Research Paper

EFFECT OF STRECTURED RESISTANCE TRAINING AND VARIED INTENSITIES OF WEIGHT TRAINING ON SELECTED SPEED AND RESTING PULSE RATE AMONG ATHLETES

PHYSICAL EDUCATION

B.RANJITH GOUD | Lecturer, Sri Venkateswara B.P.Ed College , Dubbaka, Siddipet Dist, Telangana

ABSTRACT

The Aim of the study was to find out the Effect Of Structured Resistance Training And Varied Intensities Of Weight Training On Selected Speed And Resting Pulse Rate Among Athletes who competed at inter collegiate level sports meets representing different colleges Rayalasema University in A.P. They were divided into four groups at random again consisting fifteen subjects in each group and they were randomly assigned as experimental They were divided into three groups at random again consisting twenty subjects in each group and they were randomly assigned as experimental group- I (SRT – Structured Resistance Training) and Experimental group II (VWT – varied weight training), and control group (CG).using ANCOVA, which was the effect of Incline, Decline and sprint running on treadmill. In all cases 0.05 level was fixed to test the hypothesis of the study.

I. INTRODUCTION

Athletic performance has dramatically progressed over the past few years. Performance levels unimaginable before are now common place, and the number of athletes capable of outstanding results is increasing. One factor is that athletics is a challenging field, and intense motivation has encouraged long, hard hours of work. Also, coaching has become more sophisticated, partially from the assistance of sport specialists and scientists. A broader base of knowledge about athletes now exists, which is reflected in training methodology

RESISTANCE TRAINING

Resistance Training involves the application of elastic or hydraulic resistance to muscle contraction rather than gravity. Weight training provides the majority of the resistance at the beginning, initiation joint angle of the movement, when the muscle must overcome the inertia of the weight's mass. After this point, the overall resistance alters depending on the angle of the joint. In comparison, hydraulic resistance provides a fixed amount of resistance throughout the range of motion, depending on the speed of the movement. Elastic resistance provides the greatest resistance at the end of the motion, when the elastic element is stretched to the greatest extent (**Arnheim, 1985**).

WEIGHT TRAINING

Weight training is a very important aspect of sports training or physical body training and every body is aware of their effects on the body's muscles and tendons. Many researchers and analysts also believe that weight training with the right cardio exercises is known to reduce and control hypertension and supports the cardio vascular health functions of the body. The greatest benefit of weight training on the body is the creation of lean body mass, which he

II. STATEMENT OF THE PROBLEM

The purpose of the study was to investigate the "Effect of structured resistance traininand varied intensities of weight training on selected motor fitness and physiological variables among college level athletes".

III. SIGNIFICANCE OF THE STUDY

The present investigation will contribute significantly to the field of Physical Education and Sports in the following ways.

1. The study was significant in assessing the present state of college level athletes' motor fitness and physiological levels.
2. The study was significant in experimenting with different strength training exercises, structured resistance training and varied intensities of weight training for athletes.
3. This study may help the Coaches and Physical Educators to train the athletes to improve the selected motor fitness and physiological variables.

IV. LIMITATIONS

Uncontrollable factors associated with the study were accepted as limitation and the following were considered as limitation of the research study:

1. Certain factors like rational habits like life style, daily routine, diet and climatic conditions were not taken into account in the study.
2. The influence of vigorous academic activity of students could have discouraged or motivated the subjects during training and during testing period.

V. DELIMITATIONS

This research will be delimited to the following areas:

Sixty men sprinters who had represented their colleges in intercollegiate level sports meets in Rayalasema University area in Andhra Pradesh were selected for this study.

The age of subjects for the study between 19 to 25 years and all the subjects were good in health.

Experimental period will be 12 weeks.

VI. SELECTION OF SUBJECTS

To find out the effects of structured resistance training and varied intensities of weight training on selected motor fitness and physiological variables among college level athletes, the investigator randomly selected 60 sprinters, who competed at inter collegiate level sports meets representing different colleges in Rayalasema University area 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 (SRT – Structured Resistance Training) and Experimental group II (VWT – varied weight training), and control group (CG).

VII. SELECTION OF VARIABLES

Motor Fitness Variables
1 .Speed
Physiological Variables
1.Resting Pulse Rate
Work load schedule for Structured Resistance Training Group

Sl. No.	Resistance Training Exercises	Variations	Time and Repetitions							
			I – III Weeks		IV – V Weeks		VI – VIII Weeks		IX –XII Weeks	
			Time	Reps	Time	Reps	Time	Reps	Time	Reps
1	Partner Assisted Let GOs	Medium	4 mts	2	4 mts	2	4	2	4 mts	2
2	Partner Tubbing Assisted Acceleration Drills	Medium	4 mts	2	4 mts	2	4	2	4 mts	2
3	Towed Running (Pulley)	Medium	4 mts	2	4 mts	2	4	2	4 mts	2
4	Partner Assisted Starts	Medium	4 mts	2	4 mts	2	4	2	4 mts	2
5	Weighted Starts	Medium	4 mts	2	4 mts	2	4	2	4 mts	2
6	Varied Weighted Iron Shoes (Running)	3 Kg	4 mts	2					3 mts	1
		3.5 Kg			4 mts	2			3 mts	1
		4 Kg					4 mts	2	3 mts	1
7	Weight Jackets (Running)	4 Kg	4 mts	2					3 mts	1
		5 Kg			4 mts	2			3 mts	1
		6 Kg					4 mts	2	3 mts	1
8	Varied Weighted Forearm Iron Plates (Running)	1 kg in each hand	4 mts	2					3 mts	1
		1.5 kg in each hand			4 mts	2			3 mts	1
		2 kg in each hand					4 mts	2	3	1

