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Effect of interval training on health related physical fitness components of engineering college men students

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Abstract

The objective of the study was to find out the effects of interval training on health related physical fitness components of engineering college men students. For the purpose of the study 60 under graduate boy's student were selected. This was studying in NDMVP'S K.B.G.T. College of engineering, Nasik and age ranged from 18-25 years. The subjects were purposively assigned into two groups: Group-A: Experiential (N1=30) and Group-B: Control (N2=30). All the subjects were informed about the objective and protocol of the study. The subjects from Group A were subjected to 8-week of interval training programme. The 8-week interval training brought about significant improvement in muscular endurance ($t = 3.41$), muscular strength ($t = 5.53$), cardiovascular endurance ($t = 8.66$) body composition ($t = 3.32$) and flexibility ($t = 5.52$) in Group (A) as compared with the control one. The 8-week interval training had significant effect on cardiovascular endurance, body composition, muscular strength, muscular endurance and flexibility.

Keywords: Interval training, Health related physical fitness and engineering college students.

Introduction

Physical fitness is the most important keys for a healthy life style. It is also the basis for active and inspired activity to doing living. A totally fit person is physically fit and has social and emotional maturity for his or her age. Fitness is constantly changing and is influenced by many factors. Fitness is based upon a solid foundation of good health. Healthful living implies freedom from disease, enough strength, endurance, skill, agility, capacity to meet the daily demands and sufficient reserves to meet extra ordinary stresses without undue fatigue, besides mental development and emotional balance according to the maturity level of the individual. Physical fitness is one of the most important things in life and one of the most valuable assets one can ever have. Health is one of the pre-requisites for a happy, well-balanced life. Interval training is use of develop to physical fitness of the body. Generally, it is used to develop cardio-vascular endurance.

The interval training in which bouts of hard running or work are separated by periods of light exercise with no pause for rest. Interval training involves intense exercise interspersed with intervals of relatively light exercise. To improve cardio respiratory functioning, strenuous intervals should be allowed at near-maximum heart rate intensity. This form of training usually results in a greater buildup of lactate, accompanied by greater pain and discomfort. However, since the overload principle is applied-that is, the length or intensity of intervals can be increased-great improvement in fitness can occur in a short period of time.

Methods and Procedures

The methodology for the study was to determine the effect of interval training on health related physical fitness components of engineering college men students in Nasik city (M.S.). The subjects for the study were selected from under graduate boy's students in studding NDMVP'S K.B.G.T. College of engineering in Nasik. Sixty subjects were randomly selected from NDMVP'S K.B.G.T. College of engineering and divided into two groups i.e., Experimental group and Control group. The subjects aged between eighteen to twenty eight years. The experimental treatment of eight weeks of interval training was given to experimental group and control group has no training. A pilot study was conducted before the

investigation. The pre and post tests for both groups were collected and data was analyzed to find the t-ratio for significance result. Standard statistical packages were used to analyses the data.

Table 1: Health Related Physical Fitness Components

Sr. No.	Variable	Test	Measuring Unit
1.	Muscular endurance	Push up	Number
2.	Muscular strength	Grip dynameters	Kg (Most Used Hand)
3.	Cardio-vascular endurance	12 m run & walk	Meter
4.	Flexibility	Sit & reach	Inch
5.	Body composition	B.M.I.	Number

Training Protocol

The principle of interval training is that of speed work. A workload is applied, generally from 30 to 40 seconds, which speed up the heart; this is followed by a recovery period. The subsequent intervals of work and recovery periods are adjusted in duration and number to suit the athlete and the level of training reached. Interval training naturally involves alternating periods of work with periods of recovery. The

advantage of interval training is that more work can be done with less fatigue than in continuous training. During the training period, the experimental groups underwent their respective programme three days per week over eight weeks. Every day the work lasted for 40 to 60 minutes approximately including warming up and warming down periods. The training programme carried out on a 400 meter track during the morning hours. A typical session could be 6X400 meters in 70 seconds with a 100 meters recovery jog in 45 seconds between each fast run. As the athlete improved he could increase the number of fast runs, and/or increase the speed of the runs, and/or reduce the time spent in recovery.

Statistical Analyses

Student’s t-test for independent data was used to assess the between-group differences. The level of $p \leq 0.05$ was considered significant.

Results

The results pertaining to significant difference on control group and experimental group between pre-test and post-test of health related physical fitness components to engineering college men students were assessed using the Student’s t test and the results are presented in table-2.

Table 2: The pre and post test result of Health Related Physical Fitness components of engineering college men student.

