EFFECTS OF AEROBIC EXERCISES AND PSYCHOLOGICAL TRAINING ON MUSCULAR STRENGTH AND MUSCULAR ENDURANCE AMONG COLLEGE LEVEL WOMEN BASKETBALL PLAYERS

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ABSTRACT

The purpose of the study was find out the effect of aerobic exercises and psychological training on muscular strength and muscular endurance among college women basketball players. 45 college level women basketball players were selected from Chennai colleges as subjects. They were divided into three equal groups namely experimental group I, experimental group II and control group. Each group consists of 15 players. Experimental group I underwent aerobic exercises, experimental group II underwent psychology training and group three acted as control group for the 12 weeks period. Before and after the experimental the pre and post test was conducted for muscular strength and muscular endurance. ANCOVA the statistical technique was used. If test is significant Scheffe's post hoc test was used to find out the paired mean difference. Due to the aerobic exercises and psychological training muscular strength and muscular endurance were significantly improved at 0.05 level of confidence.

Key words: Aerobic Exercises, Psychological Training, muscular strength and muscular endurance

INTRODUCTION

Sports in the present world have become extremely competitive. It is not the mere participation or practice that brings out victory to an individual. The high level of physical fitness comes from years of daily experience in a selected variety of vigorous physical activities. One of the most important aspects of health - related fitness is the aerobic capacity or the Cardio vascular endurance of an individual. Aerobic capacity can be defined as the ability to take in, transport and utilize oxygen efficiently. Since aerobic fitness involves so many important organs and systems, it tells much about the health of these components and about the health in general. Therefore, when aerobic fitness is high, physical and mental health is enhanced **(Mowley and Frank, 1943).**

AEROBIC EXERCISES

Aerobic exercise is physical exercise of relatively low intensity that depends primarily on the aerobic energy-generating process **(Sharon, et al. 2007).** It refers to the use of oxygen to adequately meet energy demands during exercise via aerobic metabolism. Generally, light-to-moderate intensity activities that are sufficiently supported by aerobic metabolism can be performed for extended periods of time **(William, et al. 2006).** Oxygen is the spark, the fuel needs to burn. Regardless aerobic is the word in generally use. The fact is that cooper codified and organized what fitness means to many people. The majority of medical opinion is that aerobics performs strengthen heart muscle, increase the efficiency of lungs and offer other wonderful benefits. Regular aerobic exercise has been associated with various health benefits, including lower mortality rates, improved cardiorespiratory fitness, and enhanced psychologic well-being. Conversely, with reduced aerobic stimulus, as occurs in normal individuals on prolonged bed rest, there is a measurable deterioration in fitness **(Convertino, 1997).**

PSYCHOLOGICAL TRAINING

Psychological Skills Training is an individually designed combination of methods selected to attain psychological skill needs. There is no single idyllic psychological skills training package, each program must be individualized based on the psychological state of the individual and, the sport. To assemble a successful psychological skills training package program it is important to distinguish between psychological skills training package skills and psychological skills training package methods. Psychological skills training package skills are the psychological qualities or attribute that need to be developed (i.e. confidence, concentration), the psychological skills training package method is the tool that will be used to help improve the psychological skills training package skill. Much of the early research utilizing prescriptive psychological skills training

package programs used single psychological skills training package methods and examined their effect on performance that when implementing a psychological skills training package program, it is improbable that a single method will be employed by a sports psychologist. Highlight that it is more effective to employ a combination of mental skills that relate to the specific sport. Motor skills in basketball are varied, they require different levels of mental work. Mental training represents one of the essential movements in the preparation for discussion, as sports achievements require great amount of mental uses and taking actions **(Allawi, 1992).**

STATEMENT OF THE PROBLEM

The purpose of the study was find out the effects of aerobic exercises and psychological training on muscular strength and muscular endurance among college level women basketball players.

HYPOTHESIS

It was hypothesized that there was significant improvement on muscular strength and muscular endurance among college level women basketball players due to the aerobic exercises and psychological training.

METHODOLOGY

Forty five college women basketball players were randomly selected from Chennai city. Their age ranged between 17 to 25 years. They were divided in to three equal group namely experimental group I, experimental group II and control group consists 15 subjects. The experimental group I underwent aerobic exercise, experimental group II underwent psychological training (progressive muscle relaxation technique) and group III acted as control group for period of 12 weeks. The muscular strength and muscular endurance were selected as dependent variables.

