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Effect of Aerobic Dance, Aquarobics and Combined Training on Selected Physiological Variables of Engineering College Students

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Abstract

The purpose of the study was to find out the effect of aerobic dance, aquarobics and combined training on selected physiological variables of engineering college students. To achieve the purpose of the present study, forty five engineering college students from Tamilnadu, India were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into three equal groups of fifteen each. Group I acted as Experimental Group I (Aerobic dance training), Group II acted as Experimental Group II (Aquarobics training) Group III acted as Experimental Group II (Combined training). The duration of experimental period was 12 weeks. After the experimental treatment, all the forty five subjects were tested on their selected variables. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to statistical analysis using Analysis of Covariance (ANCOVA) to find out the significance among the mean differences, whenever the 'F' ratio for adjusted test was found to be significant, Scheffe's post hoc test was used. In all cases 0.05 level of significance was fixed to test hypotheses. The combined training had shown significant improvement in all the selected physiological variables of engineering college students than the aerobic dance training and aquarobics.

Keywords: Aerobic, Aquarobics, Physiological, Engineering Students.

Introduction

Aerobic exercise, also known as cardio-vascular exercise, is an activity that is sustained for a long period of time, that is rhythmic and that affects large muscle groups. Aerobic exercise impacts the cardio-vascular and circulatory system and makes your heart stronger and more efficient. Aerobics, step classes, water aerobics and swimming are examples of aerobic exercises involving the use of some type of equipment. Specific kinds of equipment that can be used specifically for aerobic exercises include treadmills, elliptical machines, bicycles and jump ropes. Also, active sports like football, basketball, hockey and such others are great for aerobic exercises. Aerobic exercises can also be done without the use of equipment. Many people who do not have gym memberships or who do not want to purchase any kind of equipment engage in this option for aerobic exercise. Once again, aerobic exercises include activities that last for a long period of time with a high heart rate. Jogging and running long distances are the most common forms of aerobic exercise that can be done without any kind of equipment. Another example of aerobic exercise, which is an alternative to jogging and running that many people actually find enjoyable and fun, is dancing. Specific kinds of dance include jazz, tap, hip hop and others.

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Water aerobics (waterobics, aquatic fitness, aquafitness, aquafit) is the performance of aerobic exercise in fairly shallow water such as in a swimming pool. Done mostly vertically and without swimming typically in waist deep or deeper water, it is a type of resistance training. Water aerobics is a form of aerobic exercise that requires water-immersed participants. Most water aerobics is in a group fitness class setting with a trained professional teaching for about an hour. The classes focus on aerobic endurance, resistance training, and creating an enjoyable atmosphere with music. Different forms of water aerobics include: aqua Zumba, water yoga, aqua aerobics, and aqua jog (White, 1995). Aquarobics is often part of an exercise regimen for those who have sustained injury to the bones or joints, but in order to get the full benefit of such exercise, it needs to be practiced in waist to shoulder deep water. The farther one's upper body is from the water, the less impact reduction will be accomplished. Aquarobics practiced in water at least waist or chest deep will significantly reduce impact on the legs, reducing some of the unwanted side-effects of regular aerobics classes like shin splints. However, deeper water also requires harder work to move one's body through water resistance.

Methodology

The purpose of the study was to find out the effect of aerobic dance, aquarobics and combined

training on selected physiological variables of engineering college students. To achieve the purpose of the present study, forty five engineering college students from Tamilnadu, India were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into three equal groups of fifteen each. Group I acted as Experimental Group I (Aerobic dance training), Group II acted as Experimental Group II (Aquarobics training) Group III acted as Experimental Group II (Combined training). The duration of experimental period was 12 weeks. After the experimental treatment, all the forty five subjects were tested on their selected variables. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to statistical analysis using Analysis of Covariance (ANCOVA) to find out the significance among the mean differences, whenever the 'F' ratio for adjusted test was found to be significant, Scheffe's post hoc test was used. In all cases 0.05 level of significance was fixed to test hypotheses.

