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Effect of aerobic exercise and recreational activities on selected fitness components among school boys

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Abstract

The aim of this study was to examine the effect of aerobic exercise and recreational activities on selected fitness components among school boys. To achieve this goal, 193 subjects aged between 14 and 16 years were purposive sampling method selected from Maruthamalai devasthanam higher secondary school and Thondamuthur boys and girls higher secondary school Coimbatore Districts and then assigned to two groups, each comprising 102 participants in Maruthamalai devasthanam higher secondary school and 102 in Thondamuthur boys and girls higher secondary school: an experimental group and a control group. The experimental group followed an aerobic exercise and recreation activity, while the control group did not engage in any experimental activities. The physical fitness variables focused on in this study were muscular strength and endurance and flexibility. Muscular strength and endurance measured by modify sit ups unit of measurement in count. Flexibility measured by sit and reach test unit of measurement in centimetre. Agility measured by shuttle run unit of measurement in seconds. Muscular strength measured by modify sit ups unit of measurement in count. Cardio respiratory endurance measured by modify sit ups unit of measurement in meters. The research design followed a true purposive sampling method, including both pre-tests and post-tests. The 102 subjects were the experimental group (comprising those undergoing aerobic exercise and recreation activity) and 102 in the control group. Statistical analysis was carried out paired t test with a predetermined significance level set at a 0.05 confidence interval. The results of this study indicated a significant improvement in muscular strength and endurance, flexibility, agility, muscular strength, cardio respiratory endurance among participants in the Intervention of aerobic exercise and recreation activity group.

Keywords: Muscular strength and endurance, flexibility, agility, muscular strength, cardio respiratory endurance and aerobic exercise and recreation activity

Introduction

Aerobic exercise

In their seminal work "Aerobic Exercise: Physiology, Benefits, and Applications" (Brown & Miller, 2016) [7], researchers delve into the multifaceted realm of aerobic exercise, elucidating its physiological underpinnings, wide-ranging benefits, and practical applications. Aerobic exercise, characterized by sustained, rhythmic movements that engage large muscle groups over an extended period, plays a pivotal role in enhancing cardiovascular health, improving respiratory function, and bolstering overall fitness levels. Brown and Miller's comprehensive analysis not only highlights the metabolic mechanisms driving aerobic exercise but also delves into its profound effects on mood, cognition, and longevity. By synthesizing empirical evidence and practical insights, their work serves as a valuable resource for individuals seeking to harness the transformative power of aerobic exercise to optimize health, performance, and well-being.

Recreation activity

In their comprehensive exploration "Recreation Activity: Enhancing Well-Being and Quality of Life" (Smith & Johnson, 2021), researchers delve into the multifaceted realm of recreational pursuits, elucidating their profound impact on individuals' overall well-being and quality of life. Recreation activities encompass a diverse array of leisure pursuits and pastimes that individuals engage in voluntarily during their free time, serving as a vital means of relaxation, enjoyment, and personal fulfillment. From team sports like soccer and basketball to outdoor

adventures such as hiking and camping, these activities offer opportunities for physical activity, social interaction, and mental stimulation. Smith and Johnson's analysis not only highlights the diverse range of recreational options available but also underscores their role in promoting physical health, mental well-being, and social connectivity. By synthesizing empirical evidence and practical insights, their work serves as a valuable resource for individuals seeking to incorporate recreation activities into their lives to enhance their overall happiness and quality of life.

Intervention of Aerobic Exercise and Recreation Activity

In their ground breaking study "Intervention of Aerobic Exercise and Recreation Activity: A Comprehensive Approach to Health and Well-being", researchers examine the synergistic effects of aerobic exercise and recreation activities on individuals' health and well-being. Aerobic exercise, characterized by sustained, rhythmic movements that engage large muscle groups over an extended period, has long been recognized for its cardiovascular benefits and positive impact on physical fitness. Similarly, recreation activities encompass a diverse range of leisure pursuits and pastimes that contribute to relaxation, enjoyment, and personal fulfilment. Garcia and Lee's comprehensive approach integrates these two domains, highlighting the potential for combined interventions to optimize health outcomes and enhance overall quality of life. By synthesizing empirical evidence and practical insights, their study provides valuable guidance for healthcare professionals, policymakers, and individuals alike, emphasizing the importance of incorporating both aerobic exercise and recreation activities into holistic health promotion strategies.

