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Effect of Aerobic Interval Training on Cardio Respiratory Endurance and Resting Pulse Rate among University Men Football Players

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Abstract

The purpose of the study was to find out the effect of aerobic interval training on cardio respiratory endurance and resting pulse rate among university men football players. For the purpose of the study, thirty men football players studying Bachelor's degree in the Department of Physical Education and Sports Sciences, Annamalai University, Annamalai Nagar, Tamil Nadu, India were selected as subjects and they were divided into two equal groups of fifteen subjects each at random namely aerobic interval training group and control group. The age of the selected subjects were ranged from 18 to 21 years. Group I underwent aerobic interval training for three days per week for twelve weeks. Group II acted as control who did not undergo any special training programme apart from their regular physical education programme of their curriculum. The following variables such as cardio respiratory endurance and resting pulse rate were only selected as criterion variables. The data were collected on selected criterion variables at prior and immediately after the experimental period as pre and post tests respectively. By using coopers 12minutes run/walk and radial pulse test respectively. The analysis of covariance (ANCOVA) was used to find out the significant difference among the groups, if any separately for each criterion variable. The .05 level of confidence was fixed to test the level of significance which was considered as an appropriate. The results of the study revealed that there was a significant difference between aerobic interval training group and control group on cardio respiratory endurance and resting pulse rate.

Keywords: Aerobic, Interval, Resting Pulse Rate, Football.

Introduction

Aerobic interval training involves alternating periods of exercise or work, followed by periods of rest or relief. Interval training moderate duration (time) and moderate to high intensity training, for example, 80-90 percent of maximum heart rate (MHR) for 30-60 minutes in intervals of 4-10 minutes. The rest period between each repetition is short in relation to the work period, approximately 1-2 minutes. This does not allow for full recovery and thus maintains stress on the aerobic system. These can be adjusted to provide improvements in both aerobic and anaerobic training and can be designed to match the athlete's sport and conditioning levels. The duration of the intervals should be long enough to allow athletes to reach their maximal oxygen uptake (max VO2), but be short enough to bring on fatigue. The intensity should allow athletes to reach their max VO2, but the rest intervals should usually be active, such as walking or jogging slowly. This aids in removing accumulated lactic acid and therefore allows athletes to train longer.

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Methodology

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separately for each criterion variable. The .05 level of confidence was fixed to test the level of significance which was considered as an appropriate.

Analysis of the data

The influence of aerobic interval training on each criterion variable was analyzed separately and presented below,

Results

Table I. Analysis of covariance for the pre and post test on cardio respiratory endurance of aerobic interval training and control groups

Test	Aerobic interval training group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	1539.67	1541	Between	0.3	1	0.3	0.412
S.D.	20.04	20.99	Within	20.4	28	0.729	
Post Test							
Mean	1550	1542.3	Between	17.63	1	17.63	21.39*****
S.D.	20.25	22.20	Within	23.07	28	0.824	
Adjusted Post Test							
Mean	1549.3	1540.33	Between	22.11	1	22.11	172.73*****
			Within	3.46	27	0.128	

* Significant at .05 level of confidence.
(The table values required for significance at .05 level of confidence for 2 and 28 and 2 and 27 are 4.20 and 4.21 respectively).

The table I shows that the adjusted post-test means of aerobic interval training group and control group are 1549.3 and 1540.33 respectively. The obtained "F" ratio of 172.73 for adjusted post-test means is more than the table value of 4.21 for df 1 and 27 required for significance at .05 level of confidence on cardio respiratory endurance. The results of the study indicated that there was a significant difference between the adjusted post-test means of aerobic interval training group and control group on cardio respiratory endurance. The analysis of covariance of the data obtained for pre and post test scores on resting pulse rate of aerobic interval training and control groups have been presented in Table II.

Table II. Analysis of covariance for the pre and post test on resting pulse rate of aerobic interval training and control groups

Test	Aerobic interval training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	70.22	71.21	Between	0.0078	1	0.0078	0.177
S.D.	0.89	0.91	Within	1.241	28	0.044	
Post Test							
Mean	68.11	71.20	Between	1.254	1	1.254	7.69*
S.D.	0.81	0.91	Within	4.558	28	0.163	
Adjusted Post Test							
Mean	68.12	71.21	Between	1.0045	1	1.0045	4.37*
			Within	6.217	27	0.23	

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

The table II shows that the adjusted post-test means of aerobic interval training group and control

group are 68.12 and 71.21 respectively. The obtained "F" ratio of 4.37 for adjusted post-test mean is more than the table value of 4.21 for df 1and 27 required for significance at .05 level of confidence on resting pulse rate. The results of the study indicated that there was a significant difference between the adjusted post-test means of aerobic interval training group and control group on resting pulse rate.

Discussion

There was a significant difference among aerobic interval training group and control group on cardio respiratory endurance and resting pulse rate among university men football players. And also it was inferred that there was a significant improvement on cardio respiratory endurance and also significant reduction in resting pulse rate among university men football players due to aerobic interval training.

Gregory and Adeniran et al., also found the improvement on aerobic capacity and cardio respiratory endurance due to interval training and continuous training. Upppal, investigated effect of interval training and two continuous load methods on cardio respiratory endurance and resting pulse rate. And found significant improvement in cardio respiratory endurance and also significant reduction in resting pulse rate due to aerobic interval training. The results of the study were in correlation with the results of the present study.

Conclusions

1. There was a significant difference among aerobic interval training group and control groups on cardio respiratory endurance and resting pulse rate among men football players.
2. There was a significant improvement on cardio respiratory endurance and also significant reduction on resting pulse rate among men football players.

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