IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

INFLUENCE OF AEROBIC EXERCISE ON SELECTED ANTHROPOMETRIC VARIABLES OF ADOLESCENT SCHOOL GIRLS

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Abstract

The purpose of the study was to investigate the effect of aerobic exercises on selected anthropometric variables of adolescent school-going girls. To conduct the study 30 girls, participating in Physical Education activities in their respective schools were selected from different schools in Nadia District of West Bengal as subjects. The age of the subjects was between 13 to 16 years. Among the 30 girls students, 15 were selected for the control group (CG), and the remaining 15 were selected for the Aerobic Exercise Group (EG).
Subjects of EG were treated for 8 weeks and with a frequency of three days (alternative days) per week of Aerobic exercises with music more or less 1.30 hours per day. No treatment was given to the subjects of CG, but they were allowed to participate in their respective physical education activities in the school.

To find out the Anthropometric status of the girls the pre-test data of CG and AEG were taken for Height, Weight, and four skinfold measurements (i.e., Biceps, Triceps, Subscapularis and Supra-iliac), Waist, and Hip circumference. After 8 weeks of treatment, all girls were again tested for post-treatment data. Body Fat Percentage (BFP), Lean Body Weight (LBW), Waist-Hip ratio (WHR) and Body Mass Index (BMI) are used as dependent variables.

In order to find out the significant difference between pre-test and post-test data on selected Anthropometric variables "t" test was conducted at a 0.05 level of confidence which was considered appropriate and adequate for the purpose of this study.

From the statistical analysis, it was revealed that 8 weeks of aerobic exercises significantly changed the anthropometric variables of the adolescent girls. There was no significant impact of the short-term school Physical Education program on the anthropometric variables of the students.

Keywords: Aerobic exercises, Anthropometric variables, Physical Education, Adolescent girls

INTRODUCTION

Exercise assumes a significant job in day-to-day life, in light of the fact that expanded requests and a quick life approach need a fit and sound mental and physical fitness. Man from the earliest starting point of life was free and was very much aware of his needs every now and then. Be that as it may, for each reason and each progression it needs legitimate fitness and striking choices based on which it is predominant in other living species. So, fitness remains the primary worry for him from the date of the development of human life on this planet. In the current world to accomplish the total or criteria required fitness for the specific undertaking various endeavours were made to accomplish it through various methods and strategies and is particularly fruitful in that. The most prevalent and most satisfactory procedure is explored. Through this procedure, everybody attempts to add to the field of life.

Aerobic exercises provide cardiovascular conditioning. The term aerobic actually means "with oxygen," which means that breathing controls the amount of oxygen that can make it to the muscles to help them burn fuel and move. The American Heart Association recommends that everyone reach a minimum of 30 minutes of some form of cardiovascular exercise 5 to 7 days per week. This can be broken up into 10-minute time periods. This means that taking 3 walks of 10 minutes each would let you reach the recommended minimum guideline for reducing the risk of heart disease, diabetes, hypertension, and high cholesterol. You would also burn the same number of calories as you would if you walked for the full 30 minutes at 1 time.

The American College of Sports Medicine recommends a minimum of 3 sessions of 30 minutes of the total should be made up of moderate to vigorous exercise to improve cardio-respiratory fitness and help manage weight.

It is appropriate to do aerobic exercise every day. There is no need to rest in between sessions unless you are at an extreme level of training, such as preparing for a marathon, or if you experience reoccurring joint pain. If joint pain is a limiting factor, it would be appropriate to alternate less painful exercises with those that may cause joint pain or discontinue the painful exercise altogether.

The purpose of the study was to investigate the effect of aerobic exercises on selected Anthropometric variables of adolescent girls.

METHODOLOGY

Subjects: To conduct the study 30 girls, participating in Physical Education activities in their respective schools were selected from different schools in Nadia District of West Bengal as subjects. The age of the subjects was between 13 to 16 years. Among the 30 girls students, 15 were selected for the control group (CG), and the remaining 15 were selected for the Aerobic Exercise Group (EG).

