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EFFECT OF HIGH AND LOW INTENSITY INTERVAL TRAINING ON MUSCULAR STRENGTH AMONG HIGHER SECONDARY STUDENTS OF HANDBALL PLAYERS

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ABSTRACT

The purpose of the study was to find out the effect of high and low intensity interval training on muscular strength among higher secondary students of handball players. To achieve the purpose of this study, 45 school handball players were selected randomly from Islamiah Boys Higher Secondary School, Vaniambadi, Vellore District, Tamil Nadu. The groups were assigned as Experimental Group I, Experimental Group II and Control Group in an equivalent manner. Experimental Group I was exposed to high intensity interval training, Experimental Group II was exposed to low intensity interval training and Control Group was not exposed to any experimental training other than their regular daily activities. The duration of experimental period was 12 weeks. Data was analyzed by using ANCOVA and Scheffe's Post Hoc Test. Result revealed that high intensity interval training had significant improvement in muscular strength among handball players than the low intensity interval training.

KEY WORDS: *Low and High Intensity, Muscular Strength, Handball.*

INTRODUCTION

Training programmes aim directly at the improvement of performance. That too, the interval training involves the aerobic quality of muscles fit for the activity. Interval training, as a means of improving the aerobic endurance, is mostly included in all the athletic training programmes. Interval training involves activities that are more intermittent. It consists of alternating periods of relatively intense work and active recovery. It allows performing more work at an intense work load over a long period of time than working continuously. Interval training is a highly taxing type of training that we could compare with the extremely strenuous work performed by Sisyphus (Rex, 1985).

Handball has become one of the popular sports in the world and is known for its speed. This game is also a part of Olympic Sport. The simple rules of this game, minimal ground and equipment facilities and the speed of game itself along with the scope for players to exhibit their exclusive skills makes it as a popular game among even the schools and educational institutions. An effective handball players needs to possess several physical and mental abilities such as high-speed action, neuro muscular coordination, explosive jumping and hand power with proper aiming at goal. Additional abilities like explosive power of arms and legs, sprint velocity and kinesthetic feeling in ball control add to the playing efficacy. These physical activities, most crucial for playing Handball, are considered anaerobic mainly because of the speed at which the game is played9. In the recent days, a Handball player is required to possess the longitudinal dimensions like stature, arm span, hand span and length.

METHODOLOGY

The purpose of the study is to find out the effect of high and low intensity interval training on muscular strength among higher secondary students of handball players. The random sample consists of 45 school handball players (ages ranged from 15-17 years) from Islamiah Boys Higher Secondary School, Vaniambadi, Vellore District, Tamil Nadu. The groups were assigned as Experimental Group I, Experimental Group II and Control Group in an equivalent manner. Experimental Group I was exposed to high intensity interval training, Experimental Group II was exposed to low intensity interval training and Control Group was not exposed to any experimental training other than their regular daily activities. The duration of experimental period was 12 weeks. ANCOVA and Scheffe's Post Hoc Test were used to analyze the data.

RESULTS

Table 1: Analysis of Covariance of Mean of High Intensity Interval Training, Low Intensity Interval Training and Control Groups on Muscular Strength

	High Intensity Interval Training	Low Intensity Interval Training	Control Group	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	8.20	8.06	8.00	Between Groups	0.31	2	0.15	0.13
				Within Groups	49.33	42	1.17	
Post-Test Means	11.93	10.86	8.20	Between Groups	110.93	2	55.46	62.84*
				Within Groups	37.06	42	0.88	
Adjusted Post-Test Means	11.93	10.86	8.20	Between Groups	110.28	2	55.14	61.00*
				Within Groups	37.06	41	0.90	

Table-1 indicates that the pre test means of high intensity interval training, low intensity interval training and control groups were 8.20, 8.06 and 8.00 respectively. The obtained F-ratio for the pre-test was 0.13 and the table F-ratio was 3.22. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that there were no significant difference between the experimental and control groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups.

