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ORIGINAL RESEARCH ARTICLE

Impact of High and Medium Velocity Resistance Training on Speed Endurance among Youth Boys

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ABSTRACT

The purpose of the study was to find out the impact of high and medium velocity resistance training on speed endurance among youth boys. To achieve this purpose, Forty five (*n=45*) youth boys were selected as subject at random. The age of the subjects were ranged between 15 and 19 years. The selected subjects were divided into three equal groups of high resistance training group, medium velocity resistance training group and control group of fifteen (*n=15*) each. The training groups were treated with systematic high velocity resistance training and medium velocity resistance training for twelve weeks duration and three sessions in a week. The speed endurance was taken as a criterion variable for this study and 150 m run test was used as a test item. The data were collected before and immediately after the training. The collected data were analyzed statistically by using analysis of covariance (ANCOVA). The level of confidence was fixed at 0.05 in all aspects. The results of the study shows that the high and medium velocity resistance training group have significant improvement ($p \leq 0.05$) in speed endurance as compare with the control group and the significant difference ($p \leq 0.05$) occurred between the training groups of high and medium velocity resistance training groups to each other. It was further concluded that the high velocity resistance training is better for improve the quality of speed endurance as compared with the medium velocity resistance training.

Key words: Speed endurance, Systematic training and Youth boys.

1. INTRODUCTION

'Resistance Training' is another name for exercising our muscles using opposing force i.e. dumb bells or resistance bands or any other resistances. In the olden days it used to be called as 'Weight Training', but this phrase invoked images of huge sweaty men with bulging biceps and wasn't very popular with women. So the language has changed but the activity remains the same. Resistance training, toning and weight training are one and the same activity; they require the use of resistance to increase muscle size and strength. The most well known equipment used for Resistance Training is 'weights'. During resistance training exercise muscle fibers are broken down and in the days following the work-out the fibers repair and grow stronger to meet the demands that have been placed on it. Therefore rest days are as important as the exercise itself [1].

Physical exercise and resistance training may improve, or at least maintain health, physical and psychological well-being and cognitive functioning in all category people. Although the benefits of physical exercise have been consistently shown for objective health measures like improvement of cardio respiratory fitness, favorable physiological changes such as lower serum cholesterol concentrations and increase in bone mineral density etc. [2].

Speed endurance is one's ability to run at maximum or near maximum speed for a sustained period of time. Certain running athletes seek speed endurance to better perform at their events, and other athletes, such as football or hockey players, can benefit from speed endurance in their respective sports by taking advantage of the ability to stay at near maximum speeds consistently. Developing speed endurance is a

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matter of proper training combined with proper diet, as well as preparation for the specific event in which the athlete will take part. Most training methods include the set periods of time workouts, followed by sufficient rest and recovery. The energy required to do this is supplied anaerobic ally as the aerobic system is too slow to meet the energy demands. These results in lactic acid build up and it is this, which leads to muscle fatigue. Therefore with improved speed endurance (anaerobic endurance) the body can delay the production of lactic acid and tolerate higher concentrations of it thus delaying fatigue. [3]. It has been recommended that the greatest gains in strength and muscle size by weight resistance training would result from programs with sets of high loads [85–90% of one repetition maximum (1RM)] and sets of moderate loads (70–75% of 1RM), respectively [4]. Several studies have been carried out to certify this point [5,6,7].

2. MATERIALS AND METHODS

The purpose of the study was to find out the impact of high and medium velocity resistance training on speed endurance among youth boys. To achieve this purpose, forty five (*n=45*) youth boys were randomly selected as subjects from Nagapattanam District in Tamil Nadu State. The age of the subject were ranged between 15 and 19 years. The total strength was divided into three different groups of fifteen (*n=15*) each. The groups were named as high velocity resistance training, medium velocity resistance training groups and the control group. The training groups were underwent high velocity resistance training and medium velocity resistance training for twelve weeks duration with three sessions per week. The control group didn't do any special training programs apart from their regular activities. Speed endurance was taken as a criterion variable for the current study and the test item used to measure the speed endurance was 150 m run test. The data were collected before and after the training period. The data were analyzed by using analysis of covariance (ANCOVA). If the '*F*' value was found to be significant for adjusted post-test mean, Scheffe's test was applied as a post hoc test to determine the significant difference between the paired mean. Statistical significance was fixed at 0.05 levels in all aspects.