Research Design: Subjects of EG were treated for 8 weeks and with a frequency of three days (alternative days) per week of Aerobic exercises with music more or less 1.30 hours per day. No treatment was given to the subjects of CG, but they were allowed to participate in their respective physical education activities in the school. Pre- and post-treatment data was collected for the Experimental group. Two sets of data were also obtained from the Control group before and after 8 weeks.

Aerobic Exercise Programme:

10 minutes of warming up with calisthenics exercises followed by an Aerobic dance program with music.

Criterion Measure:

Anthropometric variables were measured by:

Sl. No.	Anthropometric variables	Instruments	Unit	Dependent Variables	Unit
1.	Height	Stadiometer	Meter	Body Mass Index (BMI)	Kg./m^2
2.	Weight	Weighing machine	Kg.	Body Fat % (BFP)*	-
3.	Skin Folds	Skinfold calliper	Cm.	Lean Body Weight (LBW)*	Kg.
4.	Waist Circumference	Measuring Tape	Cm.	Waist-Hip ratio (WHR)	-
5.	Hip Circumference	Measuring Tape	Cm.		

By using suitable formulas and software Body Mass Index (BMI), Body Fat % (BFP), Lean Body Weight (LBW), and Waist-Hip Ratio (WHR) were measured by using height, weight, and skinfold measurements. And those variables were used as dependent variables. Body *__Fat Calculator for Men and Women by Durnin/Womersley Calliper Method.__

Statistical Design

To compare the pre and post-treatment mean of the experimental group "t" test was used for all the cases. In the case of the Control Group "t" test was conducted with two sets of data obtained from them.

RESULT AND DISCUSSION

Table No.1 Mean and SD of BFP of both groups

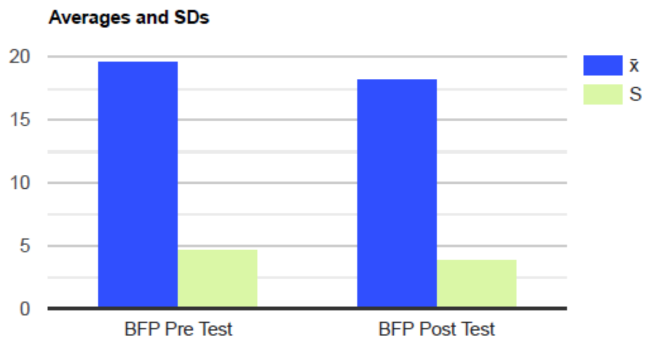
Groups	Mean		SD	
	Pre Test	Post Test	Pre Test	Post Test
CG	20.3	20.2	4.4	4.4
EG	19.6	18.2	4.6	3.9

Table No. 1 presents the mean and standard deviation (SD) of Body Fat Percentage (BFP) for two groups, the Control Group (CG) and the Experimental Group (EG), at both the pre-test and post-test stages.

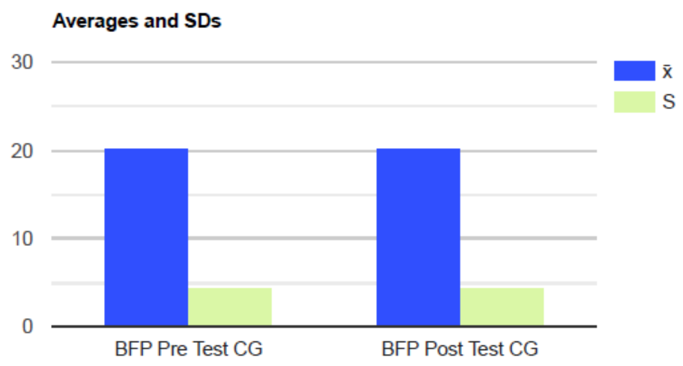
For Control Group (CG), Pre-Test Mean BFP = 20.3 and Post-Test Mean BFP = 20.2. As well as Pre-Test SD is 4.4 and Post-Test SD is also 4.4. For the Experimental Group (AEG), the Pre-Test Mean BFP is 19.6 and the Post-Test Mean BFP is 18.2. For CG Pre-Test SD is 4.6 and Post-Test SD is 3.9 so far as BFP data is concerned.

