

**EFFECT OF AEROBIC TRAINING, RESISTANCE TRAINING AND
CONCURRENT TRAINING PROGRAMME ON VITAL CAPACITY AND LEAN
BODY MASS AMONG UNIVERSITY BASKETBALL PLAYERS**

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ABSTRACT

The purpose of the study was to find out the effect of aerobic training, resistance training and concurrent training programme on vital capacity and lean body mass among university basketball players. The study will be confined with 60 women basketball players studying Affiliated Colleges of Kurukshetra University, Kurukshetra. Their age ranged between 18 to 25 years. The subjects considered are all regularly participating in the games and sports. The subjects were divided into four equal groups. Group-I (n=15) underwent aerobic training, Group-II (n=15) underwent resistance training, Group-III (n=15) underwent concurrent training for 12 weeks and Group-IV acted as control did not participate any special activities. The study was conducted on dependent variables such as vital capacity and lean body mass. In the present study random group design was used. Analysis of covariance (ANCOVA) statistical technique was used to find out the adjusted mean difference among the variables. Scheffe's post hoc test was used to find out the paired adjusted mean difference when the study was significant. The results of the study proved that there was a significant difference existed between control group and aerobic training, resistance training and concurrent training groups.

Keywords:- *aerobic training, resistance training, concurrent training, vital capacity, lean body mass and basketball*

Introduction

Aerobic means 'with oxygen'. During vigorous work, the body is working at a level that the requests for oxygen and fuel can be met by the body's admission. The main side-effects formed are carbon dioxide and water.

The mechanics of vigorous exercise necessitate that oxygen be acquired by the lungs and moved to the veins. Oxygen rich blood is then siphoned by the heart to the muscles. The muscles use oxygen for muscle withdrawal.

Resistance training has become an essential part of athletic molding, recovery and general work out schedules (Pollock and Wilmore, 1990). Despite the fact that opposition preparing has for some time been acknowledged as a methods for creating and keeping up strong strength, force and muscle hypertrophy, its valuable relationship to wellbeing factors and persistent sickness been perceived as of late.

concurrent training attempts to build up immensely significant characteristics simultaneously. This methodology, as some other, has its own upsides and downsides. The greatest bit of leeway of the simultaneous methodology is the equal improvement, everything being equal. The greatest burden is after some time (or with the most progressive competitors), you essentially can't build up the entirety of the significant characteristics simultaneously without gambling overtraining and restricting potential preparing impacts.

Statement of the problem

To achieve the purpose of the study was effect of aerobic training, resistance training and concurrent training programme on vital capacity and lean body mass among university basketball players

Methodology

The study will be confined with 60 women basketball players studying Affiliated Colleges of Kurukshetra University, Kurukshetra. Their age ranging between 18 to 25 years. The subjects considered are all regularly participating in the games and sports. The subjects were experimentally treated with aerobic training, resistance training and concurrent training for 12 weeks. The study was conducted on dependent variables such as vital capacity and lean body mass. Vital capacity was assessed by using wet spirometer and lean body mass assessed by using skinfold caliper.

Statistical Techniques

In the present study random group design was used. All the four groups were randomly selected from various colleges basketball players of Kurukshetra University. Analysis of covariance (ANCOVA) statistical technique was used to find out the adjusted mean difference among the variables. Scheffe's post hoc test was used to find out the paired adjusted mean difference when the study was significant.

Results

The pre and post test data collected from the experimental and control groups on vital capacity and lean body mass are statistically analyzed by ANCOVA and the results are presented in table- I

Table-I: Analysis of Covariance on Vital capacity and Lean body mass of Experimental and Control Groups

	Aerobic Training	Resistance Training	Concurrent Training	Control Group	S o v	SS	Df	MS	'F' ratio
Vital capacity	3.82	3.76	3.86	3.65	B	2.34	3	0.78	15.6*
					W	2.76	55	0.05	
Lean body mass	64.74	65.18	66.42	62.05	B	23.93	3	7.98	4.29*
					W	102.25	55	1.86	

(The required table value for significant at .05 level of confidence are of 3 and 56 and 3 and 55 are 2.70 and 2.72)

** Significant at .05 level of confidence*

The adjusted post-test means on vital capacity of aerobic, resistance, concurrent training and control groups are 3.82, 3.76, 3.86 and 3.65 respectively. The obtained 'F' ratio value of 15.6 on vital capacity were greater than the required table value of 2.72 for the degrees of freedom 3 and 55 at 0.05 level of confidence. It is observed from this finding that significant differences exist among the adjusted post-test means of experimental and control groups on vital capacity.

The adjusted post-test means on lean body mass of aerobic, resistance, concurrent training and control groups are 64.74, 65.18, 66.42 and 62.05 respectively. The obtained 'F' ratio value of 4.29 on lean body mass were greater than the required table value of 2.72 for the degrees of freedom 3 and 55 at 0.05 level of confidence. It is observed from this finding

that significant differences exist among the adjusted post-test means of experimental and control groups on lean body mass.

Further to determine which of the paired means has a significant improvement, Scheffé S test was applied as post-hoc test. The result of the follow-up test is presented in Table – II

Table – II

Scheffé S Test for the Difference Between the Adjusted Post-Test Mean of vital capacity and lean body mass on aerobic, resistance, concurrent training and control groups

Adjusted Post-test Mean of vital capacity					
Aerobic Training	Resistance Training	Concurrent Training	Control Group	Mean Difference	CI at .05 level
3.82	3.76	-	-	0.06	0.106
3.82	-	3.86	-	0.04	
3.82	-	-	3.65	0.17*	
-	3.76	3.86	-	0.10	
-	3.76	-	3.65	0.11*	
-	-	3.86	3.65	0.21*	
Adjusted Post-test Mean of lean body mass					
64.74	65.18	-	-	0.44	1.52
64.74	-	66.42	-	1.68*	
64.74	-	-	62.05	2.69*	
-	65.18	66.42	-	1.24	
-	65.18	-	62.05	3.13*	
-	-	66.42	62.05	4.37*	

* Significant at 0.05 level of confidence.

The result of the study shows that aerobic, resistance training and concurrent training increases vital capacity and lean body mass when compare with control. concurrent training may have better effect to increases vital capacity and lean body mass of university basketball players.

Discussion

The findings of the study proved that there was a significant difference existed between control group and aerobic training, resistance training and

concurrent training groups. Thus, 12 weeks of tentative treatment reduction in vital capacity of the basketball women players compared to control group. However there was no significant difference between experimental groups on vital capacity. The above findings are in consonance with the study conducted by **Rathod and Kuravatti (2018)**, **Kilinç (2008)** and **Moradians and others (2016)**.

The results of the study showed that there was a significant difference existing among aerobic training, resistance training, concurrent training and control group and aerobic training and concurrent training group on lean body mass. However there was no significant difference between aerobic training group and resistance training group as well as resistance training group and concurrent training group. The above findings are in consonance with the study conducted by **Hamid Arazi and others (2011)**, **Willis (2012)** and **Kilinç (2008)**.

Conclusions

From the analysis of the data, the following conclusions were drawn.

1. The result of the study shows that aerobic, resistance training and concurrent training increases vital capacity and lean body mass when compare with control group.
2. Concurrent training may have better effect to increases vital capacity and lean body mass of university basketball players.

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