



ISSN: 2456-0057
IJPNPE 2019; 4(1): 1055-1057
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www.journalofsports.com
Received: 13-11-2018
Accepted: 17-12-2018

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Effect of aerobic training on VO₂ max of diabetic men

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Abstract

The purpose of the study was to find out the effect of aerobic training on VO₂ Max of diabetic men. For the purpose of the study thirty men selected as subjects from Chidambaram, TN. The subjects were aged between 35 to 40 years. The subjects chosen for the study divided into two equal groups as called one experimental (aerobic training) group and another one control group, each group consists of fifteen diabetic men. The data collected from the two groups prior to and post experimentation were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). In all the cases level of confidence fixed at 0.05 for significance. The results the effects aerobic training had significantly contributed to improve on VO₂ Max of diabetic men.

Keywords: Aerobic training, VO₂ max and diabetic

Introduction

Aerobic training is physical exercise of low to excessive intensity that depends frequently on the aerobic energy-producing manner (Sharon and Denise, 2007) [3]. Cardio workout is once in a while known as "cardio" exercise that requires pumping of oxygenated blood via the coronary heart to supply oxygen to operating muscle groups. Cardio exercise stimulates the coronary heart rate and breathing fee to increase in a way that can be sustained for the exercising consultation. Aerobic sports can come to be anaerobic sporting events if completed at a level of intensity this is too excessive. Cardio workout not handiest improves health; it additionally has recognized blessings for both physical and emotional health. Cardio workout can help save you or reduce the threat of developing a few cancers, diabetes, melancholy, cardiovascular disorder, and osteoporosis.

All that oxygen being pumped by means of the blood is important. Trainers may be familiar with the term "oxygen intake." In technological know-how, its labeled VO₂, or volume of oxygen consumed. It's the quantity of oxygen the muscular tissues extract, or eat from the blood, and it is expressed as ml/kg/minute (milliliters consistent with kilogram of frame weight). Muscle groups are like engines that run on fuel; handiest our muscles use fat and carbohydrates instead of gas. Oxygen is a key player due to the fact, once in the muscle; it is used to burn fats and carbohydrate for gasoline to maintain our engines walking. The extra green our muscular tissues are at ingesting oxygen, the extra fuel we can burn, the extra match we are, and the longer we can exercise.

Aerobic education strengthens the heart and lungs and improves muscle characteristic. One goal of cardio training is to beautify sports activities performance and to improve schooling reaction. Cardio schooling will increase the price at which oxygen inhaled is surpassed on from the lungs and coronary heart to the bloodstream to be utilized by the muscle tissues. Aerobically in shape athletes can exercise longer and tougher earlier than feeling worn-out. Throughout workout they have got a slower coronary heart fee, slower respiration charge, less muscle fatigue, and more energy. After exercise, recovery happens more quick. Cardio health can be measured in a laboratory placing whilst workout on a treadmill or bicycle. That is called maximal oxygen uptake or VO₂ max.

Diabetes mellitus usually referred to as diabetes is a set of metabolic issues characterized by means of high blood sugar ranges over a prolonged length (WHO, 2014) [4]. Diabetes mellitus type 2 is an extended-term metabolic sickness this is characterized by using excessive blood sugar, insulin resistance, and relative lack of insulin.

Not unusual symptoms encompass improved thirst, frequent urination, and unexplained weight loss. Signs and symptoms can also encompass improved starvation, feeling tired, and sores that don't heal. Often signs and symptoms come on slowly. Long-time period headaches from excessive blood sugar consist of heart ailment, strokes, diabetic retinopathy which could result in blindness, kidney failure, and terrible blood drift in the limbs which may lead to amputations. Type 2 diabetes generally occurs due to weight problems and absence of exercise. a few human beings are extra genetically at hazard than others (NIDDKD, 2016).

Methodology

The purpose of the study was to find out the effect of aerobic training on VO₂ Max of diabetic men. In this study thirty men selected as subjects from Chidambaram, TN. The subjects were aged between 35 to 40 years. The subjects chosen for the study divided into two equal groups as called one experimental (aerobic training) group and another one control group, each group consists of fifteen diabetic men. The data collected from the two groups prior to and post

experimentation were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). In all the cases level of confidence fixed at 0.05 for significance.

Training Protocol and Statistical Analysis

The experimental Group – I subjects underwent aerobic training programme for five days a week for twelve weeks. The intensity of training during the first week of training fixed at 30% of HRR. The training load progressively increased once in two weeks for 5%, the duration of aerobic training from 20 minutes to 30 minutes. Group – II acted as control. VO₂ Max was measured by one mile run test. The data collected from the two groups prior to and post experimentation were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). In all the cases level of confidence fixed at 0.05 for significance.

