



## Effect of Six Weeks Aqua Aerobic Exercise and Aerobic Exercise Training Programme on Vo<sub>2</sub> Max Responses

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### Abstract

The purpose of the study was to find out the effect of yogic practice on selected psycho physiological variables among athletes. To achieve the purpose of the present study, thirty athletes from SDAT Tiruchirappalli, Tamilnadu, India were selected as subjects and their ages ranged from 16 to 20 years. The subjects were divided into two equal groups of fifteen each. Group I acted as Experimental Group (Yogic practices) and Group II acted as Control Group. Experimental Group was exposed to yogic practices and control group were not exposed to any experimental training other than their regular daily activities. The duration of experimental period was 12 weeks. CSAI II Inventory was administered to test the cognitive anxiety, somatic anxiety and self confidence. After the experimental treatment, all the thirty subjects were tested on their selected variables. To find out the difference between pre and post test of each groups, paired 't' test was used. In all cases 0.05 level of significance was fixed to test hypotheses. The yogic practices had shown significant improvement in all the selected psychophysiological variables among athletes after undergoing yogic practices for a period of twelve weeks.

**Keywords:** Yogic Practice, Cognitive Anxiety, Somatic Anxiety, Self Confidence, Athletes.

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### Introduction

#### Aerobic Exercises

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.

#### Aqua Aerobics

Water aerobics (waterobics, aquatic fitness, aquafitness, aquafit) is the performance of aerobic exercise in fairly shallow water such as in a swimming pool. Done mostly vertically and without swimming typically in waist deep or deeper water, it is a type of

resistance training. Water aerobics is a form of aerobic exercise that requires water-immersed participants. Most water aerobics is in a group fitness class setting with a trained professional teaching for about an hour. The classes focus on aerobic endurance, resistance training, and creating an enjoyable atmosphere with music. Different forms of water aerobics include: aqua Zumba, water yoga, aqua aerobics, and aqua jog. While similar to land aerobics, in that it focuses on cardiac training, water aerobics differs in that it adds the component of water resistance and buoyancy. Although heart rate does not increase as much as in land-based aerobics, the heart is working just as hard and underwater exercise actually pumps more blood to the heart. Exercising in the water is not only aerobic, but also strength-training oriented due to the water resistance. Moving your body through the water creates a resistance that will activate muscle groups. Hydro aerobics is a form of an aerobic exercise that requires water-immersed participants.

#### Materials and Methods

The purpose of the present study was to investigate the effect of six weeks aqua aerobic exercises and aerobic exercise on the vo<sub>2</sub> max parameter of college men students. To achieve this study was randomly selected forty five college men students from Alagappa University College of Physical Education, Karaikudi, during the year 2015-16 and their age ranged from 18 to 25 years. The selected subjects (N=45) were divided into three groups equally and randomly. Forty

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five subjects from college men students were randomly selected and they were assigned into three equal groups. Each group consisted of fifteen subjects. Of which Experimental Group I underwent Aqua aerobic exercises (AAEG), Group II underwent Aerobic exercises (AEG) and Group III acted as Control Group (CG). The two experimental groups were treated with their respective training for one hour per day for three days a week for a period of six weeks.

Aqua aerobic exercises group performed 10 drills namely toning arms, jumping jacks, side stretch, waist trimmer, total body stretch, standing kick backs, leg adduction and abduction, crunch and floating on water. Aerobic exercises group performed 10 drills namely v step, turn step, over the top, L step, basic straddle step, side to side, double step side, knee kick, kick forward, kick sideward. This aqua aerobics exercises group and aerobic exercises group starts with 3 set of 12-10 repetitions in the first two weeks and

progressed to 4 set of 10-8 repetitions in the second two weeks and 5 sets of 8-6 repetitions in the last two weeks. 30sec rest was given in between the sets. As the intensity start with 60% for first four weeks, 10% of intensity was increased for every two weeks. The subjects of all the three groups were tested on vo2 max prior to and after the training period.

