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INFLUENCE OF AEROBIC INTERVAL TRAINING ON STRENGTH ENDURANCE AND CARDIO RESPIRATORY ENDURANCE AMONG NOVICE UNDER GRADUATE WOMEN STUDENTS

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Abstract:

The purpose of the study was designed to examine the effect of aerobic interval training on strength endurance and cardio respiratory endurance of novice under graduate women students. For the purpose of the study, thirty men students from various departments in Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu, India were selected as subjects. They were divided into two equal groups. Each group consisted of the fifteen subjects. 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. The following variables namely strength endurance and cardio respiratory endurance were selected as criterion variables. All the subjects of two groups were tested on selected dependent variables by using bend knee sit up as and cooper's 9 min run and walk test respectively at prior to and immediately after the training programme. The analysis of covariance was used to analyze the significant difference, if any among the groups. The .05 level of confidence was fixed as the level of significance to test the 'F' ratio obtained by the analysis of covariance, which was considered appropriate. The results of the study showed that there was a significant difference between aerobic interval training group and control group on strength endurance and cardio respiratory endurance. And also it was found that there was a significant improvement on strength endurance and cardio respiratory endurance due to twelve weeks of aerobic interval training.

Key Words: Aerobic Interval Training, Strength Endurance, Cardio Respiratory Endurance, Novice Under Graduate Women Students

Introduction:

In the realm of fitness and endurance training, Aerobic Interval Training (AIT) has emerged as a highly effective method for improving cardiovascular health, increasing endurance, and enhancing overall athletic performance. This training method involves alternating between periods of moderate-to-high-intensity exercise and periods of lower-intensity recovery. Unlike continuous aerobic workouts, which maintain a steady pace throughout, aerobic interval training allows individuals to push their limits in short bursts while still maintaining an overall aerobic energy system dominance.

AIT is widely used by athletes, fitness enthusiasts, and even individuals recovering from certain health conditions due to its efficiency in boosting oxygen utilization, increasing heart rate variability, and promoting fat metabolism. The key principle behind this training is the structured alternation between work and recovery phases, ensuring that the body is challenged but not overstressed.

By engaging in AIT, individuals can improve their VO_2 max (a key indicator of aerobic fitness), enhance muscular endurance, and achieve faster recovery times compared to traditional steady-state cardio exercises. Whether performed through running, cycling, swimming, or rowing, this training method is adaptable to different fitness levels and goals.

Regular AIT sessions enhance heart efficiency, strengthen cardiac muscles, and improve circulation. By gradually extending the duration and intensity of work intervals, individuals can build better stamina over time. AIT encourages fat oxidation, making it an excellent option for those aiming to lose weight while maintaining muscle mass. Due to the intensity of interval training, it often requires less time than traditional aerobic exercises to achieve significant benefits.

AIT can be customized based on personal fitness levels, allowing for variations in intensity, duration, and type of exercise. Aerobic Interval Training is a powerful and versatile training technique that combines the benefits of traditional aerobic workouts with the effectiveness of interval-based exertion. Whether an elite athlete or a beginner, integrating AIT into a fitness routine can lead to enhanced performance, better cardiovascular health, and greater overall fitness.

Methodology:

The purpose of the study was designed to examine the effect of aerobic interval training on strength endurance and cardio respiratory endurance of novice under graduate women students. For the study, thirty men

students from various departments in Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu, India were selected as subjects. They were divided into two equal groups. Each group consisted of fifteen subjects. 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. The following variables namely strength endurance and cardio respiratory endurance were selected as criterion variables. All the subjects of two groups were tested on selected dependent variables by using bend knee sit upas and cooper's 9 min run and walk test respectively at prior to and immediately after the training programme. The analysis of covariance was used to analyze the significant difference if any among the groups. The .05 level of confidence was fixed as the level of significance to test the 'F' ratio obtained by the analysis of covariance, which was considered appropriate.

Analysis of the Data:

Strength Endurance:

The analysis of covariance on strength endurance of the pre and post test scores of aerobic interval training group and control group have been analyzed and presented in table 1.

Table 1: Analysis of Covariance of the Data on Strength Endurance of Pre and Post Tests Scores 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	41.13	40.27	Between	5.63	1	5.63	1.54
S.D.	1.82	1.83	Within	102.67	28	3.67	
Post Test							
Mean	46.20	40.53	Between	240.83	1	240.83	19.32*
S.D.	1.88	1.96	Within	348.97	28	12.46	
Adjusted Post Test							
Mean	45.79	40.94	Between	167.40	1	167.40	258.39*
			Within	17.49	27	0.65	

* 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 3.34 and 3.35 respectively).

The table 1 shows that the adjusted post-test means of aerobic interval training group and control group are 45.79 and 40.94 respectively on strength endurance. The obtained "F" ratio of 258.39 for adjusted post-test means is more than the table value of 3.35 for df 1 and 27 required for significance at .05 level of confidence on strength 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 strength endurance.

Cardio Respiratory Endurance:

The analysis of covariance on cardio respiratory endurance of the pre and post test scores of aerobic interval training group and control group have been analyzed and presented in table 2.

Table 2: Analysis of Covariance of the Data on Cardio Respiratory Endurance of Pre and Post Tests Scores 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	1378.67	1370.67	Between	480.00	1	480.00	0.2
S.D.	47.87	35.94	Within	62866.67	28	2245.24	
Post Test							
Mean	1448.67	1380.67	Between	34680.00	1	34680.00	11.62*
S.D.	43.58	44.34	Within	83546.67	28	2983.81	
Adjusted Post Test							
Mean	1445.42	1383.92	Between	28153.39	1	28153.39	102.93*
			Within	7385.15	27	273.52	

* 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 3.34 and 3.35 respectively).

The table 2 shows that the adjusted post-test means of aerobic interval training group and control group are 1445.42 and 1383.92 respectively on cardio respiratory endurance. The obtained "F" ratio of 102.93 for adjusted post-test means is more than the table value of 3.35 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.

Conclusions:

- There was a significant difference between aerobic interval training group and control group on strength endurance and cardio respiratory endurance.
- And also it was found that there was a significant improvement on selected criterion variables such as strength endurance and cardio respiratory endurance due to aerobic interval training.

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