



## EFFECT OF FLOOR AEROBIC EXERCISES AND AEROBIC EXERCISE TRAINING ON PHYSICAL FITNESS AND PHYSIOLOGICAL VARIABLES OF SCHOOL LEVEL STUDENT

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### Abstract

The purpose of the study was to find out whether there would be any significant improvement on selected variables as a result of floor aerobics and aerobics exercise. Ninety school boys were selected from Zenith Gujarati Medium School, Dabhoi Road, Pratapnagar, Vadodara, Gujarat. They were selected randomly as subjects. The selected subjects were of age group of 15 to 18 years. The subjects were randomly divided in to three groups of 30 subjects in each group. Group one acted as experimental group I and group two acted as experimental group -II and group three acted as control group. Group three underwent routine physical exercises and group I underwent floor aerobics training and group II underwent aerobics exercise training for eight weeks. The subjects were tested on selected criterion Physical Fitness variables, agility, flexibility, muscular power and physiological variables, resting pulse rate and breath holding time at prior to any immediately after the training period. The selected criterion variables such as agility were measuring by using shuttle run, flexibility was measured by sit and reach test, muscular power was measured by standing broad jump, resting pulse rate was measured by using stop watch, breath holding time was measured by using stop watch respectively. The analysis of covariance (ANCOVA) was used to find out

the significant differences if any, between the experimental group and control group on selected criterion variables separately. In all the cases, 0.05 level of significance was fixed to test the significance, which was considered as an appropriate.

**Keywords:** Floor Exercises, Aerobic Exercise, anaerobic exercise and Physical Fitness

### Introduction

Physical Fitness is a dynamic state of energy and vitality that enables one not only to carry out daily tasks, active leisure time pursuits, and to meet unforeseen emergencies without undue fatigue, but also to avoid hypokinetic diseases, while functioning at an optimum level of intellectual capacity and experiencing the joys of life.

Aerobics is a form of exercise that comprises rhythmic aerobic exercise with stretching and strength training components in order to improve all elements of fitness (flexibility, muscle strength, and cardio-vascular fitness). It is typically performed to music in a group setting with a leader, although it can be practiced solo and without musical accompaniment. Physical illness being targeted, practitioners go through variable routines comprising a number of different exercises. Proponents of aerobics cite staving off boredom and working out the whole body as two of the advantages of aerobics over



other types of exercise. The reputedly higher safety factor inherent in a fitness routine led and overseen by a trained professional is another.

Aerobics helps burn calories and fat. It also helps to reduce stress, promote restful sleep, strengthen muscles and gives the body a more streamline appearance. The number of calories burned depends on the speed of movements, step height, and length of exercise. Exercise sessions can create social connections with others and step as well as low-impact aerobics is suitable for all ages, low cost, and has no restrictions on place.

### Methodology

The purpose of the study was to find out whether there would be any significant improvement on selected variables as a result of floor aerobics and aerobics exercise. Ninety school boys were selected from Zenith Gujarati Medium School, Dabhoi Road, Pratapnagar, Vadodara, Gujarat. They were selected randomly as subjects. The selected subjects were of age group of 15 to 18 years. The subjects were randomly divided in to three groups of 30 subjects in each group. Group one acted as experimental group I and group two acted as experimental group -II and group three acted as control group. Group three underwent routine physical exercises and group I underwent floor aerobics training and group II underwent aerobics exercise training for eight weeks. The subjects were tested on selected criterion Physical Fitness variables, agility, flexibility, muscular power and physiological variables, resting pulse rate and breath holding time at prior to any immediately after the training period. The selected criterion variables such as agility were measuring by using shuttle run, flexibility was measured by sit and reach test, muscular power was

measured by standing broad jump, resting pulse rate was measured by using stop watch, breath holding time was measured by using stop watch respectively. The analysis of covariance (ANCOVA) was used to find out the significant differences if any, between the experimental group and control group on selected criterion variables separately. In all the cases, 0.05 level of significance was fixed to test the significance, which was considered as an appropriate.

### Findings

Tabel-1

ANALYSIS OF COVARIANCE ON AGILITY OF FLOOR AEROBIC TRAINING AEROBICS EXERCISE TRAINING AND CONTROL GROUPS OF SCHOOL BOYS

	Floor Aerobic Ex.	Aerobic Ex.	Control Group	Source of Variance	Sum of Squares	df	Mean Square	'F' ratio
Pre-test Mean	13.64	13.34	13.51	Between	1.24	2	0.62	2.21
S.D.	0.73	0.51	0.45	Within	24.56	87	0.28	
Post-test Mean	13.62	13.21	13.61	Between	4.24	2	2.12	6.84*
S.D.	0.67	0.78	0.45	Within	26.84	87	0.31	
Adjusted Post-test Mean	13.51	13.39	13.55	Between	0.63	2	0.32	1.78
				Within	15.46	86	0.18	

\* Significant at .05 level of significance.