To ascertain vo2 max was used and accordingly cooper vo2 max test was administered mean value count by ml/min/kg.

**Statistical Technique**

The significance of the difference among the means of experimental group was found out by pre-test. 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).

**Results and Interpretation**

**Table I.** Analysis of Covariance for the Pre, Post and Adjusted Post Test Means Values for Aqua aerobic exercises Group, Aerobic exercises Group and Control Group on Vo2 Max (Cooper vo2 max test Mean value count by ml/min/kg)

Test	Aqua aerobic exercises group	Aerobic exercises 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 aqua aerobic exercises group, aerobic exercises 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 aqua aerobic exercises group, aerobic exercises 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 aqua aerobic exercises group, aerobic exercises 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)

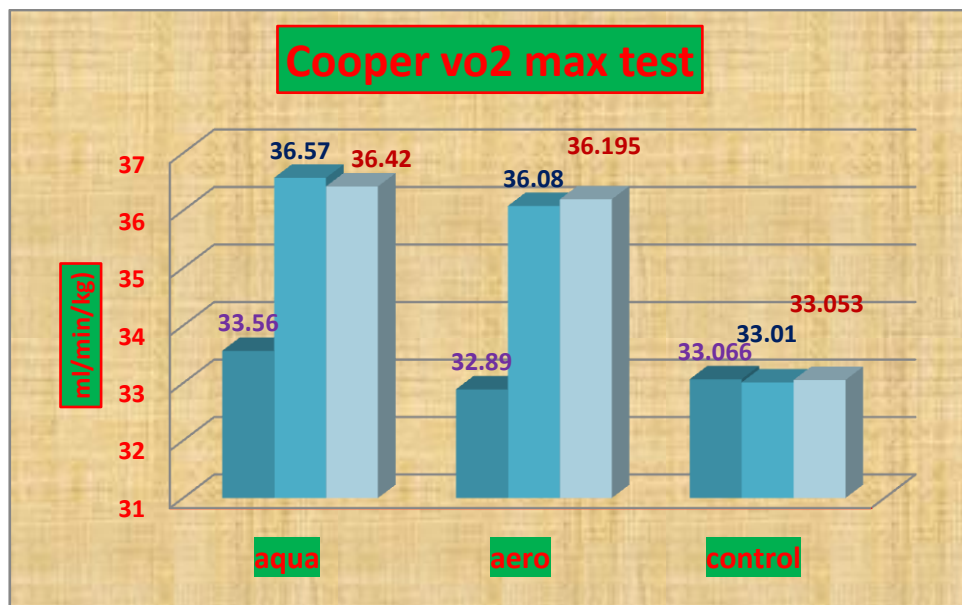
Means			Mean Difference	Required CI
Aqua aerobic exercises	Aerobic exercises	Control Group		
36.42	36.195	-	.225	1.07
36.42	-	33.053	3.367*	1.07
-	36.195	33.053	3.142*	1.07

\*Significant at 0.05 level of confidence

The table II shows that the adjusted post-test mean difference in vo2 max between aqua aerobic exercises group and aerobic exercises group is .225 it is significant at 0.05 level of confidence and proved there was a insignificant improvement. Aqua aerobic exercises group and control group is 3.367\* it is significant at 0.05 level of confidence and proved there was a significant improvement. Aerobic exercises 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 aqua aerobic exercises group and control group, aerobic exercises group and control group on vo2 max.

**Figure I.** Bar diagram for Aqua aerobic exercises 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 aqua aerobic exercises and aerobic exercises improve vo2 max. The training given to the experimental group with aqua aerobic exercises 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 land-based 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).

According to Moreno (1996) and her quotes from Huey an Olympic athlete trainer, the benefits of water resistance training include the activation of opposing muscle groups for a balanced workout. The push and pull of the water allows both increased muscle training and a built-in safety barrier for joints. In fact, before water aerobics water, injury therapy used the benefits of water. The water also helps to reduce lactic acid buildup.

## Conclusion

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

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