



## EFFECT OF SIX WEEKS PLYOMETRIC TRAINING AND AEROBIC EXERCISE TRAINING PROGRAMME ON VO<sub>2</sub> MAX RESPONSES COLLEGE MEN STUDENTS

### Physical Education

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### ABSTRACT

The purpose of the present study was to investigate the effect of six week Plyometric training and aerobic exercises on vo<sub>2</sub> max parameter among college men students. To achieve the purpose of the study thirty college men students were selected from Alagappa University College of Physical Education, Karaikudi during the year 2019-20. The subject's age ranges from 18 to 25 years. The selected players were divided into three equal groups consists of 10 men students each namely experimental group-I, experimental group-II and control group. The experimental group-I underwent aqua aerobic exercise and experimental group-II underwent aerobic exercises for six weeks. The control group was not taking part in any exercise during the course of the study. The dependent variable vo<sub>2</sub> max was taken as criterion variables and they were tested by using cooper vo<sub>2</sub> max test for this study. Pre-test was taken before the exercise period and post-test was measured immediately after the six weeks of training period. Statistical technique 'F' ratio was used to analyze the means of the pre-test and post test data of experimental groups and control group. The data were analyzed analysis of covariance (ANCOVA) technique was used with 0.05 levels as confidence. Analysis was performed using SPSS 20.0 (SPSS Inc Software). The results revealed that there was a significant difference found on the criterion variables. The difference found is due to Plyometric training and aerobic exercises groups when compare better than the control group on vo<sub>2</sub> max.

### KEYWORDS

Plyometric training, Aerobic exercises, Vo<sub>2</sub> max.

### INTRODUCTION

According to Bucher (1983) aerobic exercise is any physical activity that requires the heart rate to reach at least 60% of the maximal heart rate for an extended period of time. Also it is an activity that can be sustained for an extended period of time without developing an oxygen deficit. The main objective of an aerobic exercise program is to increase the maximum amount of oxygen that the body can process within a given time. This is called "Aerobic capacity". It is dependent upon an ability to (1) rapidly breathe a large amount of air, (2) forcefully deliver large volumes of blood and (3) effectively deliver oxygen to all parts of the body. In short, it depends upon efficient lungs, a powerful heart, and a good vascular system. Because it reflects the conditions of these vital organs, the aerobics capacity is the best index of overall physical fitness.

Plyometric exercise tends to be performed in a much more explosive way than traditional strength training. Plyometric training requires the athlete to rapidly develop force, promoting the development of muscular power. The dynamic nature of Plyometric training allows for greater improvements in the maximal rate of force development and thus power, in comparison to traditional weight training methods. Plyometric exercise do not involve a large deceleration phase during concentric movement, which occurs in traditional strength training, as the body does not have to achieve zero velocity at the end of the exercise. Thus plyometric exercise involves the production of high forces and accelerations throughout the entire range of motion, specific to most competitive movements. Plyometric exercise tends to be performed in a much more explosive way than traditional strength training. Plyometric training requires the athlete to rapidly develop force, promoting the development of muscular power. The dynamic nature of Plyometric training allows for greater improvements in the maximal rate of force development and thus power, in comparison to traditional weight training methods. **Donald A. Chu, (1992)**

### MATERIALS AND METHODS

The purpose of the present study was to investigate the effect of six

### RESULTS & INTERPRETATION

**Table I. Analysis of Covariance for the Pre, Post and Adjusted Post Test Means Values for Plyometric training Group, Aerobic exercises Group and Control Group on Vo<sub>2</sub> Max (Cooper vo<sub>2</sub> max test Mean value count by ml/min/kg)**

Test	Aerobic exercises group	Plyometric training Group	Control Group	Source of Variance	Sum of Square	Df	Mean Square	'F' ratio	Table value
Pre Test Mean SD	33.56 2.02	32.89 1.50	33.066 1.29	Between	3.711	2	1.856	.691	3.35
				Within	112.795	42	2.686		
Post Test Mean SD	36.57 1.36	36.08 1.22	33.01 1.37	Between	112.035	2	56.017	32.02*	3.35
				Within	73.486	42	1.75		
Adjusted Post Test Mean	36.42	36.20	33.05	Between	105.923	2	52.962	39.25*	3.36
				Within	55.32		1.349		

