



INFLUENCE OF SHALLOW AND DEEP-AQUA AEROBIC EXERCISES ON MAXIMAL OXYGEN CONSUMPTION PARAMETER AMONG COLLEGE MEN STUDENTS

Physical Education

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ABSTRACT

The purpose of this current study was to explore the influence of shallow and deep-aqua aerobic exercises on maximal oxygen consumption parameter among college men students. To achieve this purpose of the study forty-five (N=45) college men students were selected from Dyal Singh College, Delhi state, India, during the year 2021-22. The subject's age ranges from 17 to 23 years. The selected subject were divided into three equal groups consists of fifteen subject each namely two experimental groups and control group from college students. The experimental group I underwent shallow aqua aerobic exercise group (SAAG) and experimental group II underwent deep aqua aerobic exercise group (DAAG) programme for six weeks. The control group was not taking part in any exercise during the course of the study. The dependent variable selected for the study were maximal oxygen consumption measure by Cooper's formulae was used and accordingly Cooper's 12 Minutes Run / Walk Test. Pre-test was taken before the exercise period and post- test was measured immediately after the six weeks exercise period. The data collected from the three groups were statistically analyzed for significance, the analysis of covariance (ANCOVA) was used and the F ratio was found out. The Scheffe's test is applied as post-hoc test to determine the paired mean differences. The level of significance will be fixed at .05 level of confidence for all the cases.

KEYWORDS

Shallow aqua, Deep aqua, Aerobic exercise and Maximal oxygen consumption

INTRODUCTION

Aqua aerobics (aquaobics, aquatic fitness, aqua fitness, aqua fit) is the performance of aerobic exercise in fairly shallow aqua such as in a swimming pool. Done mostly vertically and without swimming typically in waist deep or deeper aqua, it is a type of resistance training. Aqua aerobics is a form of aerobic exercise that requires aqua-immersed participants. Most aqua 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 aqua aerobics include: aqua Zumba, aqua yoga, aqua aerobics, and aqua jog. Most land-based aerobic exercisers don't incorporate strength training into their schedules and therefore adding aquatic exercise can greatly improve their health. Over time aqua aerobics can lead to a reduction of blood pressure and resting heart rate, which will improve health overall.

While similar to land aerobics, in that it focuses on cardiac training, aqua aerobics differs in that it adds the component of aqua resistance and buoyancy. Although heart rate does not increase as much as in land-based aerobics, the heart is working just as hard and under aqua exercise actually pumps more blood to the heart. Exercising in the aqua is not only aerobic, but also strength-training oriented due to the aqua resistance. Moving your body through the aqua creates a resistance that will activate muscle groups.

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

lactic acid buildup. Another obvious benefit to aqua exercise is the cooling effect of the aqua on the system. The average temperature around 78 degrees in a group fitness pool, this temperature will force the body to burn calories to stay at homeostasis while also maintaining a cool, comfortable atmosphere with less sweat noticeable to the participant.

METHODS

Forty five men college students of age 17 to 23 years from Dyal Singh College, Delhi were selected as subjects at random to undergo the training. They were divided into three groups namely shallow aqua aerobic exercise group (Experimental group I), deep aqua aerobic exercise group (Experimental group II), and control group (group III) each consists of 15 subjects. The experimental groups (I & II) were subjected to six weeks of shallow and deep aqua aerobic exercise training respectively, and the group III acted as control. The experimental groups I and II used exercises of travel, forward, backward, sideways, grapevine (feet alternately cross in front and behind), in circles (in place, but change direction faced), whirlpool, ladder, downward (alternate 2 exercises, do 8, 6, 4, 2 reps each), upward (as upward, but start with smaller number of reps) and the load given were progressively increased from 50%, 60%, 70% intensity level aqua aerobic exercise drills respectively for one hour per day for three days a week for a period of six weeks. The subjects of all the three groups were tested on maximal oxygen consumption prior to and after the training period.

To ascertain Maximal oxygen consumption of the subjects, Cooper's formulae was used and accordingly Cooper's 12 Minutes run / Walk Test was administered mean value count by mille/liter.

RESULTS AND DISCUSSION

Table No.1. Analysis of Covariance for the Pre, Post and Adjusted Post Test Means Values for Shallow aqua aerobic exercise group, Deep aqua aerobic exercise group and Control group on Maximal oxygen consumption

(Maximal oxygen consumption mean value measure by Cooper's 12 Minutes run / Walk Test in mille/liter)

Variable name	Test	Shallow aqua aerobic exercise group	Deep aqua aerobic exercise group	Control group	Source of Variance	Sum of Square	df	Mean square	F' ratio
Vo2 Max	Pre test	134.66	134.61	134.71	Between	0.07	2	0.035	0.01
					Within	10796.1	42	257.05	
	Post test	122.31	117.49	136.01	Between	2770.88	2	1385.44	9.28*
					Within	6269.37	42	149.27	
	Adjusted post test	122.31	117.52	135.98	Between Set	2754.14	2	1377.07	29.16*
					Within Set	1936.46	41	47.23	

*Significance at 0.05 level of confidence

Table value required for significant at 0.05 level with df 2 and 42, 2 and 41 are 3.22 and 3.23 respectively.

