



Effect of High Intensity Interval Training on Selected Physical Fitness Variables among University Men Students

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Received 15th December 2019, Accepted 1st January 2020

Abstract

The purpose of the study was to find out the effect of high intensity interval training (HIIT) on selected physical fitness variables namely Speed and Explosive Power among University men students. To achieve this purpose of the study, 30 men students were selected from Department of Physical Education, Annamalai University, Annamalai nagar, Cuddalore district, Tamilnadu, India as subjects. The age of subjects were ranged from 18 to 23years. The selected subjects were divided into two equal groups of fifteen subjects each, such as High intensity interval training group (Group-I) and control group(Group-II). The High intensity interval training group (Group-I) underwent training programme for 5 days per week for 12 weeks. Group II acted as control in which they did not undergo any special training programme apart from regular activities. All the subjects of two groups were tested on selected physical fitness variables such as Speed and Explosive power by using 50 meter's run and Vertical jump at prior to and immediately after the training programme. The analysis of covariance (ANCOVA) was used to analyze the significant difference, if any between the groups. The level of significant to test the "F" ratio obtained by the analysis of covariance was tested at .05 level of confidence, which was considered as an appropriate. The results of the study revealed that there was a significant difference between High intensity interval training group and control group on selected physical fitness variables such as Speed and Explosive power. The significant changes on selected criterion variables were also noticed due to High intensity interval training.

Keywords: High intensity interval training, speed, Explosive power (ANCOVA).

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Introduction

An interval training is probably defined as a period of time or time or a specified distance, but for endurance training it means repeated bouts of high intensity exercise with intermittent rest periods. Imagine running through the woods, accelerating up slopes and around bends and decelerating only when you feel the need to, basing your 1- 2-hour training on terrain and self-judgment alone. This type of running revolutionized athletic interval training in the 1930s and today is known as Fartlek running or "speed play." It was developed in Sweden by Gosta Holmer. Later, two Germans, Woldemar Gerschler and cardiologist Herbert Reindel, decided Fartlek running did not offer enough precision when developing a training regimen. In particular, it did not give the opportunity to measure progression. Consequently, they developed the first interval training program based on heart rate (HR) responses. Their program stressed running short bouts (100-450 m) at high intensity until an HR of 180

BPM was reached. The participant was then given 90 seconds of rest for HR to decrease to 120 BPM. If the HR did not decrease to this level, the workout was terminated. From their work, predictive relationships were developed between average workout speed and race pace. The wide adoption of interval training led to the steady improvement in world record performances from the 400m to the marathon. In the 1990s, interval training for clinical populations was popularized by the work of Katharina Meyer from Germany. She demonstrated that, after coronary bypass surgery, patients benefited more from interval training than continuous exercise. During the last decade, interval training has shown benefit in almost every population.

Achievements of an athlete is always related to how he practices, what is practiced and what its purpose. Selection methods and the right kind of exercise will support the success of the exercise itself. High Intensity Interval Training (HIIT) is one of the methods and the right kind of exercise because it is very effective and efficient way to improve the desired physical components. HIIT workouts can improve cardiac performance and impact on the body's metabolism is also increased sharply. Metabolism herein relates to the body's ability to convert fat into energy. In addition to increased metabolism during practice, at rest also

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increased the metabolism so that the body remains at rest in a state of energy production [1]. For example, HIIT workout is to combine sprint exercise with jogging. For example, 60 seconds of jogging and then after 60 seconds continue with sprint for 30 seconds and so on.

Interval Training

To prevent chronic disease, the American College of Sports Medicine (ACSM) recommends accumulating 150 minutes of moderate-intensity exercise or 75 minutes of vigorous-intensity exercise a week. Less than half of Americans meet the current activity guidelines . Lack of time is the leading perceived barrier to exercise. Accordingly, exercise programs have leaned toward workouts that are time efficient. Interval training has been suggested as an answer for time-crunched Americans trying to achieve cardiovascular health.