Sr. No.	Components	Group	Subject	Pre-test Mean±SD	Post-test Mean±SD	M.D	t-value
1.	Muscular endurance	Con	30	28.8±5.76	28.7±5.55	-0.1	3.41
		Exp	30	29.5±5.34	34.39±5.39	4.8	
2.	Muscular strength	Con	30	47.7±5.46	47.8±5.15	0.1	5.53
		Exp	30	47.8±4.21	55.4±6.18	7.6	
3.	Cardio-vascular endurance	Con	30	1813±148	1821±128	8.0	8.66
		Exp	30	1806±164	2348±300	542	
4.	Flexibility	Con	30	4±0.86	4.2±0.79	0.2	3.32
		Exp	30	3.96±0.75	4.71±0.97	0.75	
5.	Body composition	Con	30	22.4±1.27	22.43±1.10	0.03	5.52
		Exp	30	22.16±1.28	20.13±1.54	-2.03	

*Significant at 0.05 level

Muscular endurance

Table-2 presents the results of muscular endurance of subjects shows the pre and post-test Mean and SD values of control group of 28.8±5.76 and 28.7±5.55 and experimental group pre and post-test mean and SD of respectively 29.5±5.34 and

34.39±5.39 was significant initiate. The t-value 3.41 as shown in the table above was found statistically significant ($P < .05$). It has been observed that interval training have significantly enhanced for muscular endurance. The graphical representation of responses has been exhibited in figure-1.

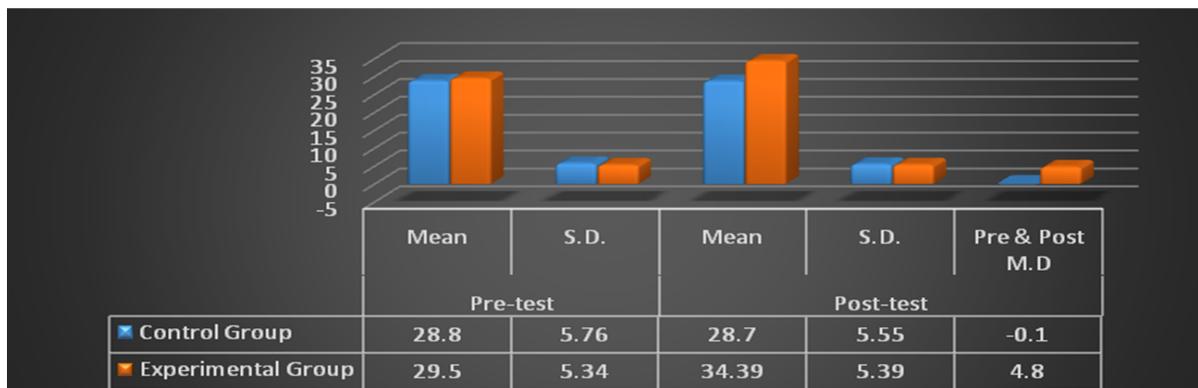


Fig 1: Graphical representation of data pre-test and post-test on muscular endurance.

Muscular Strength

Table -2 shows that the descriptive statistics for muscular strength of subjects control group pre and post-test Mean and SD values as 47.7±5.46 and 47.8±5.15 and experimental group pre and post-test mean and SD of respectively 47.8±4.21 and

55.4±6.18 was significant initiate. The t-value 5.53 as shown in the table above was found statistically significant ($P < .05$). It has been observed that interval training have significantly recovered for muscular endurance. The graphical representation of responses has been exhibited in figure-2

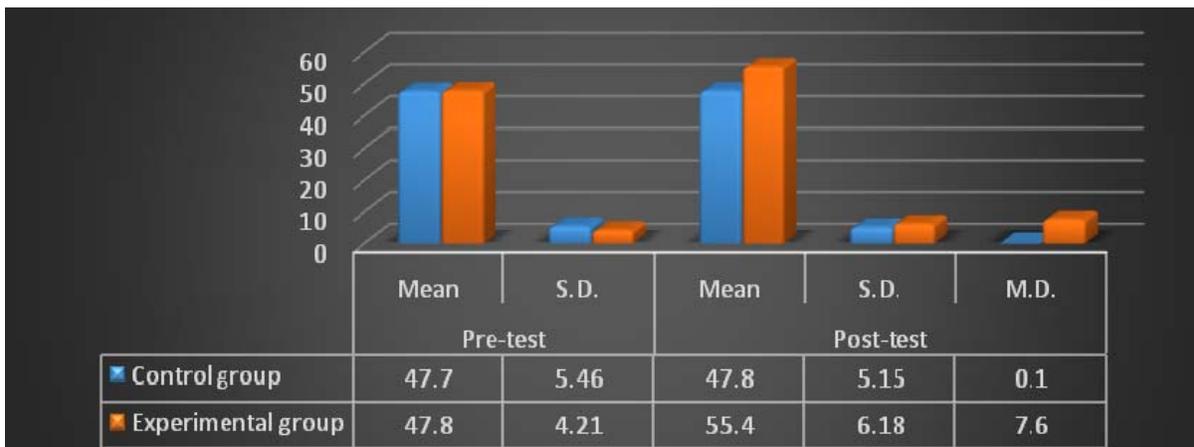


Fig 2: Graphical representation of data pre-test and post-test on muscular strength.

Cardio-vascular endurance

Table-2 presents the results of cardio-vascular endurance of subject's shows the pre and post-test Mean and SD values of control group of 1813±148 and 1821±128 and experimental group pre and post-test mean and SD of respectively 1806±164 and 2348±300 was significant initiate. The t-value 8.66 as

shown in the table above was found statistically significant (P<.05). It has been observed that interval training have significantly developed for cardio-vascular endurance. The graphical representation of responses has been exhibited in figure-3.



