



A Study of the Effect of Aerobic Exercises on Selected Physical Fitness Components of Adolescent Girls

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Abstract

Main purpose of the present study was to determine the Effect of Aerobic Exercises on Selected Physical Fitness Components on Adolescent Girls. For this study 50 Adolescent Girls from Sriganganagar of Rajasthan (in the age group of 16 to 20 Years) was randomly select as subjects for the study. The subjects were randomly assigned as Experimental Group and Control Group and each Group consisted of 25 subjects. The study was further delimited to Selected Physical Fitness components that are Height, Weight, Speed, Abdominal Strength and Flexibility. To compare the Mean Difference between initial and final scores of Experimental Group, the 't' test was employed with respect of each of the Selected Physical Components. Aerobic Exercises Program was for 8 weeks/only 5 days per week, rest of Saturday & Sunday. After 8 weeks of Aerobic Exercises Program, there was a significant increase in Mean values of Flexibility and Abdominal Strength and decrease in Mean value of Speed and Weight in Experimental Group. There was no significant change in the Mean value of Height in Experimental Group. Speed, Abdominal Strength, Weight, Height, and Flexibility remained unchanged in control group after 8 weeks. Within the limits of the study conclusions were showed that the Result of the study has shown that the female adolescents who practiced aerobics have better physical fitness components. The study shows that Aerobic Exercise increases the Speed, Flexibility, and Abdominal Strength in the subjects. Results of the Study also show that there is significant decrease in Weight of the Subjects after the Aerobic Exercise program. Thus it has been concluded that practicing Aerobics Exercises can be applied for the health promotion and physical fitness of female adolescent.

Key Words:- Aerobic Exercise, Adolescent Girls, Physical Fitness Components, Height, Weight, Speed, Abdominal Strength, Flexibility, Experimental Group, Control Group.

Introduction:

Adolescence is transitional phase xxx Growth and development between childhood and adulthood. The World Health Organization (W.H.O.) defines an adolescent as any person between ages 10 and 19. This age range falls within W.H.O.'s definition of young people, which refers to individuals between ages 10 and 24.

In many societies, however, adolescence is narrowly equated with puberty and the cycle of physical changes culminating in reproductive maturity. In other societies adolescence is understood in broader terms that encompass psychological, social, and moral terrain as well as the strictly physical aspects of maturation. In these societies the term adolescence typically refers to the period between ages 12 and 20 and is roughly equivalent to the word teens.

The field of women's health is concerned with health issues and aging changes relating to post pubescent females. During adolescence (ages 12-20), a young woman's body begins to change as puberty sets in and menstrual cycles begin. At the same time, teenage girls also have changing nutritional needs and susceptibility to diseases.

Teenage girls need more calories and nutrients than at any other time in their lives as their body mass will almost double. Bone development and calcium requirements really reach the peak during these years; in fact, how much calcium a girl gets now will establish the lifelong pattern for how healthy her bones become. Yet this dramatic increase in food requirements comes at a time when many girls develop irregular eating habits. Concerned as their bodies begin to change and become more mature, many teenagers start to diet. A few girls take dieting too far and develop eating disorders.

The position of women in any society is the true index of its culture and spiritual potential. In the word of Swami Vivekananda, 'the country and the nation which do not respect women are neither great nor will ever be in future.'

Women's fitness means different things to different women. While almost every woman knows that exercise is beneficial, many of us are so busy with our families and our careers, we have very little time for ourselves. Heavy exercise is not necessary for good health. Moderate exercise levels are the most beneficial. Regardless of your lifestyle in the past, it should not be too late to begin small steps towards healthier lifestyles. And women's fitness should be one of those steps. Lack of women fitness may create an increased risk of chronic illness such as heart disease, arthritis, cancer, obesity, lack of energy and even hormone imbalance.

Methodology:

In this chapter, procedures and methods were applied in Selection of Subjects, Selection of Variables, Experimental Design, Criterion Measures, Reliability of the Data, Reliability of Instruments, Tester's Reliability, Subject Reliability, Orientation to the Subjects, Training Program, Training Schedule, Selection of Tests, Administration of Tests, Collection of Data and Statistical Procedure followed in this study.

Selection of Subjects:

Fifty subjects (Adolescent Girl) from Sriganaganagar of Rajasthan in the age group of 16 to 20 Years were selected randomly as subjects for the study. The subjects were randomly assigned as Experimental Group and Control Group; each Group consisted of 25 subjects. The requirement of the study was explained to all the subjects. All subjects voluntarily agreed to undergo the testing and training programs. The study was formulated as pre post test pre experimental design.