Table – 1 showed that the pre-test values on agility for floor aerobic training, aerobics exercise training and control groups were  $13.64 \pm 0.73$ ,  $13.34 \pm 0.51$  and  $13.51 \pm 0.45$  respectively. The obtained 'F' ratio value of 2.21 for pre-test score of floor aerobic training, aerobics exercise training and control groups on agility was less than the required table value of 3.10 for significance with df 2 and 87 at .05 level of significance, which indicates that there was no significant variation on agility among the three groups before the commencement of training. The post-test mean values of agility for floor aerobic training, aerobics exercise training and control groups were  $13.62 \pm 0.67$ ,  $13.21 \pm 0.78$ , and  $13.61 \pm$



0.45 respectively. The obtained 'F' ratio value of 6.84 for post-test scores of floor aerobic training, aerobics exercise training and control groups was more than the required table value of 3.10 for significance with df 2 and 87 at .05 level of significance. It indicates that there is a significant variation in agility among the three groups after respective training for a period of 8 weeks. The adjusted post-test mean values of agility for floor aerobic training, aerobics exercise training and control groups were 13.51, 13.39 and 13.55 respectively. The obtained 'F' ratio value of 1.78 for adjusted post-test scores of floor aerobic training, aerobics exercise training and control groups were less than the required table value of 3.10 for significance with df 2 and 86 at .05 level of significance. The result of this study showed that there was no significant difference between floor aerobic training, aerobics exercise training and control groups on agility.

TABLE-2  
ANALYSIS OF COVARIANCE ON FLEXIBILITY OF FLOOR AEROBIC TRAINING AEROBICS EXERCISE TRAINING AND CONTROL GROUPS OF SCHOOL BOYS

	Floor Aerobic Ex.	Aerobic Ex.	Control Group	Source of Variance	Sum of Squares	df	Mean Square	'F' ratio
Pre-test Mean	7.00	6.38	6.00	Between	7.61	2	3.80	1.34
S.D.	2.41	1.36	0.94	Within	247.68	87	2.85	
Post-test Mean	8.25	8.23	6.50	Between	60.67	2	30.34	10.32*
S.D.	2.40	1.44	0.99	Within	255.74	87	2.94	
Adjusted Post-test Mean	7.85	8.43	6.70	Between	46.60	2	23.30	104.55
				Within	19.16	86	0.22	

\* Significant at .05 level of significance.

Table – 2 showed that the pre-test values on flexibility for floor aerobic training, aerobics exercise training and control groups were  $7.00 \pm 2.41$ ,  $6.38 \pm 1.36$  and  $6.00 \pm 0.94$  respectively. The obtained 'F' ratio value of 1.34 for pre-test score of floor aerobic training, aerobics exercise training and control groups on flexibility was less than the required table value of 3.10 for significance with df 2 and 87

at .05 level of significance, which indicates that there was no significant variation on flexibility among the three groups before the commencement of training.

The post-test mean values of flexibility for floor aerobic training, aerobics exercise training and control groups were  $8.25 \pm 2.40$ ,  $8.23 \pm 1.44$ , and  $6.50 \pm 0.99$  respectively. The obtained 'F' ratio value of 10.32 for post-test scores of floor aerobic training, aerobics exercise training and control groups was more than the required table value of 3.10 for significance with df 2 and 87 at .05 level of significance. It indicates that there is a significant variation in flexibility among the three groups after respective training for a period of 8 weeks. The adjusted post-test mean values of flexibility for floor aerobic training, aerobics exercise training and control groups were 7.85, 8.43 and 6.70 respectively. The obtained 'F' ratio value of 104.55 for adjusted post-test scores of floor aerobic training, aerobics exercise training and control groups were more than the required table value of 3.10 for significance with df 2 and 86 at .05 level of significance.

The result of this study showed that there was a significant difference between floor aerobic training, aerobics exercise training and control groups on flexibility. Further to determine which of the paired means had a significant difference Scheffé S test was applied and the result was presented in Table – 3.

