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EFFECT OF RESISTANCE TRAINING AND VARIED INTENSITIES OF WEIGHT TRAINING ON VO_2 Max AMONG ATHLETES

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ABSTRACT

To find out the effect of resistance training and varied intensities of weight training on vo_2 max among athletes. The study was formulated as a true random group design, consisting of a pre test and post test. The subjects (n=60) were randomly assigned to three equal groups of twenty men sprinters in each group. The groups were assigned as Experimental Groups I, II and control group respectively. Experimental group I was assigned as Resistance Training (RT) and Experimental group II was assigned as varied weight training (VWT) and control group. The control group was not given any special treatment except of their routine. Pre tests were conducted on VO_2 max. The experimental groups participated in their respective training protocols for a period of twelve weeks.The post tests were conducted on the above said dependent variables after the experimental period of twelve weeks for all the three groups. The differences between the initial and final means on selected variables were considered. The obtained data were subjected to statistical treatment using ANCOVA. In all cases 0.05 level was fixed to test the hypothesis set for this study.

Key Words: resistance training ,varied intensities of weight training and vo_2Max

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INTRODUCTION

Improving skill means that the performance of any motor task becomes more efficient thereby reducing the time taken to complete the task and the level of effort required. This increased level of skillfulness could also mean more enjoyment and satisfaction for the performer by increasing the ease with which the task can be completed or by allowing new, more complex skills to be attempted. If by understanding the processes that govern the control of movement we can show the way for all individuals to improve their ability to perform the myriad of motor tasks that they confront, then we can claim to have made a real contribution to improving the quality of life within our society (Kerr, R. 1982).

VO_2 MAX

VO_2 max (also maximal oxygen consumption, maximal oxygen uptake or aerobic capacity) is the maximum capacity of an individual's body to transport and utilize oxygen during incremental exercise, which reflects the physical fitness of the individual. The name is derived from V - volume per time, O_2 - oxygen, max - maximum.

VO_2 max is expressed either as an absolute rate in liters of oxygen per minute (l/min) or as a relative rate in millilitres of oxygen per kilogram of bodyweight per minute (ml/kg/min), the latter expression is often used to compare the performance of endurance sports athletes

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"Maximal oxygen uptake (VO_2max) is widely accepted as the single best measure of cardiovascular fitness and maximal aerobic power. Absolute values of VO_2max are typically 40-60% higher in men than in women."[1] Clearly, then, VO_2max varies considerably in the population, with sex being a primary determining factor in this variability. (P.J.Strukic, 1981).

METHODOLOGY

SELECTION OF SUBJECTS

To find out the effect of resistance training and varied intensities of weight training on vo_2 max among athletes the investigator randomly selected 60 sprinters, who competed at inter collegiate level sports meets representing different colleges in Andhra Pradesh .

They were divided into three groups at random again consisting twenty subjects in each group and they were randomly assigned as experimental group I (RT –Resistance Training) and Experimental group II (VWT – varied weight training). And control group..

SELECTION OF VARIABLES

Dependent Variables

1. VO_2 max

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Independent Variables

1. Resistance Training (RT) for twelve weeks
2. .Varied Weight Training (VWT) for twelve weeks.

EXPERIMENTAL DESIGN

The study was formulated as a true random group design, consisting of a pre test and post test. The subjects (n=60) were randomly assigned to three equal groups of twenty men sprinters in each group. The groups were assigned as Experimental Groups I, II and control group respectively. Experimental group I was assigned as Resistance Training (RT) and Experimental group II was assigned as varied weight training (VWT) and control group. The control group was not given any special treatment except of their routine. Pre tests were conducted on VO_2 max. The experimental groups participated in their respective training protocols for a period of twelve weeks.

The post tests were conducted on the above said dependent variables after the experimental period of twelve weeks for all the three groups. The differences between the initial and final means on selected variables were considered. The obtained data were subjected to statistical treatment using ANCOVA. In all cases 0.05 level was fixed to test the hypothesis set for this study.

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RESULTS ON VO_2 MAX

The statistical analysis comparing the initial and final means of VO_2 max due to Resistance Training and Varied Weight Training among athletes is presented in Table I

Table I

COMPUTATION OF ANALYSIS OF COVARIANCE OF VO_2 MAX

	RESISTANCE TRAINING	VARIED WEIGHT TRAINING	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED F
Pre Test Mean	37.00	36.23	36.87	Between	6.78	2	3.39	0.17
				Within	1152.61	57	20.22	
Post Test Mean	40.50	40.01	37.01	Between	142.72	2	71.36	4.89*
				Within	831.73	57	14.59	
Adjusted Post Test Mean	40.32	40.30	36.91	Between	153.90	2	76.95	10.82*
				Within	398.31	56	7.11	
Mean Diff	3.50	3.78	0.14					

Table F-ratio at 0.05 level of confidence for 2 and 57 (df) =3.16, 2 and 56 (df) =3.16.

*Significant

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As shown in Table I, the obtained pre test means on VO2 max on Resistance Training group was 37.00, Varied Weight Training group was 36.23 was and control group was 36.87. The obtained pre test F value was 0.17 and the required table F value was 3.16, which proved that there was no significant difference among initial scores of the subjects.

The obtained post test means on VO2 max on Resistance Training group was 40.50, Varied Weight Training group was 40.01 and control group was 37.01. The obtained post test F value was 4.89 and the required table F value was 3.16, which proved that there was significant difference among post test scores of the subjects.

