

Effect Of Solitary Aerobic Training on Selected Physical and Physiological Parameters Among Women Students

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ABSTRACT

The purpose of the study was to find out the effect of solitary aerobic training on selected physical and physiological variables among women students. For the present study, thirty (N=30) women students were selected at random, and their age range from 17 to 21 years. For the collection of data pre and post-test was conducted in this, subjects were randomly assigned into two equal groups of fifteen (n=15) each, volunteered. Group I underwent solitary aerobic training and group II acted as control. The assessed parameters are cardiorespiratory endurance and heart rate at rest, were measured by 12-minute run/walk test and bio-monitor respectively. The data was collected before and after twelve weeks of training. The data was analysed by applying ANCOVA. The level of confidence was fixed at 0.05 level. The results of the study showed that solitary aerobic training has significantly influenced cardiorespiratory endurance and heart rate at rest as compared to the control group.

KEYWORDS: aerobic training, cardiorespiratory endurance, heart rate at rest

INTRODUCTION

Sports training is a conscious human activity, goal-oriented and devoted to the study of performance capacity which further comprises physical condition techniques, coordinative abilities, tactics, physique, and psychic factors. **Hardyal Sing (1991)** Numerous training procedures are in practice to improve each and every physical and motor fitness quality at various levels in this aerobic activity is one of the sports training to develop sports performance. **Boucher. C (1993)**. Regular exercise is necessary to develop and maintain optimal health, performance, and appearance. It makes us to feel good in both physically and mentally. Aerobic activity generally has a low to moderate intensity and it can be sustained for long periods of time, it increases the strength and size of the heart and the efficiency of the lungs, increases the body's endurance, and lowers blood pressure.

Aerobic exercise stimulates the heart, lungs, and all working groups of muscles and produces valuable changes in the body and mind. Daily aerobic exercises determine many physiological changes **Shahana et al., (2010)**.

Regular aerobic exercise will produce beneficial effects for any age group. It produces greater energy and reduces the risk of developing many diseases. **Rosser, (2001)**. In sports participation or better

performance one requires physical fitness components that can be achieved through regular aerobic exercise as aerobic exercise keeps everyone super-fit and healthy. It boosts the amount of oxygen delivered to our heart and muscles so they use oxygen more efficiently and stay healthier. **Mr. Santosh Toppo and Dr. D Sultana (2013)** Aerobic capacity describes the functional status of the cardiorespiratory system, (the heart, lungs, and blood vessels). Aerobic capacity is the maximum volume of oxygen that can be consumed by muscles during exercise. It is a function both of cardiorespiratory performance and the ability of the muscles to extract the oxygen and fuel delivered. **Dr. Razeena K.I. and Dr. Razia K.I (2013).**

The higher a cardiorespiratory endurance level, the more oxygen is transported to exercising muscles, the longer exercise can be maintained without exhaustion and accordingly, the faster they are able to run. The Cooper and Multi-Stage Fitness tests can also be used to functionally assess Aerobic capacity. Aerobic capacity can be improved through a variety of means, including Fartlek training. **Mr. Mathewos Hosiso et al., (2013) and A Shahana et al., (2010)** stated that the moderate aerobic activity has positive effect on cardiovascular endurance. **Tadele Ademe et al., (2013)** stated that the aerobic exercise was found better than anaerobic exercise in improving the cardiovascular endurance.

Bo-Ae Lee and Deuk-Ja Oh (2016) stated that the cardiac efficiency among people who expose to aerobic activities, and the resting heart rate is significantly lower. **Sullivan and Bell (2000)** stated that the previous inactivity subjects that 6 weeks of systematic and moderate aerobic exercise is adequate to outcome a significantly decrease heart rate. According to **SK Khabiruddin et al., (2016)**, the aerobic training has positive impact on resting heart rate.

METHODOLOGY

For the collection of required data through the scientific method. The investigator has selected thirty (N=30) degree college women students as subjects in the age group of 18 to 21 years. The subjects were randomly assigned into two equal groups of fifteen each. Group-I underwent solitary aerobic training for 12 weeks 3 days/week @ 90 minutes including warmup and warm down and Group II acted as a control group. The selected parameters are cardiorespiratory endurance and heart rate at rest were measured by a 12-minute run/walk test and bio-monitor respectively.

STATISTICAL ANALYSIS

collected data from the experimental group and control group. were statistically analysed by using Analysis of covariance (ANCOVA). The criteria for statistical significance was set at a 0.05 level of assurance.