Methodology

The purpose of the study was to find out the effect of high intensity Interval training on selected physical fitness variables namely Speed and Explosive power among University men students. To achieve this purpose of the study 30 men students selected from

Department of Physical Education, Annamalai University, Annamalai nagar, Cuddalore district, Tamilnadu, India were selected as a subjects. The age of subjects were ranged from 18 to 23years.The selected subjects were divided into two equal groups of fifteen subjects each, such as High intensity interval training group (Group-I) and control group(Group-II). The High intensity interval training group (Group-I) underwent training programme for three days per week for 12 weeks. Group II acted as control in which they did not undergo any special training programme apart from regular activities. All the subjects of two groups were tested on selected physical fitness variables such as Speed and Explosive power by using 50 meter’s run and Vertical jump at prior to and immediately after the training programme. The analysis of covariance (ANCOVA) was used to analyse the significant difference, if any between the groups. The level of significant to test the “F” ratio obtained by the analysis of covariance was tested at .05 level of confidence, which was considered as an appropriate. The mean, standard deviation and “F”ratio values on each criterion variables were analysed separately and presented below,

Analysis and results of the study

Table 1

The mean, standard deviation and ‘f’ratio values on speed of high intensity interval training(hitt) group and control group

Test	HIIT Group	Control Group	Source of variance	Sum of squares	Df	Mean square	F ratio
PRE TEST							
MEAN	8.10	8.12	BETWEEN	0.001	1	0.001	0.20
S.D	0.06	0.061	WITHIN	0.14	28	0.005	
POST TEST							
MEAN	7.87	8.10	BETWEEN	0.86	1	0.86	49.14*
SD	0.10	0.07	WITHIN	0.49	28	0.175	
ADJUSTED POST TEST							
MEAN	7.88	8.12	BETWEEN	0.79	1	0.79	39.50*
			WITHIN	0.52	27	0.02	

*Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence with df 1 and 28 &1 and 27are 4.20 and 4.21respectively .)

The table 1 shows that the adjusted post test mean values on Speed for HITT and control group were 7.88 and 8.12. The obtained “F” ratio value 39.50 on Speed which was greater than the required table value 4.21for significance with df 1 and27. The results of the

study showed that there was a significant changes between HIIT group and control group on Speed. The mean, standard deviation and “F” ratio values on Explosive power was analysed separately and presented below.

Table 2

The mean, standard deviation and 'f' ratio values on explosive power of high intensity interval training (hiit) group and control group

Test	HIIT Group	Control Group	Source of variance	Sum of squares	Df	Mean square	F ratio
PRE TEST							
MEAN	0.40	0.41	BETWEEN	3.33	1	3.33	2.34
S.D	0.01	0.02	WITHIN	39.87	28	1.424	
POST TEST							
MEAN	0.45	0.41	BETWEEN	13.33	1	13.33	8.208*
SD	0.02	0.02	WITHIN	45.47	28	1.624	
ADJUSTED POST TEST							
MEAN	0.45	0.41	BETWEEN	27.41	1	27.41	109.64*
			WITHIN	6.79	27	0.25	

*Significant at .05 level of confidence

(The table values required for significance at .05 level of confidence with df 1 and 28 & 1 and 27 are 4.20 and 4.21 respectively.)

The table 2 shows that the adjusted post test mean values on Explosive power for HIIT group and control group were 0.45 and 0.41 respectively. The obtained 'F' ratio value 109.64 on Explosive power which was greater than the required table value 4.21 for significance with df 1 and 27. The result of the study showed that there was significant changes between HIIT group and control group on Explosive power.

Conclusions

Based on the results of the study, the following conclusions were drawn:

1. There was a significant difference between HIIT group and control group on Speed.
2. There was a significant difference between HIIT group and control group on Explosive power.
3. The findings of this study proved that HIIT significantly changed the Speed and Explosive power.

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