International Journal of Advanced Research and Development
ISSN: 2455-4030
Impact Factor: RJIF 5.24
www.advancedjournal.com
Volume 3; Issue 2; March 2018; Page No. 1467-1468

Efficacy of intensive and extensive interval training on cardio respiratory endurance of physical education students of Annamalai University

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Abstract
The purpose of the study was to analyze the effect of intensive and extensive interval training on Cardio respiratory endurance. To achieve the purpose of the study, forty-five male students studying bachelor's degree in physical education, from the Department of Physical Education and Sports Sciences, Annamalai University, Chidambaram, Tamilnadu, India were selected as subjects at random. The age, height and weight of the subjects ranged from 19 to 21 years, 160 to 175cms and 50 to 60 kg respectively. The selected subjects were medically examined by a qualified physician and certified that they were medically and physically fit enough to undergo the intensive and extensive interval running programme.
The selected subjects were randomly assigned into three groups of 15 each namely experimental group I, experimental group II and a control group. The experimental group I underwent Intensive Interval Training and experimental group II underwent Extensive Interval Training and group III acted as control, who did not participate in any special training apart from their regular physical education programme of the curriculum. The experimental groups underwent the respective training programme for three days a week for twelve weeks. It is inferred that twelve weeks of intensive interval training and extensive interval training groups have significantly improved the cardio respiratory endurance as compared to the control group. The results also reveal that there was no significant differences exist between intensive interval training group and extensive interval training group in improving the cardio respiratory endurance.

Keywords: intensive and extensive interval training and cardio respiratory endurance

Introduction

Intensive interval training

The interval training constitutes the intermittent variation of exertion and active recovery periods within a training unit. Characteristics of the extensive interval method are short exertion periods with high load intensity (Competition Specific Endurance or Intensive Strength Endurance) with the duration of the recovery periods being short enough as to not result in full recovery.

Objectives of the study

The purpose of the study was to analyze the effect of intensive and extensive interval training on cardio respiratory endurance.

Methodology

The interval running programmes were scheduled for one session a day. The training schedule was administered for both the experimental groups. During the training period the experimental groups underwent their respective training programme three days per week (alternate days) for twelve weeks in addition to their regular programme of the course of study as per their curriculum. Group I underwent high intensity with low repetition interval running, Group II underwent moderate intensity with high repetition interval running. Prior to every training sessions both the groups had ten to fifteen minutes of warm-up exercise involving jogging, calisthenics and stretching exercises.

Cardio respiratory endurance

The pre and post test data on cardio respiratory endurance of the intensive interval training, extensive interval training and control groups have been analysed statistically and the results are presented in table-I.

Table 1: Analysis of covariance on cardio respiratory endurance of intensive interval training extensive interval training and control groups

	Group I	Group II	Group III	Source of variance	Sum of Squares	df	Mean squares	'F' ratio
Pretest Mean SD	2474.66	2466.66	2450.66	Between	4697.77	2	2348.88	0.95
	57.42	51.08	38.99	Within	103000	42	2452.38	
Posttest Mean SD	2520.66	2547.33	2404.66	Between	172604.4	2	86302.22	26.81*
	46.51	53.78	67.80	Within	135160	42	3218.09	
Adjusted Posttest Mean	2513.52	2546.10	2413.05	Between	139829.36	2	69914.68	32.40*
				Within	88481.36	41	2158.08	

* Significant at.05 level of confidence.

(The table values required for significance at.05 level of confidence for degree of freedom 2 and 41 is 3.23 and degree of freedom 2 and 42 is 3.22.)

The pretest means on cardio respiratory endurance of intensive interval training, extensive interval training groups and control group are 2474.66, 2466.66 and 2450.66 respectively. The obtained 'F' ratio value on the scores of pre test means 0.95 was lesser than the required F ratio value 3.22 for significance at 0.05 level of confidence with degrees of freedom 2 and 42. The result of the study reveals that there was no significant differences existed between the experimental and control groups during the pretest period.

The posttest means on cardio respiratory endurance of intensive interval training, extensive interval training groups and control group are 2520.66, 2547.33 and 2404.66 respectively. The obtained posttest 'F' ratio value of 26.81 was greater than the required table value of 3.22 for significance at 0.05 level of confidence with degrees of freedom 2 and 42. It reveals that significant differences existed between the groups after twelve weeks of training.

The adjusted posttest means on cardio respiratory endurance of intensive interval training, extensive interval training groups and control group are 2513.52, 2546.10 and 2413.05 respectively. The obtained 'F' ratio value 32.40 was greater than the required table value of 3.23 for significance at 0.05 level of confidence with degrees of freedom 2 and 41. The result of the study shows that significant differences existed between the adjusted posttest mean of the intensive interval training, extensive interval training and control groups in improving the cardio respiratory endurance.

Since the adjusted posttest mean 'F' value was found to be significant, the results were subjected to post hoc analysis using Scheffe'S test. The results were presented in table-2.

Table 2: Scheffe's test for the adjusted posttest paired means differences on cardio- respiratory endurance

Adjusted posttest MEANS				Confidence Interval
Intensive Interval Training Group	**Extensive Interval Training Group**	**Control Group**	**Mean Difference**	
2513.52	2546.10		32.58	39.56
2513.52		2413.05	100.47*	39.56
	2546.10	2413.05	133.05*	39.56

*Significant at.05 level of confidence

Table–II indicates that the adjusted posttest mean difference on cardio respiratory endurance between intensive interval training and extensive interval training groups, intensive interval training and control groups, extensive interval training and control groups are 17.75, 18.20 and 16.83 respectively, which are higher than the confidence interval value of 0.53 at 0.05 level of confidence.

Result

It is inferred that twelve weeks of intensive interval training and extensive interval training groups have significantly improved the cardio respiratory endurance as compared to the control group. The results also reveal that there was no significant differences exist between intensive interval training group and extensive interval training group in improving the cardio respiratory endurance.

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