RESULTS AND FINDINGS OF THE STUDY

Cardiorespiratory endurance:

Table I

Analysis of co-variance for the cardiorespiratory endurance data on solitary aerobic training group and control group

*Significant at 0.05 level of assurance.

Tests		Solitary aerobic training group	Control group	Source of Variance	df	Sum of Squares	Mean Squares	F Value	Table Value
Pre-Test	\bar{x}	1650.33	1657.6	B	1	396.033	396.033	0.056	4.20
	σ	89.25	78.22	W	28	197194.93	7042.65		
Post-Test	\bar{x}	2427.93	1665.73	B	1	4357116.30	4357116.30	191.705*	4.215
	σ	196.88	81.81	W	28	636389.87	22728.21		
Adjusted Post-test	\bar{x}	2429.053	1664.61	B	1	4373974.395	4373974.39	191.201*	4.215
				W	27	617659.32	22876.27		

The table value for significance at 0.05 level with df 1 and 28 and 1 and 27 are 4.20 and 4.215 respectively.

The table I shows that the pre-test means of the solitary aerobic training group and control group are 1650.33 and 1657.60 metres respectively. The obtained ‘F’ ratio 0.056 for pre-test means is less than the required table value of 4.20 for the df 1 and 28 for significance at 0.05 level of assurance. The post-test means of the solitary aerobic training group and control group are 2427.93 and 1665.73 meters respectively. The obtained ‘F’ ratio of 191.705 for post-test means is greater than the required table value of 4.20 for the df 1 and 28 for significance at 0.05 level of assurance. The adjusted post-test means of the solitary aerobic training group and control group are 2429.053, and 1664.61 meters respectively. The obtained ‘F’ ratio of 191.201 is much greater than the required table value of 4.215 for the df 1 and 27 for significance at 0.05 level. The study’s results stipulate a significant difference in adjusted post-test means of the solitary aerobic training group and control group on cardiorespiratory endurance.

The adjusted post-test mean values on cardiorespiratory endurance of the two groups are graphically depicted in Figure 1.

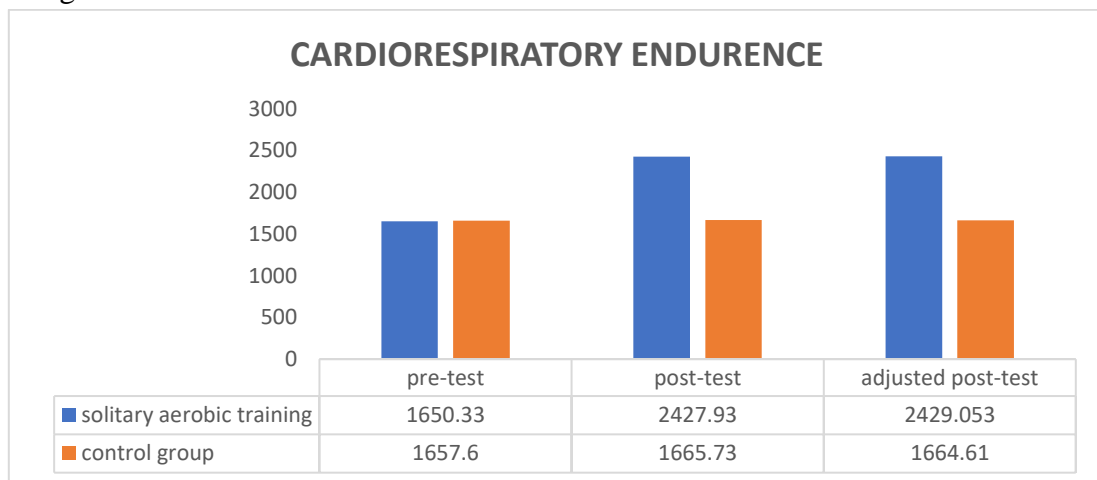


Fig 1: Bar diagram on cardiorespiratory endurance means of solitary aerobic training and control group

Heart rate at rest

Table II

Analysis of co-variance for the heart rate at rest data on solitary aerobic training group and control group

*Significant at 0.05 level of assurance.