3. RESULTS AND DISCUSSION

The (**Table 1**) shows the pre test mean values on speed endurance for the high velocity resistance training group, medium velocity resistance training group and the control groups were 26.48, 26.59 and 26.54 respectively. The obtained '*F*' ratio of 0.01 for pre test, which was lower than the required table value 3.35 with df 2 and 27 at 0.05 level of confidence. The post test mean values the high velocity resistance training group, medium velocity resistance training group and the control groups were 24.42, 25.31 and 26.51 respectively. The obtained '*F*' ratio of 2.59 for post test, which was lower than the required table value 3.35 with df 2 and 27 at 0.05 level of confidence. There was no significant difference in post test '*F*' value on speed endurance among the groups. The adjusted post test mean values of speed endurance for the high velocity resistance training group, medium velocity resistance training group and the control groups were 24.47, 25.25 and 26.50 respectively. The obtained '*F*' ratio of 227.18 for adjusted post test, which was higher than the required table value 3.37 with df 2 and 26 for significance at the 0.05 level of confidence on speed endurance. Hence, the results of the study showed that there was a significant difference exists between high velocity resistance training group, medium velocity resistance training group and the control group on speed endurance. Further to determine which of the paired means has a significant improvement, Scheff *s* test was applied as a post - hoc test.

(**Table 2**) shows that, the adjusted post-test mean difference in speed endurance between high velocity resistance training group and the medium velocity resistance training group was 0.78. It was higher than the confident interval value of 0.26. Hence, there was a significant difference between the high velocity resistance training group and the medium velocity resistance training group on speed endurance. The mean difference of high velocity resistance training group and the control group was 2.03. It was also higher than the confident interval values of 0.26. It shows that, there was a significant difference in speed endurance among the high velocity resistance training group and the control group. The mean difference of medium velocity resistance training group and the control group was 1.25. The mean difference was greater than the confident interval value of 0.26. So the result of the study indicated that the significant difference exists among medium velocity resistance training group and the control group on speed endurance. It was further concluded that, the high velocity resistance training is better to improve the quality of speed endurance than the medium velocity resistance

training. The pre, post and adjusted post test mean values of high, medium and the control group on speed endurance was graphically represented in (**Figure 1**).

The result of the study indicated that, there was a significant difference occurred between the high and medium velocity resistance training groups as compared with the control group on speed endurance.

And also there was a significant difference in speed endurance among the high and medium velocity resistance training groups. It was further concluded that the high velocity training was better to improve the quality of speed endurance as compare with the medium velocity resistance training. The results of Housh *et al*. [8] and the results of Chestnaut and Docherty [4] were describes the same results in their studies. These studies are the supportive background for the present investigation.

Table 1: Analysis of Covariance on Speed Endurance of High and Medium Velocity Resistance Training Groups and the Control Group

Test		HVR TG	MVR TG	CG	SOV	SS	df	MS	F
Pre test	**Mean**	26.48	26.59	26.54	B	0.06	2	0.03	0.01
	SD	1.76	2.11	1.98	W	104.5	27	3.87	
Post test	**Mean**	24.42	25.31	26.51	B	22.13	2	11.06	2.59
	SD	1.85	2.35	1.98	W	115.5	27	4.28	
Adjusted Post test	**Mean**	24.47	25.25	26.50	B	21.02	2	10.51	227.2*
					W	1.20	26	0.05	

*Significant F = (df 2, 27) (0.05) = 3.35; (P ≤ 0.05) F = (df 2, 26) (0.05) = 3.37; (P ≤ 0.05)

Table 2: Scheffe's Test for the difference between the Adjusted Post-Test Mean of Speed Endurance

Adjusted Post Test Mean			MD	*CI*
HVR TG	MVR TG	CG		
24.47	25.25	-	0.78*	0.26
24.47	-	26.50	2.03*	
-	25.25	26.50	1.25*	

*Significant at 0.05 level of Confidence

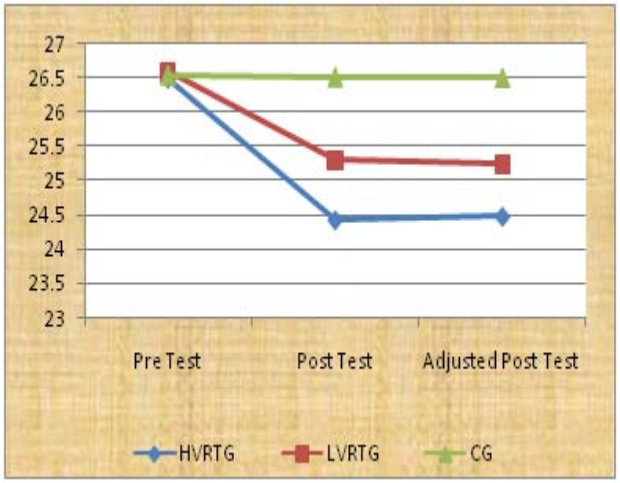

Figure 1: The pre, post and adjusted post test mean values of experimental groups and the control group on Speed Endurance

4. CONCLUSION

The following results were concluded from the present study.

1) There was a significant difference in speed endurance among the high velocity resistance training group and the control group.
2) There was a significant difference in speed endurance among the high velocity resistance training group and the medium velocity resistance training group.
3) There was a significant difference in speed endurance among the medium velocity resistance training group and the control group.
4) It was further concluded that the high velocity resistance training is better to improve the quality of speed endurance as compare with the medium velocity resistance training.

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