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Effects of Aerobic Training on Improving Health Related Physical Fitness Components among the Postural Deformities of Engineering Students

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Abstract – The purpose of the study was to find out the effects of aerobic training on improving health related physical fitness components among engineering students with postural deformities. To achieve the purpose of the study, fifty female students were selected randomly from Anna University, Coimbatore. The subjects aged from 22 to 25 years. The selected subjects were divided into two equal groups, namely aerobic training group (Group A), and control group (Group B) each group consist of 25 subjects. The training period was limited to twelve weeks and for three days per week. The aerobic training practices was selected as independent variables and muscular strength endurance, cardio respiratory endurance, flexibility and body mass index ,were selected as dependent variable and it was measured by sit ups,12 min run and walk, sit and reach, body height and weight. All the subjects were tested two days before and immediately after the experimental period on the selected dependent variables. The obtained data from the experimental group (Group A) and control group(Group B) before and after the experimental period were statistically analyzed with 't' ratio to find out significant improvement for each variable separately in order to determine the differences, if any, among the means. The level of significance was fixed at 0.05 level confidences for all the cases. The results of study shows that there was the significant effect muscular strength endurance, cardio respiratory endurance, flexibility and body mass index of experimental group due to the effect of followed by aerobic training when compared to the control group. Based on this finding, it can be concluded that Moderate aerobic training has positive effect on improvement of health related physical fitness components among engineering students with postural deformities.

Keywords: Muscular Strength Endurance, Cardio Respiratory Endurance, Flexibility and Body Mass Index.

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INTRODUCTION

Aerobic Training:

The word aerobics means "with oxygen". While this definition may sound quite vague, once you have a better understanding of what aerobics actually is, it will make more sense.

Aerobic training can be considered any physical activity that has the ability to elevate your heart rate to its target heart rate and maintain that level for a minimum of 20 consecutive minutes.

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.

For example, an individual that performs a running routine that elevates their heart rate to their target heart rate for 20, or more, consecutive minutes will achieve an aerobic effect.

Aerobic Activity as Part of a Healthy Lifestyle:

Aerobics activities can be performed virtually anywhere; from the comfort of your home to a fitness centre, a swimming pool, and even the sidewalk in your neighborhood. For individuals that prefer to perform their aerobic exercise routines at

home, there are literally thousands of home-based aerobic DVD/VHS classes that can be purchased.

In addition, one can purchase weight equipment, stationary bikes, elliptical machines, treadmills, exercise balls, and the like for home use as well. Aerobic activities outside of the home include brisk walking, pushing a baby stroller, jogging, swimming, biking, hiking, and becoming a member of a fitness centre.

Regularly performing an aerobic activity, and incorporating it into our daily lifestyle, will produce a life that is filled with good health and fitness. The benefits are numerous and far outweigh the effort required to perform the actual exercise.

The benefits are associated with regularly performing an aerobic activity you will begin to not only enjoy the times when you exercise, but encouraging others to begin an aerobic exercise routine as well.

METHODOLOGY

For the purpose of the study, altogether fifty engineering students with postural deformities were chosen on random basis from Anna University, Chennai. Their age group ranges from 22 to 25 years. They were divided into two equal groups of 25.The Experimental group I would undergo aerobic training. The second group was Control groups II.Pre – test and post –tests were conducted. Treatments were given for twelve weeks. It would be find out finally the effect of aerobic training on engineering students with postural deformities in scientific methods.

The selected tests were measured by following units for testing:

CRITERION MEASUREMENTS - TABLE 1

Criterion variables	Test items	Unit measurements
Muscular Strength Endurance	sit ups	Counting in seconds (numeric)
Cardio respiratory endurance	12 min run and walk,	Minutes
Flexibility	sit and reach	Centimeter
Body Mass Index	body height and weight	Centimeter and kg

STATISTICAL TECHNIQUE

The achieved data were statistically evaluated with dependent t-test to discovery obtainable significant development. The level of significance was secure at

0.05 level of confidence for all the cases.

TRAINING PROGRAMME

The procedure adopted in the training programme for the present study is described in the following aspects.

During the training period, the experimental group was practiced aerobic training for 12 weeks. The group practiced for duration of 90 minutes. They started with a warming– up for a period of 10 minutes. During the warming – up the participants was trained to perform aerobic training in a slow manner so that each of the 12 exercises was held for duration of 30 seconds. They performed aerobic training five times. At the end of the class the participants performed relaxation warm down such as stretching for a period of 10 minutes.

TABLE 1

DESCRIPTION ON DESIGN OF THE TRAINING PROGRAMME	
GROUPS	DESIGN OF THE TRAINING
Experimental Group I	Aerobic Training
Control Group II	Did not do any Specific Training
Training Duration	90 Minutes
Training Session	3 Days a week
Total Length of Training	Twelve weeks

EXPERIMENTAL DESIGN GROUP

The experimental group was given aerobic training after taking an initial test. After the initial test selected aerobic training exercises were given for twelve weeks in 3 days a week. The time of practice was from 7.00A.M to 8.30A.M.The control group was not participating in any of the special training programme. However they were allowed to participate in their regular works.