In the case of the Control Group (CG), the mean BFP slightly decreased from 20.3 to 20.2 from the pre-test to the post-test. The standard deviation remained the same at 4.4, indicating consistent variability in BFP scores. In the case of the Experimental Group (EG), the mean BFP decreased more noticeably from 19.6 to 18.2 from the pre-test to the post-test. The standard deviation decreased from 4.6 to 3.9, suggesting a reduction in the variability of BFP scores. The Comparisons show that mean BFP changes as the Experimental Group (EG) shows a greater reduction in mean BFP compared to the Control Group (CG), indicating a potential impact of the experimental intervention. The Experimental Group (EG) also shows a decrease in standard deviation, suggesting increased consistency in BFP reduction across participants.

The Experimental Group (EG) seems to have experienced a more consistent and significant reduction in BFP compared to the Control Group (CG). These findings could suggest that the intervention applied to the Experimental Group may have contributed to the observed changes in body fat percentage.



Flg.1 Pre- and Post-treatment mean and SD of BFP of EG



Flg.2 Pre- and Post-treatment mean and SD of BFP of CG

Table No.2 Mean and SD of LBW of both groups

Groups	Mean		SD	
	Pre Test	Post Test	Pre Test	Post Test
CG	33.2	33.1	2.0	2.0
EG	32.7	30.4	3.4	3.6

According to Table No. 2 let's analyze the mean and standard deviation (SD) of Lean Body Weight (LBW) for the Control Group (CG) and the Experimental Group (EG) at both the pre-test and post-test stages. The Control Group (CG) shows Pre-Test Mean LBW as 33.2 and Post-Test Mean LBW as 33.1. Pre-Test SD and Post-Test SD are similar with a value is 2.0 for both cases. In the case of the Experimental Group (EG), the Pre-Test Mean LBW is 32.7 and the Post-Test Mean LBW is 30.4. Pre-Test SD and Post-Test SD are 3.4 and 3.6 respectively.

In the case of the Control Group (CG), the mean LBW slightly decreased from 33.2 to 33.1 from the pre-test to the post-test. The standard deviation remained the same at 2.0, indicating consistent variability in LBW scores. For the Experimental Group (EG), the mean LBW decreased more noticeably from 32.7 to 30.4 from the pre-test to the post-test and the standard deviation increased from 3.4 to 3.6, suggesting an increase in the variability of LBW scores.

In the case of the Experimental Group (EG) mean LBW Changes, showed a more substantial reduction in mean LBW compared to the Control Group (CG), indicating a potential impact of the experimental intervention. The Experimental Group (EG) showed an increase in standard deviation, suggesting increased variability in LBW reduction across participants.

The Experimental Group (EG) appears to have experienced a more variable reduction in LBW compared to the Control Group (CG). These findings could indicate individual differences in the response to the intervention within the Experimental Group.