Selection of Variables:

The following variables were selected:

Physical Variables;

1. Abdominal Strength
2. Flexibility
3. Speed
4. Weight
5. Height
6. B.M.I.

Physiological Variables;

1. Resting Heart Rate

Administration of Treatment:

In the present study, the specifically designed Aerobic Practices which were selected in consultation with the experts in the field of Aerobic Dance is given as treatment to the two experimental for 8 weeks in Morning hours Five days per week (Rest of Saturday & Sunday). For the better understanding of the participants the designed Aerobic Dance Practices/ Aerobic Exercises were demonstrated and explained in systematic manner. The subjects were also instructed on the precautions to be taken while undergoing the intensive training treatment. In this way, the investigator was able to get successful application of interventions. Special care was taken to check that the training load of aerobic dance practices/ Aerobic Exercises is well balanced at every session of the training.

Experimental Design:

The study was formulated as a true random group design. Consisting of a Pre-Test and Post-Test, the subjects (N=50) were randomly divided into two equal groups of 25-25 subjects each. The groups were

assigned as experimental group and control group respectively. Pre-Test was conducted for all the subjects on selected Motor Ability Physiological Variables such as Flexibility, Muscular Strength, Speed, Height, Weight, Resting Pulse Rate, B.M.I. The Experimental Groups participated in their respective Aerobic Dance Practices/Aerobic Exercises for a period of 8 weeks. The Post-Test was conducted on the above said dependent variables after a period of 8 weeks in the respective treatments.

Criterion Measures:

Effect of various training on adolescent Girls selected Physical (Physiological) Parameters. The following tests were selected and their scores were considered as criterion measures for the study;

1. Flexibility was measured through Sit and Reach Test.
2. Muscular Strength was measured through Sit-Ups.
3. Speed was measured by 30 Meter Dash.
4. Resting Pulse Rate measured manually.
5. Weight is measured by Standard Weighing Machine.
6. Height was measured by Standard Stadiometer.
7. Body Mass Index

Reliability of Instruments:

For training purpose, the equipments like music system, sit and reach box, stop watch, stadiometer, weighing machine used in the study were obtained from standard suppliers and are properly calibrated. The instruments available at the department of physical education were used in the present study. Therefore it is considered as reliable and accurate. All the instruments were in good condition and workable.

Tester's Reliability:

To measure uniformity and reliability of the testing technique, the investigator had a number of practice session in the testing procedure with the guidance of their teacher. The investigator has done all the experimental parameters with the assistance of their teacher and laboratory experts.

Orientation to the Subjects:

Before the collection of data, the subjects were oriented about the purpose of the study that was the Effect of Selected Motor Ability, Physiological, Hematological and Biochemical Variables. The Investigator has explained the training methods and its procedures, the training schedule and utility. The Procedure of the training was instructed to the subjects.

Administration of Training Programme:

Experimental Group had undergone Aerobic Training Five days in a Week i.e; on Monday, Tuesday, Wednesday, Thursday and Friday for a period of Eight weeks. The Control Group did not involve in any Aerobic Dance Training/ Aerobic Exercises. The data was collected before the Start of Experimental Treatment (Pre-Test) and the end of the Training (Post-Training). The Aerobic Dance Training/ Aerobic Exercises activity included the Exercise of whole body. The Warm-Up work out in Aerobic Dance/Aerobic Exercises, Stretching, Rotation, Exercise with Music and Meditation was for one hour. The intensity of Aerobic Dance/ Aerobic Exercises was started with low impact and gradually increased by using more difficult training after every one week.

Analysis of the Data & Results of the Study:

In this study, the influences of Aerobic Dance Practices/ Aerobic Exercises on the Selected Physical Fitness Components of Adolescent Girls were investigated. The performance in the criterion measures were scored and recorded as described in the next pages. The data pertaining to the Weight, Height, m Dash, Sit-Ups and Sit and Reach of the Experimental and Control Group were tested by 't' test. The level of significance to test t-ratio obtained by the analysis of variance was fixed at 0.05 level of confidence which was considered to be an appropriate view of the fact that very high sophisticated equipments were used for stringent levels of significance.

