IMPACT OF SHALLOW AND DEEP WATER AEROBIC EXERCISES ON VO2 MAX PARAMETER AMONG COLLEGE MEN STUDENTS

BALJINDER SINGH

Asstt. Prof.,Dept. of Physical Education, G.H.G Khalsa College Gurusar Sadhar Ludhiana, Punjab, India

ABSTRACT

The purpose of this present study was to investigate the impact of shallow and deep water aerobic exercises on vo2 max protocol among college men students. To achieve this purpose of the study forty five (N=45) college men students were selected from G.H.G Khalsa College Gurusar Sadhar Ludhiana. 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 water aerobic exercise group (SWAG) and experimental group II underwent deep water aerobic exercise group (DWAG) 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 vo2 Max 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 water, Deep water, Aerobic exercise and Vo2 Max.

INTRODUCTION:

Water aerobics (waterobics, aquatic fitness, aqua fitness, aqua fit) 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. 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 water 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, 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.

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. Another obvious benefit to water exercise is the cooling effect of the water 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 G.H.G Khalsa College Gurusar Sadhar Ludhiana were selected as subjects at random to undergo the training. They were divided into three groups namely shallow water aerobic exercise group (Experimental group I), deep water 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 water 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 water 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 vo2 max prior to and after the training period.

To ascertain VO2 Max 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

Table No.1.Analysis of Covariance for the Pre, Post and Adjusted Post Test Means Values for Shallow water aerobic exercise group, Deep water aerobic exercise group and Control group on Vo2 Max

(Vo2 Max mean value measure by Cooper's 12 Minutes run / Walk Test in mille/liter)

Variable name	Test	Shallow water aerobic exercise group	Deep water 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 water aerobic exercise group, deep water 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 water aerobic exercise group, deep water 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 water aerobic exercise group, deep water 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

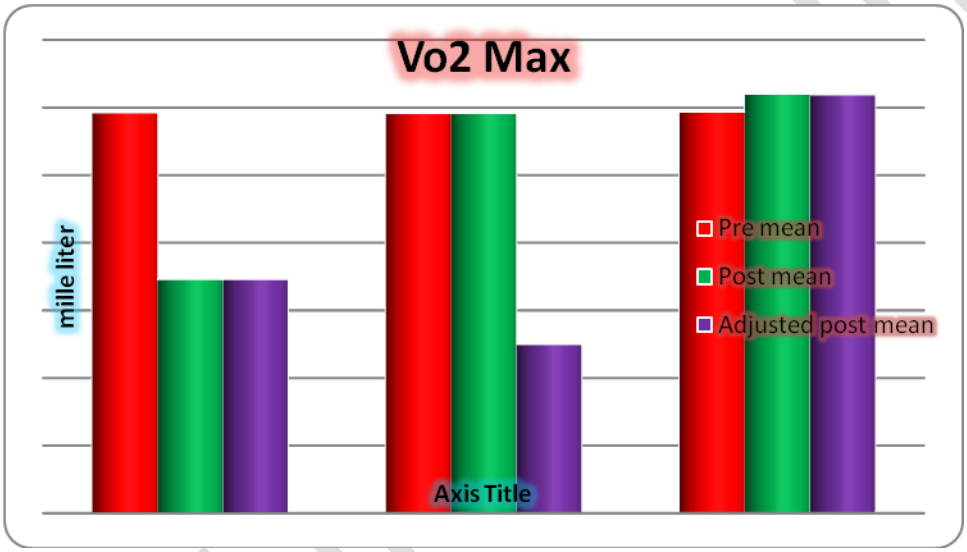
Scheffe's Test for the Difference between the Adjusted Post Test Paired Means on Vo2 Max of college men students

Variables	Control group	Shallow water aerobic exercise group	Deep water 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 water 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 water 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 water aerobic exercise group and deep water 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 water aerobic exercise group responded to the training with more positive influences of Vo2 Max when compared with the shallow water aerobic exercise group and control group. The shallow water aerobic exercise group responded better when compared with the Control group.

Figure.1.Cylinder diagram ordered mean values of Vo2 Max



CONCLUSION:

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

- Deep water aerobic exercise group was possessed greater Vo2 Max than the shallow water aerobic exercise group and control group.
- Shallow water aerobic exercise group was possessed greater Vo2 Max than the control group.

REFERENCES

- Aellen, R., W. Hollmann and U. Boutellier, " Effects of Aerobic and Anaerobic Training on Plasma Lipoproteins", *International Journal of Sports Medcine.*14:7,1993.

- Bowman A.J.and Clayton, R.H., et.al., "Effects of Aerobic Exercise Training and Yoga on the Baroreflex in healthy elderly persons". *European Journal and Clinical Invest*, 27:5, May 1997, p.443-449
- Colcombe, S.J, and K.I. Ericken " Aerobic Exercise Training increases Brain Volume in Aging Humans" – *Biological Sciences and Medical Sciences Journal*,1,Nov.2006,61:11,p1166-1170.
- *Moreno, b. (1996).* "Making a splash". Ebscohost.com. Retrieved 2013-11-07.
- *Piotrowska-calka, E.E. (2010).* "Effects of a 24-week deep water aerobic training program on cardiovascular fitness.". *Biology of sport*. Retrieved 2013-11-10.
- *Rica, R. (2013).* "Effects of water-based exercise in obese older women: impact of short-term follow-up study on anthropometric, functional fitness and quality of life parameters". *Geriatrics & gerontology international, 13(1)*. Retrieved 2013-11-21.
- Town, G.P., and S.S. Bradley. "Maximal metabolic responses of deep and shallow water running in trained runners". *Med.Sci. Sport Exerc.* 23:238–241. 1991.
- *White, Martha (1995). Water exercise. Champaign, il: Human kinetics.*ISBN:0-87322-726-3.