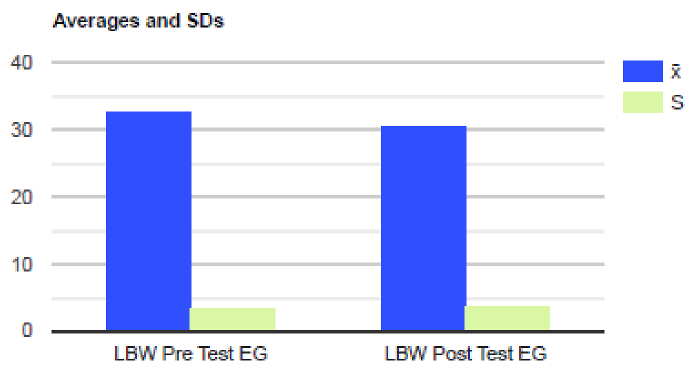


FIg.3 Pre and Post-treatment mean and SD of LBW of EG

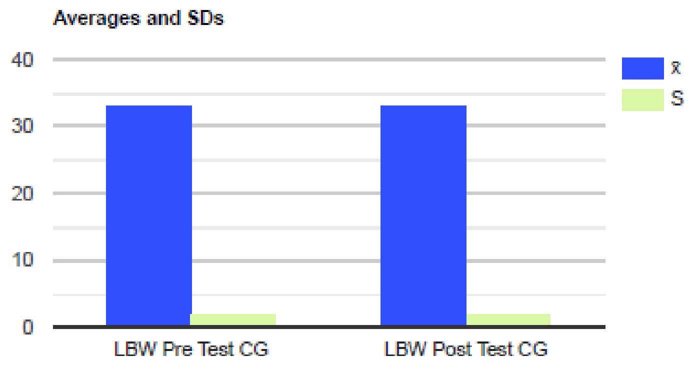


FIg.4 Pre and Post-treatment mean and SD of LBW of CG

Table No.3 Mean and SD of WHR of both groups

Groups	Mean		SD	
	Pre Test	Post Test	Pre Test	Post Test
CG	1.3	1.3	0.09	0.09
EG	1.5	1.4	0.5	0.4

According to Table No. 3 let's analyze the mean and standard deviation (SD) of the Waist-to-Hip Ratio (WHR) for the Control Group (CG) and the Experimental Group (EG) at both pre-test and post-test stages. The Control Group (CG) shows a Pre-Test Mean WHR is 1.3 and a Post-Test Mean WHR is 1.3. Again, Pre-Test SD for CG is 0.09 and Post-Test SD is 0.09. The Experimental Group (EG) shows a Pre-Test Mean WHR: of 1.5, Post-Test Mean WHR: of 1.4, Pre-Test SD: of 0.5 and Post-Test SD: of 0.4. In the case of the Control Group (CG), the mean WHR remained the same at 1.3 from the pre-test to the post-test. The standard deviation also remained constant at 0.09, indicating consistent variability in WHR scores. In the case of the Experimental Group (AEG), the mean WHR decreased from 1.5 to 1.4 from the pre-test to the post-test. The standard deviation decreased from 0.5 to 0.4, suggesting a reduction in the variability of WHR scores. Mean WHR Changes, so, The Experimental Group (EG) showed a reduction in mean WHR from the pre-test to the post-test, indicating a potential impact of the experimental intervention. Standard Deviation Changes, so, the Experimental Group (EG) showed a decrease in standard deviation, suggesting increased consistency in WHR reduction across participants. The Experimental Group (EG) appears to have experienced a reduction in mean WHR and increased consistency in WHR reduction compared to the Control Group (CG). These findings suggest that the experimental intervention may have had a more consistent impact on WHR reduction in the Experimental Group.

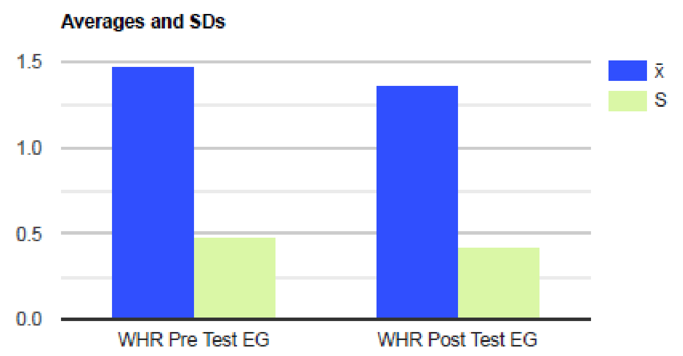


FIg.5 Pre- and Post-treatment mean and SD of WHR of EG

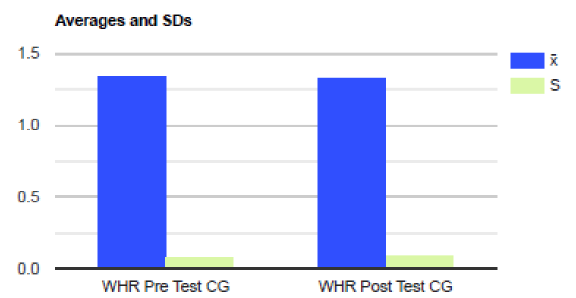


FIg.6 Pre and Post-treatment mean and SD of WHR of CG

Table No.4 Mean and SD of BMI of both groups

Groups	Mean		SD	
	Pre-Test	Post Test	Pre-Test	Post Test
CG	16.6	17.7	4.7	2.2
EG	17.8	17.2	2.8	2.8

