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Quantification of land and shallow water aerobic exercise on cardio vascular fitness among school students

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Abstract
The purpose of the study was to find out the effect of land and shallow water aerobic exercise on cardio vascular fitness among school students. To attain the purpose, Sixty (N=60) school students were selected as subject at random. They were divided equally into three group of twenty (n=20) each namely Land Based Aerobic Exercises group, Water Based Aerobic Exercises group and control group. The experimental group underwent their respective training for three days per week for 12 weeks duration. Cardiovascular fitness only selected for this study and it was assessed through 12 minutes run/walk test. To find out the difference between pre and post test mean values Independent't' test was followed. The results of the study showed significant differences (0.05 Level) in cardiovascular endurance, among the groups. Land Based Aerobic Exercises are superior than Water Based Aerobic Exercise in Cardiovascular endurance. The present study demonstrated that differences in cardiovascular endurance, among Land and Shallow Water Aerobic Exercise and Control group. Land Aerobic Exercise may have potential role of increasing cardiovascular endurance.

Keywords: land based aerobic exercises, water based aerobic exercises, cardiovascular endurance

Introduction
Water aerobics (waterobics, aquarobics, aquatic fitness, aquafitness, aquafit) is the performance of aerobic exercise in 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 (White, 1995) [5]. Water aerobics is a type of aerobic exercise (meaning it gets your heart rate up) that's completed in a swimming pool. Water aerobics is performed in waist-deep water or deeper and rarely includes swimming. Many of the exercises in a water aerobics class are similar to a normal aerobics class, but because water is so buoyant, moves can be completed with less impact on the joints (Svedenhag, 1992) [4].
Water fitness activity is an exercise that is performed in the water, which promotes and enhances physical and mental fitness. Water fitness is among the most popular and widely prescribed fitness activities because it appears to be suitable for different groups: older, injured, and even healthy people (Benelli et al., 2004) [2]. Water exercise programs had an enormous benefit in the improvement of physical fitness and are attributes for each physical fitness components (Barbosa et al., 2009) [1]. The density of water is approximately 800 times that of air, this has an important contribution to the energy cost of water exercise (Prampero, 1986) [3].
Water-based aerobic classes follow the same principles of land based exercises with the exceptions noted in this section. Water based exercise is predominantly for lower body exercise in a low impact, resistance based, environment.

Methodology
To attain the purpose, Sixty (N=60) school students were selected as subject at random. They were divided equally into three group of twenty (n=20) each namely Land Based Aerobic Exercises group, Water Based Aerobic Exercises group and control group. The experimental group underwent their respective training for three days per week for 12 weeks duration. Cardiovascular fitness only selected for this study and it was assessed through 12 minutes run/walk test. To find out the difference between pre and post test mean values Independent 't' test was followed.

Statistical Analysis
The results of the independent 't'-test on the data obtained for Cardio Vascular Fitness of the subjects in the pre-test and post-test of the experimental groups and control group have been analyzed and presented in Table-1.

Table 1: Cardio Vascular Fitness in the Land Aerobic Exercises group, Shallow Water Aerobic Exercises group and Control group before and after interventions

Groups	Before Interventions	After Interventions	Differences	t- value
Cardiovascular Endurance (Scores in Meters)				
Land Aerobic Exercises group	2095.00	2549.00	454.00	14.40*
Shallow Water Aerobic Exercises group	2128.50	2352.00	223.50	6.19*
Control group	2131.00	2101.50	29.50	0.54

* Significant at 0.05 level.
The table value required for 0.05 level of significance with df 59 is 2.00.

A significant, positive impact on the measured variables was observed. The subjects increased in cardiovascular endurance 14.40, from base line among Land Aerobic Exercises group and 6.19 in Shallow water Aerobic Exercises group; however there was no statistical significance in the control group (0.54).
The Cardiovascular endurance fitness was significantly altered by the treatments (cardiovascular endurance 't' is 454.00, 14.40).
The mean values of experimental groups and control group on cardio vascular fitness are graphically represented in the Fig.1.

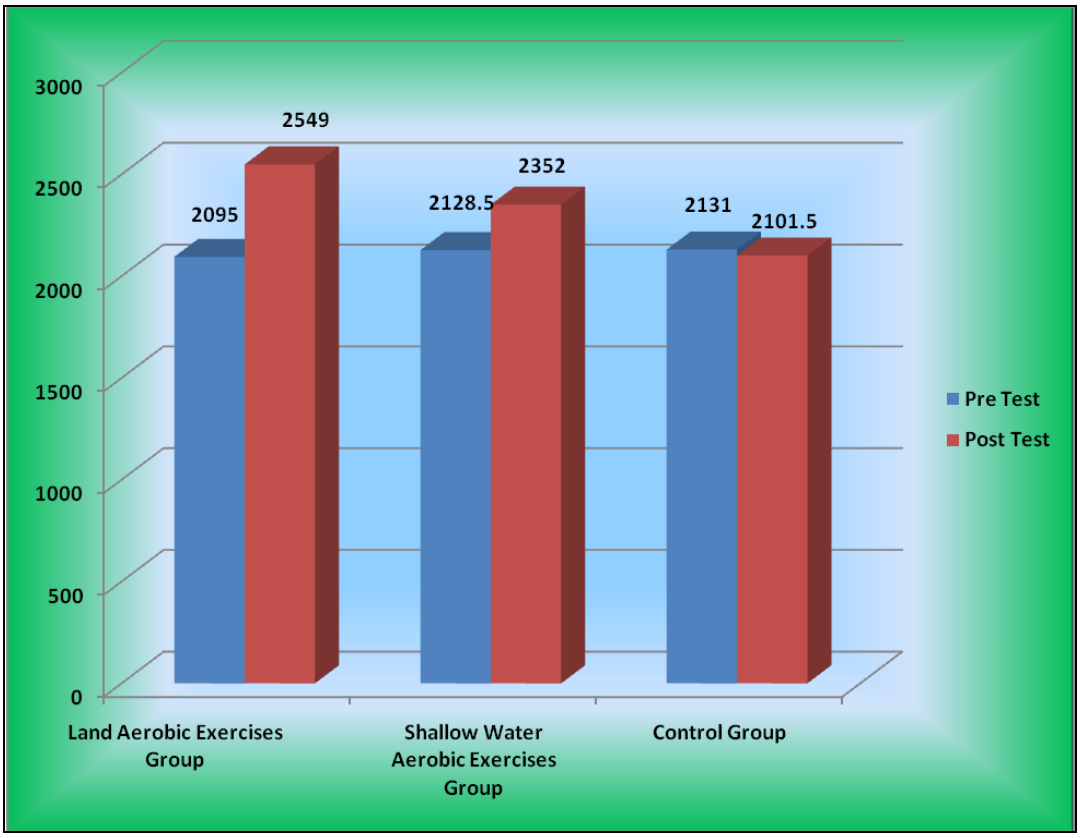

Fig 1: Bar Diagram showing the Pre and Post test mean values of Experimental groups and Control group on Cardiovascular Endurance

Conclusions

1. The present study reveals that the 12 weeks of land aerobic exercises and shallow water aerobic exercises shown significant differences among the three groups with respect to cardiovascular endurance.
2. Finally it is also concluded that the subjects land aerobic exercises has shown greater improvement comparable to the subject shallow water aerobic exercises and control group regard to cardiovascular endurance.

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