Tests		Solitary aerobic training group	Control group	Source of Variance	df	Sum of Squares	Mean Squares	F Value	Table value
Pre-Test	\bar{x}	72.066	72.20	B	1	0.133	0.133	0.137	4.20
	σ	0.96	1.014	W	28	27.333	0.976		
Post-Test	\bar{x}	65.866	72.266	B	1	307.20	307.20	348.71*	
	σ	1.125	0.70	W	28	24.667	0.88		
Adjusted Post-test	\bar{x}	65.911	72.22	B	1	297.225	297.225	648.757*	4.215
				W	27	12.370	0.458		

The table value for significance at 0.05 level with df 1 and 28 and 1 and 27 are 4.20 and 4.215 respectively.

The table II shows that the pre-test means of the solitary aerobic training group and control group are 72.066 and 72.20 metres respectively. The obtained ‘F’ ratio 0.137 for pre-test means is less than the required table value of 4.20 for the df 1 and 28 for significance at 0.05 level of assurance. The post-test means of the solitary aerobic training group and control group 65.866 and 72.266 metres respectively. The obtained ‘F’ ratio of 348.71 for post-test means is greater than the required table value of 4.20 for the df 1 and 28 for significance at 0.05 level of assurance. The adjusted post-test means of the solitary aerobic training group and control group are 65.911 and 72.22 meters respectively. The obtained ‘F’ ratio of 648.757 is greater than the required table value of 4.215 for the df 1 and 27 for significance at 0.05 level of assurance. The study’s results stipulate a significant difference in adjusted post-test means of the solitary aerobic training group and control group on heart rate at rest.

The adjusted post-test mean values on cardiorespiratory endurance of the two groups are graphically presented in Figure 2.

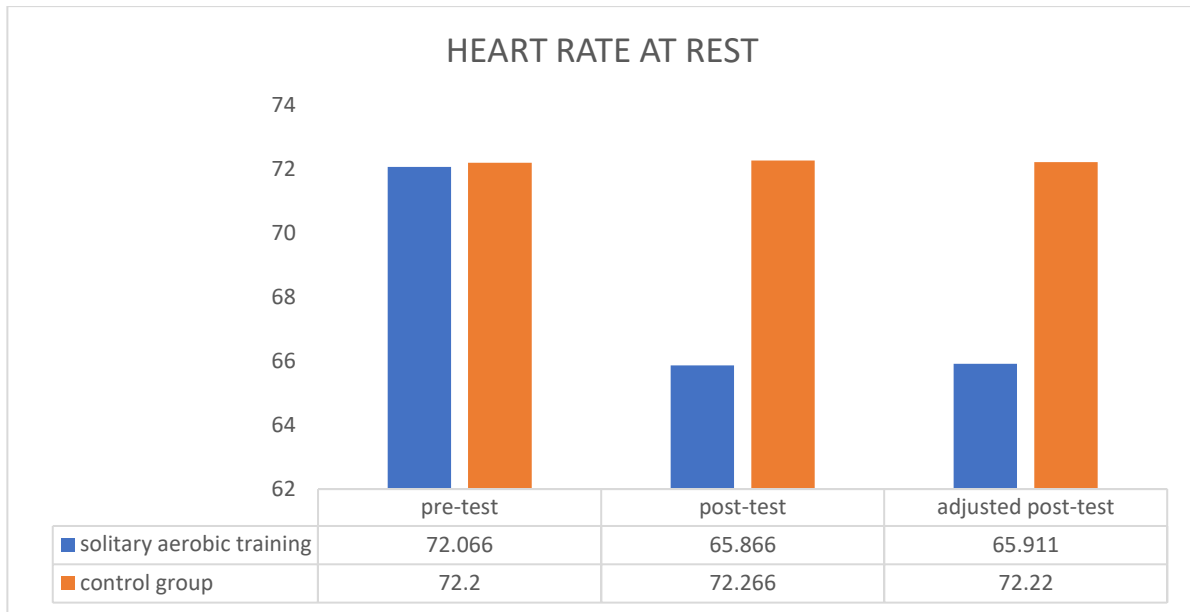


Fig 2: Bar diagram on heart rate at rest means of solitary aerobic training and control group

DISCUSSION ON FINDINGS

Research evidence indicates that solitary aerobic training can increase cardiorespiratory endurance and decrease the resting heart rate as compared to the control group.

Cardiorespiratory endurance

From the result, it has been concluded that solitary aerobic training can increase cardiorespiratory endurance more than that of the control group. **Dr. R Ashok Kumar et al. (2019)** has observed six weeks of aerobic training has significantly improved cardiorespiratory endurance and **Menbere Girma and Gashaw Birhanu(2021)** have proved that twelve weeks of aerobic exercise training on male students can significantly increased cardiovascular endurance. The results of the present study fell in line with the above research evidence.