\*Significant at 0.05 level of confidence

The table I showed that the pre-test mean values on vo2 max for Aerobic exercise group, Plyometric training group and control group are 33.56, 32.89 and 33.066 respectively. The obtained 'F' ratio 0.691 for pre-test mean was less than the table value 3.35 for df 2 and 42 required for significance at 0.05 level of confidence on vo2 max. The post-test mean values on vo2 max for Aerobic exercise group, Plyometric training group and control group are 36.57, 36.08 and 33.01 respectively. The obtained 'F' ratio 32.02\* for post-test mean was greater than the table value 3.35 for df 2 and 42 required for significance at 0.05 level of confidence on vo2 max. The adjusted post-test means of for Aerobic exercise group, Plyometric training group and control group are 36.42, 36.195 and 33.053 respectively. The obtained 'F' ratio 39.25\* for adjusted post-test mean was greater than the table value 3.36 for df 2 and 41 required for significance at 0.05 level of confidence on vo2 max. Since the obtained 'F' ratio value was significant further to find out the paired mean difference, the Scheffe's post hoc test was employed and presented in table- II

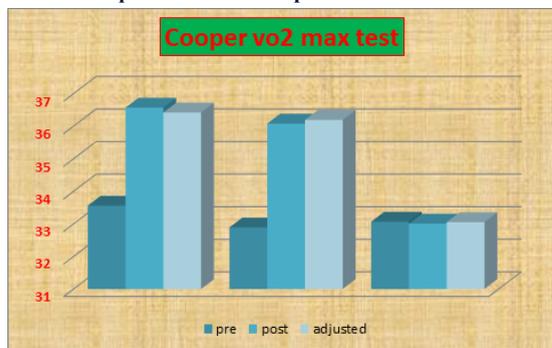
**Table-II.The Scheffe's Test for the Difference between Paired Means on Vo2 Max (Cooper vo2 max test Mean value count by ml/min/kg)**

Means			Mean Difference	Require d CI
Aerobic exercise	Plyometric training	Control Group		
36.42	36.195	-	.225	1.07
36.42	-	33.053	3.367*	1.07
-	36.195	33.053	3.142*	1.07

\*Significant at 0.05 level of confidence

The table II shows that the adjusted post-test mean difference in vo2 max between Aerobic exercise group and Plyometric training group is .225 it is significant at 0.05 level of confidence and proved there was a insignificant improvement. Aerobic exercise group and control group is 3.367\* it is significant at 0.05 level of confidence and proved there was a significant improvement. Plyometric training group and control group is 3.142\* it is significant at 0.05 level of confidence and proved there was a significant improvement. Hence, there was significant difference between control and experimental groups in vo2 max among college men students. The results of the study showed that there were a significant difference between Plyometric training group and control group, aerobic exercises group and control group on vo2 max.

**Figure I. Bar diagram for Plyometric training Group, Aerobic exercises Group and Control Group on Vo2 Max**



**DISCUSSION OF FINDING**

The investigator was convinced with the results that the group training in vo2 max with the Plyometric training and aerobic exercises improve vo2 max. The training given to the experimental group with Plyometric training and aerobic exercises had an influence on the experimental group and had shown improvement in vo2 max than the control group in the final test. The training given to the experimental group was planned by the investigator in consultation with his guide and with great care. The investigator felt that anyone could become good athletes if he has good vo2 max.

Most aerobic exercisers do not incorporate strength training into their schedules and therefore adding aquatic exercise can greatly improve their health. As stated by the U.S. Department of Health and Human Services (2008).

**CONCLUSION**

1. There was a significant improvement in vo2 max on college men students. However the improvement was in favour for experimental groups namely Plyometric training and aerobic exercises compare better than the control group due to six weeks of training programme.
2. However the improvement was in favour for experimental groups namely Aerobic exercises group compare better than the Plyometric training and control group due to six weeks of training programme on vo2 max.
3. However the improvement was in favour for experimental groups namely Plyometric training compare better than the control group due to six weeks of training programme on vo2 max.

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