TABLE-3  
SCHEFFÉ S TEST FOR THE DIFFERENCE BETWEEN THE ADJUSTED POST-TEST MEAN OF FLEXIBILITY TWO EXPERIMENTAL AND ONE CONTROL GROUP

ADJUSTED POST-TEST MEAN			MD	Significance Interval at .05 level
Floor Aerobic Ex.	Aerobic Ex.	Control Group		
7.85		6.70	1.15*	0.30
7.85	8.43		0.58*	0.30
	8.43	6.70	1.73*	0.30

\* Significant at .05 level of significance.

Table – 3 shows that the mean difference in flexibility between floor aerobic training and



control group is 1.15 and it is higher than the significance interval required for significance at .05 level. This indicates that there is significant improvement in flexibility for floor aerobic training group as a result of 8 weeks training. The mean difference in flexibility between aerobics exercise training and control group is 1.73 and it is higher than the significance interval required for significance at .05 level. This indicates that there is significant improvement in flexibility for aerobics exercise training group as a result of 8 weeks training. The mean difference in flexibility between floor aerobic training and aerobics exercise training group is 0.58 and it is higher than the significance interval required for significance at .05 level. This indicates that there is significant differences existed between floor aerobics and aerobics exercise. This proved that due to eight weeks floor aerobics and aerobics exercise, the college men have improved their flexibility significantly comparing to control group. Since the differences between the aerobics exercise and floor aerobics was significant, it was found that aerobics exercises was significantly better than floor aerobics.

were  $2.50 \pm 0.15$ ,  $2.54 \pm 0.13$  and  $2.53 \pm 0.12$  respectively. The obtained 'F' ratio value of 2.5 for pre-test score of floor aerobic training, aerobics exercise training and control groups on muscular power was less than the required table value of 3.10 for significance with df 2 and 87 at .05 level of significance, which indicates that there was no significant variation on muscular power among the three groups before the commencement of training. The post-test mean values of muscular power for floor aerobic training, aerobics exercise training and control groups were  $2.53 \pm 0.15$ ,  $2.59 \pm 0.13$ , and  $2.47 \pm 0.12$  respectively. The obtained 'F' ratio value of 5.83 for post-test scores of floor aerobic training, aerobics exercise training and control groups was more than the required table value of 3.10 for significance with df 2 and 87 at .05 level of significance. It indicates that there is a significant variation in muscular power among the three groups after respective training for a period of 8 weeks. The adjusted post-test mean values of muscular power for floor aerobic training, aerobics exercise training and control groups were 2.53, 2.55 and 2.50 respectively. The obtained 'F' ratio value of 65.22 for adjusted post-test scores of floor aerobic training, aerobics exercise training and control groups were more than the required table value of 3.10 for significance with df 2 and 86 at .05 level of significance. The result of this study showed that there was a significant difference between floor aerobic training, aerobics exercise training and control groups on muscular power. Further to determine which of the paired means had a significant difference Scheffé S test was applied and the result was presented in table – 5.

TABEL - 4  
ANALYSIS OF COVARIANCE ON MUSCULAR POWER OF FLOOR  
AEROBIC TRAINING AEROBICS EXERCISE TRAINING AND  
CONTROL GROUPS OF SCHOOL BOYS

	Floor Aerobic Exercise	Aerobic Exercise	Control Group	Source of Variance	Sum Squares	df	Mean Square	'F' ratio
Pre-test Mean	2.50	2.54	2.53	Between	0.09	2	0.045	2.5
S.D.	0.15	0.13	0.12	Within	1.54	87	0.018	
Post-test Mean	2.53	2.59	2.47	Between	0.21	2	0.105	5.83*
S.D.	0.15	0.13	0.12	Within	1.58	87	0.018	
Adjusted Post-test Mean	2.53	2.55	2.50	Between	0.030	2	0.015	65.22*
				Within	0.02	86	0.00023	

\* Significant at .05 level of significance.

Table – 4 showed that the pre-test values on muscular power for floor aerobic training, aerobics exercise training and control groups



TABEL - 5  
SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN THE  
ADJUSTED POST-TEST MEAN OF MUSCULAR POWER TWO  
EXPERIMENTAL AND ONE CONTROL GROUP

ADJUSTED POST-TEST MEAN			MD	Significance Interval at 0.05 level
Floor Exercise	Aerobic Exercise	Control Group		
2.53		2.50	0.03*	0.022
2.53	2.55		0.02	0.022
	2.55	2.50	0.05*	0.022

\* Significant at .05 level of significance.