Heart rate at rest

Previous research evidence indicates that solitary aerobic training can significantly decrease the heart rate at rest than that of the control group. The cardiac efficiency among people who were exposed to long-term aerobic training has significantly improved. **Bo-Ae Lee and Deuk-Ja Oh (2016)** and **Sullivan and Bell (2000)** stated that six weeks of systematic, moderate aerobic training is adequate for a considerable lowering of heart rate at rest. **Mukesh Kumar Mishra, and Vishan Singh Rathore (2015)**, also conducted a study on the Effect of six weeks of aerobic exercises on selected physiological variables. they stated that six weeks of aerobic exercise training can successfully lower the resting heart rate. The present investigation concludes that the outcomes are in conformity with the above research findings.

CONCLUSIONS

The present study has successfully influenced the selected parameters of cardiorespiratory endurance and heart rate at rest by employing 12 weeks of solitary aerobic training.

IMPLICATIONS

Based on the above results of the study 12 weeks of solitary aerobic training is strongly advisable to bring the desired modifications in cardiorespiratory endurance, and heart rate at rest among college sports women.

REFERENCE:

1. Bo-Ae Lee and Deuk-Ja Oh (2016), the effects of long-term aerobic exercise on cardiac structure, stroke volume of the left ventricle and cardiac output, *Journal of Exercise Rehabilitation*, pp 37-41.
2. Boucher C, Malina RM (1993), genetics of physical fitness and motor performance, *Exercise and Sports Science Reviews*, 11(3), p 206.
3. Dr. R Ashok Kumar et al. (2019) Effect of aerobic exercise program on development of physical and physiological components in college men, *International Journal of Physiology, Nutrition, and Physical Education*, pp 1130-1132
4. Dr. Razeena K.I. and Dr. Razia K.I. (2013), A Study on the Effect of Aerobic Exercises on Selected Physical Fitness Variables among Handball, *International Journal of Creative Research Thoughts (IJCRT)*, ISSN: 2320-2882, p 911.
5. Hardayal sing (1991), *Science of Sports Training*, DVS publication, New Delhi, p 130.
6. Menbere Girma and Gashaw Birhan (2021), Effects of aerobic exercise on selected health-related physical fitness components in the case of Ambasel Woreda Wuchale 17 general secondary and preparatory school, South Wollo Zone, Amhara Regional State, *International Journal of Yogic, Human Movement and Sports Sciences*, pp 109-113
7. Mr. Santosh Toppo and Dr. D Sultana (2013), Effect Of Aerobic Training On Selected Physical And Physiological variables On Normal And Overweight School Boys, *International Journal of Health, Physical Education and Computer Science in Sports*, ISSN 2231-3265, p 48.
8. Mr. Mathewos Hosiso et al., (2013), Effects of Aerobic Exercise on Improving Health Related Physical Fitness Components of Dilla University Sedentary Female Community, *International Journal of Scientific and Research Publications*, Volume 3, ISSN 2250-3153, pp 1-5.
9. Mukesh Kumar Mishra, and Vishan Singh Rathore (2015), Effect of six weeks training of aerobic exercises on selected physiological variables, *International Journal of Physical Education, Sports and Health* 2015; 2(2): 116-118
10. Rosser, M., (2001). *Body Fitness and Exercises*. 2nd edition. p32.
11. Shahana, A., S.N. Usha and S.S. Hasrani, (2010), Effect of Aerobic exercise program on Health Related physical fitness components of middle Aged women. *Br J Sports Med.*,
12. SK Khabiruddin et al., (2016), Effect of aerobic training on selected physical and physiological variables among University male students, *International Journal of Yogic, Human Movement and Sports Sciences*, pp 82-85
13. Sullivan and Bell (2000), the effects of exercise and training on human cardiovascular reflex control, *Journal of the Autonomic Nervous System*, pp 16-24.
14. Tadele Ademe et al., (2013), Comparative Effects of Aerobic and Anaerobic Workouts on Performance Enhancement of Selected Physical Fitness Variables among First Year Sports Science Students of Wolaita Sodo University, Ethiopia, *International Journal of Scientific and Research Publications*, Volume 3, Issue 9, ISSN 2250-3153, pp 1-6.