

Scientific Analysis on the Effects of Intensity Training, Progressive Resistance Training and Combination of Intensity Training with Progressive Resistance Training on Speed

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Abstract: To achieve this purpose sixty male students (N=60) who were studying intermediate course were selected randomly as subjects from SSBN Junior College, Ananthapuramu, Andhra Pradesh, India. Their age is between 16 and 18 years. The selected subjects were randomly divided into four groups i.e. three experimental groups and a control group contained 15 each. The three experimental groups are combination of intensity training with progressive resistance training (CIPRTG), progressive resistance training group (PRTG) and intensity training group (ITG). Group-I (CIPRTG) underwent combination of intensity training with progressive resistance training, Group-II (PRTG) underwent progressive resistance training, Group-III (ITG) underwent Intensity training, and Group-IV (CG) acted as control group, which did not receive any training. The data collected from the four groups prior to and after the experimental period on speed were statically analyzed for significant difference if any by employing analysis of covariance (ANCOVA). All the data were analyzed by using SPSS package. The level of confidence was fixed at 0.05 for significance as the number of subjects was limited and because the selected variables might fluctuate due to various extraneous factors as mentioned in the limitations. In addition to this, Scheffe's post-hoc test was employed, when the 'F' ratio of adjusted post test means was significant to find out the paired mean difference, if any, among the groups of each variable separately. The effect of combination of intensity training with progressive resistance training (CIPRTG), progressive resistance training (PRTG), intensity training (ITG) and control groups on speed is presented in Table 1. The analysis of covariance proved that the combination of intensity training with progressive resistance training (CIPRTG) has augmented significant improvement on speed as compared to the two other training groups.

Key Words: Intensity training, progressive resistance training, speed

1. INTRODUCTION:

Training is an organized program of exercise designed to stimulate chronic adaptations Robert et al. (2000). It is a "Pedagogical process of sports performance which through systematic effect on psycho-physical performance ability, readiness aims at leading the sportsmen to high and highest performance. Through active and conscious interaction with the given demands in sports training, the sportsman's personality develops according to the norms and standards of socialist society Harre (1986). Intensity is expressed as a percentage of load or IRM Bompá (1999). According to Anita Bean (1997) resistance training refers to strength training performed primarily to enhance a person's appearance, symmetry and well being. It is a conventional training method where the training load is progressively increased. Whenever any object or body travel/cover certain distance in relation to time refers to the term speed. In simple term distance covered per unit time is called as speed. The speed is recorded in meter per seconds. In sports the speed may be define as the ability to execute motor action (movement) under given condition in minimum possible time. In other words speed may be defined as the capacity of an individual to perform successive movements of the same pattern at a fast rate. Like strength and endurance abilities speed is also one of the important conditional ability which depends upon the nervous system of the body. (Dr. sinku kumar singh 2011).

2. METHODOLOGY:

To achieve this purpose sixty male students (N=60) who were studying intermediate course were selected randomly as subjects from SSBN Junior College, Ananthapuramu, Andhra Pradesh, India. Their age is between 16 and 18 years. The selected subjects were randomly divided into four groups i.e. three experimental groups and a control group contained 15 each. The three experimental groups are combination of intensity training with progressive resistance training (CIPRTG), progressive resistance training group (PRTG) and intensity training group (ITG). Group-I (CIPRTG) underwent combination of intensity training with progressive resistance training, Group-II (PRTG) underwent progressive resistance training, Group-III (ITG) underwent Intensity training, and Group-IV (CG)

acted as control group, which did not receive any training. The data collected from the four groups prior to and after the experimental period on selected physical and physiological variables were statically analyzed for significant difference if any by employing analysis of covariance (ANCOVA). All the data were analyzed by using SPSS package. The level of confidence was fixed at 0.05 for significance as the number of subjects was limited and also because the selected variables might fluctuate due to various extraneous factors as mentioned in the limitations. In addition to this, Scheffe's post-hoc test was employed, when the 'F' ratio of adjusted post test means was significant to find out the paired mean difference, if any, among the groups of each variable separately.

3. RESULTS:

The analysis of covariance on the date obtained for speed of pre test, post test and adjusted post test of combination of intensity training with progressive resistance training, progressive resistance training and intensity training and control groups are presented in table 1.

Table-1 Analysis of Covariance for the Pre Test, Post Test and Adjusted Post Test Data on Speed of Combination of Intensity Training with Progressive Resistance Training, Progressive Resistance Training, Intensity Training and Control Groups

Tests / Groups		CITPRT G	PRT G	ITG	Control Group	SOV	Sum of Squares	df	Mean Squares	F ratio
Pre Test	\bar{X}	5.52	5.55	5.59	5.64	B	0.0153	3	0.0051	2.51
	σ	.050	.039	.050	.040	W	0.1138	56	0.0020	
Post Test	\bar{X}	5.18	5.26	5.36	5.64	B	1.8185	3	0.6061	32.82*
	σ	.035	.046	.262	.041	W	1.034	56	0.0184	
Adjusted Post Test	\bar{X}	5.08	5.16	5.12	5.54	B	66.50	3	0.5713	30.46*
						W	118.40	55	0.0187	

*Significant at 0.05 level of confidence.

SOV: Source of Variance; B: Between, W: Within.