Results

Table I. Computation of analysis of covariance of mean of aerobic dance, aquarobics and combined training groups on resting heart rate

	ADT	AQT	CT	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	72.46	72.66	72.80	**BG**	0.84	2	0.42	0.23
				WG	75.46	42	1.79	
Post-Test Means	69.46	70.13	68.00	**BG**	35.73	2	17.86	18.09*
				WG	41.46	42	0.98	
Adjusted Post-Test Means	69.48	70.13	67.98	**BG**	36.22	2	18.11	18.22*
				WG	40.74	41	0.99	

An examination of table - I indicated that the pre test means of aerobic dance training, aquarobics and combined training groups were 72.46, 72.66 and 72.80 respectively. The obtained F-ratio for the pre-test was 0.23 and the table F-ratio was 3.22. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that there were no significant differences between the experimental and combined training groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test means of the aerobic dance training, aquarobics and combined training groups were 69.46, 70.13 and 68.00 respectively. The obtained F-ratio for the post-test was 18.09 and the table F-ratio was 3.22. Hence the post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that the differences between the post test means of the subjects were significant. The adjusted post-test means of the aerobic dance training, aquarobics and combined training groups were 69.48, 70.13 and 67.98 respectively. The obtained F-ratio for the adjusted post-test means was 18.22 and the table F-ratio was 3.23. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 41. This proved that there was a significant difference among the means due to the experimental trainings on resting heart rate. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's post hoc test. The results were presented in Table – II.

Table II. The scheffe's test for the differences between the adjusted post test paired means on resting heart rate

Adjusted Post-test means			Mean Difference	Required CI
Aerobic Dance Training	**Aquarobics Training**	**Combined Training**		
69.48	70.13	---	0.65	0.92
69.48	---	67.98	1.50*	
---	70.13	67.98	2.15*	

**** Significant at 0.05 level of confidence***

The multiple comparisons showed in table II proved that there existed significant differences between the adjusted means of aerobic dance training with combined training group (1.50), aquarobics training with combined training group (2.15). There was no significant difference between aerobic dance training and aquarobics training group (0.65) at 0.05 level of confidence with the confidence interval value of 0.92.

Figure I. Pre post and adjusted post test differences of the aerobic dance aquarobics and combined training groups on resting heart rate

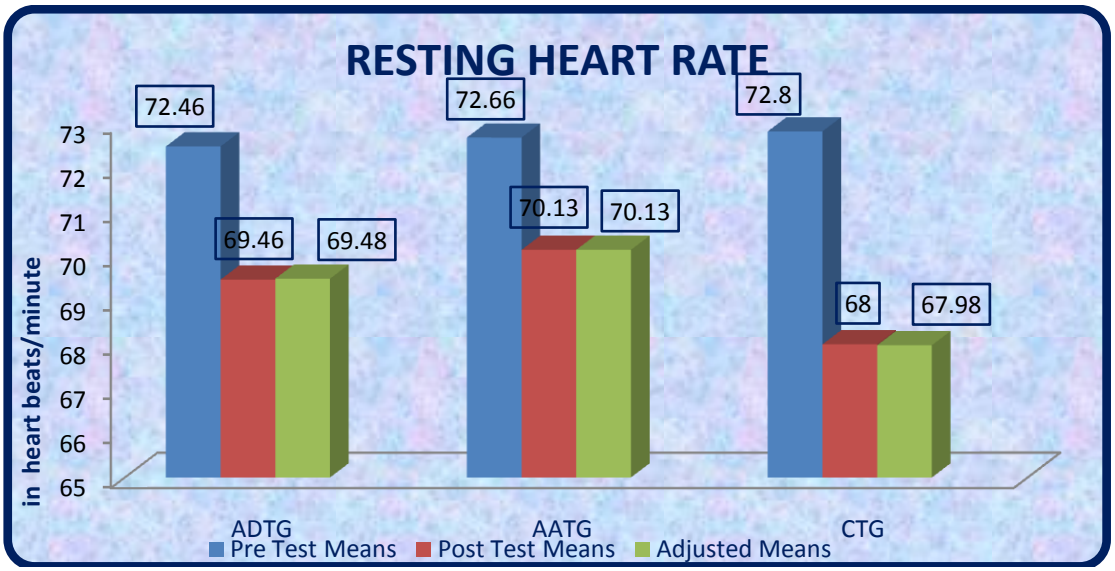


Table III. Computation of analysis of covariance of mean of aerobic dance, aquarobics and combined training groups on vo2 max

	ADT	AQT	CT	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	49.88	49.76	49.90	**BG**	0.17	2	0.08	0.06
				WG	60.06	42	1.43	
Post-Test Means	52.28	52.64	55.93	**BG**	121.34	2	60.67	51.95*
				WG	49.04	42	1.16	
Adjusted Post-Test Means	52.28	52.65	55.92	**BG**	120.49	2	60.24	51.87*
				WG	47.61	41	1.16	

