

# Influence of High Intensity Interval and Low Intensity Interval Trainings on Selected Motor Fitness Components

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## Abstract

*The purpose of the study was to find out the effects of high intensity interval training and Low intensity interval training on selected motor fitness components namely speed and agility. To achieve this purpose of the study, forty five men students studying Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu and India were selected as subjects at random. Their age ranged between 18 to 24 years. The selected subjects were divided into three equal groups of fifteen each namely high intensity interval training group, Low intensity interval training group and control group. The experimental group I underwent high intensity interval training and group II underwent Low intensity interval training for three days per week for twelve weeks whereas the control group maintained their daily routine activities and no special training was given to them. The following motor fitness components namely speed and agility were selected as criterion variables. The subjects of the three groups were tested on selected motor fitness components namely speed and agility using standardized tests namely 50 mts run and shuttle run at prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significant difference, if any among the groups. Whenever the obtained “F” ratio was found to be significant, the Scheffe’s test was applied as post hoc test to find out the paired mean difference, if any. The .05 level of confidence was fixed to test the level of significance which was considered as an appropriate. The results of the study showed that there was a significant difference exist among high intensity interval training group, Low intensity interval training group and control group on selected motor fitness components namely speed and agility. And also high intensity interval training group and Low intensity interval training group showed significant improvement on speed and agility when compared to control group.*

**Keywords:** High Intensity Interval Training, Low Intensity Interval Training, Speed, Agility, Analysis of Covariance (ANCOVA).

## Introduction

High intensity interval training (HIIT) and low intensity interval training (LIIT) are two different types of interval training which differ in the intensity of their exercises. HIIT is a type of physical activity which involves alternating periods of intense exercise with periods of rest or active recovery. HIIT workouts usually involve exercises such as sprints, burpees, mountain climbers, or other high-intensity activities. LIIT is a type of physical activity that involves alternating periods of low-intensity exercise with periods of rest or active recovery. LIIT workouts usually involve exercises such as walking or light jogging, and can also include movements such as bodyweight squats or lunges. HIIT and LIIT both have their benefits, and both can be beneficial to those looking to improve their speed and agility. HIIT is great for those looking to increase their power and strength, as well as their speed and agility. HIIT workouts involve short bursts of high intensity exercise followed by periods of rest or active recovery. This type of exercise can help increase an individual’s power and strength, as well as their speed and agility. Additionally, HIIT workouts can help individuals burn a significant amount of calories in a short amount of time, making it an effective way to lose weight.

LIIT is great for those looking to improve their cardiovascular fitness and endurance. LIIT workouts involve alternating periods of low-intensity exercise with periods of rest or active recovery. This type of exercise can help improve an individual's cardiovascular fitness and endurance, as well as their speed and agility. Additionally, LIIT workouts can help individuals burn a moderate amount of calories in a short amount of time. Overall, HIIT and LIIT are both effective forms of interval training which can help individuals improve their speed and agility. While HIIT is great for those looking to increase their power and strength, LIIT is great for those looking to improve their cardiovascular fitness and endurance. Ultimately, the type of interval training an individual should do depends on their specific goals and fitness level.

### Methodology

The purpose of the study was to find out the effects of high intensity interval training and Low intensity interval training on selected motor fitness components namely speed and agility. To achieve this purpose of the study, forty five men students studying Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu and India were selected as subjects at random. Their age ranged between 18 to 24 years. The selected subjects were divided into three equal groups of fifteen each namely high intensity interval training group, Low intensity interval training group and control group. The experimental group I underwent high intensity interval training and group II underwent Low intensity interval training for three days per week for twelve weeks whereas the control group maintained their daily routine activities and no special training was given to them. The following motor fitness components namely speed and agility were selected as criterion variables. The subjects of the three groups were tested on selected motor fitness components namely speed and agility using standardized tests namely holding the breath for time and radial pulse at prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significant difference, if

any among the groups. Whenever the obtained "F" ratio was found to be significant, the Scheffe's test was applied as post hoc test to find out the paired mean difference, if any. The .05 level of confidence was fixed to test the level of significance which was considered as an appropriate.

### Training Programme

During the training period, the Group I underwent high intensity interval training and Group II underwent Low intensity interval training for three days per week (alternative days) for twelve weeks. Every day the workout lasted for 45 to 60 minutes approximately including warming up and warming down periods. Group III acted as control who did not participate in any strenuous physical exercises and specific training throughout the training period. However, they performed activities as per their curriculum.

### Analysis of the Data

The analysis of covariance on selected motor fitness components of high intensity interval training group and Low intensity interval training group and control group have been analyzed and presented below.

### Speed

The analysis of covariance on speed of the pre and post test scores of high intensity interval training group, Low intensity interval training group and control group have been analyzed and presented in Table 1.