Fig 3: Graphical representation of data pre-test and post-test on cardio-vascular endurance.

Flexibility

Table -2 shows that the descriptive statistics for flexibility of subjects control group pre and post-test Mean and SD values as 4±0.86 and 4.2±0.79 and experimental group pre and post-test mean and SD of respectively 3.96±0.75 and 4.71±0.97 was

significant initiate. The t-value 3.32 as shown in the table above was found statistically significant (P<.05). It has been observed that interval training have significantly enhanced for flexibility. The graphical representation of responses has been exhibited in figure-4

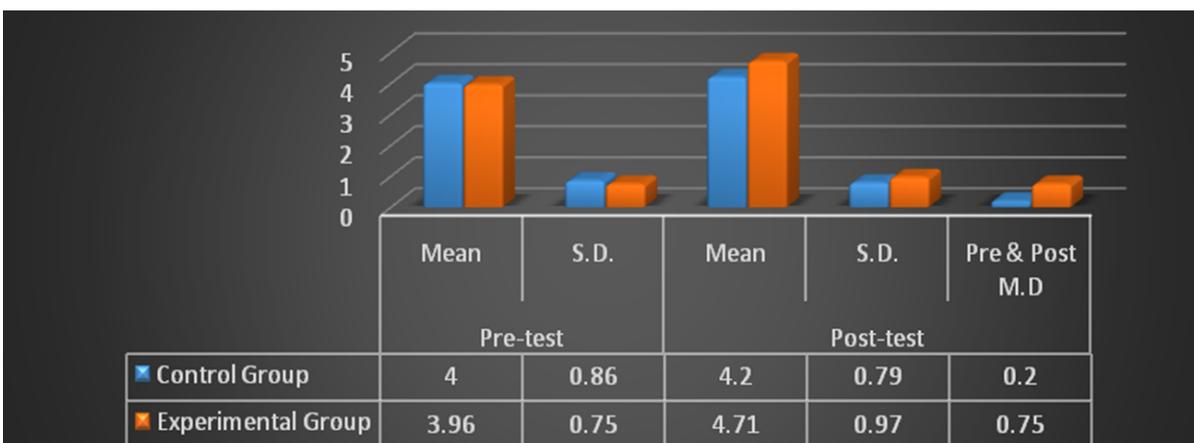


Fig 4: Graphical representation of data pre-test and post-test on flexibility.

Body composition

Table-2 presents the results of body composition of subjects shows the pre and post-test Mean and SD values of control group of 22.4 ± 1.27 and 22.43 ± 1.10 and experimental group pre and post-test mean and SD of respectively 22.16 ± 1.28 and

20.13 ± 1.54 was significant initiate. The t-value 5.52 as shown in the table above was found statistically significant ($P < .05$). It has been observed that interval training have significantly enriched for body composition. The graphical representation of responses has been exhibited in figure-5.

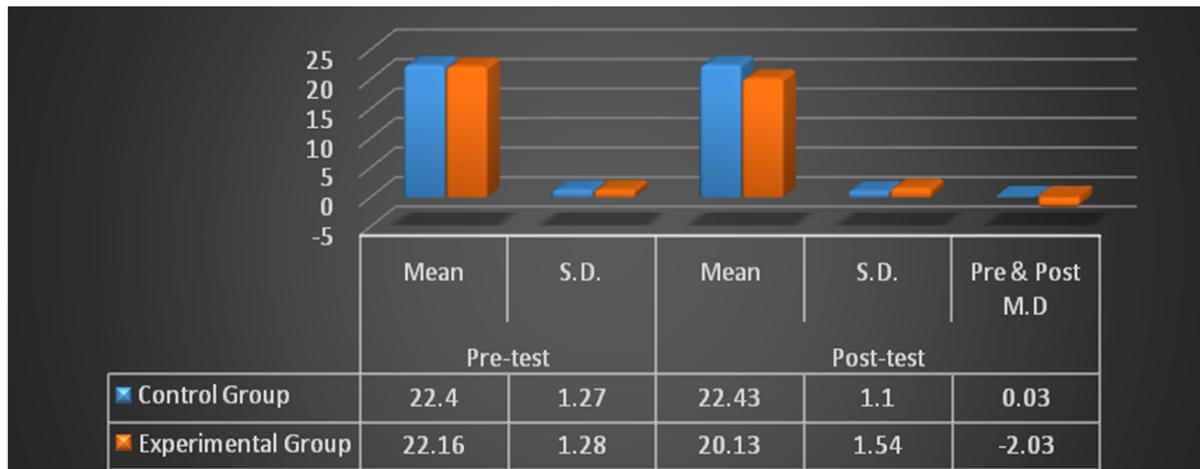


Fig 5: Graphical representation of data pre-test and post-test on body composition.

Conclusion

Based on the results of the study, it is concluded that there was a significant difference between control group and experimental groups of subject's health related physical fitness components of muscular endurance, muscular strength, cardiovascular endurance, flexibility and body composition to interval training. There was a significant improvement on health related physical fitness components of engineering college men students.

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