Original Research Paper

Physical Education

EFFECT OF CONTINUOUS TRAINING AND INTERVAL TRAINING ON CARDIO RESPIRATORY ENDURANCE PARAMETER AMONG DELHI UNIVERSITY STUDENTS

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ABSTRACT The present study was to investigate the effect of Effect of continuous training and interval training on cardio respiratory endurance parameter among Delhi university students. To achieve this purpose of the study forty five (N=45) university students were selected from Delhi university, New Delhi, India, during the year 2016-17. The subject's age ranges from 18 to 25 years. The selected subject were divided into three equal groups consists of fifteen subject each namely two experimental groups and control group from university students. The experimental group I underwent continuous training group (CTG) and experimental group II underwent interval training group (ITG) programme for twelve weeks. The control group was not taking part in any exercise during the course of the study. The dependent variable cardio respiratory endurance parameter selected for the study, it was measured by Cooper 12min run/walk unit of Meters.Pre-test was taken before the exercise period and post- test was measured immediately after the twelve weeks exercise period. The data collected from the three groups were statistically analyzed for significance, the analysis of covariance (ANCOVA) was used and the F ratio was found out. The Scheffe's test is applied as post-hoc test to determine the paired mean differences. The level of significance will be fixed at .05 level of confidence for all the cases. These results suggest that both continuous training and interval training improve cardio respiratory endurance level. The both training provides an alternative means of exercising for overweight, injured or ill individuals.

KEYWORDS : Continuous training, Interval training, Cardio respiratory endurance and ANCOVA

INTRODUCTION

Continuous running can be classified into three types, namely slow continuous, fast continuous running and varied pace running. In slow continuous running the pace is such that the heart beats, at the rate of about 140 beats per minutes. In fast continuous running the pace is such that the heart beat reaches between 150-170 per minutes. This running exposes the runner to harder and longer stresses. In varied pace slow speed is kept for long distance which keeps the heart rate at 140 per minutes and later the runner charges to fast pace which takes the heart beat to 170 per minutes. Long slow distance training is another training method in which long slow aerobic runs are used to improve cardiovascular fitness. Runs of two to five times of racing distance at a pace of seven to eight minutes per mile are the key elements for improving both performance and physical fitness. **(www. brianmac. co.uk,2017)**

Interval training works both in the aerobic and the anaerobic system. During the high intensity effort, the anaerobic system uses the energy stored in the muscles (glycogen) for short bursts of activity. Anaerobic metabolism works without oxygen. The byproduct is lactic acid, which is related to the burning sensation felt in the muscles during high intensity efforts. During the high intensity interval, lactic acid builds up and the athlete enters oxygen debt. During the recovery phase the heart and lungs work together to "pay back" this oxygen debt and break down the lactic acid. It is in this phase that the aerobic system is in control, using oxygen to convert stored carbohydrates into energy. **(www.brianmac.co.uk,2017)**

Methods & Materials

This study was selected forty five (N=45) university men students were selected from Delhi university, New Delhi, India, during the year 2016-17. The subject's age ranges from 18 to 25 years. They were divided into three groups namely the experimental group I underwent continuous training group (CTG) and experimental group II underwent interval training group (ITG) and control group (group III) each consists of 15 subjects. The experimental groups (I & II) were subjected to twelve weeks of continuous training group and interval training group respectively and the group III acted as control. The experimental groups I used exercises of Warm up at 5 mph pace-5 minutes, Jog at 6 mph pace-1 minute, Jog at 5.5 mph pace-2 minutes, Jog at 6.2 mph pace-1 minute, Jog at 5.3 mph pace-2 minutes and experimental group II used 1000 meters run,1100 meters run ,1200 meters run ,1300 meters run ,1400 meters run ,1500 meters run ,1600 meters run ,1700 meters run ,1800 meters run ,1900 meters run & 2000 meters run and the load given were progressively increased from 50%,60%,70% intensity level continuous training and interval training respectively for one hour per day for three days a week for a period of

twelve weeks. The subjects of all the three groups were tested on cardio respiratory prior to and after the training period.

To ascertain cardio respiratory endurance parameter measured by cooper 12 minute run/walk test accordingly the mean value count by meters.

Statistical Technique

The significance of the difference among the means of experimental group was found out by pre-test. The data were analyzed analysis of covariance (ANCOVA) technique was used with 0.05 levels as confidence. Analysis was performed using SPSS 22.0 (SPSS Inc Software).