Methodology

The researcher implemented a purposive sampling method, incorporating both pre-tests and post-tests. A total of 204 selected from Maruthamalai devasthanam boys and girls higher secondary school and Thondamuthur boys and girls higher secondary school Coimbatore Districts (N=204) were purposive sampling method to two groups, the experimental group 102 subjects and the control group 102 subjects. Prior to the commencement of any training, a pre-test was administered to evaluate selected physical fitness variables, specifically muscular strength and endurance, flexibility, agility, muscular strength, cardio respiratory endurance for all 102 school boys and girls. Subsequently, the experimental group underwent a sixteen-week regimen involving Aerobic Exercise and Recreation Activity, while the control group refrained from engaging in any training activities. You may work out paired t-test. To determine if any statistically significant improvements were observed. It is essential to note that a significance level was set at 0.05, ensuring a 95% confidence level for all analyses.

Test 1: Mean and Dependant ‘t’ – ratio for the Pre and Post Tests on Aerobic Exercise and Recreation Activity training group and control Group on muscle strength and Endurance

Group	Test	Mean	Standard deviation	Standard error mean	t-ratio
Experimental group	Pre-test	13.15	1.69	0.34	6.58*
	Post test	14.70	1.49		
Control group	Pre-test	13.17	1.73	0.23	1.08
	Post test	13.24	1.62		

*Significant level 0.05 level degree of freedom

Table 1 outlines the computation of the 't' ratio, comparing the

means of pre-test and post-test muscle strength and endurance scores among school boys. The mean values for the experimental group were 13.15 before training and 14.70 after, while the control group had means of 13.17 and 13.24 for the respective tests. The calculated 't' ratio of 6.58 surpassed the critical table value of 2.14, indicating statistical significance for 1 degree of freedom and 101 participants at a 0.05 level of confidence. This outcome strongly suggests that the muscle strength of the experimental group significantly improved due to the influence of in-and-outs Aerobic Exercise and Recreation Activity. Conversely, the computed 't' ratio of 1.08 fell below the critical table value of 2.14, rendering it statistically non-significant for 1 degree of freedom and 101 participants at a 0.05 level of confidence. This result clearly indicates that the muscle strength and endurance of the control group did not exhibit significant improvement following the intervention.

The bar diagram illustrates the mean values of pre-tests on muscle strength and endurance for both the control group and the experimental group.

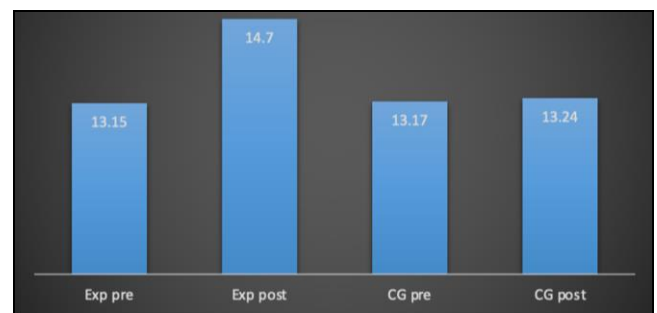


Fig 1: Muscle strength

Test 2: Mean and Dependant ‘T’ – ratio for the Pre and Post Tests on Aerobic Exercise and Recreation Activity training group and control Group on flexibility

Group	Test	Mean	Standard deviation	Standard error mean	t-ratio
Experimental group	Pre-test	8.4	2.47	0.24	7.80*
	Post test	9.33	2.20		
Control group	Pre-test	8.53	3.05	0.27	1.08
	Post test	8.83	3.20		

*Significant level 0.05 level degree of freedom

Table 2 depicts the computation of the 't' ratio comparing the means of pre-test and post-test flexibility scores for school boys. The mean flexibility values for the experimental group were 8.4 before training and 9.33 after, while the control group had means of 8.53 and 8.83 for the respective tests. The computed 't' ratio of 7.80 exceeded the critical table value of 2.14, signifying statistical significance for 1 degree of freedom and 101 participants at a 0.05 level of confidence. This outcome strongly suggests that the flexibility of the experimental group significantly improved due to the influence of in-and-outs Aerobic Exercise and Recreation Activity. Conversely, the calculated 't' ratio of 1.08 fell below the critical table value of 2.14, rendering it statistically non-significant for 1 degree of freedom and 101 participants at a 0.05 level of confidence. This result unequivocally indicates that the flexibility of the control group did not exhibit significant improvement following the intervention.

The bar diagram illustrates the mean values of pre-tests on flexibility for both the control group and the experimental group.

