



# Effect Of Aerobic Exercises On Selected Physical Fitness And Psychological Variables Among College Handball Players.

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**Citation:** Dr. S. Ezhilarasi, et.al (2024) Effect Of Aerobic Exercises On Selected Physical Fitness And Psychological Variables Among College Handball Players., *Educational Administration: Theory and Practice*, 30(1) 5854-5857

Doi: 10.53555/kuey.v30i1.9282

## ARTICLE INFO

## ABSTRACT

*This investigation aimed to explore the impact of aerobic exercises on specific physical fitness and psychological parameters among students at K.C.S. Kasi Nadar College of Arts & Science. A total of 60 handball players, aged 18-20, were randomly selected from the college and divided into three groups. Two experimental groups underwent aerobic exercise interventions, focusing on muscular strength and self-confidence. The control group did not receive any intervention. The study employed an actual random group design involving pre-test and post-test assessments. The 60 participants were randomly assigned to one of three groups, each consisting of 20 subjects. Pre-test evaluations were conducted for all participants, assessing muscular strength and self-confidence. After an eight-week intervention, post-test assessments were conducted, and the data were recorded. Descriptive statistics (mean, standard deviation, and F ratio) confirmed the normality of the data. Analysis of Covariance (ANCOVA) was applied to determine significant mean differences in the selected variables between the initial and final assessments.*

**Keywords:** Muscular strength group, Aerobics Training group, Self-confidence and Handball.

## INTRODUCTION

### AEROBIC EXERCISE

Aerobic exercise is a physical activity designed to improve cardiovascular function, increasing oxygen absorption and transportation efficiency. Various types of aerobic exercises exist, typically performed at moderate intensity (60-85% of maximum heart rate) for extended periods.

### MUSCULAR STRENGTH

Muscular strength refers to the ability of muscles to exert force during physical activity. Resistance training, using weights or gravity, is essential for building strength (Hardayal Singh, 1991). Strength gains are closely linked to muscle hypertrophy, which involves increased protein synthesis and muscle fiber growth. In sports, muscular strength is often combined with endurance and speed abilities.

### SELF-CONFIDENCE

Self-confidence is defined as the assurance of feeling capable of accomplishing a task. This certainty is characterized by an unwavering belief in one's abilities. While self-confidence is desirable, arrogance – or unjustified confidence – is undesirable. In the context of sports performance, self-confidence can be a powerful asset, while arrogance can be a debilitating liability.

## METHODOLOGY

This study aimed to determine the effect of aerobic exercises on selected fitness and psychological variables among K.C.S. Kasi Nadar College of Arts & Science students. To achieve the purpose of the study, 60 handball players from K.C.S. Kasi Nadar College students in Chennai were randomly selected as subjects, and their ages

were 18-20 years. They were assigned into three groups, namely Experimental Group I (Muscular strength-), Experimental Group- II (Self-confidence)) with aerobic exercises and the control group was not given any experiment. The variables selected for the study were fitness variables (muscular strength) and psychological variables (self-confidence). The study was formulated as a random group design consisting of a pre-test and post-test. The subjects (N=60) were randomly assigned to three equal groups of twenty subjects in each group. The groups were designated as Experimental Group I – (aerobics training group), Experimental Group II (aerobic training) and the control group, respectively. Pre-tests were conducted for all 60 subjects on selected fitness and psychological variables. After the experimental period of eight weeks, post-tests were performed, and the scores were recorded. Push-ups measured the selected muscular strength. The selected self-confidence was measured using a questionnaire (SCQ). The normality of the data was found through mean, standard deviation, and F ratio and the data was collected as standard. The differences between the initial and final scores in selected variables were subjected to statistical treatment using Analysis of Covariance (ANCOVA) to determine whether the mean differences were significant.

### STATISTICAL ANALYSIS

The differences between the initial and final scores in aerobic exercises were subjected to statistical analysis using Analysis of Variance (ANOVA) to determine whether the mean differences were significant. Scheffe's post hoc test was also employed to identify significant paired mean differences.