To find out significant Mean Differences between Initial and Final scores for Experimental and Control Group 't' test was administered. The Mean Difference of the criterion measures for the Control and Experimental Group is presented in the Table.

Results and Discussion:**Table-1: Descriptive Statistics of Pre –Test and Post-Test of Experimental Group and Control Group in Height**

		No.	Mean	SD	't'ratio
Experimental Group	Pre-test	25	1.57	4.51	0.041
	Post-test		1.57	4.51	
Control Group	Pre-test	25	1.57	4.506	0.167
	Post-test		1.57	4.506	

Table-1 Shows that the Pre-Test and Post-Test Mean values on Height of Aerobic Dance Practice/ Aerobic Exercises Groups are 1.57 respectively. The obtained 't' ratio 0.041 for Pre-Test and Post-Test scores of Experimental Group is lesser than the table value 2.14 with the (df 14). Since the obtained 't' ratio is lesser than the table value there is no significant at 0.05 level of confidence on Height. The Pre-Test and Post-Test Mean values on Height of Control Group are 1.57 respectively. The obtained 't' ratio 0.167 for Pre-Test and Post-Test scores of Control Group was lesser than the table value 2.14 with the (df 14). Since the obtained 't' ratio is lesser than the table value there is no significant at 0.05 level of confidence on Height. The results of the study indicate that there was statistically no significant Mean Difference among the Pre-Test and Post-Test Means of Aerobic Dance Group and Control Group in Height.

Table-2: Descriptive Statistics of Pre-Test and Post-Test of Experimental Group and Control Group in Weight

		No.	Mean	SD	't'ratio
Experimental Group	Pre-test	25	54.93	24.02	0.484
	Post-test		52.27	22.8	
Control Group	Pre-test	25	53.57	23.649	0.4952
	Post-test		53.73	23.67	

Table-2 Shows that the Pre-Test and Post-Test Mean values on Weight of Aerobic Dance Practice Groups are 54.93 and 52.27 respectively. The obtained 't' ratio 0.484 for Pre-Test and Post-Test scores of Experimental Group scores was lesser than the table value 2.14 with the (df 14). Since the obtained 't' ratio is lesser than the table value, there is no significant at 0.05 level of confidence on Weight. The Pre-Test and Post-Test Mean values on Weight of Control Group are 53.57 and 53.73 respectively. The obtained 't' ratio 0.495 for Pre-Test and Post-Test scores of Control Group was lesser than the table value of 2.14 since the obtained 't' ratio is lesser than the table value there is no significant at 0.05 level of confidence on Weight. The results of the study indicate that there was statistically no significant Mean Difference among the Pre-Test and Post-Test Means of Aerobic Dance/ Aerobic Exercises Group and Control Group in Weight.

Table-3: Descriptive Statistics of Pre-Test and Post-Test of Experimental Group and Control Group in Sit-Ups

		No.	Mean	SD	't'ratio
Experimental Group	Pre-test	25	10.2	4.4	0.23
	Post-test		16.7	5.86	
Control Group	Pre-test	25	10.2	4.487	0.422
	Post-test		10.53	4.439	

Table-3 Shows that the Pre-Test and Post-Test Mean values on Sit-Ups of Aerobic Dance Practice/Aerobic Exercises Groups are 10.2 and 16.7 respectively. The obtained 't' ratio 0.23 for Pre-Test and Post-Test scores of Experimental Group scores was lesser than the table value 2.14 with the (df14). Since the obtained 't' ratio is lesser than the table value there is no significant at 0.05 level of confidence on Sit-Ups. The Pre-Test and Post-Test Mean values on Sit-Ups of Control Group are 10.2 and 10.53 respectively. The obtained 't' ratio 0.422 for Pre-Test and Post-Test scores of Control Group was lesser than the table value of 2.14 since the obtained 't' ratio is lesser than the table value there is no significant at 0.05 level of confidence on Sit-Ups. The results of the study indicate that there was statistically no significant Mean difference among the Pre-Test and Post-Test means of Aerobic Dance/ Aerobic Exercises Group and Control Group in Sit-Ups.

