

Influence of Different Intensity Aerobic Exercises on Speed among Education Students

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Abstract

The purpose of the study was to find out the influence of different intensity aerobic exercise on speed among education students. Forty five females ($n = 45$) bachelor of education students was randomly selected as subjects and their age ranged from 20 to 26 years. The selected subjects were randomly assigned into three equal groups of fifteen subjects each ($n = 15$), namely experimental group I underwent moderate intensity aerobic training (MAEG), group II underwent high intensity aerobic training (HAEG) was designed by the investigator and was administered for a period of 12 weeks 5 days a week and a session on each day, and group III control was not exposed to any specific training (CG) apart from their regular activities. Speed was selected as criterion variable for this study. Analysis of covariance (ANCOVA) was used to analyse the data and Scheffe's test was applied as a post hoc test to determine which of the paired mean difference significantly. The result of the study revealed that both training groups such as moderate intensity aerobic training group and high intensity aerobic training group were produced significant improvement in speed ($p \leq 0.05$) as compared to control group.

KEYWORDS: High intensity aerobic, moderate intensity, Aerobics, Speed

Introduction

Aerobics is a form of physical exercise that combines rhythmic aerobic exercise with stretching and strength training routines with the goal of improving all elements of fitness like flexibility, muscular strength, speed and cardiovascular fitness. It is an activity that uses large muscle group. This is rhythmic in nature. It is simple and more beneficial. It means 'with air' any exercise is aerobic if the muscle being exercised gets the oxygen needed (Kenneth, 1970). It can be very simple like fast walking a distance for 30 minutes, in 3-5 days a week. It is defined as any repetitive physical activity that is hard enough, to enhance circulatory and respiratory efficiency (Bucher & Wuest, 1987). It is usually performed to music and may be practiced in a group setting led by an instructor although it can be done also and without musical accompaniment. 'Aerobics' means 'in the presence of oxygen' many exercises are aerobic since these activities increased oxygen uptake in the body. Aerobic fitness refers to the capacity to take in, transport and utilize oxygen, since aerobic fitness involves many important bodily organs and systems like the heart, lungs, muscles, respiration and blood circulation etc. (Obert *et al.*, 2001) Aerobic training is very useful for motor fitness and health in general.

Speed is the capacity to travel or move very quickly. It is an ability to execute motor action under given condition in maximum possible time (Clarke & Clarke, 1987). It may mean the whole body moving at maximal running speed, as in the sprint. Muscles are made up of a combination of fast-switch and slow-switch fibers. Fast-switch fibers contract rapidly and slow-switch fibers contract more slowly and with lower level of force. If all other things are equal, athletes with longest muscle fibers and greater percentage of fast switch fiber should have the ability to run faster (Jarver, 1978) than an athlete with shorter slow -switch fibers. Eicher (1975) pointed out that speed is the product of two factors, stride length and stride frequency. Increasing either factor automatically increases a runners sprinting speed. The stride length can be increased by increasing the leg strength and power. Many studies have indicated that different intensities of aerobic training are helping to improve the strength and power that will help to achieve sprinting speed (Zafeieiridis *et al.*, 2005). In this study fifty meters sprint has been taken as a test for measuring the speed of the subjects.

Materials and Methods

The aim of this study was to determine the influence of different intensity aerobic exercise on speed among education students. Forty five females ($n = 45$) bachelor of education (B. Ed) students from teachers training colleges, Ernakulam district, Kerala, India were randomly selected as subjects and their age ranged from 20 to 26 years. The selected subjects were randomly divided into three equal groups of fifteen subjects each ($n = 15$). The groups were moderate intensity aerobic exercise group (MREG), high intensity aerobic exercise group (HAEG) and one control (CG). During the training period, the experimental groups underwent their respective training programme for 5 days in a week for twelve weeks and a session on each day. Control group (CG) was not exposed any specific training apart from their regular curriculum. Speed was selected as the dependent variable for this study and it was measured by using 50 meter run. The aerobic exercise program was scheduled for one session per day in the morning between 6:30 am and 7:30 am. During every session the work out lasted approximately for 60 minutes included warming up, training and warming down process. Aerobic training was given under the direct supervision of the investigator. These are the exercise used as aerobics 1. Continuous run 2. Step aerobics 3. Aerobic dance 4. Skipping.

Data Analysis

Mean and standard deviation were calculated for speed for each training group. And the data were analyzed by using analysis of covariance (ANCOVA). If the '*F*' value was found to be significant for adjusted post-test mean, Scheffe's test was applied as a post hoc test to determine the significant difference between the paired mean. Statistical significance was set to priority at 0.05 levels.