According to Table No. 4, let's analyze the mean and standard deviation (SD) of Body Mass Index (BMI) for the Control Group (CG) and the Experimental Group (EG) at both the pre-test and post-test stages. The Control Group (CG) shows a Pre-Test Mean BMI of 16.6, a Post-Test Mean BMI of 17.7, a Pre-Test SD of 4.7 and a Post-Test SD: of 2.2, Similarly, the Experimental Group (AEG) shows Pre-Test Mean BMI: 17.8, Post-Test Mean BMI: 17.2, Pre-Test SD: 2.8 and Post-Test SD: 2.8. In case of the Control Group (CG), the mean BMI increased from 16.6 to 17.7 from pre-test to post-test and the standard deviation decreased from 4.7 to 2.2, indicating a reduction in the variability of BMI scores. In the case of the Experimental Group (AEG), the mean BMI decreased from 17.8 to 17.2 from the pre-test to the post-test and the standard deviation remained the same at 2.8, suggesting consistent variability in BMI scores.

Mean BMI Changes, so, the Control Group (CG) showed an increase in mean BMI, while the Experimental Group (EG) showed a decrease, indicating different trends in BMI changes.

Standard Deviation Changes, so, the Control Group (CG) showed a substantial decrease in standard deviation, while the Experimental Group (EG) maintained consistent variability in BMI scores.

The Control Group (CG) showed an increase in mean BMI, which could be concerning and might warrant further investigation. The Experimental Group (EG) showed a decrease in mean BMI, suggesting a potential positive impact of the experimental intervention. The reduction in the standard deviation of BMI in the Control Group (CG) may indicate a more consistent response to the intervention in terms of BMI changes.

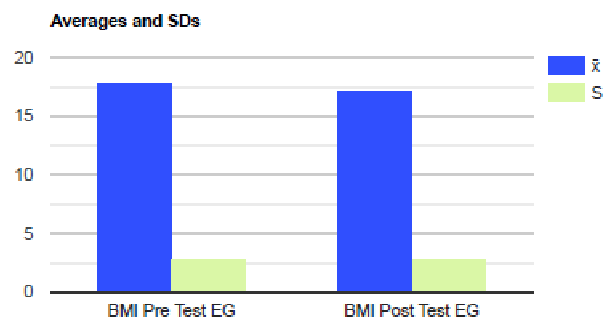
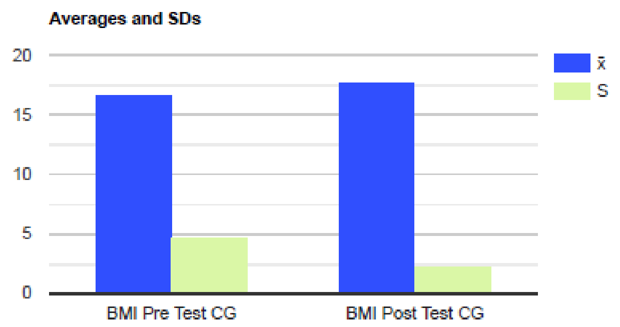


FIg.7 Pre and Post-treatment mean and SD of BMI of EG



Flg.8 Pre and Post-treatment mean and SD of BMI of CG

Table No.5 Paired sample "t" test in relation to BFP of EG

Parameter	Value
P-value	0.00001389
t	-6.5055*
Sample size (n)	15
Average of differences (x̄)	-1.4373
SD of differences (S)	0.8557

* Significant

In Table No. 1 paired sample T-test, using T(df:14) distribution (two-tailed) indicated that p-value < α, so H_0 is rejected. The BFP post-test population's average is considered to be not equal to the BFP pre-test of the EG population's average. In other words, the sample difference between the averages of the BFP post-test of EG and the BFP pre-test is big enough to be statistically significant.

The p-value equals 0.00001389, (P(x≤-6.5055) = 0.000006946). It means that the chance of a type-I error (rejecting a correct H) is small:0.00001389 (0.0014%). The smaller the p-value the more it supports H_1.

The test statistic T equals -6.5055, which is not in the 95% region of acceptance: [-2.1448, 2.1448]. The BFP post-test minus the BFP pre-test (-1.44), is not in the 95% region of acceptance: [-0.4739, 0.4739]. The 95% confidence interval of the BFP post-test minus the BFP pre-test is: [-1.9112, -0.9635].