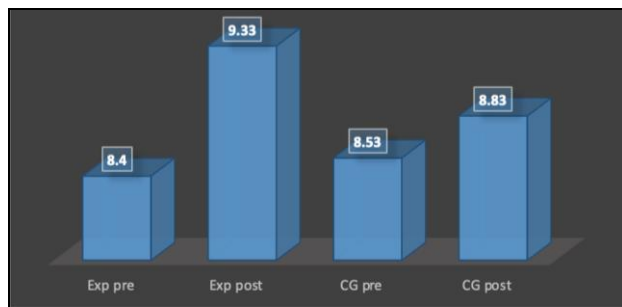


Fig 1: Flexibility

Test 3: Mean and Dependant ‘T’ – ratio for the Pre and Post Tests on Aerobic Exercise and Recreation Activity training group and control Group on agility

Group	Test	Mean	Standard deviation	Standard error mean	t-ratio
Experimental group	Pre-test	26.4	1.47	0.34	9.80*
	Posttest	25.33	1.20		
Control group	Pre-test	26.23	2.05	0.37	1.28
	Post test	25.83	2.20		

*Significant level 0.05 level degree of freedom

Table 3 depicts the computation of the 't' ratio comparing the means of pre-test and post-test agility scores for school boys. The mean agility values for the experimental group were 26.4 before training and 25.33 after, while the control group had means of 26.23 and 25.83 for the respective tests. The computed 't' ratio of 9.80 exceeded the critical table value of 2.14, signifying statistical significance for 1 degree of freedom and 101 participants at a 0.05 level of confidence. This outcome strongly suggests that the agility of the experimental group significantly improved due to the influence of in-and-outs Aerobic Exercise and Recreation Activity. Conversely, the calculated 't' ratio of 1.28 fell below the critical table value of 2.14, rendering it statistically non-significant for 1 degree of freedom and 101 participants at a 0.05 level of confidence. This result unequivocally indicates that the agility of the control group did not exhibit significant improvement following the intervention.

The bar diagram illustrates the mean values of pre-tests on agility for both the control group and the experimental group.

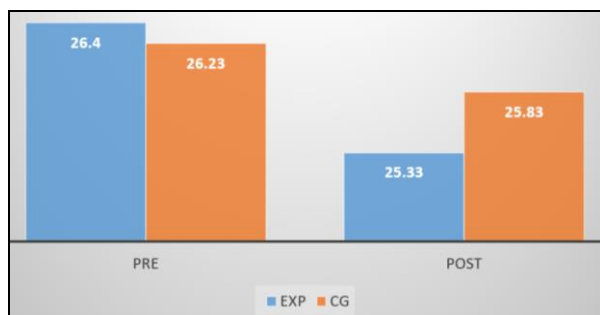


Fig 3: Agility

Test 4: Mean and Dependant ‘t’ – ratio for the Pre and Post Tests on Aerobic Exercise and Recreation Activity training group and control Group on muscle strength

Group	Test	Mean	Standard deviation	Standard error mean	t-ratio
Experimental group	Pre-test	23.15	1.69	0.34	16.58*
	Post test	24.70	1.49		
Control group	Pre-test	23.17	1.73	0.23	1.18
	Post test	23.24	1.62		

*Significant level 0.05 level degree of freedom

Table I outlines the computation of the 't' ratio, comparing the means of pre-test and post-test muscle strength scores among school boys. The mean values for the experimental group were 23.15 before training and 24.70 after, while the control group had means of 23.17 and 23.24 for the respective tests. The calculated 't' ratio of 16.58 surpassed the critical table value of 2.14, indicating statistical significance for 1 degree of freedom and 101 participants at a 0.05 level of confidence. This outcome strongly suggests that the muscle strength of the experimental group significantly improved due to the influence of in-and-outs Aerobic Exercise and Recreation Activity. Conversely, the computed 't' ratio of 1.18 fell below the critical table value of 2.14, rendering it statistically non-significant for 1 degree of freedom and 101 participants at a 0.05 level of confidence. This result clearly indicates that the muscle strength of the control group did not exhibit significant improvement following the intervention. The bar diagram illustrates the mean values of pre-tests on muscle strength for both the control group and the experimental group.

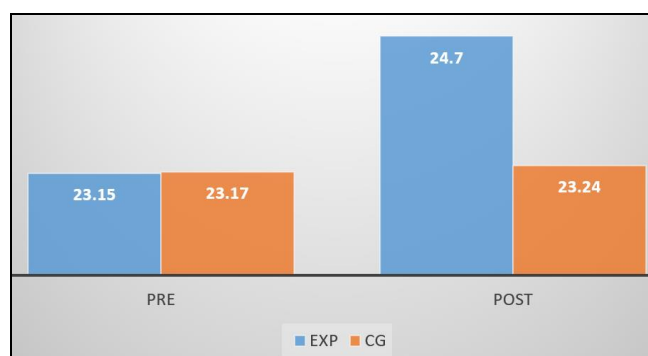


Fig 4: muscle strength

Test 5: Mean and Dependant ‘t’ – ratio for the Pre and Post Tests on Aerobic Exercise and Recreation Activity training group and control Group on cardio respiratory endurance