The statistical analysis from the table.1 shows that the pre-test means of shallow aqua aerobic exercise group, deep aqua aerobic exercise group and control group are 134.66, 134.61 and 134.71 respectively. The obtained F ratio 0.01 for pre-test is lesser than the table value of 3.22 for df 2 and 42 required for significance at 0.05 level. The post-test means of shallow aqua aerobic exercise group, deep aqua aerobic exercise group and control group are found 122.31, 117.49 and 136.01 respectively. The obtained F ratio 9.28* for post-test is greater than the table value of 3.22 for df 2 and 42 required for significance at 0.05 level. The adjusted post-test means of shallow aqua aerobic exercise group, deep aqua aerobic exercise group and control group are 122.31, 117.52 and 135.98 respectively. The F ratio obtained for adjusted post-test 29.16* is also greater than the table value of 3.23 for df 2 and 41 required for significance at 0.05 level.

Table.2 Scheffe's Test for the Difference between the Adjusted Post Test Paired Means on Vo2 Max of college men students

Variables	Control group	Shallow aqua aerobic exercise group	Deep aqua aerobic exercise group	Mean Difference	C.I value
Arm strength	135.98	122.31	-	13.67*	6.25
	135.98	-	117.52	18.47*	
	-	122.31	117.52	4.80	

From the table it can be seen that the mean difference between Control group and shallow aqua aerobic exercise group was 13.67* ($P > 0.05$) and the calculated C.I value was 6.25 ($P > 0.05$). The mean difference between Control group and the deep aqua aerobic exercise group was 18.47* ($P < 0.05$) and the calculated C.I value was 6.25 ($P < 0.05$). The mean difference between the shallow aqua aerobic exercise group and deep aqua aerobic exercise group was 4.80 ($P > 0.05$) and the calculated C.I value was 6.25 ($P > 0.05$). The dependent variable were that it can be clearly noticed that deep aqua aerobic exercise group responded to the training with more positive influences of Vo2 Max when compared with the shallow aqua aerobic exercise group and control group. The shallow aqua aerobic exercise group responded better when compared with the Control group.

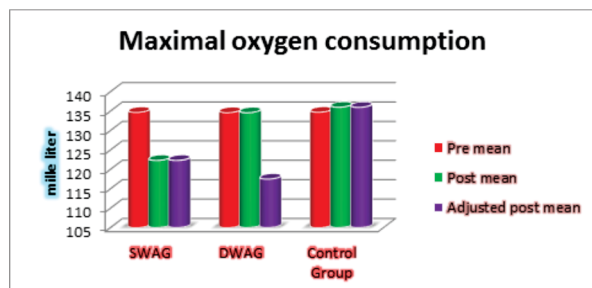


Figure.1. Cylinder diagram ordered mean values of Maximal oxygen consumption

DISCUSSION OF FINDINGS

The end result of the present study clearly indicated that, there was a significant difference among the training groups and control group on maximal oxygen consumption responses to six weeks training intervention among college men students. Further the significant improvement has been noticed in the level of maximal oxygen consumption response between the experimental groups, when compared with the control group. After analysing statistical end results the researcher found that the selected training groups have significantly increased the level of maximal oxygen consumption from the baseline to post interventions. The change from pre to post intervention is as follows. The deep aqua aerobic exercises group from pre (36.02) to post (39.54) and shallow aerobic exercises group from pre (36) to post (38.95) have significantly changed the pre and post results. The present study demonstrates the increased level of maximal oxygen consumption of 1.27 % and 1.06 % for shallow aqua aerobic exercises group and deep aerobic exercises group respectively. This result of study proves that the level of maximal oxygen consumption increased, due to the six weeks training effects of shallow aqua aerobic exercises and deep aerobic exercises groups. Among the training

groups the deep aqua aerobic exercises group shows the greater increased level of maximal oxygen consumption, when compared with shallow aerobic exercises training group. Further shallow aerobic exercises training group also significantly increased the maximal oxygen consumption level while compared with control group of college men students.

CONCLUSION

After completion of all work following conclusions were drawn by the researcher:

- Deep aqua aerobic exercise group was possessed greater maximal oxygen consumption than the shallow aqua aerobic exercise group and control group.
- Shallow aqua aerobic exercise group was possessed greater maximal oxygen consumption than the control group.

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