### RESULTS ON AEROBIC EXERCISES

The pre-test and post-test muscular strength and self-confidence scores were measured and analyzed statistically. The results of the eight-week aerobic exercise program are presented in Table II.

**TABLE -II COMPUTATION OF ANALYSIS OF COVARIANCE ON AEROBICS EXERCISES  
(Scores in numbers)**

Test	Muscular strength Group	Self-confidence Group	Control group	Source of variance	Sum of squares	D f	Mean squares	Obtained f Ratio
Pre Test	18.00	17.95	17.75	Between	0.70	2	0.35	0.03
				Within	716.70	57	12.57	
Post Test Mean	20.80	19.15	17.80	Between	90.30	2	45.15	4.64*
				Within	554.95	57	9.74	
Adjusted Post Test Mean	20.72	19.11	17.92	Between	78.57	2	39.28	33.48*
				Within	65.71	56	1.17	
Mean Diff	2.80	1.20	0.05					

Table II presents the three groups' pre-test and post-test mean scores for muscular strength and self-confidence. Initially, the mean scores for the Muscular Strength Group, Self Confidence Group, and control group were 18.00, 17.95, and 17.75, respectively. Following eight weeks of aerobic exercise, the post-test mean scores showed significant improvements, with values of 20.80, 19.15, and 17.80, respectively.

The analysis of variance (ANOVA) revealed no significant difference among the groups at the initial stage, as the obtained F-value (0.03) was less than the required F-value (3.16) for significance at the 0.05 level. This indicated the successful randomization of subjects into the three groups.

In contrast, the post-test scores analysis showed a significant difference among the groups, with an obtained F-value (4.64) exceeding the required F-value (3.16). This demonstrated significant differences among the post-test means.

A covariance (ANCOVA) analysis was conducted to investigate the effects of varied aerobic exercises. The adjusted mean scores were calculated and analysed, considering both pre-test and post-test scores. The obtained F-value (33.48) surpassed the required table F-value (3.16), indicating significant differences among the means due to the eight-week aerobic exercise intervention on muscular strength and self-confidence.

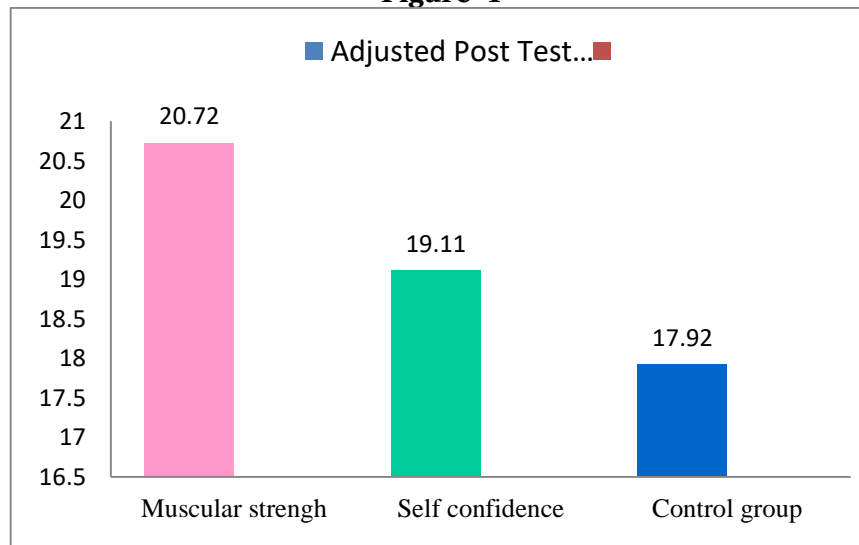
Given the significant improvements observed, post-hoc analysis using Scheffe's Confidence Interval test was performed to explore further the results presented in Table III.

