International Journal of Advanced Trends in Engineering and Technology (IJATET)
Impact Factor: 5.965, ISSN (Online): 2456 - 4664
(www.dvpublication.com) Volume 8, Issue 2, 2023

INFLUENCE OF AEROBIC TRAINING ON SELECTED ENDURANCE PARAMETERS AMONG COLLEGE MEN STUDENTS

Ranganatha H K* & Dr. G. Kumarasamy**
* Research Scholar, Department of Physical Education, Annamalai University, Annamalai Nagar, Tamil Nadu
** Assistant Professor, Department of Physical Education, Annamalai University, Annamalai Nagar, Tamil Nadu

Cite This Article: Ranganatha H K & Dr. G. Kumarasamy, "Influence of Aerobic Training on Selected Endurance Parameters Among College Men Students", International Journal of Advanced Trends in Engineering and Technology, Volume 8, Issue 2, July - December, Page Number 39-41, 2023.

Abstract:

The purpose of the study was designed to examine the effect of aerobic training on strength endurance and cardio respiratory endurance among college men students. For the purpose of the study, thirty college men students from the colleges in and around Bangalore, Karnataka State, India were selected as subjects. They were divided into two equal groups. Each group consisted of fifteen subjects. Group I underwent aerobic 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 namely strength endurance and cardio respiratory endurance by using bend knee sit ups and cooper's 12 min run / walk test 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 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 training.

Key Words: Aerobic Training, Strength Endurance, Cardio Respiratory Endurance, College Men Students

Introduction:

Aerobic training, which focuses on activities that increase heart rate and oxygen consumption over an extended period, can have significant effects on both strength endurance and cardiorespiratory endurance. Aerobic training can indirectly improve strength endurance by enhancing the efficiency of energy systems and promoting muscle endurance. While aerobic training primarily targets cardiovascular fitness, it can still positively influence strength endurance through adaptations in muscle fibers and metabolic pathways.

Prolonged aerobic exercise, such as jogging, cycling, or swimming, engages slow-twitch muscle fibers, which are responsible for sustained contractions and endurance activities. By improving overall cardiovascular efficiency and enhancing the delivery of oxygen and nutrients to muscles, aerobic training can delay the onset of fatigue during strength-endurance activities, such as repetitive lifting or bodyweight exercises.

Aerobic training is specifically designed to improve cardiorespiratory endurance, which refers to the ability of the heart, lungs, and circulatory system to deliver oxygen to working muscles during prolonged physical activity. Regular aerobic exercise strengthens the heart muscle, improves lung capacity, and enhances the efficiency of oxygen utilization by the body. As individuals engage in aerobic activities, their bodies adapt by increasing the number of capillaries in muscles, enhancing oxygen extraction, and improving the transport of oxygen-rich blood to tissues. Over time, aerobic training can lead to lower resting heart rates, increased stroke volume (amount of blood pumped per heartbeat), and improved overall cardiovascular function. Improved cardiorespiratory endurance allows individuals to sustain higher levels of physical activity for longer durations without experiencing excessive fatigue or shortness of breath.

Aerobic training positively impacts both strength endurance and cardiorespiratory endurance by enhancing overall cardiovascular fitness, improving oxygen delivery to muscles, and promoting physiological adaptations that support prolonged physical activity. Integrating a well-rounded training program that includes both aerobic and strength training components can lead to comprehensive improvements in overall fitness and performance.

Methodology:

The purpose of the study was designed to examine the effect of aerobic training on strength endurance and cardio respiratory endurance among college men students. For the purpose of the study, thirty college men students from the colleges in and around Bangalore, Karnataka State, India were selected as subjects. They were divided into two equal groups. Each group consisted of fifteen subjects. Group I underwent aerobic 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 namely strength endurance and cardio respiratory endurance by using bend knee sit ups and cooper's 12 min run / walk test 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 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 Training and Control Groups

Test	Aerobic Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	36.80	36.53	Between	0.53	1	0.53	0.17
S.D.	1.47	2.16	Within	86.13	28	3.08	
Post Test							
Mean	45.13	36.67	Between	537.63	1	537.63	23.06*
S.D.	1.89	1.74	Within	652.70	28	23.31	
Adjusted Post Test							
Mean	45.02	36.78	Between	506.53	1	506.53	249.71*
			Within	54.77	27	2.03	

* 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 training group and control group are 45.02 and 36.78 respectively. The obtained "F" ratio of 249.71 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 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 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 Training and Control Groups

Test	Aerobic Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test							
Mean	1392.00	1380.00	Between	1080.00	1	1080.00	0.46
S.D.	48.47	43.12	Within	65040.00	28	2322.86	
Post Test							
Mean	1462.67	1389.33	Between	40333.33	1	40333.33	10.99*
S.D.	44.57	47.95	Within	102720.00	28	3668.57	
Adjusted Post Test							
Mean	1457.21	1394.79	Between	28749.76	1	28749.76	89.76*
			Within	8647.82	27	320.29	

* 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 training group and control group are 1457.21 and 1394.79 respectively. The obtained "F" ratio of 89.76 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 training group and control group on cardio respiratory endurance.

Conclusions:

- There was a significant difference between aerobic training group and control group on strength endurance and cardio respiratory endurance.

- And also it was found that there was a significant change on selected criterion variables such as strength endurance and cardio respiratory endurance due to aerobic training.

References:

1. Bassett Jr, D. R., Howley, E. T., Thompson, D. L., King, G. A., Strath, S. J., McLaughlin, J. E., ... & George, J. D. (2001). Validity of inspiratory and expiratory methods of measuring gas exchange with a computerized system. Journal of Applied Physiology, 91(1), 218-224.
2. Fletcher, G. F., Balady, G. J., Amsterdam, E. A., Chaitman, B., Eckel, R., Fleg, J., ... & Froelicher, V. F. (2001). Exercise standards for testing and training: a statement for healthcare professionals from the American Heart Association. Circulation, 104(14), 1694-1740.
3. Hawley, J. A., & Stepto, N. K. (2001). Adaptations to training in endurance cyclists: implications for performance. Sports Medicine, 31(7), 511-520.
4. Hickson, R. C., Bomze, H. A., Holloszy, J. O., & Dover, G. (1977). Reduced training intensities and loss of aerobic power, endurance, and cardiac growth. Journal of Applied Physiology, 43(5), 858-866.
5. Spencer, M. R., & Gastin, P. B. (2001). Energy system contribution during 200- to 1500-m running in highly trained athletes. Medicine & Science in Sports & Exercise, 33(1), 157-162.
6. Swain, D. P., & Franklin, B. A. (2006). Comparison of cardioprotective benefits of vigorous versus moderate intensity aerobic exercise. The American Journal of Cardiology, 97(1), 141-147.
7. Wenger, H. A., & Bell, G. J. (1986). The interactions of intensity, frequency and duration of exercise training in altering cardiorespiratory fitness. Sports Medicine, 3(5), 346-356.
8. Westgarth-Taylor, C., Hawley, J. A., Rickard, S., Myburgh, K. H., & Noakes, T. D. (1997). Metabolic and performance adaptations to interval training in endurance-trained cyclists. European Journal of Applied Physiology and Occupational Physiology, 75(4), 298-304.

.