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Effect of Aerobic Exercise on the Selected Physical and Physiological Variables of College Women

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Abstract

Many researchers proved Aerobic exercise is one of the appropriate methods planned to develop physical and physiological of the college women. Hence, it is good to find out the effect of Aerobic exercise on the selected physical and physiological variables of college women. To achieve the purpose of the study, thirty (30) physically active women were randomly selected from Idhaya engineering college for women, Chinnasalem, Tamil Nadu, during the academic year 2016-17. Their age ranged from 19 to 21 years. The selected subjects were divided into two (15) equal groups, namely Training Groups and control groups. The training group underwent weekly three days for eight weeks of Aerobic exercise and no treatment was given to the Control group. The collected data were analysed and computed by t test. The result of the study shows that Aerobic exercise produced a significant changes in physical (Muscular strength-t = 5.54 and Speed-t = 8.86, P < 0.05), agility-t=4.78, P < 0.05), and physiological (Resting heart rate-t = 6.50 and Breath holding time-t = 10.96, P < 0.05) variables of the training group.

Keywords: Weight training, Muscular strength, Resting heart rate, Breath holding time.

Introduction

Fundamental movements of man, which they have achieved from their pre-human ancestors, are walking, running, jumping, climbing, throwing, pulling, pushing etc. By permutation and combination of these basic fundamental movements, man has developed various secondary movements essential for day-to-day living and for the use in games and sports. Physical fitness is important for all human beings, irrespective of their age. A given work may not be carried out if the required physical strength is not available. Fitness is the first and foremost thing to enjoy the life fully (Reddy, 2012). Regular physical activity, fitness, and exercise are critically important for the health and wellbeing of people of all, whether they participate in vigorous exercise or some type of moderate health-enhancing physical activity. Even among frail and very old adults, mobility and functioning can be improved through physical activity (Butler *et al.*, 1998). Regular Aerobic exercise will produce beneficial effects for any age group providing the exercise is specific and appropriate to the level of fitness of the individual. Progressive exercise correctly performed will increase the level of fitness and improve health. It will also create a sense of well -being, produce greater energy and reduce the risk of developing many diseases. Exercise makes demands on the body systems over and above normal every day activities and as result the systems adapt anatomically and physiologically (Rosser, 2001).

Appropriate regular daily physical activity is a major component in preventing chronic disease, along with a healthy diet and not smoking. For individuals, it is a powerful means of preventing chronic diseases; for nations, it can provide a cost effective way of improving public health across the population. Available experience and scientific evidence show that regular physical activity provides people, both male and female, of any conditions including disabilities with a wide range of physical, social and mental health benefits. (WHO 2003)

Fitness for living in the house or on the farm or at office or factory or in work places or in any service implies freedom from disease, enough strength, endurance and other abilities to meet the demands of daily living. Doing physical activity everyday contributes to optimum health and quality of life. Life styles can be changed to improve health and fitness through daily exercises. Aerobic exercise stimulates heart, lungs and all working group of muscles and produces valuable changes in body and mind. Many physiological changes are determined by daily aerobic exercises (Shahana *et al.*, 2010).

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Methodology

Selection of Subjects

To achieve the purpose of the study, thirty (30) physically active women were randomly selected from Idhaya engineering college for women, Chinnasalem, Tamil Nadu, during the academic year 2016-17. Their age

ranged from 19 to 21 years. The selected subjects were divided into two (15) equal groups, namely Training and control groups. The training group underwent weekly three days for eight weeks of Aerobic exercise and no treatment was given for the Control group.

Selection of Variables

To find out the impact of training the researcher selected the following variables for the present study.

Sl.No	Variables	Test
Physical variables		
1	Muscular strength	Pull ups
2	Speed	50 m dash
3	Agility	Shuttle run
Physiological variables		
3	Resting heart rate	Radial Pulse
4	Breath holding Time	Breath Holding

Statistical analysis

The collected data on the selected dependent variables were statistically analyzed by dependent "t" test to find out the significant improvement between pre and post tests of training and control groups at the 0.05 level of confidence.

