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## Influence of 6 weeks of high intensity interval training on selected physical fitness variables among school boys

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### Abstract

The purpose of this study was to find out influence of moderate intensity interval training on selected physical fitness variables among school boys. To achieve the purpose of this study thirty (n=30) school boys were selected from Chennai, Tamil Nadu. The selected subject's age ranged between 14 to 17 years. Further they were classified at random in two equal groups of 15 (n=15) subjects each. Group - I (Experimental Group) underwent high interval training for thrice in a week of six weeks, and each section lasted 45minutes and the Group - II - acted as a control group (CG) they did not participate in any kind of training programme apart from the daily activities. The selected physical fitness variables such as speed and cardio respiratory endurance were measured by 50m and 12min run and walk test. The collected data were analysed statistically through analyse of covariance (ANCOVA) to find the significance difference. The results of the study showed that selected physical fitness variables were significantly improved due to interval training of school boys.

**Keywords:** 6 weeks, high intensity interval training, physical

### Introduction

In the last two decades, a growing number of studies have tested the efficacy of exercise programs with different structures regarding the type (aerobic, resistance, and mixed) the weekly frequency, the volume, the intensity and the duration. Exercise is a subset of physical activity that is planned, structured, repetitive, and purposeful in the sense that improvement or maintenance of physical fitness is the objective, interval training is based on a very simple concept: go fast then go slow, repeat. It sounds easy, but within this simple formula lies a tremendous number of possible variations and strategies one can employ to take full advantage of the power available to one. For those who are always using the excuse that there is not enough time to exercise, there is a new solution – High Intensity Interval Training. High Intensity Interval Training is a type of intense fitness training approach in which low to moderate intensity intervals are alternated with high intensity intervals. While High Intensity Interval Training has become a popular way to burn fat quickly. The increase in fat mass in children has occurred concomitantly with a decline in cardio respiratory fitness (Tomkinson, *et al.* 2003). In adults, it is well established that regular physical activity is associated with numerous physiological effects that are beneficial to health (Blair, *et al.*, 1995) [4].

The well-established benefits of regular physical activity on health and well-being, current levels within school aged youth are widely regarded as insufficient to meet recommendations (Ekelund, Tomkinson, Armstrong, 2011) [1]. Recommendations within the India recommend that all children and young people should engage in moderate to vigorous intensity physical activity for at least 60 minutes and up to several hours every day whilst also suggesting that vigorous intensity activities, including those that strengthen muscle and bone, should be incorporated at least three days a week. Understanding why youth fail to meet recommended physical activity levels is a complex phenomenon influenced by numerous interrelated factors that can be different for each individual. Nonetheless, school is one setting where youth spend a substantial amount of their time. The school environment, and in particular physical education (PE), affords an ideal setting to practice health-promoting behaviours and is widely recognized as an important setting for collaborative intervention (Dobbins, Corby, Robeson, Husson, Tirilis, 2009) [2].

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Moreover, the school setting provides a venue whereby interventions can reach a large number of individuals from assorted socioeconomic surroundings while providing an environment for youth to engage in physical activity.

### Methodology

To achieve the purpose of this study thirty (n=30) school boys were selected from Chennai, Tamil Nadu. The selected subject's age ranged between 14 to 18 years. Further they were classified at random in two equal groups of 15 (n=15) subjects each. Group - I (Experimental Group) underwent similar interval training for thrice in a week of six weeks, and each section lasted 45minutes and the Group - II - acted as a control group (CG) they did not participate in any kind of training programme apart from the daily activities. The selected physical fitness variables such as speed and cardio respiratory endurance were measured by 50m and 12min run and walk test.

### Training programme

During the training period the experimental group (HIIT) underwent six weeks of aerobic training programmes on Tuesdays, Thursdays and Saturdays, in addition to their daily

routine activities as per the schedule. The duration of training were planned for 60 minutes that is from 4.00pm to 5.00pm. All the subjects involved in this study were carefully monitored throughout the training programmes. The following exercise was followed in the training session, the schedule consist of 10min warm up (jogging and dynamic stretches) then fast run 4 min, sprint for 20 sec, walk for 1 min, sprint for 10 sec walk for 1 minute, 3-Hurdle Drill, Box Blast, Lateral Bound, Squat Jump, Ankle Jump, Single-Leg Hurdle Hop. High knee, mountain climbers, plank hops, jump and jack, tuck jump and jump rope etc. at the end of session the subjects involved cool down and stretches for 15min.

### Statistical technique

The collected data were analysed statistically through analyze of covariance (ANCOVA) to find the significance difference.

