	Post	SD (±)
1	Explosive Strength	0.24	0.03	0.31	0.04	0.25	0.02	0.26	0.03
2	Strength Endurance	25.45	1.45	29.45	1.36	25.89	1.31	26.01	1.07

Table II. Analysis of variance of pre test scores on strength variables

Sl. No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
1	Explosive Strength	BG	10.10	1	10.10	0.78
		WG	358.20	28	12.79	
2	Strength Endurance	BG	3.03	1	3.03	0.38
		WG	222.11	28	7.93	

***** P < 0.05 Table F, df (1,28) (0.05) = 4.19

In table II, the results of analysis of variance of pre test scores on explosive strength (0.78) and strength endurance (0.38) were lesser than the table value of 4.19 indicating that it was not significant for the degrees of freedom (1,28) at 0.05 level of confidence indicating that the random sampling was successful.

Table III. Analysis of variance of post test scores on strength variables

Sl. No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
1	Explosive strength	BG	121.00	1	121.00	9.22*
		WG	367.41	28	13.12	
2	Strength Endurance	BG	13.65	1	13.65	5.60*
		WG	68.21	28	2.43	

***** P < 0.05 Table F, df (1,28) (0.05) = 4.19

In table III, the results of analysis of variance of post test scores on explosive strength (9.22) and strength endurance (5.60) were greater than the table value of 4.19 indicating that it was significant for the degrees of freedom (1,28) at 0.05 level of confidence

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Table IV. Analysis of covariance of strength variables

Sl. No	Variables	Adjusted Mean		Source of Variance	Sum of Squares	df	Mean Squares	F-Value
		CSMERTG	CG					
1	Explosive Strength	0.31	0.26	BG	71.06	1	71.06	14.20*
				WG	140.02	27	5.00	
2	Strength Endurance	29.46	26.01	BG	25.14	1	25.14	7.73*
				WG	91.02	27	3.25	

***** P < 0.05 Table F, df (1,27) (0.05) = 4.21

In table IV, the results of analysis of covariance on explosive strength (14.20) and strength endurance (7.73) were greater than the table value of 4.21 indicating that it was significant for the degrees of freedom (1,27) at 0.05 level of confidence.

Figure I. Shows the mean values of experimental group on strength variables

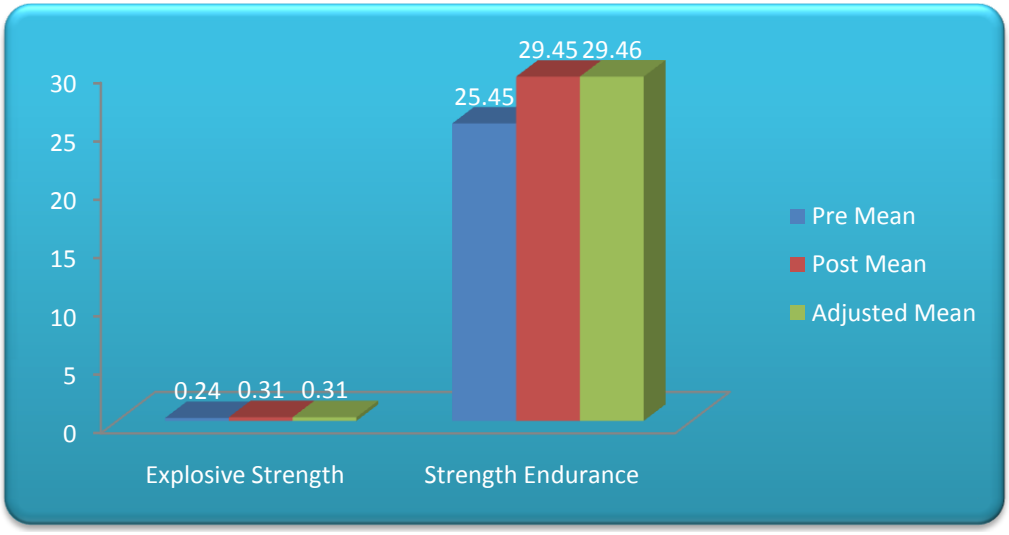
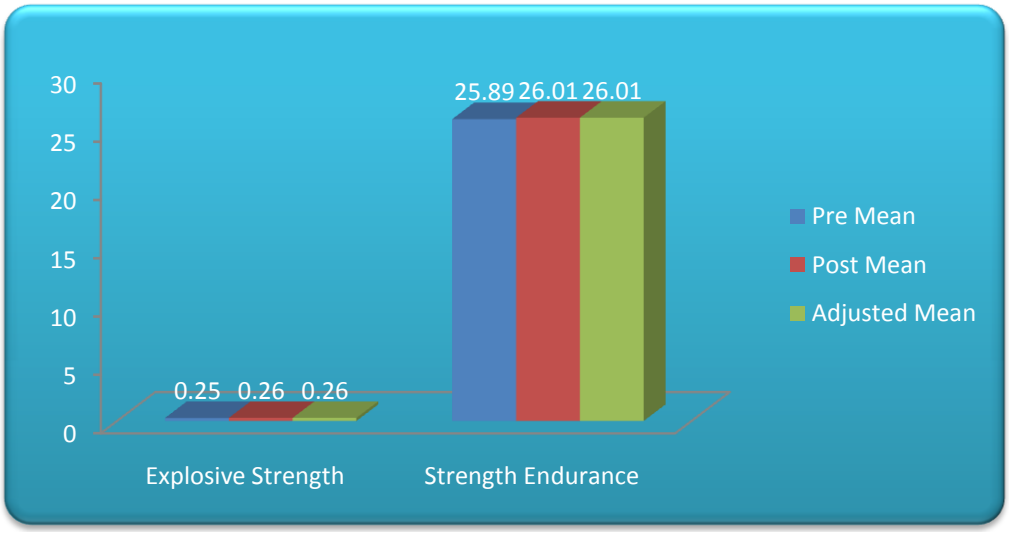


Figure II. Shows the mean values of control group on strength variables



Conclusions

Within the limitation of the present study, the following conclusions were drawn.

1. The experimental group showed significant differences on explosive strength and strength endurance than the control group owing to the training effects of training.

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