Results

Table I

Analysis of Covariance for Pre, Post and Adjusted Post Test Data on Speed of Moderate Intensity and High Intensity Aerobic Exercise Groups and Control Group

Test	MAEG	HAEG	CG	SOV	SS	df	MS	<i>F</i>
Pre-test								
Mean	8.27	8.2	8.33	B G	0.12	2	0.06	0.22
S.D (±)	0.54	0.51	0.54	W G	11.71	42	0.28	
Post-test								
Mean	7.75	7.53	8.08	B G	2.35	2	1.17	4.74*
S.D (±)	0.46	0.53	0.50	W G	10.40	42	0.25	
Adjusted Post-test								
Mean	7.75	7.58	8.04	B G	1.62	2	0.81	8.56*
				W G	3.87	41	0.09	

*Significant at 0.05 level of confidence

(The table values required for significance at 0.05 levels with df 2 and 42 is 3.22 and 2 and 41 is 3.23)

The table 1 shows that the pre tests mean of speed for moderate intensity aerobic exercise group, high intensity aerobic exercise group and a control group are 8.27, 8.2 and 8.33 respectively. The obtained '*F*' ratio of 0.22 is lesser than the table value 3.22 required for significance at 0.05 levels of df 2 and 42. It shows that there is no significant difference in speed among the three groups before the commencement of training.

The post test mean of speed for the moderate intensity aerobic exercise group is 7.75, high intensity aerobic exercise group is 7.53 and the control group is 8.08. The obtained '*F*' ratio of 4.74 is higher than the table value of 3.22 required for significance at 0.05 levels of df 2 and 42. The adjusted post test mean of speed for the moderate intensity aerobic exercise group is 7.75, high intensity aerobic exercise group is 7.58 and the control group is 8.04. The obtained '*F*' ratio of 8.56 is higher than the table value of 3.23 required for significance at 0.05 levels of df 2 and 41. The result of the study indicates that there was significant improvement of the post and adjust post test mean of moderate intensity aerobic exercise, high intensity aerobic exercise and control group on the development of speed. To determine which of the paired mean had a significant difference in speed, Scheffe's test was applied as post hoc test and the results are presented in table II.

Table II
Scheffe's Test for the Difference between the Adjusted Post Test Mean on Speed

MATG	HATG	CG	MD	CI
7.75	7.58		0.17	0.28
7.75		8.04	0.29*	
	7.58	8.04	0.46*	

*Significant at 0.05 level of confidence

(The confidence interval required for significance at 0.05 levels is 0.28)

Table II indicates that the adjusted post test mean difference of speed between moderate intensity aerobic exercise group and control group and high intensity aerobic exercise group and control group are 0.29 and 0.46 respectively. These values are higher than the confidence interval value of 0.28, which shows significant difference at the 0.05 level of confidence.

However the above table showed that there is no significant difference between the moderate intensity aerobic exercise group and high intensity aerobic exercise group in speed. It is concluded that high intensity aerobic exercise group is better than moderate intensity aerobic exercise group in improving speed. The pre, post and adjusted post test mean values of moderate intensity aerobic training group, high intensity aerobic training group and control group on speed is graphically presented in figure 1.

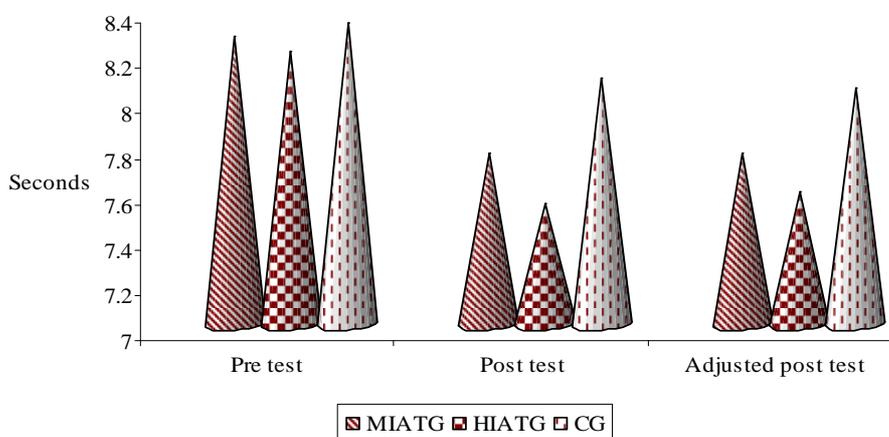


Figure 1: The Pre, Post and Adjusted Post Test Mean Values of Moderate Intensity Aerobic Training Group, High Intensity Aerobic Training Group and Control Group on Speed

Conclusion

Any practical application requires careful implementation and individual experimentation. In summary, the speed can be improved during the age between 20 and 26 years of female students and favour the prescription of moderate intensity and high intensity aerobic exercise. From this study we can conclude that high intensity aerobic exercise is the top to improve speed followed by moderate intensity. Finally, the studies presented in this review demonstrate that there was a significant improvement on speed due to moderate intensity and high intensity aerobic exercise as compared to control group.

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