Results

Table 1: Analysis of Covariance on Vo₂ Max of Experimental and Control Groups

	Aerobic Training Group	Control Group	SOV	Sum of Squares	df	Mean squares	'F' ratio
Pre-test Mean	1.89	1.87	B	0.002	1	0.002	1.11
SD	0.03	0.05	W	0.06	28	0.002	
Post-test Mean	2.13	1.90	B	0.41	1	0.41	163.96*
SD	0.06	0.03	W	0.07	28	0.0025	
Adjusted Post-test Mean	2.12	1.90	B	0.38	1	0.38	152.00*
			W	0.07	27	0.0025	

(The required table value for significance at 0.05 level of confidence with degrees of freedom 1 and 27 is 4.21 and degree of freedom 1 and 28 is 4.20.) *Significant at.05 level of confidence

Table shows that the pre-test mean and standard deviation on VO₂ Max of aerobic training and control groups are 1.89 ± 0.03 and 1.87 ± 0.05 respectively. The obtained 'F' ratio value of 1.11 for pre-test means on VO₂ Max of experimental and control groups was less than the required table value of 4.20 for the degrees of freedom 1 and 28 at 0.05 level of confidence.

The post-test mean and standard deviation on VO₂ Max of aerobic training and control groups are 2.13 ± 0.06 and 1.90 ± 0.03 respectively. The obtained 'F' ratio value of 163.96 for post-test means on VO₂ Max of experimental and control

groups was greater than the required table value of 4.20 for the degrees of freedom 1 and 28 at 0.05 level of confidence.

The adjusted post-test mean on VO₂ Max of aerobic training and control groups are 2.12 and 1.90 respectively. The obtained 'F' ratio value of 152.00 for adjusted post-test mean on VO₂ Max of experimental and control groups was greater than the required table value of 4.21 for the degrees of freedom 1 and 27 at 0.05 level of confidence. Hence it was concluded that due to the effect of twelve weeks of aerobic training the VO₂ Max of the subjects was significantly improved.

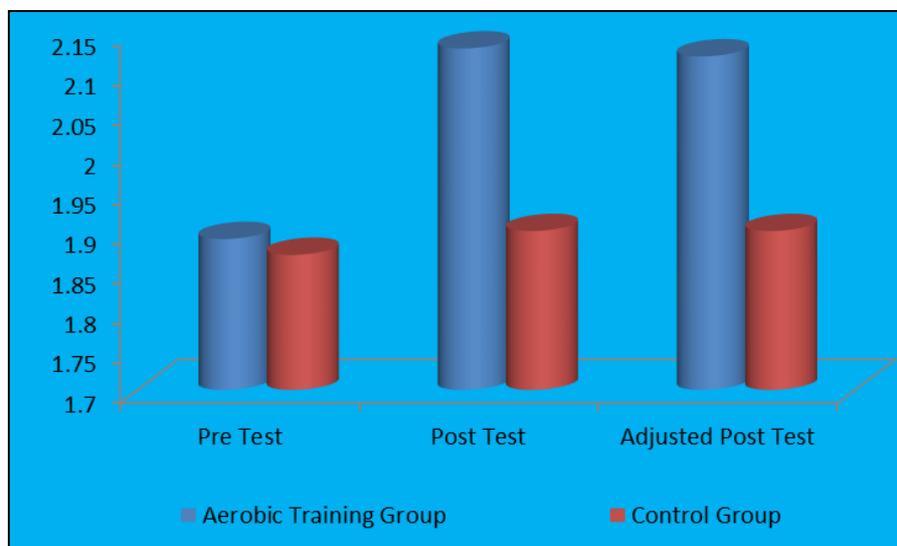


Fig 1: Cylinder Diagram of the Data on Vo₂ Max of Experimental and Control Groups

Discussion and Conclusion

The result of the study stated that the effect of twelve weeks of aerobic training had an impact to increase on VO₂ Max of the diabetic men. The accompanying investigations related with my discoveries. Gormley, *et al.*, (2008) ^[1] conducted effect of intensity of aerobic training on VO₂max. The result stated that VO₂ Max significantly increased in all exercising groups by 7.2, 4.8, and 3.4 mL.min.kg in the near-maximal. Karadkhedkar and Somwanshi (2015) ^[2] examined the effect of aerobic training on vo₂ max and other physiological parameters in working women. The Study demonstrated that 16 weeks of aerobic training produced favourable changes in all cardiovascular parameters.

Conclusion

The conclusion of the study showed that the effect of twelve weeks of aerobic training had significant an increase on VO₂ Max of the diabetic men.

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