The post-test means of the high intensity interval training, low intensity interval training and control groups were 11.93, 10.86 and 8.20 respectively. The obtained F-ratio for the post-test was 62.84 and the table F-ratio was 3.22. Hence the post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that the differences between the post test means of the subjects were significant. The adjusted post-test means of the high intensity interval training, low intensity interval training and control groups were 11.93, 10.86 and 8.20 respectively. The obtained F-ratio for the adjusted post-test means was 61.00 and the table F-ratio was 3.23. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 41. This proved that there was a significant difference among the means due to the experimental trainings on muscular strength. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's post hoc test. The results were presented in Table-2.

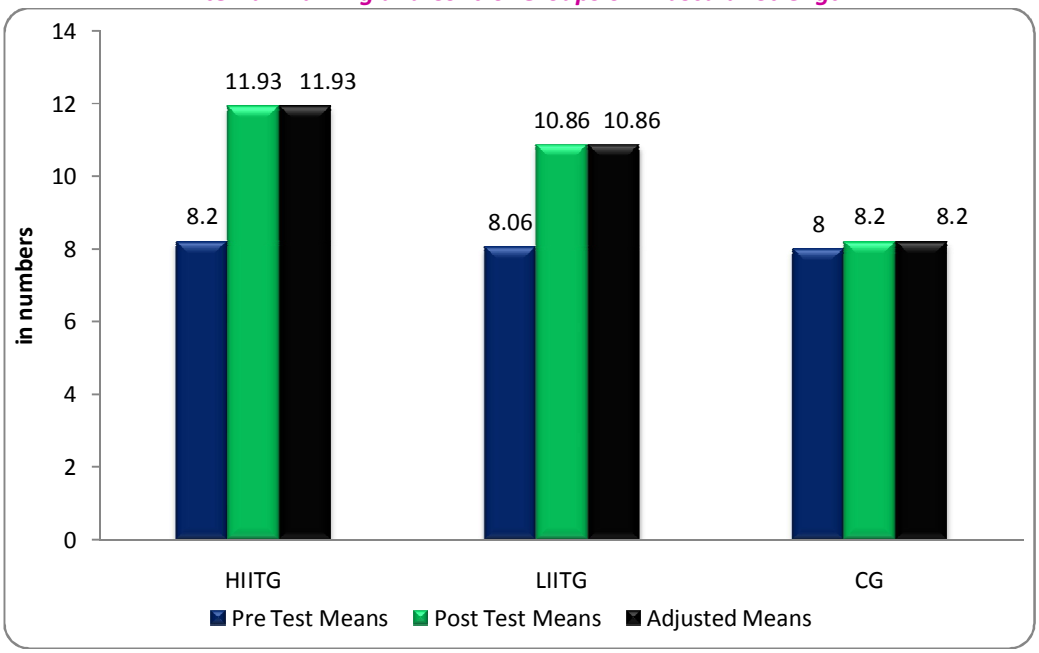
Table 2: Scheffe's Test for the Differences between the Adjusted Post-Test Paired Means on Muscular Strength

Adjusted Post-test means			Mean Difference	Required CI
High Intensity Interval Training	Low Intensity Interval Training	Control Group		
11.93	10.86	---	1.07*	0.87
11.93	---	8.20	3.73*	
---	10.86	8.20	2.66*	

**Significant at 0.05 level.*

Table-2 shows that there exists significant difference between the adjusted means of high intensity interval training and low intensity interval training (1.07), high intensity interval training with control group (3.73) and low intensity interval training with control group (2.66) at 0.05 level of significance with the confidence interval value of 0.87. The pre, post and adjusted means on muscular strength were presented through bar diagram for better understanding of the results of this study in Figure-1.

Fig 1: Pre Post and Adjusted Post Test Differences of the High Intensity Interval Training, Low Intensity Interval Training and Control Groups on Muscular Strength



CONCLUSION

- The high intensity interval training had shown significant improvement in muscular strength among handball players than the low intensity interval training.

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