Results

Table 1

Computation of 't'-ratio between pre and post test means of training and control groups on muscular strength (pull ups - scores in number)

Test		Mean	SD	MD	T - ratio
T G	Pre test	6.86	0.84	0.96	5.54*
	Post test	7.93	0.82		
CG	Pre test	6.83	0.84	0.53	1.76
	Post test	6.89	0.92		

*significant at 5% level (P<0.05), table value (2.145)

The above table displays the mean values of pre and post test of training group. They are 6.86 and 7.93. Since, the obtained't' ratio of 5.54 is greater than the required table value of 2.145, it is found to be statistically significant at 0.05 level of confidence. The results clearly indicate that the muscular strength of the training group improved due to Aerobic exercise. There is no significant improvement on control group at 0.05 level of confidence.

Table 2

Computation of 't'-ratio between pre and post test means of training and control groups on speed (50 m dash - time in seconds)

Test		Mean	SD	MD	T - ratio
T G	Pre test	8.42	0.14	0.12	8.86*
	Post test	8.00	0.07		
CG	Pre test	8.25	0.15	0.012	1.89
	Post test	8.19	0.09		

*significant at 5% level (P<0.05), table value (2.145)

The above table displays the mean values of pre and post test of training group are 8.42 and 8.00 respectively. Since, the obtained't' ratio of 8.86 is greater than the required table value of 2.145, it is found to be statistically significant at 0.05 level of confidence. The results clearly indicate that the speed of the training

group improved due to Aerobic exercise. There is no significant improvement on control group at 0.05 level of confidence.

Table 3
Computation of 't' ratio between pre and post test means of experimental & control group on agility

Test		Mean	SD	MD	T - ratio
T G	Pre test	11.89	10.196	3.09	**4.78***
	Post test	11.42	43.158	12.17	
CG	Pre test	11.16	15.70	48.26	0.73
	Post test	11.21	28.08	8.91	

*significant at 5% level (P<0.05), table value (2.145)

Table 3 shows that the agility of experimental group mean values. The mean value of pre and post test 11.89 and 11.42 respectively, the calculated value 4.78 is greater than the required table value of 2.14 for 0.05 level of confidence. Was significant difference on agility between the pre and post test on experimental group. The mean value of pre and post test on control group is 11.16 and 11.21 respectively; the calculated value 0.73 is lower than the required table value of 0.05 level of confidence. Hence there was no significant difference on agility between pre and post test on control group.

Table 4
Computation of't'-ratio between pre and post test means of training and control groups on resting heart rate (radial pulse – number of beats per minute)

Test		Mean	SD	MD	T - ratio
T G	Pre test	63.78	1.89	1.50	6.50*
	Post test	62.46	1.52		
CG	Pre test	63.56	1.86	0.40	1.88
	Post test	63.46	1.88		

*significant at 5% level (P<0.05), table value (2.145)

The above table displays the mean values of pre and post test of training group are 63.78 and 62.46 respectively. Since, the obtained't' ratio of 6.50 is greater than the required table value of 2.145, it is found to be statistically significant at 0.05 level of confidence. The results clearly indicate that the resting heart rate of the training group improved due to Aerobic exercise. There is no significant improvement on control group at 0.05 level of confidence.

Table 5
Computation of 't'-ratio between pre and post test means of training and control groups on breath holding time (breath holding - scores in seconds)

Test		Mean	SD	MD	T - ratio
T G	Pre test	42.51	0.67	1.15	10.90*
	Post test	43.56	0.79		
CG	Pre test	42.68	0.618	0.0018	1.74
	Post test	42.59	0.624		

*significant at 5% level (P<0.05), table value (2.145)

The above table displays the mean values of pre and post test of training group are 42.51 and 43.56 respectively. Since, the obtained't' ratio of 10.90 is greater than the required table value of 2.145, it is found to be statistically significant at 0.05 level of confidence. The results clearly indicate that the breath holding time of the training group improved due to Aerobic exercise. There is no significant improvement on control group at 0.05 level of confidence.

Discussion

The present study examined the effect of Aerobic exercise on physical and physiological variables of college women. The result of this study revealed that the Aerobic exercise improved the physical (Muscular strength, Speed and agility) and Physiological (Resting heartrate and Breath holding time) variables, which are in conformity with the findings of Martin & George (2015), Vinayagamoorthi & Sakthivel (2014), Cittibabu & Akilan (2013) and Kaikkonen et al., (2000).

Conclusion

Based on the results, it is concluded that eight weeks of Aerobic exercise produced a significant improvement in the physical (Muscular strength, Speed and agility) and Physiological (Resting heart rate and Breath holding time) variables of college women.

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