ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 12,Iss 1, 2023

January 2023

EFFECT OF STRUCTURED RESISTANCE TRAINING AND VARIED INTENSITIES OF WEIGHT TRAINING ON RESTING PULSE RATEAMONG SPRINTERS

Adapa Mohana Raju
Physical Director, Government Degree College for men Srikakulam, AP, India
mohanrajuadapa94@gmail.com

ABSTRACT

Aim of the study was to find out the effect of structured resistance training and varied intensities of weight training on resting pulse rate among sprinters. 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 Structured Resistance Training (SRT) 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 for all the subjects on resting pulse rate. 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: structured resistance training ,varied intensities of weight training and sprinters

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INTRODUCTION

The relationship between resistance training and cardiovascular health has garnered significant attention in sports science, particularly among athletes like sprinters who rely on explosive power and speed. Structured resistance training, characterized by systematic and progressive exercises, can lead to numerous physiological adaptations, including changes in resting pulse rate. Resting pulse rate is an important indicator of cardiovascular fitness and overall health, reflecting the efficiency of the heart and the body's ability to recover from intense physical activity.

Varied intensities of weight training—ranging from low to high resistance—can produce distinct effects on cardiovascular parameters. Lower intensities may enhance muscular endurance and facilitate recovery, while higher intensities can lead to greater improvements in muscular strength and power. Understanding how these different training modalities influence resting pulse rate can provide valuable insights for optimizing training programs for sprinters, ultimately enhancing their performance and reducing the risk of injury.

This study aims to explore the effects of structured resistance training and varied intensities of weight training on the resting pulse rate of sprinters. By examining these relationships, we hope to contribute to the body of knowledge that informs training practices, enabling athletes to achieve peak performance while maintaining cardiovascular health.

METHODOLOGY

SELECTION OF SUBJECTS

To find out the effect of structured resistance training and varied intensities of weight training on resting pulse rate among sprinters who competed at inter collegiate level sports meets representing different colleges in Dr.B.R.Ambedkar University,Andhra Pradesh . They were divided into three groups at random again consisting twenty subjects in each group and they

ISSN PRINT 2319 1775 Online 2320 7876

 UGC CARE Listed (Group -I) Journal Volume 12,Iss 1, 2023

were randomly assigned as experimental group I (SRT –Structured Resistance Training) and Experimental group II (VWT – varied weight training). And control group..

SELECTION OF VARIABLES

Dependent Variables

1. Resting Pulse Rate

Independent Variables

1. Structured Resistance Training (SRT) 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 Structured Resistance Training (SRT) 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 for all the subjects on resting pulse rate. The experimental groups participated in their respective training protocols for a period of twelve weeks.

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RESULTS ON RESTING PULSE RATE

Table I

COMPUTATION OF ANALYSIS OF COVARIANCE OF RESTING PULSE RATE

	STRUCTURED RESISTANCE TRAINING	VARIED WEIGHT TRAINING	CONTROL GROUP	SOURCE OF VARIANCE	SUM OF SQUARES	df	MEAN SQUARES	OBTAINED F
Pre Test Mean	62.70	58.60	62.25	Between	202.23	2	101.12	2.30
				Within	2506.75	57	43.98	
Post Test Mean	59.75	56.45	62.75	Between	397.20	2	198.60	6.39*
				Within	1772.45	57	31.10	
Adjusted Post Test Mean	59.22	57.36	62.38	Between	247.81	2	123.90	4.74*
				Within	1464.68	56	26.16	
Mean Diff	-2.95	-2.15	0.50					

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

*Significant

As shown in Table I, the obtained pre test means on Resting Pulse Rate on Structured Resistance Training group was 62.70, Varied Weight Training group was 58.60 was and control group was 62.25. The obtained pre test F value was 2.30 and the required table F value was 3.16, which proved that there was no significant difference among initial scores of the subjects.

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 UGC CARE Listed (Group -I) Journal Volume 12,Iss 1, 2023

The obtained post test means on Resting Pulse Rate on Structured Resistance Training group was 59.75, Varied Weight Training group was 56.45 was and control group was 62.75. The obtained post test F value was 6.39 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 4.74 was greater than the required value of 3.16 and hence it was accepted that there was significant differences among the treated 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.