The adjusted post-test means of high intensity interval training group, Low intensity interval training group and control group are 7.85, 7.52 and 8.06 respectively. The obtained "F" ratio of 26.33 for adjusted post-test means is greater than the table value of 3.226 for df 1 and 42 required for significance at .05 level of confidence on speed.

Since, three groups were compared whenever the obtained "F" ratio for the adjusted post test was found to be significant, the Scheffe's test was applied as post hoc test to find out the paired mean differences, if any and it was presented in table I- A

**Table 1 Analysis of Covariance of the Data on Speed of Pre and Post Tests Scores of High Intensity Interval Training, Low Intensity Interval Training and Control Groups**

Test	High Intensity Interval Training Group	Low Intensity Interval Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test								
Mean	8.04	8.07	8.09	Between	0.0199	3	0.0099	0.089
S.D.	0.36	0.33	0.28	Within	4.7298	42	0.1126	
Post Test								
Mean	7.83	7.53	8.07	Between	2.2524	3	1.1262	12.41*
S.D.	0.32	0.28	0.27	Within	3.8120	42	0.0908	
Adjusted Post Test								
Mean	7.85	7.52	8.06	Between	2.1847	3	1.0923	26.33*
				Within	1.7009	41	0.0415	

\* Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 2 and 42 and 2 and 41 are 3.222 and 3.226 respectively).

**Table 2 The Scheffe's Test for the Differences Between Paired Means on Breath Holding Time**

High Intensity Interval Training Group	Low Intensity Interval Training Group	Control Group	Mean differences	Confidence Interval Value
7.85	7.52		0.33*	0.19
7.85		8.06	0.21*	0.19
	7.52	8.06	0.54*	0.19

\* Significant at .05 level of confidence.

The table 2 showed that the mean difference values between high intensity interval training group and Low intensity interval training group, high intensity interval training group and control group and Low intensity interval training group and control group on speed were 0.33, 0.21 and 0.54 respectively which were greater than the required confidence interval value 0.19. The results of the study showed that there was a significant difference between high intensity interval training group and Low intensity

interval training group, high intensity interval training group and control group and Low intensity interval training group and control group on speed.

### Agility

The analysis of covariance on agility of the pre and post test scores of high intensity interval training group, Low intensity interval training group and control group have been analyzed and presented in Table 3.

**Table 3 Analysis of Covariance of the Data on Agility of Pre and Post Tests Scores of High Intensity Interval Training, Low Intensity Interval Training and Control Groups**

Test	High Intensity Interval Training Group	Low Intensity Interval Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test								
Mean	8.57	8.56	8.54	Between	0.0084	3	0.0042	0.268
S.D.	0.11	0.12	0.14	Within	0.6613	42	0.0157	
Post Test								
Mean	8.21	7.95	8.52	Between	2.4173	3	1.2087	83.13*

S.D.	0.13	0.05	0.15	Within	0.6107	42	0.0145	83.13*
Adjusted Post Test								
Mean	8.20	7.95	8.53	Between	2.4753	3	1.2377	98.69*
					0.5141	41	0.0125	

\* Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 2 and 42 and 2 and 41 are 3.222 and 3.226 respectively).

The adjusted post-test means of high intensity interval training group Low intensity interval training group and control group are 8.20, 7.95 and 8.53 respectively. The obtained “F” ratio of 98.69 for adjusted post-test means is greater than the table value of 3.226 for df 2 and 41 required for

significance at .05 level of confidence on agility.

Since, three groups were compared whenever the obtained “F” ratio for the adjusted post test was found to be significant, the Scheffe’s test was applied as post hoc test to find out the paired mean differences, if any and it was presented in table II- A.

**Table 4 The Scheffe’s Test for the Differences Between Paired Means on Agility**

High Intensity Interval Training Group	Low Intensity Interval Training Group	Control Group	Mean Differences	Confidence Interval Value
8.20	7.95		0.25*	0.10
8.20		8.53	0.33*	0.10
	7.95	8.53	0.57*	0.10

\* Significant at .05 level of confidence.

The table 4 showed that the mean difference values between high intensity interval training group and Low intensity interval training group, high intensity interval training group and control group and Low intensity interval training group and control group on agility were 0.25, 0.33 and 0.57 respectively which were greater than the required confidence interval value 0.10. The results of the study showed that there was a significant difference between high intensity interval training group and Low intensity interval training group, high intensity interval training group and control group and Low intensity interval training group and control group on agility.

### Conclusions

1. The results of the study showed that there was a significant difference among high intensity interval training group, Low intensity interval training group and control group on speed and agility.
2. And also it was showed that there was a significant change on speed and agility due to

High intensity interval training and Low intensity interval training.

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