



EFFECT OF AQUA AEROBIC TRAINING ON SELECTED PHYSIOLOGICAL PARAMETERS OF MIDDLE AGE WOMEN OF MANIPUR

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ABSTRACT

Purpose: The purpose of the study was to find out the effect of aqua aerobic training on the selected physiological parameters of middle age women of Manipur.

Selection of subjects: A total 40 female subjects participated in this study from Kakching mayai leikai, Manipur were selected randomly divided into the experimental and control group. The age of the subjects ranged between 35 to 45 years.

Selection of variables. The variables selected for the present study were aqua aerobic training (independent variable), Vital Capacity (VC) (dependent variable).

Methodology : The study pretest –post test randomized group design, which consists of control group (20 female) and experimental group (20 female) was used. The data were collected through the pre test, before training and post test, after 12 weeks of aqua aerobic training.

Statistical Technique: For comparing pre and post test means of experimental and control groups of selected physiological variables, descriptive analysis, paired sample t- test and analysis of co- variance (ANCOVA) were used, the data analyzed with the help of SPSS (20 version) software and the level of significance was set at 0.05 level of confidence.

Result : The result of the study showed that there was significant difference between pre and post test (experimental group) of vital capacity (VC), another hand there was insignificant difference between pre and post test (control group) of Vital Capacity (VC). Further, by employing the ANCOVA, the significant effect was found as the calculated 'F' = 38.57 is greater than tabulated 'F' = 4.08 for the selected aqua aerobic on vital capacity of middle age women.

Conclusion: On the basis of the finding it was concluded that twelve week aqua aerobic training might be responsible for the improvement of selected physiological variables like Vital Capacity (VC).

Keywords: Aqua Aerobic Training, Physiological Variables, Vital Capacity.

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1. INTRODUCTION

“Aqua aerobics is the performance of aerobic exercises in the water. It is also known as aqua fitness or water aerobics. Aqua aerobic training can be performed as a special segment of workout or as a warm-up to the rest of the water activities”.

Currently, aqua aerobics is among the aquatics programs most widely recognized by health specialist, sport professionals, and practitioners. This reorganization could be due not only to the organic changes caused by hydro drastic pressure, buoyancy and thermodynamics but also to the variety of movements that can be carried out using the properties of water to create resistance to the variety of movements that can be carried out using the properties of water to create resistance to movement with reduced neuromuscular activity required from the antigravity muscles.

The expiratory reserve volume is the amount of air that one can voluntarily expel after he or she have completed a normal quiet respiratory cycle; the inspiratory reserve volume is the amount of air that one can take in over and above the tidal volume. The tidal volume is the amount of air that one move into out of his order lungs during a single respiratory cycle under resting conditions. The Vital Capacity is the maximum amount of air that one can move into out of his /her lungs in a single respiratory cycle.

2. OBJECTIVE OF THE STUDY

To find out the effect of 12 weeks aqua aerobic training on selected physiological parameters i.e. Vital Capacity (VC) of middle age women of Manipur.

3. HYPOTHESIS OF THE STUDY

It was hypothesized that there would be a significant differences in Vital Capacity (VC) after 12 weeks of aqua aerobic training in experimental groups.

4. METHODOLOGY

4.1 Selection of Subjects

A total of 40 women were selected randomly as subjects from, Kakching district, Manipur (India).The subjects were randomly assigned into two Equal group, experimental group (n=20) and control group (n=20). The age groups of the subjects selected were between 35 to 45 years.

4.2 Selection of Variables

Keeping the feasibility criterion in mind, the researcher selected the following variables for the present study:

1. Aqua aerobic training (Independent Variables)
2. Physiological Variables (Dependent Variables)
 - i) Vital Capacity (VC).

4.3 Criterion Measures

Vital Capacity was measured by contact SP 70B dry spirometer and recorded in milliliters.

4.4 Experimental Design

It was experimental pretest and posttest control group design. The experimental group participated in aqua aerobic training for a period of twelve weeks. The control group did not participate in any training program rather they involved in their daily routine program

4.5 Collections of Data

Before the administration of aqua aerobic training, the selected test for selected physiological variables were administered on both the experimental and control groups to collect pretest data. After the completions of the twelve weeks of aqua aerobic training again the same tests were conducted to collect the post training data. Necessary instructions were given to the subjects before administration of the tests.

4.6 Administration of Training

The training for experimental group was administered at Kha Manipur College, Kakching, Manipur. Selected aqua aerobic training were given to experimental group on five day i.e. (Monday to Friday) sessions per week for twelve weeks. Each training session consisted of 45minutes included 5minutes of warming up & 5minutes for cooling down. Remaining minutes allotted for aqua aerobic training program.

Table no. 1: Aqua aerobic Training program

Aqua Aerobic Exercises/ training Control	No. of circuit	
The Main Training(30mins)		
Aqua jogging	4(1-4 weeks)	
Flutter Kicking		
Leg lifts		
Standing water push up.	5(5-8 weeks)	
Alternating Scissor jump		
Kick Your		
Tuck Jump	6(9-12 weeks)	
Chest fly		
Splash the water		
Cross punches with hip rotation		
Front Kick, back Kick & jogging		
Alternate front Kick Back Kick & rotate whole body		
Butterfly beat (clap)		
Punches		
Jumping jack in the pool		

4.7 Statistical Procedure

The data were analyzed by applying descriptive statistical, paired sample t- test and analysis of covariance (ANCOVA). The data analyzed with the help of SPSS (20 Version) Software and the level of significance was set at 0.05.