TABLE 2

Day	Training programme	Time
Monday	Aerobic training	7.00 AM – 8.30AM
Tuesday	Rest	7.00 AM – 8.30AM
Wednesday	Aerobic training	7.00 AM – 8.30AM
Thursday	Rest	7.00 AM – 8.30AM
Friday	Aerobic training	7.00 AM – 8.30AM
Saturday & Sunday	Rest	7.00 AM – 8.30AM

RESULTS AND DISCUSSIONS

The effect of independent variables on each criterion variables was considered by dependent‘t’ – test on the data achieved for muscular strength endurance, cardio respiratory endurance, flexibility and body mass index. The pretest and post-test means of experimental group and control group have been analyzed and existing in Table I

TABLE – I

MEAN AND DEPENDENT 'T' – TEST FOR THE PRE AND POST TESTS ON MUSCULAR STRENGTH ENDURANCE, CARDIO RESPIRATORY ENDURANCE, FLEXIBILITY AND BODY MASS INDEX OF EXPERIMENTAL AND CONTROL GROUPS

S. No.	Variable	Group/Test	Mean	SD	SEM	DF	't' ratio
1.	Muscular Strength Endurance	Experimental Pre - test	32.55	1.30	00.42	1.60	5.74*
		Experimental Post - test	34.15	1.41			
		Control Pre – test	29.10	1.30	0.42	0.02	1.09
		Control Post – test	29.08	1.41			
2.	Cardio respiratory endurance	Experimental Pre - test	789.06	43.02	0.69	179.87	3.94*
		Experimental Post - test	968.93	32.74			
		Control Pre – test	728.86	45.55	161.4	20.09	1.92
		Control Post – test	890.26	68.26	0		
3.	Flexibility	Experimental Pre - test	0.85	0.78	6.87	0.05	4.34*
		Experimental Post - test	0.90	0.55			
		Control Pre – test	0.85	0.78	6.87	0.01	1.17
		Control Post – test	0.84	0.55			
4.	Body Mass Index	Experimental Pre - test	22.91	0.98	0.07	0.85	8.12*
		Experimental Post - test	21.06	0.78			
		Control Pre - test	23.44	0.92	0.13	0.10	0.71
		Control Post - test	23.54	1.26			

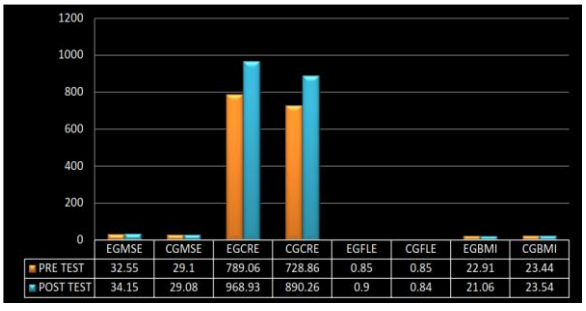
*Significance at 0.05 level of confidence

The table I, shows that, the obtained 't'–ratio between the pre and post test means of experimental group were 5.74, 3.94, 4.34, 8.12 and control group were 1.09, 1.92, 1.17, 0.71 respectively. The table values required for significant difference with df 24 at 0.05 Level of confidence. Since the obtained 't' – ratio value of experimental and control group on were greater than the table value 2.063,it was concluded that the aerobic training had significantly improved Muscular Strength Endurance, Cardio Respiratory Endurance, Flexibility and Body Mass Index of experimental group.

The pre and posttest mean value of experimental and control group on muscular strength endurance, cardio respiratory endurance, flexibility and body mass index were graphically represented in the figure 1.

FIGURE I

BAR DIAGRAM SHOWING THE PRE AND POST MEAN VALUE FOR AEROBIC TRAINING GROUP AND CONTROL GROUP AMONG ENGINEERING STUDENTS WITH POSTURAL DEFORMITIES



DISCUSSION ON FINDINGS

The finding of the study reveals that the aerobic training group cause significant improvement in their health related physical fitness variables... The findings of the study corroborate with Arslan, J., 2011, Butler, R.N., R. Davis and C.B. Lewis, 1998, Lin, L.C., H.M .Tseng; R.F. Tseng and J. L.Show, 2006, Reddy, M., 2012, Rosser, M., 2001, Shahana, A., S.N. Usha and S.S. Hasrani, 2010 in their study, they stated that aerobic training developed health related physical fitness variables.

CONCLUSION

Improvement of on muscular strength endurance, cardio respiratory endurance, flexibility and body mass index was found significantly on experimental group due to the effect of aerobic training when compared to the control group.

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