The observed effect size d is large, 1.68. This indicates that the magnitude of the difference between the average of the differences and the expected average of the differences is large.

Table No.6 Paired sample "t" test in relation to BFP of the CG

Parameter	Value
P-value	0.2749
t	-1.1363#
Sample size (n)	15
Average of differences (x̄)	-0.07733
SD of differences (S)	0.2636

Not significant

In Table No. 6, paired sample T-test, using T(df:14) distribution (two-tailed) indicates that, since the p-value > α, H_0 cannot be rejected. The BFP post-test CG population's average is considered to be equal to the BFP pre-test of CG population's average. In other words, the sample difference between the averages of BFP post-test CG and BFP Pre Test of CG is not big enough to be statistically significant. A non-significance result cannot prove that H_1 is correct, only that the null assumption cannot be rejected.

The p-value equals 0.2749, (P(x≤-1.1363) = 0.1375). It means that the chance of type I error, rejecting a correct H, is too high: 0.2749 (27.49%). The larger the p-value the more it supports H_0.
The test statistic T equals -1.1363, which is in the 95% region of acceptance: [-2.1448, 2.1448]. The BFP post-test of CG minus BFP pre-test of CG (-0.077), is in the 95% region of acceptance: [-0.146, 0.146].The 95% confidence interval of BFP post-test of CG minus BFP pretest of CG is: [-0.2233, 0.06864]. The observed effect size d is small, 0.29. This indicates that the magnitude of the difference between the average of the differences and the expected average of the differences is small.

Table No.7 Paired sample "t" test in relation to LBW of the EG

Parameter	Value
P-value	0.000001147
t	-8.1227*
Sample size (n)	15
Average of differences (x̄)	-2.2824
SD of differences (S)	1.0883

*** Significant**

In Table No. 7, paired sample T-test, using T(df:14) distribution (two-tailed) indicated that, since the p-value < α, H is rejected. The LBW Post-Test of EG population's average is considered to be not equal to the LBW Pre-Test EG population's average. In other words, the sample difference between the averages of the LBW Post-Test of EG and LBW Pre-Test of EG is big enough to be statistically significant.
The p-value equals 0.000001147, (P(x≤-8.1227) = 5.733e-7). It means that the chance of a type I error (rejecting a correct H_0) is small: 0.000001147 (0.00011%). The smaller the p-value the more it supports H_1.
The test statistic T equals -8.1227, which is not in the 95% region of acceptance: [-2.1448, 2.1448]. The LBW post-test of of EG minus of LBW pre-test of of EG (-2.28), is not in the 95% region of acceptance: [-0.6027, 0.6027]. The 95% confidence interval of LBW post-test of EG minus LBW pre-test of EG is: [-2.885, -1.6797]. The observed effect size d is large, 2.1. This indicates that the magnitude of the difference between the average of the differences and the expected average of the differences is large.

Table No.8 Paired sample "t" test in relation to LBW of the CG

Parameter	Value
P-value	0.3344
t	-0.9997#
Sample size (n)	15
Average of differences (x̄)	-0.116
SD of differences (S)	0.4493

#Not significant

In Table No. 8, paired sample T-test, using T(df:14) distribution (two-tailed) indicated that, Since the p-value > α, H_0 cannot be rejected. The LBW Post-Test of the CG population's average is considered to be equal to the LBW Pre-Test of the CG population's average. In other words, the sample difference between the averages of the LBW Post-Test of CG and the LBW Pre-Test of CG is not big enough to be statistically significant. A non-significance result cannot prove that H_1 is correct, only that the null assumption cannot be rejected.
The p-value equals 0.3344, (P(x≤-0.9997) = 0.1672). It means that the chance of a type I error, rejecting a correct H_0, is too high: 0.3344 (33.44%). The larger the p-value the more it supports H_0.
The test statistic T equals -0.9997, which is in the 95% region of acceptance: [-2.1448, 2.1448]. The lbw post-test of CG minus LBW pre-test of CG (-0.12), is in the 95% region of acceptance: [-0.2488, 0.2488]. The 95% confidence interval of LBW post-test of CG minus LBW pre-test of CG is: [-0.3648, 0.1328]. The observed effect size d is small, 0.26. This indicates that the magnitude of the difference between the average of the differences and the expected average of the differences is small.

