



Effect of Aerobic Training on Health Related Physical Fitness Variables among College Students

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Abstract

The purpose of the present study was to find out the effect of aerobic training on selected health related physical Fitness variables among College Students. To achieve the purpose of the study thirty College men students in an age group of 18 to 24 were selected as subjects. All the students were in the residential College staying in the hostel. The selected subjects were divided in to two equal groups of fifteen subjects each as experimental and control group. Both the group underwent their routine physical activities. In addition of the physical activities the experimental group underwent specified aerobic training morning one hour before starting the own routine physical activities in a schedule of weekly three days in alternative days for all the eight weeks. The collected data's were statistically analyzed by using ANCOVA to find out the significant difference between the groups if any. It was concluded from the result of the study that the experimental group significantly improved in the health related physical fitness variables of cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition.

Keywords: Aerobic training, physical fitness, cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition.

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Introduction

Aerobic exercise is physical exercise of low to high intensity that depends primarily on the aerobic energy-generating process. Aerobic literally means "relating to, involving, or requiring free oxygen", and refers to the use of oxygen to adequately meet energy demands during exercise via aerobic metabolism. Aerobic exercise (also known as cardio) is physical exercise of low to high intensity that depends primarily on the aerobic energy-generating process (Sharon A. Plowman; Denise L. Smith, 2007). Aerobic literally means "relating to, involving, or requiring free oxygen" (Kenneth H. Cooper, 1997). It refers to the use of oxygen to adequately meet energy demands during exercise via aerobic metabolism. Achieving an "aerobic effect" can be defined as participating in a physical activity that elevates your heart rate to your target heart rate and maintains that level for a minimum of 20 consecutive minutes.

There are many numerous studies were conducted in related to the effect of aerobic training on physical fitness variables and all the studies were given positive result for the improvement of physical fitness variables. Mathewos Hosiso et al. (2013) found that Moderate aerobic exercise has positive effect on improvement of health related physical fitness

components of sedentary female communities. Santosh Toppo& Sultana (2013) found the aerobic training beneficial for improving physical fitness of School boys. Rohit Bhairvanath Adling and Dattaram Bhagwan Bangar (2017) found aerobic training improved muscular endurance, cardio-respiratory endurance of College men students. Seol-Jung Kang et al. (2016) found that the aerobic training beneficial for improving the physical fitness quality of female patients. It was found from the studies that regular aerobic exercise will produce beneficial effects for any age group providing the exercise is specific and appropriate to the level of fitness of the individual. Progressive exercise correctly performed will increase the level of fitness and improve health.

Methodology

To achieve the purpose of the study thirty college men students in an age group of 18 to 24 were selected as subjects. All the students were in the arts and Science College residing in the college hostel. The selected subjects were divided in to two equal groups of fifteen subjects each as experimental group and control group. Both the group underwent their routine physical fitness program. In addition of the above training the experimental group underwent specified aerobic training program morning one hour before starting their own routine physical activities in a schedule of weekly three days in alternative days for all the eight weeks.

Aerobic Training Procedure

The eight weeks aerobic training was designed

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in emphasizes the necessity of the needs of fitness development of college men students with the age group of 18 to 24 years. For achieving an aerobic effect the following types of aerobic in nature of physical activities are performed during the aerobic training period. They are Brisk walking, Jogging, Running and Jumping rope continuously to improve the aerobic effect. The above aerobic training was performed weekly three days with one hour in alternative days for the duration eight weeks.

Methods of Data Collection

The pre and post tests were administered before and after the eight weeks aerobic training period. The test administered were 12 minutes run and walk for assessing cardiovascular endurance, pushups for muscular strength, sit ups for muscular endurance, Sit and reach for flexibility and body mass index (BMI) for body composition. All the tests were administered

through standardized testing procedure.

Statistical Procedure

The collected data were statistically examined by analysis of covariance (ANCOVA) and the results have been presented in Table I to V.

Results and Discussions

Analysis of Covariance of Health Related Physical Fitness Variables

The analysis of covariance on the data obtained for health related physical fitness variables of cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition of pre and post tests were tabulated and presented in the tables I, to V respectively.

Table 1

Computation of analysis of covariance on cardiovascular endurance (12 Minutes run and walk test- scores in meters)

TEST	Group		SV	Sum of Squares	df	Mean Square	F value
	Exp.	Control					
Pre test	1972	1920	B	20280	1	20280	1.02
			W	552890	28	19746	
Post test	2092	1957	B	135340	1	135340	7.38*
			W	513233	28	18329	
Adjusted Mean	2068	1980	B	56342	1	56342	19.25*
			W	78987	27	2925	

*Significant at 0.05 level of confidence

It was observed from the Table-1 that there was no significant difference in the pretest ($F=1.02 < 4.20$). A significant difference in the post test ($F=7.38 < 4.20$) for df 1 and 28 and adjusted posttest ($F=19.25 > 4.21$) for df 1 and 27 at 0.05 level of confidence. It clearly indicated that there was an influence on cardiovascular endurance through aerobic training among College students. The

pre and post mean value indicated that the experimental group improved better result in comparison with control group. The discussion clearly indicated that the experimental group was higher improvement on cardiovascular endurance due to eight weeks aerobic training.