**TABLE III Scheffe's Confidence Interval Test Scores on Aerobics Exercises (Scores in numbers)**

Means			Mean Difference	Required C I
Muscular Strength Group	Self-confidence Group	Control Group		
20.72	19.11		1.61*	0.85
20.72		17.92	2.79*	0.85
	19.11	17.92	1.18*	0.85

\* Significant

The multiple mean comparisons presented in Table III revealed significant differences between the adjusted means of the Muscular Strength and control groups, the Self Confidence and control groups, and the Muscular Strength and Self Confidence groups. A bar diagram illustrates the ordered adjusted means for aerobic exercises to facilitate a clearer understanding of the findings (Figure 1).

**Figure -1**

## DISCUSSIONS ON THE FINDINGS OF AEROBICS EXERCISES

The results presented in Table II indicate that the Muscular Strength group demonstrated the highest adjusted mean score for self-confidence (20.72), followed by the Self Confidence group (19.11) and the control group (17.92). Analysis of covariance (ANCOVA) revealed significant differences between the pre-test, post-test, and adjusted mean scores, with F-values of 0.03, 4.64, and 33.48, respectively. While the pre-test F-value was non-significant, the post-test and adjusted mean F-values were significant at the 0.05 level, exceeding the required table F-value of 3.16.

Post hoc analysis using Scheffe's Confidence Interval test revealed that the Muscular Strength group exhibited significant improvements in aerobic exercises compared to the control group after eight weeks of treatment. Similarly, the Self Confidence group demonstrated significant improvements in aerobic exercises compared to the control group. Furthermore, the post hoc analysis between the experimental groups revealed significant differences, with the Muscular Strength group outperforming the Self Confidence group in improving aerobic exercises.

Previous research has highlighted the importance of physical exercise in enhancing emotional, social, spiritual, intellectual, and physical well-being and self-esteem (Carr, 2006; Von Guenther & Hammermeister, 2007). This study's findings support these conclusions, demonstrating that aerobic exercises significantly improved physical well-being and self-confidence among obese engineering college students. Moreover, the study revealed increased exercise, such as step aerobics, enhanced physical well-being and self-confidence.

## CONCLUSIONS

1. The Muscular Strength group was more effective in improving aerobic exercises among college handball players than the Self Confidence group.
2. The Self Confidence group demonstrated significant improvements in aerobic exercises compared to the control group.

### RECOMMENDATIONS

1. Coaches, physical educationists, and sports personnel are advised to incorporate muscular strength and self-confidence training into their programs to enhance fitness and physiological preparedness, ultimately leading to improved performance.
2. It is recommended that individuals of all ages engage in regular muscular strength and self-confidence exercises to improve their overall fitness and well-being, promoting a healthy lifestyle.

### REFERENCE

1. Mosher, Patricia E.; Underwood, Steven A.; Ferguson, Michael A.; Arnold, Ryan O., (1994), " Effects of 12 Weeks of Aerobic Circuit Training on Aerobic Capacity, Muscular Strength, and Body Composition in College-Age Women", *Journal of Strength & Conditioning Research*, 8(3), pp.144-148.
2. Nagarajan.S., Damodharan. C and A. Praveen. (2013), "Effect of Aerobic Circuit Training And Parcours Training On Selected Physical And Physiological Variables Among College Men Students", *International Journal of Health, Physical Education and Computer Science in Sports*, 11(3), pp.149-151.
3. Raja Singh Rogland, R.(2006), "Contribution of selected psychological profiles on skill performance of university basketball players". *Indian journals for Research in physical education and sports sciences*, Vol.1:No.1, pp.33-36.
4. Birren, J. E. (2000). Using the gift of long life: Psychological implications of the age revolution. In: Qualls et al. (Ed.). *Psychology and the Aging Revolution: How we adopt to longer life*. American Psychological Association, ISBN: Washington, D. C.
5. Selvan V.Sudha,(2008), "Effect of Aerobic Exercise on Selected Physiological Variables among College girls" A Paper Presented at National Seminar on Professional and Scientifica Approaches in Physical Education and Sports Sciences.
6. Sharon A. Plowman and Denise L. Smith. ( 2007), *Exercise Physiology for Health, Fitness, and Performance*, Lippincott Williams & Wilkins, p. 61. ISBN 978-0-7817-8406-1.