Table II

Scheffe's Confidence Interval Test Scores on Resting Pulse Rate

MEANS				Required . C I
Structured Resistance Training Group	Varied Weight Training Group	Control Group	Mean Difference	
59.22	57.36		1.86	4.07
59.22		62.38	3.16	4.07
	57.36	62.38	5.02*	4.07

***** Significant

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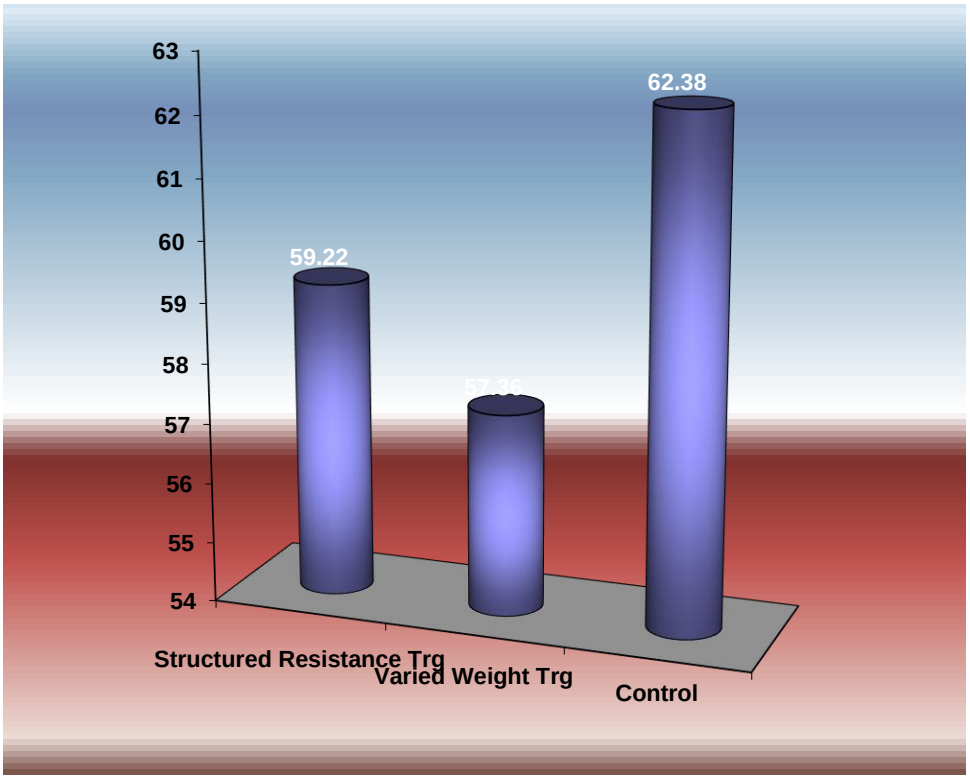
 UGC CARE Listed (Group -I) Journal Volume 12,Iss 1, 2023

The post hoc analysis of obtained ordered adjusted means proved that there was no significant differences existed between Structured Resistance Training group and control group (MD: 3.16). There was significant difference between Varied Weight Training group and control group (MD: -5.02). There no was significant difference between treatment groups, namely, Structured Resistance Training group and Varied Weight Training group. (MD: 1.86).

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

Figure I

BAR DIAGRAM ON ORDERED ADJUSTED MEANS ON RESTING PULSE RATE



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DISCUSSIONS ON FINDINGS ON RESTING PULSE RATE

The effect of Structured Resistance Training and Varied Weight Training on Resting Pulse Rate 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 4.74 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 no significant difference between Structured Resistance Training group and control group (MD: 3.16) and there was significant Varied Weight Training group and control group (MD: 5.02). Comparing between the treatment groups, it was found that there was no significant difference between Structured Resistance Training and Varied Weight Training group among Sprinters.

Thus, it was found that varied weight training was significantly better than control group in improving Resting Pulse Rate of the Sprinters.

CONCLUSIONS

1. It was concluded that varied weight training significantly improved resting pulse rate of the college level Sprinters. Comparing between the treatment groups, it was found that there was no significant difference between structured resistance training and varied weight training group.

ISSN PRINT 2319 1775 Online 2320 7876

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