Table-4: Descriptive Statistics of Pre-Test and Post-Test of Experimental Group and Control Group in Sit and Reach

		No.	Mean	SD	't'ratio
Experimental Group	Pre-test	25	9.66	4.76	0.3
	Post-test		13.1	4.8	
Control Group	Pre-test	25	9.27	5.571	0.231
	Post-test		9.6	4.313	

Table-4 shows that the Pre-Test and Post-Test Mean values on Sit and Reach of Aerobic Dance/ Aerobic Exercises Groups are 9.66 and 13.1 respectively. The obtained 't' ratio 0.3 for Pre-Test and Post-Test scores of Experimental Group scores was lesser than the table value 2.14 with the (df 14). Since the obtained 't' ratio is lesser than the table value there is no significant at 0.05 level of confidence on Sit and Reach. The Pre-Test and Post-Test Mean values on Sit and Reach of Control Group are 9.27 and 9.6 respectively. The obtained 't' ratio 0.231 for Pre-Test and Post-Test scores of Control Group was lesser than the table value of 2.14 since the obtained 't' ratio is lesser than the table value there is no significant at 0.05 level of confidence on Sit and reach. The results of the study indicate that there was statistically no significant Mean Difference among the Pre-Test and Post-Test Means of Aerobic Dance/ Aerobic Exercises Group and Control Group in Sit and Reach.

Table-5: Descriptive Statistics of Pre-Test and Post-Test of Experimental Group and Control Group in 30 Meter Dash

		No.	Mean	SD	't'ratio
Experimental Group	Pre-test	25	6.82	3.19	0.49
	Post-test		6.31	3.26	
Control Group	Pre-test	25	6.82	3.177	0.22
	Post-test		6.98	3.182	

Table-5 shows that the Pre-Test and Post-Test Mean values on 30 Meter Dash of Aerobic Dance/ Aerobic Exercises Practice Groups are 6.82 and 6.31 respectively. The obtained 't' ratio 0.49 for Pre-Test and Post-Test scores of Experimental Group scores was lesser than the table value 2.14 with the (df 14). Since the obtained 't' ratio is lesser than the table value there is no significant at 0.05 level of confidence on 30 Meter Dash. The Pre-Test and Post-Test Mean values on 30 Meter Dash of Control Group are 6.82 and 6.98 respectively. The obtained 't' ratio 0.22 for Pre-Test and Post-Test scores of Control Group was lesser than the table value of 2.14 since the obtained 't' ratio is lesser than the table value there is no significant at 0.05 level of confidence on 30 Meter Dash. The results of the study indicate that there was statistically no significant Mean difference among the Pre-Test and Post-Test Means of Aerobic Dance/ Aerobic Exercises Group and Control Group in 30 Meter Dash.

Table-6: Descriptive Statistics of Pre-Test and Post-Test of Experimental Group and Control Group in B.M.I.

		No.	Mean	SD	't' ratio
Experimental Group	Pre-test	25	21.50		0.168
	Post-test		31.66		
Control Group	Pre-test	25	21.05		0.375
	Post-test		21.02		

Table-6 shows that the Pre-Test and Post-Test Mean values on B.M.I. of Aerobic Dance Practice/Aerobic Exercises Groups are 21.50 and 31.66 respectively. The obtained 't' ratio 0.168 for Pre-Test and Post-Test scores of Experimental Group scores was lesser than the table value 2.14 with the (df 14). Since the obtained 't' ratio is lesser than the table value there is no significant at 0.05 level of confidence on B.M.I. The Pre-Test and Post-Test Mean values on B.M.I. of Control Group are 21.05 and 21.02 respectively. The obtained 't' ratio 0.375 for Pre-Test and P-Test scores of Group was lesser than the table value of 2.14 since the obtained 't' ratio is lesser than the table value there is no significant at 0.05 level of confidence on B.M.I. The results of the study indicate that there was statistically no significant Mean difference among the Pre-Test and Post-Test Means of Aerobic Dance/ Aerobic Exercises Group and Control Group in 30 Meter Dash.

Conclusion & Discussion:

Conclusion & discussion of the present study are as given below:-

- [1]. The Result of the Study has shown that Adolescent Girls, who practiced in Aerobic Dance/Aerobic Exercises, have better Physical Fitness Components.
- [2]. The Study shows that Aerobic Dance Practice/ Aerobic Exercises increase the Speed, Flexibility and Abdominal Strength in the subjects.
- [3]. There is significant decrease in Weight of the subjects after the Aerobic Practice. Thus it has been concluded that Practicing Aerobic Dance or Aerobic Exercises can be applied for the Health Promotion and Physical Fitness of Adolescent Girls.
- [4]. The Selected Aerobic Dance Practice/ Aerobic Exercises Group had a better Training Effect Physical Fitness Components than the Control Group.

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