(The Table value for significance at 0.05 level with df 3 and 56 is 2.769 and 3 and 55 is 2.773 respectively)

The statistical analysis from the table 1 show that the pre test means on speed of combination of intensity training with progressive resistance training (CITPRTG), progressive resistance training (PRTG), intensity training (ITG) and control groups are 5.52, 5.55, 5.59 and 5.64 respectively. The obtained F ratio 2.51 for pre test is lesser than the table value of 2.769. Hence, the pre test was not significant at 0.05 level of confidence for the degrees of freedom of 3 and 56 on speed. The post test means of combination of intensity training with progressive resistance training, progressive resistance training and intensity training and control groups are 5.18, 5.26, 5.36 and 5.64 respectively. The obtained F ratio 32.82 for post test is much greater than the table value of 2.769. Hence, the post test was significant at 0.05 level of confidence for the degrees of freedom 3 and 56. The adjusted post test means on speed of combination of intensity training with progressive resistance training, progressive resistance training and intensity training and control groups are 5.08, 5.16, 5.26, and 5.54 respectively. The F ratio obtained for adjusted post test 30.46 is also greater than the table value of 2.773. Hence, the adjusted post test was significant at 0.05 level of confidence for the degrees of freedom 3 and 55. The study indicates that the significant difference exist among the adjusted post test means of four groups, i.e. three training groups and a control group, Further, to determine the significant difference among the four paired means, the Scheffe's test was applied as post hoc test and the results are presented in table 1.1.

Table 1.1 - Scheffe's Post hoc Analysis for the differences between the Adjusted Post Test Paired means on Speed of three Training Groups and Control Group

Adjusted Post Test Means				Mean Difference	Required CI
CITPRTG (I)	PRTG (II)	ITG (III)	CG (IV)		
5.08	5.16			0.07	0.1436*
5.08		5.12		0.04	
5.08			5.54	0.34*	
	5.16	5.12		0.04	
	5.16		5.54	0.38*	
		5.12	5.54	0.42*	

*Significant at 0.05 level

Table 1.1 shows that the adjusted post test mean difference on speed of combination of intensity training with progressive resistance training (I), progressive resistance training (II), intensity training (III) and control group (IV) are 0.07, 0.04, 0.34, 0.04, 0.38 and 0.42 respectively. The mean difference between CITPRTG and CG is 0.34, PRTG and CG is 0.38, and ITG and CG is 0.42, which are higher than the confidence interval value of 0.1436 on speed at 0.05 level of confidence. Hence, significance exists groups between I and IV, II and IV, and III and IV. Further, the difference between CITPRTG and PRTG is 0.07, CITPRTG and ITG is 0.04, and PRTG and ITG is 0.04, which are lesser than the confidence interval value of 0.1436 on speed at 0.05 level of confidence. Hence, the insignificance exists between groups I and II, I and III, II and III, II and IV, and III and IV. The pre test, post test and adjusted post test mean values of combination of intensity training with progressive resistance training, progressive resistance training and intensity training and control groups on speed are graphically presented in figure 1.

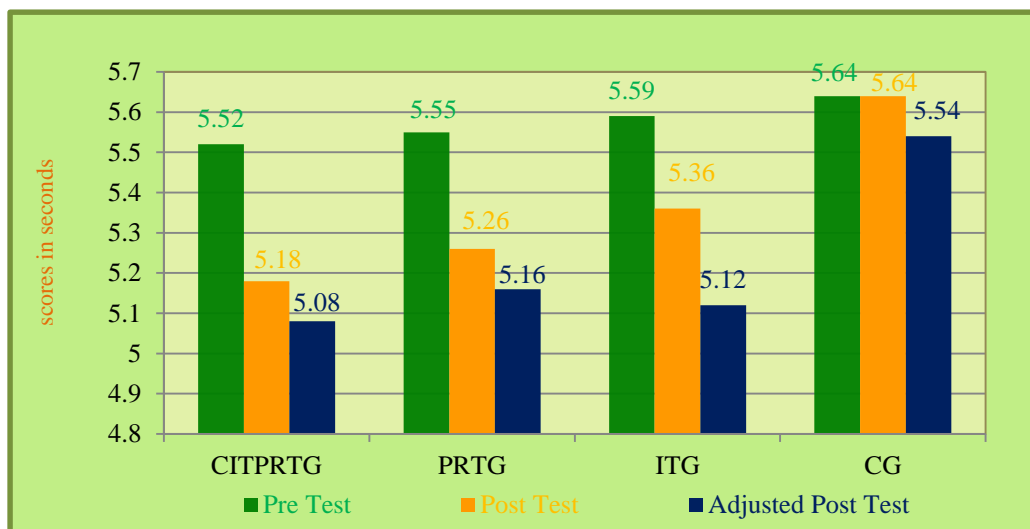


Figure 1: Bar Diagram Showing Pre Test, Post Test and Adjusted Post Test Means of Combination of Intensity Training with Progressive Resistance Training, Progressive Resistance Training, Intensity Training and Control Groups on Speed

4. CONCLUSIONS:

- Speed highly favoured to combination of intensity training with progressive resistance training group when compared with progressive resistance training and intensity training.
- It was, concluded that speed favoured to intensity training group when compared with progressive resistance training and control group.
- It was, concluded that speed preferred to progressive resistance training group when compared with control group.

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