



Effect Of Anaerobic Training And Circuit Training On Physiological Variables Among Gymnasts Of Telangana State

G.Rama Devi

Phd Scholar, Department of Physical Education
Osmania University, Hyderabad

Prof. K. Deepla
Department of Physical Education
Osmania University, Hyderabad

Abstract: The purpose of the study is to examine the effect of anaerobic training and circuit training on physiological variables among gymnasts of Telangana state. The scholar had selected a total of 40 subjects randomly. The subjects were women gymnasts who have been undergoing training from sports academies i.e. Sports authority of Telangana (SAT, N=20), and Sports authority of India, (SAI, N=20) of Telangana. These women subjects were between the 15-18 years of age and participated voluntarily with informed consent for this study. These subjects were divided into two equal groups and selected randomly. The first group 'A' was the Anaerobic experimental group (N=20), the second 'B' experimental group was circuit training (N=20). The protocol for the VO₂ max information was collected by Cooper 12mins run/walk in seconds for testing. All tests were conducted with informed consent of the subjects and before performing tests the warm-up for 10 minutes is mandatory. 6 weeks of training will be given to experimental groups for 3 days/week with 35 min duration per day. The results showed that there was no significant difference in VO₂max between two sports schools. **Keywords:** Gymnastics, physiological variables, Vo₂ Max etc.

INTRODUCTION

Gymnastics was introduced in early Greek civilization to facilitate bodily development through a series of exercises that included running, jumping, swimming, throwing, wrestling, and weight lifting. The term "Gymnastics" is derived from the Greek word "Gymnos" which means naked art. In ancient Greece, male athletes performed exercises without clothing in a school gymnastics called the Palestra. Many basic gymnastic events were practiced in some form before the introduction by the Greeks of gymnazein means "to exercise naked." Physical fitness was a highly valued attribute in ancient Greece, and both men and women participated in vigorous gymnastics exercises.



Gymnastics, as we know it today, was developed by Friedrich Ludwig John, a German educator, in the early 19th century. John founded the Turnverein movement, which aimed to promote physical fitness and national unity through gymnastics. He is often referred to as the "father of gymnastics" for his contributions to the development of the sport.

Artistic gymnastics is a discipline that involves performing a variety of physical movements and routines on different apparatus such as the vault, uneven bars, balance beam, and floor exercise. It is a highly skilled and demanding sport that requires strength, flexibility, agility, coordination, and balance.

The main aim of this study is to effect these training to all the age groups among artistic women gymnasts of telangana. Because it is necessary to ensure the learning quality of gymnastic events and also it has the biggest influence on girls' performance of gymnastics elements.

Purpose of the study

The purpose of the study was to find out the effect of anaerobic training and circuit training on physiological variables among gymnasts of telangana state.

METHODOLOGY

Sample:

The scholar had selected a total of 40 subjects randomly. The subjects were women gymnasts who have been undergoing training from sports academies i.e. Sports authority of Telangana (SAT, N=20), and Sports authority of India, (SAI, N=20) of Telangana. These women subjects were between the 15-18 years of age and participated voluntarily with informed consent for this study.

Experimental Design

The scholar has chosen a pre-post intervention research study. The total women gymnastic subjects were 40 and aged between 15-18 years. These subjects were divided into two equal groups and selected randomly. The first group 'A' was the Anaerobic experimental group (N=30), the second 'B' experimental group was circuit training (N=30). The protocol for the VO₂ max information was collected by cooper 12mins run/walk in seconds for testing. All tests were conducted with informed consent of the



subjects and before performing tests the warm-up for 10 minutes is mandatory. 6weeks of training will be given to experimental groups for 3 days/week with 35 min duration per day.