5. RESULTS AND FINDINGS OF THE STUDY

The mean (M), standard deviation and standard error mean (SEM) were calculated by using the descriptive statistics. The paired sample t-test was applied to find out the mean difference between pre test and post test of Vital Capacity for the both experimental and control groups. The data were further examined by applying the analysis of covariance (ANCOVA) to find out the significance differences among the pre and post test means of Vital Capacity between the experimental and control groups the level of significance was set at the 0.05.

The mean (M), standard deviation (SD) and paired sample t-test of pre and post test of Vital Capacity for experimental group was presented in the **Table 2**.

Table no.2: The Descriptive and Paired Sample 't' test of Vital Capacity for Experimental Group

Variable	Test	N	Mean	SD	SEM	df	t	P
Vital Capacity	Pre	20	1.86	.31	.06	19	-6.22	.00
	Post	20	2.31	.39	.08			

*Significant at 0.05, where tabulated $t(0.05) (19)=2.093$

Table 2 Clearly revealed that the mean (M) and Standard deviation (SD) of pre and post test of Vital Capacity for experimental group were $1.86 \pm .31$ and $2.31 \pm .39$ respectively, and found the calculated 't' = -6.22. therefore, there was found the significant improvement of aqua aerobic training on Vital Capacity of middle age women of Manipur as the calculated 't' = -6.22 is greater than the tabulated 't' = 2.09 at 0.05 level of confidence, as shown in the table above was found statistically significant ($P < .05$). The mean (M), standard deviation (SD) and paired sample t-test of pre and post of Vital Capacity for control group is shown in **Table 3**.

Table no. 3: The Descriptive and Paired Sample 't' test of Vital Capacity for Control Group

Variable	Test	N	Mean	SD	SEM	df	t	P
Vital Capacity	Pre	20	1.91	.15	.03	19	.74	.46
	Post	20	1.92	.17	.04			

*Insignificant at 0.05, where tabulated $t(0.05) (19)=2.093$

Table 3. reveals that the means(M) and standard deviation (SD) of pre and post tests of Vital Capacity for control group were $1.91\pm.15$ and $1.92\pm.17$ respectively. The mean difference and standard error mean of pre test were 0.01 and .03 and for post test 0.01 and 0.04 respectively and found the calculated 't' =.74. Therefore there was the insignificant improvement on Vital Capacity of middle age women of Manipur for the control group as the calculated 't' =.74 is lesser than the tabulated 't' =2.093 at 0.05 level of confidence and $P>0.05$.

Table no. 4: Pre and Post Means and Comparison of Vital Capacity between Experimental and Control Groups (ANCOVA)

Variable	Source	Type III Sum of squares	df	Mean Square	F	P
Vital Capacity	Group	2.024	1	2.024	38.57*	.000
	Error	1.942	37	.052		
	Total	183.96	40			

*Significant difference at 0.05 level of confidence, where tabulated $F(0.05) (1,37) = 4.08$

Table 4 reveals that there were significant difference among the pre and post test means of Vital Capacity between experimental and control groups as the obtained critical 'F' = 38.57 were greater than the tabulated 'F' = 4.08 at 0.05 level of confidence.

6. DISCUSSION OF FINDING

From the above results and findings, the reveal the presented in **Table 2**. The results of the paired sample t-test had shown that there was the significant difference between the pre and post test means of Vital Capacity for the experimental group as the obtained 't' =-6.22 was greater than the tabulated 't' =2.093 at 0.05 level of confidence. There was the insignificant difference between pre and post test means of Vital Capacity for control group as the calculated 't' =.74 was lesser than the tabulated 't' =2.093. further, by employing the analysis of covariance (ANCOVA), it was revealed that there were significant differences among the pre and post test means comparison between the experimental and control groups as the obtained critical value of $F= 38.57$ for Vital Capacity (VC) which is greater than the tabulated $F= 4.08$ at 0.05 level of confidence. Therefore, it was proved that 12 weeks aqua aerobic training were effective for the improvement of Vital Capacity of middle age women of Manipur.

7. HYPOTHESIS TESTING

It was hypothesized that there might be significant effect of aqua aerobic training on Vital Capacity of middle age women of Manipur. From the above findings, significant differences were found for experimental group by employing paired Sample 't' test and ANCOVA Statistical techniques. Hence, the research hypothesis was accepted. Moreover, insignificant difference was also found on Vital Capacity for the control group. So, the research hypothesis was rejected and the null hypothesis was accepted.

8. CONCLUSION

In the light of the findings, it was concluded that twelve week aqua aerobic training helped in improving Vital Capacity of middle age women of Manipur. The reasons might be due to the selection of subjects, training means, load and intensity and active participation of subjects. More over the training design and duration might be changed for different purposes.

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