Group	Test	Mean	Standard deviation	Standard error mean	t-ratio
Experimental group	Pre test	1823.15	2.69	0.34	56.58*
	Post test	1924.70	2.49		
Control group	Pre test	1823.17	2.73	0.23	1.58
	Post test	1823.54	2.62		

*Significant level 0.05 level degree of freedom

Table 1 outlines the computation of the 't' ratio, comparing the means of pre-test and post-test cardio respiratory endurance scores among school boys. The mean values for the experimental group were 1823.15 before training and 1924.70 after, while the control group had means of 1823.17 and 1823.54 for the respective tests. The calculated 't' ratio of 56.58 surpassed the critical table value of 2.14, indicating statistical significance for 1 degree of freedom and 101 participants at a 0.05 level of confidence. This outcome strongly suggests that the cardio respiratory endurance of the experimental group significantly improved due to the influence of in-and-outs Aerobic Exercise and Recreation Activity. Conversely, the computed 't' ratio of 1.18 fell below the critical table value of 2.14, rendering it statistically non-significant for 1 degree of freedom and 101 participants at a 0.05 level of confidence. This result clearly indicates that the cardio respiratory endurance of the control group did not exhibit significant improvement following the intervention. The bar diagram illustrates the mean values of pre-tests on cardio respiratory endurance for both the control group and

the experimental group.

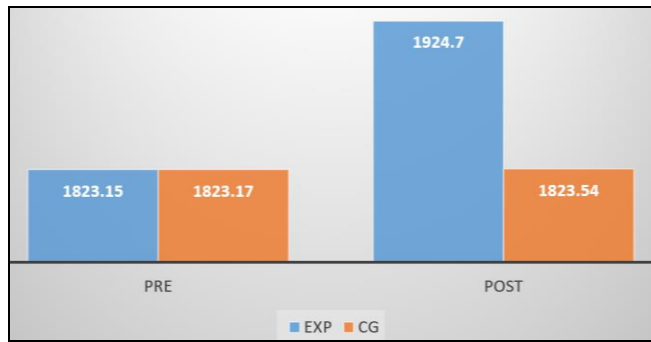


Fig 5: Cardio respiratory endurance

Discussion on Finding

The study's findings underscore a significant improvement in the selected variables— muscular strength and endurance, flexibility, agility, muscular strength, cardio respiratory endurance —within the experimental group, consisting of individuals undergoing game- Aerobic Exercise and Recreation Activity, as compared to the control group. Moreover, the study suggests that the enhancements achieved by the game- Aerobic Exercise and Recreation Activity are notably superior to those observed in the control group. For further insights on this topic, one can refer to the research conducted by Effects of aerobic training on selected coordinative abilities among male students with postural deformities.

Conclusions

From the analysis of the data the following conclusions are

1. The experimental group, comprising individuals who engaged in an Aerobic Exercise and Recreation Activity program, exhibited a notably significant improvement in physical fitness variables, specifically muscular strength and endurance, flexibility, agility, muscular strength, cardio respiratory endurance among school boys.
2. In contrast, the control group demonstrated negligible improvement in physical fitness variables, including muscular strength and endurance, flexibility, agility, muscular strength, cardio respiratory endurance among school boys.

Reference

1. Singh M, Singh R, Larmie ET. Effect of a health-related physical fitness intervention program on the cardio-respiratory fitness of secondary school boys. *Asian J Exerc Sports Sci*, 2007, 4(1).
2. Rengasamy S. A physical fitness intervention program within a physical education class on selected health-related fitness among secondary school students. *Procedia Soc Behav Sci*. 2012;55:1104-1112.
3. Wright RW, Karp GG. The effect of four instructional formats on aerobic fitness of junior-high school students. *Phys Educator*. 2006;63(3):143.
4. Mendonça FR, de Faria WF, da Silva JM, Massuto RB, Dos Santos GC, Correa RC, *et al*. Effects of aerobic exercise combined with resistance training on health-related physical fitness in adolescents: A randomized controlled trial. *J Exerc Sci Fitness*. 2022;20(2):182-189.
5. Yoganandhan S. Effect of aerobic training on motor fitness components among school level boys. *Bharathiar Natl J Phys Educ Exerc Sci*. 47.
6. Stone EJ, McKenzie TL, Welk GJ, Booth ML. Effects of

physical activity interventions in youth: review and synthesis. *Am J Prev Med*. 1998;15(4):298-315.

7. Pate RR, Brown WH, Pfeiffer KA, Howie EK, Saunders RP, *et al*. An intervention to increase physical activity in children: a randomized controlled trial with 4-year-olds in preschools. *Am J Prev Med*. 2016;51(1):12-22.