Results and Discussion:

The raw data were arranged separately, tabulated and subjected for the descriptive statistical analysis by using SPSS. The statistical tool for analysing the data was independent T-Test to find the significant difference in mean between the two sports schools fitness abilities. The level of significance was fixed at 0.05. Results the research related data are presented in the following tables and graphs below:

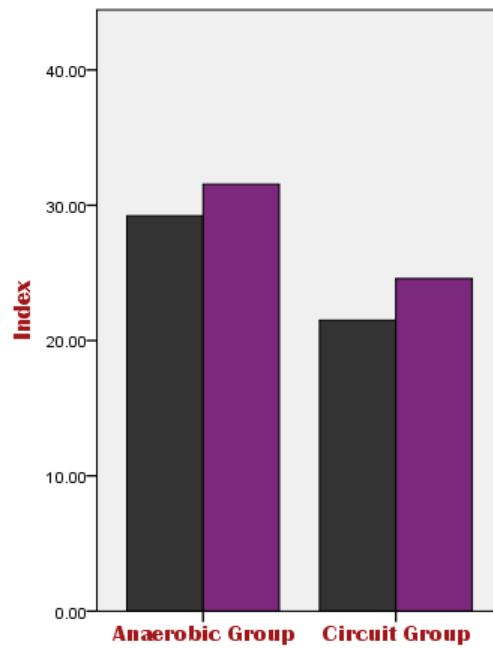
Table No.1 Physiological variable mean differences between SAT and SAI

Sl.No	Name of the Group		Cooper 12 minutes run/walk		M I	t value	Sig
			Pre-Test	Post-Test			
1	Anaerobic Experimental	Mean	29.23	31.56	7.97%	-20.65	.000
		SD	4.27	4.21			
2	Circuit experimental	Mean	21.50	24.58	14.32 %	-13.18	.000
		SD	4.26	4.18			

Table shows the comparison of Vo2max. in Cooper 12 minutes run & walk test index in three groups between pretest and post-test means as well as magnitude of increase. The circuit experimental group mean difference was higher than other groups with 14.32% magnitude of increase between pre-test and post-test and the second position was in the anaerobic group with 7.97% while the control group was in -2.12%. The anaerobic group Vo2max in the Cooper 12 minutes run/walk test index means difference between pre-test and post-test mean=-2.33 and SD= .618 with $t_{(0.05)}(29)=-20.65$ and $p=.000(2-tailed)$, the circuit group difference between pre-test and post-test mean=-3.08 and SD=1.27 with $t_{(0.05)}(29)=-13.186$ and $p=.000(2-tailed)$ and circuit group difference between pre-test and post-test mean=-262 and SD=.226 with $t_{(0.05)}(29)=6.349$ and $p=.000(2-tailed)$. Hence these results demonstrated that the Vo2max in the Cooper 12 minutes run/walk test results was statistically significant.



Graph No.1 Comparisons of Vo2max. efficiency among two groups



Above graph shows the comparison of Vo2max. in Cooper 12 minutes run & walk test index among two groups between pre-test and post-test means. The black color bar indicates the pretest and purple color bar indicates the post-test results and Y axis represents the index. Circuit experimental group Vo2max. showed higher improvement than the anaerobic training group was in second position.



Table No.2 ANOVA test Vo2max results between groups and within the groups

Physiological variable for Vo2max		Sum of Squares	df	Mean Square	F	Sig.
Cooper 12 min.Run_pre	Between	4332.849	2	2166.42	144.16	.00
	Groups					
	Within					
	Groups					
Total		5640.274	89			
Cooper 12 min.Run_post	Between	5901.399	2	2950.69	201.37	.00
	Groups					
	Within					
	Groups					
Total		7176.173	89			

The table shows the statistical ANOVA results about Vo2max as one of the physiological ability variables among two experimental groups. After post-test the Vo2max results of the one-way ANOVA revealed a statistically significant effect of treatment on Vo2max $F_{(0.05)}(2,87)=201.377, (.000)p < 0.05$. Hence the above results revealed that there was a significant difference between groups and within groups.

CONCLUSIONS

The results showed that there was no significant difference in VO2max between two sports schools. The role of fitness abilities in women gymnasts greatly influenced their ARTISTIC gymnastics events performance. VO2max means that an athlete can maintain their energy levels for a more extended period during high level performance.

The present findings outline the specific physiological abilities that may be considered in identification and selection of gymnasts talent. These results concluded



and confirmed that anaerobic and circuit training exercises caused the changes in the vo₂max of women gymnasts.

RECOMMENDATIONS

A similar study may be conducted on male gymnasts so that the results of this study would be more authenticated. More studies should be conducted on cognitive abilities and physical fitness variables which could have an impact on performance of women gymnasts.

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