Table 2

Computation of analysis of covariance on muscular strength (Push up Test- Scores in Number)

TEST	Group		SV	Sum of Squares	df	Mean Square	F ratio
	Exp.	Con.					
Pre test	19.66	19.33	B	8.833	1	8.833	0.23
			W	100.66	28	3.59	
Post test	23.4	19.46	B	116.03	1	116.03	21.46*
			W	151.33	28	5.40	
Adjusted Mean	23.23	19.62	B	96.93	1	96.93	46.25*
			W	56.57	27	2.09	

*Significant at 0.05 level of confidence

It was observed from the Table-2 that there was no significant difference in the pretest ($F=0.23 < 4.20$) for

df 1 and 28 at 0.05 level of confidence. But significant difference were observed in posttest ($F=21.46 < 4.20$) for

df 1 and 28 at 0.05 level of confidence and also adjusted posttest ($F=46.25 > 4.21$) for df 1 and 27 at 0.05 level of confidence. It clearly indicated that the experimental group showed significantly higher improvement on Muscular strength than control group. The pre and post

mean value indicated that the experimental group improved better result in comparison with control group. The discussion clearly indicated that the experimental group was higher improvement on Muscular strength due to eight weeks aerobic training.

Table 3

Computation of analysis of covariance on muscular endurance (Sit up Test- Scores in Numbers)

TEST	Group		SV	Sum of Squares	df	Mean Square	F ratio
	Exp.	Control					
Pre test	17.6	16.8	B	4.8	1	4.8	1.03
			W	130	28	4.64	
Post test	19.53	17.33	B	36.3	1	36.3	5.55*
			W	183.06	28	6.538	
Adjusted Mean	19.27	17.53	B	20.45	1	20.45	4.29*
			W	128.53	27	4.76	

*Significant at 0.05 level of confidence

It was observed from the Table-3 that there was no significant difference in the pretest ($F=1.03 < 4.20$) and however significant difference were observed in the post test ($F=5.55 > 4.20$) for df 1 and 28 at 0.05 level of confidence and also adjusted posttest ($F=4.29 > 4.21$) for df 1 and 27 at 0.05 level of confidence. It clearly indicated that the experimental group showed

significantly higher improvement on muscular endurance than control group. The pre and post mean value indicated that the experimental group improved better result in comparison with control group. The discussion clearly indicated that the eight weeks aerobic training influence the muscular endurance

Table 4

Computation of analysis of covariance on flexibility (Sit and Reach Test- Scores in Centimeter)

TEST	Group		sv	Sum of Squares	df	Mean Square	F value
	Exp.	Con.					
Pre test	17.4	19.13	B	22.533	1	22.533	1.38
			W	455.333	28	16.26	
Post test	21.66	20.2	B	16.133	1	16.133	7.02
			W	64.266	28	2.296	
Adjusted Mean	22.44	19.42	B	65.268	1	65.268	4.08
			W	430.93	27	15.96	

*Significant at 0.05 level of confidence

It was observed from the Table-4 that there were no significant difference in the pretest ($F=0.138 < 4.20$). There was a significant difference in posttest ($F=7.02 < 4.20$) for df 1 and 28 at 0.05 level of confidence. There was no significant difference in adjusted posttest ($F=4.08 > 4.21$) for df 1 and 27 at 0.05 level of confidence. However the F value of posttest

analysis clearly indicated that the experimental group showed significantly higher improvement on flexibility. The pre and post mean value indicated that the experimental group improved better result in comparison with control group. The discussion clearly indicated that the experimental group was higher improvement on flexibility due to eight weeks aerobic training.

Table 5

Computation of analysis of covariance on body composition (Body Mass Index Test- Scores in numbers)

TEST	Group		sv	Sum of Squares	df	Mean Square	F value
	Exp.	Con.					
Pre test	28.91	30.14	B	11.408	1	11.408	0.05
			W	6188.86	28	221.03	
Post test	25.11	29.44	B	140.40	1	140.40	7.55*
			W	520.07	28	18.574	
Adjusted Mean	25.09	29.46	B	143.55	1	143.55	7.34*
			W	528.04	27	19.55	

*Significant at 0.05 level of confidence

It was observed from the Table-5 that there were no significant difference in the pretest ($F=0.05<4.20$). There were a significant differences in posttest ($F=7.55<4.20$) for df 1 and 28 at 0.05 level of confidence and adjusted posttest ($F=7.34 < 4.21$) for df 1 and 27 at 0.05 level of confidence. It clearly indicated that there will be a significant impact on body mass index due to aerobic training among college students. The pre and post mean value indicated that the experimental group decreased the BMI in comparison with control group. The discussion clearly indicated that there was a significant difference in body mass index due to eight weeks aerobic training.

Conclusions

On the basis of the results and discussions it was concluded that Aerobic training was proved a best training method to improve the health related physical fitness qualities of cardiovascular endurance, muscular strength, muscular endurance, flexibility and body composition of college men students.

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