RESULTS & INTERPRETATION

Table No.1
Table No.1.Analysis of Covariance for the Pre, Post and Adjusted Post Test Means Values for Continuous training group, Interval training group and
Control group on Cardio respiratory endurance
(Units measures by meters)

Varia ble name	Test	Contin uous training group	Interval training Group	Cont rol grou p	Sour ce of Varia nce	Sum of Squa re	df	Mean square	'F' ratio
Cardio Respir atory Endur ance	Pre test	2074	2074.67	2073. 3	Betw een	13.33	2	6.667	0.02
					Withi n	3126 6.67	42	7601.5 9	
	Post test	2202.66	2188.67	2082. 6	Betw een	1291 60.0	2	64580	13.94 *
					Withi n	1945 60.0	42	4632.3 8	
	Adjus ted post test	2202.67	2188.23	2083. 1	Betw een Set	1277 69.18	2	63884. 59	46.20 *
					Withi n Set	5669 3.93	41	1382.7 8	

*Significance at 0.05 level of confidence

Table value required for significant at 0.05 level with df 2 and 42 and 2 and 41 are 3.22 and 3.23 respectively.

The statistical analysis from the table-1 shows that the pre-test

means of continuous training, interval training and control group are 2074 , 2074.67 and 2073.33 respectively. The obtained F ratio 0.01 for pre-test is lesser than the table value of 3.22 for df 2 and 42 required for significance at 0.05 level. The post-test means of continuous training, interval training and control group are found 2202.66 ,2188.67 and 2082.67 respectively. The obtained F ratio 13.94* for post-test is greater than the table value of 3.22 for df 2 and 42 required for significance at 0.05 level.   The adjusted post-test means of continuous training, interval training and control group are 2202.67 ,2188.23 and 2083.10 respectively. The F ratio obtained for adjusted post-test 46.20* is also greater than the table value of 3.23 for df 2 and 41 required for significance at 0.05 level.

## TABLE-2 SCHEFFE'S POST HOC TEST MEAN DIFFERENCES ON FLEXIBILITY AMONG DIFFERENT GROUPS

(Units measures by meters)

Variables	Control group	Continuous training group	Interval training group	Mean Difference	C.I value
Cardio Respiratory Endurance	2083.10	2202.67	-	119.56*	33.81
	2083.10	-	2188.23	105.12*	
	-	2202.67	2188.23	14.44	

In the above table-2, the results of Scheffe's Post hoc test are presented. From the table it can be seen that the mean difference between Control group and Continuous training group was 119.56* P>0.05) and the calculated C.I value was 33.81 (P>0.05). The mean difference between Control group and the Interval training group was 105.12* (P<0.05) and the calculated C.I value was 33.81 (P< 0.05). The mean difference between the continuous training group and the interval training group was 14.44 (P>0.05) and the calculated C.I value was 33.81 (P>0.05). From that it can be clearly noticed that continuous training group responded to the training with more positive influences of speed when compared with the interval training group and control group. The interval training group responded better when compared with the Control group.

Figure 1 The Pre, post Mean values of Continuous training group, Interval training group and control Group on Cardio Respiratory Endurance

(Cooper 12min run/walk of meters)
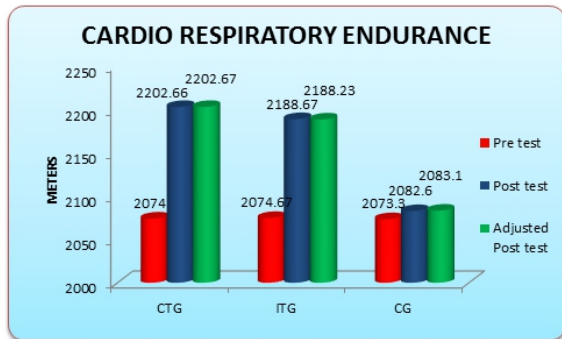
DISCUSSION OF FINDING
Improvement in cardio respiratory endurance was significant for all the training groups, i.e. group – I (continuous training group) and group - II (interval training group). Mahdiabadi J.et.al, (2013) In general, eight-week continuous training and interval training can affect cardio respiratory endurance significantly improved through to both training.

CONCLUSION
After completion of all work following conclusions were draw by the researcher:

• Continuous training group was possessed improved cardio respiratory endurance greater than the interval training group and control group.
• Interval training group was possessed improved cardio respiratory endurance greater than the control group.

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