Table -5 shows that the mean difference in muscular power between floor aerobic training and control group is 0.03 and it is higher than the significance interval required for significance at .05 level. This indicates that there is significant improvement in muscular power for floor aerobic training group as a result of 8 weeks training. The mean difference in muscular power between aerobics exercise training and control group is 0.05 and it is higher than the significance interval required for significance at .05 level. This indicates that there is significant improvement in muscular power for aerobics exercise training group as a result of 8 weeks training. The mean difference in muscular power between floor aerobic training and aerobics exercise training group is 0.02 and it is less than the significance interval of 0.022 required for significance at .05 level. This indicates that there is no significant differences existed between floor aerobics and aerobics exercise. It may be concluded from the results of the study that both floor aerobic training group and aerobics exercise training group improved the performance of muscular power due to the respective training programmes but there is no significant difference between the experimental groups.

TABEL - 6  
ANALYSIS OF COVARIANCE ON RESTING PULSE RATE OF FLOOR  
AEROBIC TRAINING AEROBICS EXERCISE TRAINING AND  
CONTROL GROUPS OF SCHOOL BOYS

	Floor Aerobic Ex.	Aerobic Exercise	Control Group	Source of Variance	Sum of Squares	df	Mean Square	F' ratio
Pre-test Mean	77.30	77.33	77.07	Between	1.27	2	0.63	0.2
S.D.	5.94	6.38	6.72	Within	3512.83	87	40.38	
Post-test Mean	70.77	71.77	76.63	Between	591.02	2	295.51	8.09*
S.D.	6.38	6.24	5.49	Within	3179.70	87	36.55	
Adjusted Post-test Mean	71.71	71.68	76.78	Between	638.18	2	319.09	60.40*
				Within	454.30	86	5.28	

\* Significant at .05 level of significance.

Table - 6 showed that the pre-test values on resting pulse rate for floor aerobic training, aerobics exercise training and control groups were  $77.30 \pm 5.94$ ,  $77.33 \pm 6.38$  and  $77.07 \pm 6.72$  respectively. The obtained 'F' ratio value of 0.2 for pre-test score of floor aerobic training, aerobics exercise training and control groups on resting pulse rate was less than the required table value of 3.10 for significance with df 2 and 87 at .05 level of significance, which indicates that there was no significant variation on resting pulse rate among the three groups before the commencement of training. The post-test mean values of resting pulse rate for floor aerobic training, aerobics exercise training and control groups were  $70.77 \pm 6.38$ ,  $71.77 \pm 6.24$ , and  $76.63 \pm 5.49$  respectively. The obtained 'F' ratio value of 8.09 for post-test scores of floor aerobic training, aerobics exercise training and control groups was more than the required table value of 3.10 for significance with df 2 and 87 at .05 level of significance. It indicates that there is a significant variation in resting pulse rate among the three groups after respective training for a period of 8 weeks. The adjusted post-test mean values of resting pulse rate for floor aerobic training, aerobics exercise training and control groups were 71.71, 71.68 and 76.78 respectively. The obtained 'F' ratio value of 60.40 for adjusted



post-test scores of floor aerobic training, aerobics exercise training and control groups were more than the required table value of 3.10 for significance with df 2 and 86 at .05 level of significance. The result of this study showed that there was a significant difference between floor aerobic training, aerobics exercise training and control groups on resting pulse rate. Further to determine which of the paired means had a significant difference Scheffé S test was applied and the result was presented in table –7.

TABEL - 7  
SCHEFFÉ S TEST FOR THE DIFFERENCE BETWEEN THE  
ADJUSTED POST-TEST MEAN OF RESTING PULSE RATE

ADJUSTED POST-TEST MEAN			MD	Significance Interval at .05 level
Floor Aerobic Exercise	Aerobic Exercise	Control Group		
71.71	76.78	76.78	5.07*	1.46
71.71	71.68		0.03	1.46
	71.68	76.78	5.10*	1.46

\* Significant at .05 level of significance.

Table – 7 shows that the mean difference in resting pulse rate between floor aerobic training and control group is 5.07 and it is higher than the significance interval required for significance at .05 level. This indicates that there is significant improvement in resting pulse rate for floor aerobic training group as a result of 8 weeks training. The mean difference in resting pulse rate between aerobics exercise training and control group is 5.10 and it is higher than the significance interval required for significance at .05 level. This indicates that there is significant improvement in resting pulse rate for aerobics exercise training group as a result of 8 weeks training. The mean difference in resting pulse rate between floor aerobic training and aerobics exercise training group is 0.03 and it is less than the significance interval of 1.46 required for significance at .05 level. This indicates that there is no significant differences

existed between floor aerobics and aerobics exercise.