An examination of table - III indicated that the pre test means of aerobic dance training, aquarobics and combined training groups were 49.88, 49.76 and 49.90 respectively. The obtained F-ratio for the pre-test was 0.06 and the table F-ratio was 3.22. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that there were no significant differences between the experimental and combined training groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test means of the aerobic dance training, aquarobics and combined training groups were 52.28, 52.64 and 55.93 respectively. The obtained F-ratio for the post-test was 51.95 and the table F-ratio was 3.22. Hence the post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that the differences between the post test means of the subjects were significant. The adjusted post-test means of the aerobic dance training, aquarobics and combined training groups were 52.28, 52.65 and 55.92 respectively. The obtained F-ratio for the adjusted post-test means was 51.87 and the table F-ratio was 3.23. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 41. This proved that there was a significant

difference among the means due to the experimental trainings on vo2 max. Since significant differences were recorded, the results were subjected to post hoc analysis using Scheffe's post hoc test. The results were presented in Table –IV.

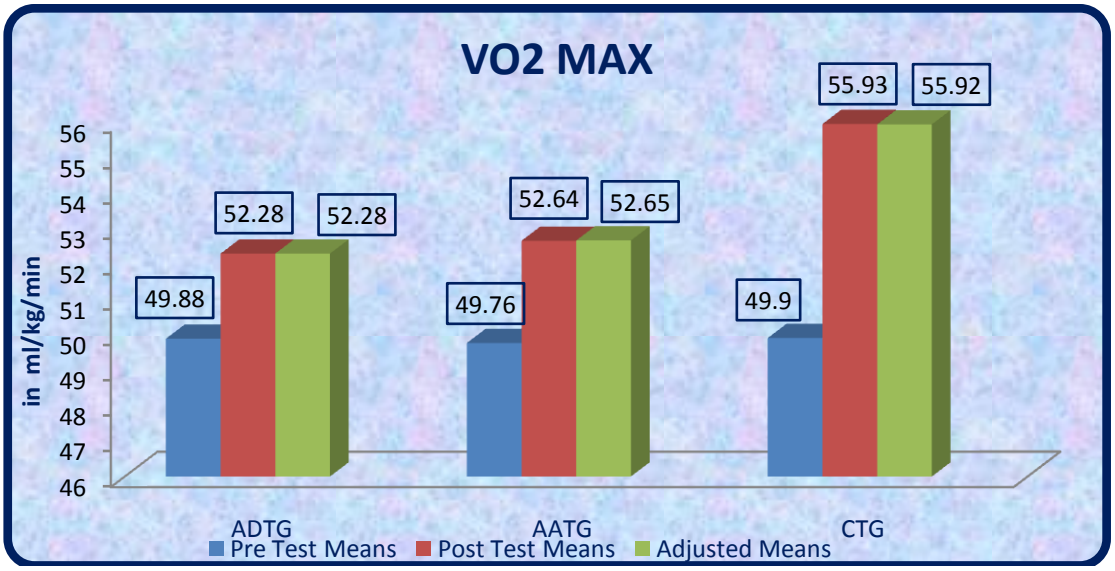
Table IV. The scheffe's test for the differences between the adjusted post test paired means on vo2 max

Adjusted Post-test means			Mean Difference	Required CI
Aerobic Dance Training	Aquarobics Training	Combined Training		
52.28	52.65	---	0.37	0.99
52.28	---	55.92	3.64*	
---	52.65	55.92	3.27*	

**** Significant at 0.05 level of confidence***

The multiple comparisons showed in table IV proved that there existed significant differences between the adjusted means of aerobic dance training with combined training group (3.64), aquarobics training with combined training group (3.27). There was no significant difference between aerobic dance training and aquarobics training group (0.37) at 0.05 level of confidence with the confidence interval value of 0.99.

Figure II. Pre post and adjusted post test differences of the aerobic dance aquarobics and combined training groups on vo2 max



Conclusions

From the analysis of the data, the following conclusions were drawn:

1. The aerobic dance training had shown significant improvement in all the selected physiological variables of engineering college students after undergoing aerobic dance training for a period of twelve weeks.
2. The aquarobics training had shown significant improvement in all the selected physiological variables of engineering college students after undergoing aquarobics training for a period of twelve weeks.
3. The combined training had shown significant improvement in all the selected physiological variables of engineering college students after undergoing combined training for a period of twelve weeks.
4. The combined training had shown significant improvement in all the selected physiological variables of engineering college students than the aerobic dance training and aquarobics.

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