### Results and discussion

The data collected prior and after the experimental period on speed and cardio respiratory endurance of experimental group (interval training) and control group (CG) were analysed and presented in table - 1 and 2.

**Table 1:** Analysis of covariance for pre and post data on speed

Test	EX- G	CG	Source of variance	Sum of squares	DF	Mean square	F
Pre-test mean	8.62	8.44	Between	.243	1	0.243	2.34
			Within	2.907	28	0.104	
Post-test mean	8.08	8.41	Between	0.80	1	0.80	12.49*
			Within	1.79	28	0.06	
Adjusted mean	8.02	8.47	Between	1.396	1	1.396	83.48*
			Within	.451	27	.017	

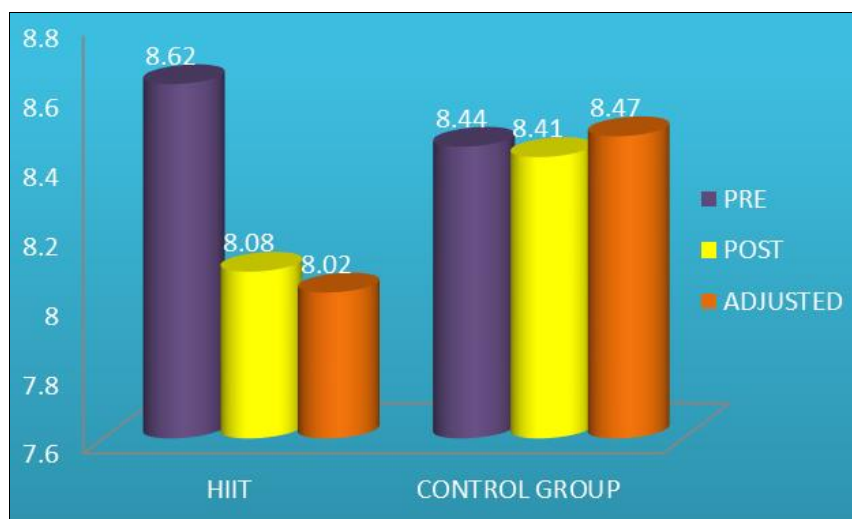
\*Significant at 0.05 level of confidence. (The table value required for significance at 0.05 level of confidence with DF 1 and 28 and 1 and 27 were 4.19 and 4.21 respectively).

### Discussion on findings of speed

The obtained F value on pre test scores 2.34 was lesser than the required F value of 4.19 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal. The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 12.49 was greater than the required F value at 4.19. This proved that the differences between the post-test mean at the subjects were significant. Taking into

consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 83.48 was greater than the required F value at 4.21 to be significant at 0.05 level and hence it was accepted that there was significant difference among the adjusted post-test means on speed due to the interval training.

The pre, post and adjusted means on speed 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 and control group on speed

**Table 2:** Analysis of covariance for pre and post data on cardio respiratory endurance

Test	EX- G	CG	Source of variance	Sum of squares	DF	Mean square	F
Pre-test mean	1280	1266.66	Between	1333.3	1	1333.33	0.16
			Within	237333.3	28	8476.19	
Post-test mean	1496.66	1240.00	Between	494083.3	1	494083.33	30.86*
			Within	448333.3	28	16011.90	
Adjusted mean	1489.81	1246.85	Between	440244.0	1	440244.06	60.19*
			Within	197479.4	27	7314.05	

\*Significant at 0.05 level of confidence. (The table value required for significance at 0.05 level of confidence with DF 1 and 28 and 1 and 27 were 4.19 and 4.21 respectively).

### Discussion on findings of cardio respiratory endurance

The obtained F value on pre test scores 0.16 was lesser than the required F value of 4.19 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal. The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 30.86 was greater than the required F value at 4.19. This proved that the differences between the post-test mean at the subjects were significant. Taking into

consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 60.19 was greater than the required F value at 4.21 to be significant at 0.05 level and hence it was accepted that there was significant difference among the adjusted post-test means on cardio respiratory endurance due to the interval training. The pre, post and adjusted means on cardio vascular endurance were presented through bar diagram for better understanding of the results of this study in Figure-2.



**Fig 2:** Pre, post and adjusted post-test differences of the high intensity interval training and control group on cardio respiratory endurance

### Conclusion

1. The speed was significantly increased due to six weeks of High Intensity Interval Training of school boys.
2. The cardio respiratory endurance was significantly increased due to six weeks of High Intensity Interval Training of school boys.

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