Work load schedule for Varied Weight Training Group

S.No.	Weight Training Exercises	Repetitions and Sets							
		I – III Weeks		IV – V Weeks		VI – VIII Weeks		IX –XII Weeks	
		Reps	Sets	Reps	Sets	Reps	Sets	Reps	Sets
1	Military Press	10	3	10	4	15	4	20	4
2	Barbell Curls	10	3	10	4	15	4	20	4
3	Bench Press	10	3	10	4	15	4	20	4
4	Lying Triceps Extension	10	3	10	4	15	4	20	4
5	Barbell Rows	10	3	10	4	15	4	20	4
6	Squats	10	3	10	4	15	4	20	4
7	Standing Calf Raises	10	3	10	4	15	4	20	4
8	Leg Press	10	3	10	4	15	4	20	4

VIII. RESULTS ON SPEED

The statistical analysis comparing the initial and final means of Speed due to Structured Resistance Training and Varied Weight Training among athletes is presented in Table-IV.

Table-i: computation of analysis of co-variance of speed

	Structured Resistance Training	Varied Weight Training	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained F
Pre-Test Mean	6.28	6.27	6.34	Between	0.05	2	0.02	0.77
				Within	1.85	57	0.03	
Post-Test Mean	6.16	6.21	6.33	Between	0.32	2	0.16	5.71*
				Within	1.59	57	0.03	
Adjusted Post-Test Mean	6.17	6.23	6.30	Between	0.15	2	0.08	13.68*
				Within	0.31	56	0.01	
Mean Diff.	-0.12	-0.06	0.00					

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 Speed on Structured Resistance Training group was 6.28, Varied Weight Training group was 6.27 was and control group was 6.34. The obtained pre-test F-value was 0.77 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 Speed on Structured Resistance Training group was 6.16, Varied Weight Training group was 6.21 was and control group was 6.33. The obtained post test F-value was 5.71 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 13.68 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

Figure-i: bar diagram on ordered adjusted means on speed
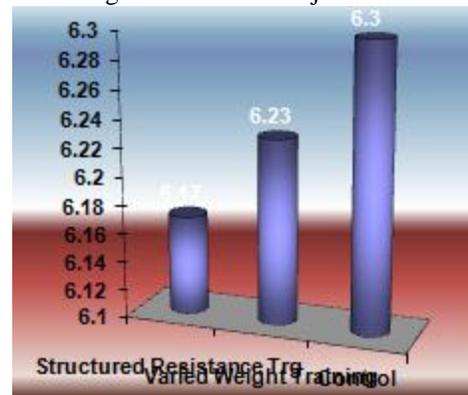
IX. DISCUSSIONS ON FINDINGS ON SPEED

The effect of Structured Resistance Training and Varied Weight Training on Speed is presented in Table-IV. The analysis of covariance proved that there was significant difference between the experimental group and control group as the obtained F-value 13.68 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-V proved that there was significant difference between Structured Resistance Training group and control group (MD: 0.13) and Varied Weight Training group and control group (MD: 0.07). Comparing between the treatment groups, it was found that there was significant difference between Structured Resistance Training and Varied Weight Training group among athletes. Thus, it was found that Structured Resistance Training was significantly better than Varied Weight Training and control group in improving Speed of the athletes.

X. RESULTS ON RESTING PULSE RATE

The statistical analysis comparing the initial and final means of Resting Pulse Rate due to Structured Resistance Training and Varied Weight Training among athletes is presented in Table-XII.

Table-xii : computation of analysis of co-variance 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-XII, 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. 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 co-variance 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.

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

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 is 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-V.

Figure-1i: bar diagram on ordered adjusted means on resting pulse rate
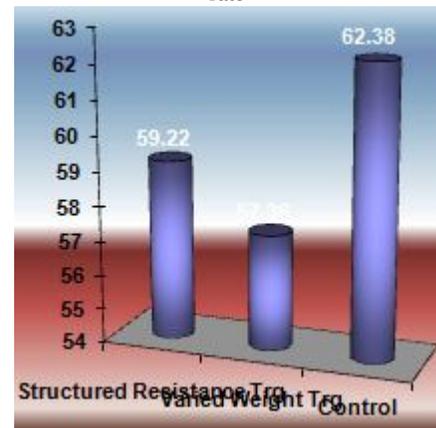
DISCUSSIONS ON FINDINGS ON RESTING PULSE RATE

The effect of Structured Resistance Training and Varied Weight Training on Resting Pulse Rate is presented in Table-XII. The analysis of co-variance 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. Thus, it was found that varied weight training was significantly better than control group in improving Resting Pulse Rate of the athletes.

CONCLUSIONS

Within the limitations and delimitations of the study, the following conclusions were drawn.

1. It was concluded that structured resistance training and varied weight training exercises significantly improved motor fitness variable such as, speed of the college level athletes. Comparing between the treatment groups, it was found that structured resistance training was better than varied weight training group.

2. It was concluded that structured resistance training significantly improved physiological variable such as, breath holding time of the college level athletes. Comparing between the treatment groups, it was found that there was no significant difference between structured resistance training and varied weight training group.

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