It may be concluded from the results of the study that both floor aerobic training group and aerobics exercise training group improved the performance of resting pulse rate due to the respective training programmes but there is no significant difference between the experimental groups.

TABEL - 8  
ANALYSIS OF COVARIANCE ON BREATH HOLDING TIME OF FLOOR  
AEROBIC TRAINING AEROBICS EXERCISE TRAINING AND  
CONTROL GROUPS OF SCHOOL BOYS

	Floor Aerobic Ex	Aerobic Ex	Control Group	Source of Variance	Sum Squares	df	Mean Square	F' ratio
Pre-test Mean	36.94	36.79	36.45	Between	123.04	2	61.52	1.54
S.D.	7.27	6.74	4.68	Within	3485.26	87	40.06	
Post-test Mean	39.15	40.25	33.14	Between	879.39	2	439.70	9.13*
S.D.	7.16	6.41	7.23	Within	4190.89	87	48.17	
Adjusted Post-test Mean	38.31	39.56	34.66	Between	376.63	2	188.32	13.31*
				Within	1216.56	86	14.15	

\* Significant at .05 level of significance.

Table –8 showed that the pre-test values on breath holding time for floor aerobic training, aerobics exercise training and control groups were  $36.94 \pm 7.27$ ,  $36.79 \pm 6.74$  and  $26.45 \pm 4.68$  respectively. The obtained 'F' ratio value of 1.54 for pre-test score of floor aerobic training, aerobics exercise training and control groups on breath holding time was less than the required table value of 3.10 for significance with df 2 and 87 at .05 level of significance, which indicates that there was no significant variation on breath holding time among the three groups before the commencement of training. The post-test mean values of breath holding time for floor aerobic training, aerobics exercise training and control groups were  $39.15 \pm 7.16$ ,  $40.25 \pm 6.41$ , and  $33.14 \pm 7.23$  respectively. The obtained 'F' ratio value of 9.13 for post-test scores of floor aerobic training, aerobics exercise training and control groups was more than the required table value of 3.10 for significance with df 2 and 87 at .05



level of significance. It indicates that there is a significant variation in breath holding time among the three groups after respective training for a period of 8 weeks.

The adjusted post-test mean values of breath holding time for floor aerobic training, aerobics exercise training and control groups were 38.31, 39.56 and 34.66 respectively. The obtained 'F' ratio value of 13.31 for adjusted post-test scores of floor aerobic training, aerobics exercise training and control groups were more than the required table value of 3.10 for significance with df 2 and 86 at .05 level of significance. The result of this study showed that there was a significant difference between floor aerobic training, aerobics exercise training and control groups on breath holding time. Further to determine which of the paired means had a significant difference Scheffé S test was applied and the result was presented in Table –9.

TABEL - 9  
SCHEFFÉ S TEST FOR THE DIFFERENCE BETWEEN THE  
ADJUSTED POST-TEST MEAN OF BREATH HOLDING TIME

ADJUSTED POST-TEST MEAN			MD	Significance Interval at .05 level
Floor Aerobic Exercise	Aerobic Exercise	Control Group		
38.31		34.66	3.66*	2.42
38.31	39.56		1.25	2.42
	39.56	34.66	4.90*	2.42

\* Significant at .05 level of significance.

Table – 9 shows that the mean difference in breath holding time between floor aerobic training and control group is 3.66 and it is higher than the significance interval required for significance at .05 level. This indicates that there is significant improvement in breath holding time for floor aerobic training group as a result of 8 weeks training. The mean difference in breath holding time between aerobics exercise training and control group is 4.90 and it is higher than the significance interval required for significance at .05 level. This indicates that there is significant

improvement in breath holding time for aerobics exercise training group as a result of 8 weeks training. The mean difference in breath holding time between floor aerobic training and aerobics exercise training group is 1.25 and it is less than the significance interval of 2.42 required for significance at .05 level. This indicates that there is no significant differences existed between floor aerobics and aerobics exercise. It may be concluded from the results of the study that both floor aerobic training group and aerobics exercise training group improved the performance of breath holding time due to the respective training programmes but there is no significant difference between the experimental groups.

### Conclusions

- There was no significant difference between floor aerobic training, aerobics exercise training and control groups on agility.
- Significant difference was found between floor aerobic training, and aerobics exercise training on flexibility.
- A significant difference was found between floor aerobic training, aerobics exercise training and control groups on muscular power.
- Significant difference was found between floor aerobic training, aerobics exercise training and control groups on resting pulse rate.
- Significant difference was found between floor aerobic training, aerobics exercise training and control groups on breath holding time.



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