Table No.9 Paired sample "t" test in relation to WHR of the EG

Parameter	Value
P-value	0.0003867
t	-4.6339*
Sample size (n)	15
Average of differences ($\bar{x}$)	-0.1092
SD of differences (S)	0.09124

* Significant

In Table No. 9, the paired sample T-test, using T(df:14) distribution (two-tailed) indicated that, the p-value < α, H_0 is rejected. The WHR Post-Test of the EG population's average is considered to be not equal to the WHR Pre-Test of the EG population's average. In other words, the sample difference between the averages of the WHR Post Test of EG and the WHR Pre-Test of EG is big enough to be statistically significant.
The p-value equals 0.0003867, ($P(x\leq-4.6339) = 0.0001934$). It means that the chance of a type I error (rejecting a correct H_0) is small: 0.0003867 (0.039%). The smaller the p-value the more it supports H_1.
The test statistic T equals -4.6339, which is not in the 95% region of acceptance: [-2.1448, 2.1448]. The WHR post-test of EG minus WHR pretest of EG (-0.11), is not in the 95% region of acceptance: [-0.05053, 0.05053]. The 95% confidence interval of WHR post-test of EG minus WHR pre-test of EG is: [-0.1597, -0.05864].
The observed effect size d is large, 1.2. This indicates that the magnitude of the difference between the average of the differences and the expected average of the differences is large.

Table No.10 Paired sample "t" test in relation to HWR of the CG

Parameter	Value
P-value	0.3149
t	-1.0425#
Sample size (n)	15
Average of differences ($\bar{x}$)	-0.01015
SD of differences (S)	0.03771

#Not significant

In Table No. 10, the paired sample T-test, using T(df:14) distribution (two-tailed) indicated that the p-value > α, H_0 cannot be rejected. The WHR Post-Test of the CG population's average is considered to be equal to the WHR Pre-Test of the CG population's average. In other words, the sample difference between the averages of the WHR Post-Test of CG and the WHR Pre-Test of CG is not big enough to be statistically significant. A non-significance result cannot prove that H_1 is correct, only that the null assumption cannot be rejected.
The p-value equals 0.3149, ($P(x\leq-1.0425) = 0.1574$). It means that the chance of a type I error, rejecting a correct H_0, is too high: 0.3149 (31.49%). The larger the p-value the more it supports H. The test statistic T equals -1.0425, which is in the 95% region of acceptance: [-2.1448, 2.1448]. The WHR post-test of CG minus WHR pre-test of CG (-0.01), is in the 95% region of acceptance: [-0.02088, 0.02088]. The 95% confidence interval of WHR post-test of CG minus WHR pre-test of CG is: [-0.03103, 0.01073].
The observed effect size d is small, 0.27. This indicates that the magnitude of the difference between the average of the differences and the expected average of the differences is small.

Table No.11 Paired sample "t" test in relation to BMI of the EG

*

Parameter	Value
P-value	9.753e-9
t	-11.9609*
Sample size (n)	15
Average of differences ($\bar{x}$)	-0.6008
SD of differences (S)	0.1946

Significant

In Table No. 11, paired sample T-test, using T(df:14) distribution (two-tailed) showed that p-value < α, H_0 is rejected. The BMI Post-Test of the EG population's average is considered to be not equal to the BMI Pre-Test of EG population's average. In other words, the sample difference between the averages of BMI post-test of EG and BMI pre-test of EG is big enough to be statistically significant.
The p-value equals 9.753e-9, (P(x≤-11.9609) = 4.877e-9). It means that the chance of type I error (rejecting a correct H_0) is small: 9.753e-9 (9.8e-7%). The smaller the p-value the more it supports H_1. The test statistic T equals -11.9609, which is not in the 95% region of acceptance: [-2.1448, 2.1448]. The BMI post-test of EG minus BMI pretest of EG (-0.6), is not in the 95% region of acceptance: [-0.1077, 0.1077]. The 95% confidence interval of BMI post-test of EG minus BMI pretest of EG is: [-0.7086, -0.4931].
The observed effect size d is large, 3.09. This indicates that the magnitude of the difference between the average of the differences and the expected average of the differences is large.