COLLECTION OF DATA

The investigator collected initial scores before the experimental period from all the three groups. After the experimental period final test scores were collected on the criterion variables.

STATISTICAL TECHNIQUES

The Analysis of Co-Variance (ANCOVA) statistical technique was used to find out the effect of aerobic exercises and psychological training on muscular strength and muscular endurance among college level women basketball players. If the test is significant the Scheffe's Post Hoc test will be used to find out the paired mean difference **(Thirumalaisamy, 1998).**

RESULTS AND DISCUSSION

Table I - Computation of Analysis of Co-Variance on Muscular Strength (Scores in counts per minute)

MEANS	EXP GRP I	EXP GRP II	CON GRP	SV	SS	DF	MS	OF	TF
Pre test mean	27.66	25.53	25.46	**B**	46.97	2	23.48	0.75	2.8
				W	1322.8	42	31.49		
Post test mean	31.8	27.53	25.53	**B**	307.37	2	153.68	4.13*	2.8
				W	1561.87	42	37.18		
Adjusted post test mean	30.58	28.11	26.16	**B**	142.64	2	71.32	4.09*	2.82
				W	623.70	41	15.21		

*Significant

Table I shows that the pre the obtained 'F' ratio was 1.72 lesser than the table 'F' ratio of 2.8. The post test obtained 'F' ratio was 5.51 less than the table 'F' ratio of 2.8. The adjusted post test obtained 'F' ratio was 18.05 greater than the table 'F' ratio of 2.82. Hence, adjusted post test was significant at 0.05 level for the degrees of freedom 2 and 41.

Table II - Computation of Scheffe's Post Hoc Test Ordered Adjusted Final Mean Difference of Muscular Strength (Scores in counts per minute)

Exp Group- I	Exp Group-II	Con Group	Mean Difference	Confidence Interval
30.58	28.11	-	2.47	3.32
30.58	-	26.16	4.42*	3.32

-	28.11	26.16	1.95	3.32

* Significant

The second comparison was significant at 3.32 confidence interval. But first and third comparisons were not significant at 3.32 confidence interval.

Table III - Computation of Analysis of Co-Variance on Muscular Endurance (Scores in counts per minute)

MEANS	EXP GRP I	EXP GRP II	CON GRP	SV	SS	DF	MS	OF	TF
Pre test mean	26	25.06	25.73	**B**	6.93	2	3.46	0.09	2.8
				W	1651.87	42	39.33		
Post test mean	29.8	28.66	25.26	**B**	166.97	2	83.48	2.01	2.8
				W	1744.67	42	41.53		
Adjusted post test mean	29.40	29.18	25.13	**B**	173.53	2	86.78	21.32*	2.82
				W	166.88	41	4.07		

* Significant

Table III shows that the pre test obtained 'F' ratio was 0.09 lesser than the table 'F' ratio of 2.8. Hence, pre test was not significant at 0.05 level of confidence. The post test obtained 'F' ratio was 2.01, lesser than the table 'F' ratio 2.8. Hence, it was proved that there was not significant at 0.05 level of confidence. The adjusted post test obtained 'F' ratio was 21.32 greater than the table 'F' ratio of 2.82. Hence adjusted post test was significant at 0.05 level.

Table IV - Computation of Scheffe's Post Hoc Test Ordered Adjusted Final Mean Difference of Muscular Endurance (Scores in counts per minute)

Exp Group- I	Exp Group-II	Con Group	Mean Difference	Confidence Interval
29.40	29.18	-	0.22	1.72
29.40	-	25.13	4.27*	1.72
-	29.18	25.13	4.05*	1.72

* Significant

The second and third comparisons were significant at 1.72 confidence interval. The first comparison was not significant at 1.72 confidence interval.

DISCUSSION OF HYPOTHESIS

The formulated hypothesis stated "It was hypothesized that there was significant improvement on muscular strength and muscular endurance among college level women basketball players due to the aerobic exercises and psychological training". The results presented on the table I and III, shows that significance difference between pretest, posttest and adjusted post test on muscular strength and muscular endurance among college level women basketball players due to the aerobic exercises and psychological training. Hence, the hypothesis was accepted at 0.05 level of confidence.

CONCLUSIONS

The experimental groups namely aerobic exercises and psychological training had achieved significant improvement on muscular strength and muscular endurance.

It was found that the improvement caused by aerobic exercises and psychological training were better than the control group.

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