Taking into consideration of the pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 10.82 was greater than the required value of 3.16 and hence it was accepted that there was significant differences among the trained groups.

Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's Confidence Interval test. The results were presented in Table II.

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Table II

Scheffe's Confidence Interval Test Scores on VO2 max

MEANS				Required . C I
Resistance Training Group	Varied Weight Training Group	Control Group	Mean Difference	
40.32	40.30		0.02	2.12
40.32		36.91	3.41*	2.12
	40.30	36.91	3.39*	2.12

* Significant

The post hoc analysis of obtained ordered adjusted means proved that there was significant differences existed between Resistance Training group and control group (MD: 3.41). There was significant difference between Varied Weight Training group and control group (MD: 3.39). There was no significant difference between trained groups, namely, Resistance Training group and Varied Weight Training group. (MD: 0.02).

The ordered adjusted means were presented through bar diagram for better understanding of the results of this study in Figure I.

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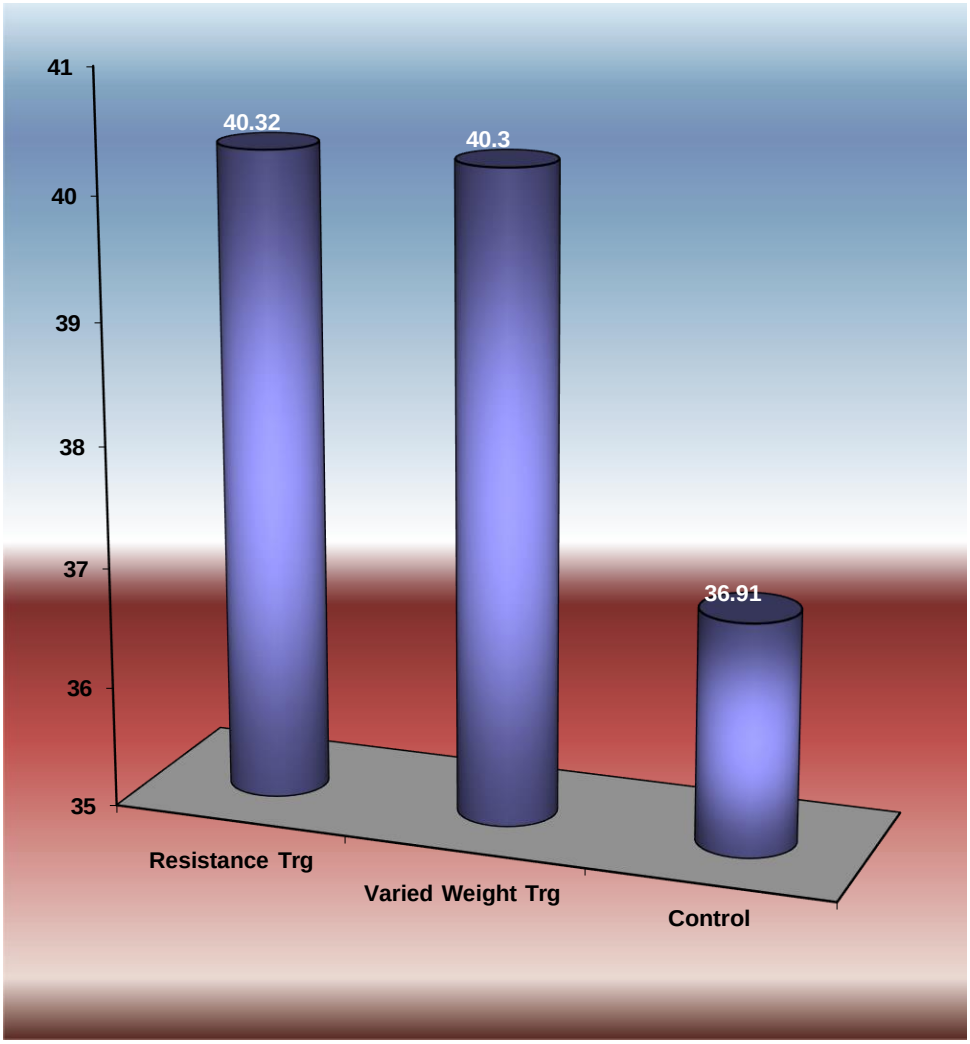
Figure I

BAR DIAGRAM ON ORDERED ADJUSTED MEANS ON VO_2 MAX



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DISCUSSIONS ON FINDINGS ON VO_2 MAX

The effect of Resistance Training and Varied Weight Training on VO2 max is presented in Table I. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F value 10.82 was greater than the required table F value to be significant at 0.05 level.

Since significant F value was obtained, the results were further subjected to post hoc analysis and the results presented in Table II proved that there was significant difference between Resistance Training group and control group (MD: 3.41) and Varied Weight Training group and control group (MD: 3.39). Comparing between the treatment groups, it was found that there was no significant difference between Resistance Training and Varied Weight Training group among athletes.

Thus, it was found that Resistance Training and Varied Weight Training were better than control group in improving VO_2 max of the athletes.

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CONCLUSION

1. It was concluded that resistance training and varied weight training significantly improved VO_2 max of the college level athletes. Comparing between the treatment groups, it was found that there was no significant difference between resistance training and varied weight training group.

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