Table No.12 Paired sample "t" test in relation to BMI of the CG

Parameter	**Value**
P-value	0.3648
t	0.9368#
Sample size (n)	15
Average of differences (x̄)	1.0156
SD of differences (S)	4.1991

#Not significant

In Table No. 12, paired sample T-test, using T(df:14) distribution (two-tailed) showed that the p-value > α, H_0 cannot be rejected. The BMI Post Test CG population's average is considered to be equal to the BMI Pre Test of CG population's average. In other words, the sample difference between the averages of BMI Post Test CG and BMI Pre Test of CG is not big enough to be statistically significant. A non-significance result cannot prove that H_1 is correct, only that the null assumption cannot be rejected. The p-value equals 0.3648, (P(x≤0.9368) = 0.8176). It means that the chance of a type I error, rejecting a correct H, is too high: 0.3648 (36.48%). The larger the p-value the more it supports H_0.
The test statistic T equals 0.9368, which is in the 95% region of acceptance: [-2.1448, 2.1448]. The BMI post-test of CG minus BMI pre-test of CG (1.02), is in the 95% region of acceptance: [-2.3254, 2.3254]. The 95% confidence interval of BMI post-test of CG minus BMI pre-test of CG is: [-1.3098, 3.341]. The observed effect size d is small, 0.24. This indicates that the magnitude of the difference between the average of the differences and the expected average of the differences is small.
In our study, we found that some of the girl students of the age group 13 to 16 years are obese in respect of their anthropometric data. Aerobic exercises including aerobic dance are very much useful for reducing unwanted fats in girls. We use, here, the short-term aerobic exercises. Aerobic dances with a lot of varieties may be introduced in the schools as Physical Education programs. According to different studies we can say that the present Physical Education Programme of the schools has no impact on the health and well-being of the students. Adolescence is the best time to shape the figures of girls by some regular aerobic exercises including musical aerobics.
Lee, Y. H. et al. (2010) suggested that a short-term exercise program for 10 weeks played an important role in decreasing BMI, blood pressure, waist circumference, and LDL-C and in improving physical strength. However, parameters such as PWV and hs-CRP did not change. This may be due to the short study duration, which was only 10 weeks. Another limitation of their study was the small number (n=54) of subjects. A larger sample size would increase statistical power and a longer longitudinal study would reduce the problem of false negative conclusions.
In summary, they found significant differences among children in waist circumference, blood pressure, LDL-C and physical strength after an exercise program. Further investigations are necessary to clarify the effectiveness of exercise in children on various parameters.
Andreasi, V., Michelin, E., Rinaldi, A. E. M. and Burini. R. C. (2010) suggested that girls were more prone to be unfit in terms of abdominal strength/resistance and obesity and excessive abdominal adiposity predisposed schoolchildren of both sexes to exhibit poor abdominal strength/resistance and aerobic resistance

fitness levels. Excessive body adiposity increases the likelihood of poor trunk flexibility. They concluded that physical unfitness was related to female sex, to obesity and to excessive abdominal adiposity. These results indicate a need for intervention with health promotion programs designed to effect lifestyle changes, emphasizing working on, improving and developing the components of physical fitness and including dietary re-education designed to prevent the emergence and progression of hypokinetic dysfunctions. The present study was conducted with the intention of finding out the influence of short-term aerobic exercise programs on the selected anthropometric variables of school students.

Thivel, D. et al. (2011) suggested that a 6-month school-based physical activity intervention in 6- to 10-year-old children did not yield positive anthropometric improvements, but appeared effective in terms of aerobic and anaerobic physical fitness. Two physical activity sessions per week in addition to standard physical education classes in primary schoolchildren bring effective results for the prevention of childhood obesity.

The relevancy of the present study with other studies has been established so far.

CONCLUSION:

From the statistical analysis, it was revealed that 8 weeks of aerobic exercises significantly changed the anthropometric variables of the adolescent girls. There was no significant impact of the short-term school Physical Education program on the anthropometric variables of the students.

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