

# Effect of Aqua Exercises on the Shuttle Run Test of School Going Girls

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**Abstract:** *In the modern scientific age in every field of human Endeavour systematic objectives and scientific procedures are followed in accordance with the principals based on experiences, understanding and application of knowledge of science. The main factor responsible for this improvement is the development of new training methods based on scientific principles derived from exercise physiology, which are incorporated in basic physical education and advanced sports training at the same time development of improved technique and tactics, new equipment and improved facilities. The study proved that the girl students can actively participate in physical as well as aquatic activities without fear and aqua exercise training can help them to achieve physical fitness*

**Key words-** Aqua exercises, Shuttle run.

## 1. Introduction

In the modern scientific age in every field of human Endeavour systematic objectives and scientific procedures are followed in accordance with the principals based on experiences, understanding and application of knowledge of science. The field of games and sports is also no exception to this. Advanced countries like U.S.A., Germany, Russia, Australia, Britain and other have made rapid progression in games and sports like Athletics, Soccer, Hockey, Basketball etc. this progress and the international achievements have been possible due to the research experimentation and application of scientific knowledge.

The performance level of sportsman in various games and sports is showing considerable improvement day by day. The main factor responsible for this improvement is the development of new training methods based on scientific principles derived from exercise physiology, which are incorporated in basic physical education and advanced sports training at the same time development of improved technique and tactics, new equipment and improved facilities, scientific understanding rendered by the sport scientist also responsible for improved performance.

Leg Strength is an important component of physical fitness which effects the performances in all activities in some form or the other. Development of strength is essential for power and speed. It has been proved that wise use of weights not only increases an athlete's strength and ability but also aids speed of reaction. Since strength base is an advantageous in Aqua exercises training program has been designed to complement the development of leg power and speed.

Mackenzie stated that, "Exercise comprises of movements designed to act on the muscles; the blood vessel, nervous system, skin and abdominal organs. Active exercises are done by person of average health and require definite exertion of the will power, while passive exercises are restored for the cure and treatment of certain diseases that do not require any exertion of will power."

Exercise is physical activity that is planned, structured, and repetitive bodily movement done to improve or maintain one or more of the components of health related fitness.

Exercise improves the efficiency of the body, refreshes the brain, enhances overall vitality of various organs of the body, increases longevity, and significantly improves the quality of life.

There are many authorities who say that swimming is the best all around exercise, whereas others feel jogging is the best. There are still others who feel that progressive weight training is the best because you can exercise every part of the body and gradually increase the resistance along with strength and stamina.

Water exercise is rapidly growing in popularity. Exercise enthusiasts, athletes, elderly and the physically challenged are discovering aquatic exercise programme that suit their fitness desires. An advantage of aquatic exercise is that it can involve the upper and lower extremities through optimal ranges of motion while minimizing joint stress. The aquatic medium is eight hundred times as dense as air.

The benefits of exercising in water have been well known since Greek and Roman times. Examples are:

- 1) Aqua fitness is a novel and enjoyable way to become and stay fit.
- 2) There is little post-exercise stiffness. This is due, possibly, to the lack of eccentric muscular contractions when using water as a mode of resistance.
- 3) Water provides resistance to motion through resistive drag. The intensity of the exercise can be easily controlled by varying the degree of resistance (drag). By moving faster, or in deeper water where the resistance is greater, the intensity is increased. By moving more slowly or in shallower water the intensity is decreased.
- 4) Buoyancy properties of water assist in supporting the body (up to 90%), often making exercise feel easier.
- 5) Up to 85% of jarring is eliminated as the water absorbs impact when jogging or jumping
- 6) Water acts as a shock absorb, reducing stress on joints.
- 7) Water acts a coolant to prevent overheating.

8) For these reasons aquatic exercises is one of the most useful and recommendable form of training.

It was considered appropriate by the research scholar to investigate effectiveness of aqua exercise training on the physical fitness. The purpose of the study is to see the effect of a set of aqua exercises on physical fitness; which might be used to decide desirability of aqua exercises for improving and maintaining the physical fitness if possible. To achieve this purpose, the following programme was selected. *“Effect of aqua exercises on the Shuttle Run Test of School Going Girls”*

## 2. Objectives of the Study

To determine the effect of aqua exercise on Shuttle Run test performance of a school going girls.

## 3. Assumptions

- 1) It is assumed that aqua exercise would help to improve physical fitness of school going girls.
- 2) It is assumed that the school girls will take part actively and enthusiastically in whole programme.
- 3) Further it will assume that the effect of aqua exercises may be of immense use for improving physical fitness of school girls.
- 4) It is assumed that trainees were not familiar with aqua exercises.
- 5) Though scientific method of research is used, it is assumed that the effect of dependent variable after experiment will be because of independent variable.

## Hypothesis

**H<sub>1</sub>:** There would be significant change in Shuttle Run test performance of school girls due to aqua exercise.

**H<sub>1</sub> : M<sub>1</sub> ≠ M<sub>2</sub>**

## 4. Materials and Methods

The methodology of this study consisted of one experiment using one experimental and one control group for testing the effects of selected aqua exercises on the **Shuttle Run test**. The purpose of the present study to gather scientific evidence in connection with the utility of aqua exercises in the promotion of Physical Fitness.

For the study experimental method was used. All the 50 subjects were divided randomly into two equal groups via group I is experimental and group II is control consisted of 25 subjects each. Training intervention was delimited to aqua exercises. The group I receives training of aqua exercises for a total period of 24 weeks, whereas group II (i.e. control group) did not participate in any training program. However, all the subjects participated in their regular school activities as per daily timetable of the school.

The design of the experiment was **pre test post test random group design** and has been planned in three phases:

Phase I: Pre test

Phase II: Aqua training program

Phase III: Post Test

## Shuttle Run (4 x10 Meter):-

**Objective:** To measure Agility

**Equipment:** Stopwatch and two blocks of wood (2”x2”x4”), wooden clapper.

**Procedure:** Marking of two parallel lines 3 meter in length were drawn 10 meters apart, considering one as starting point. The subject stood at starting point, with the two wooden blocks placed on the edge of the other line. On the starting signal with clapper, the subject ran to the wooden block, and lifted one block and return to the starting line and place the block behind the line. He then returns to the second block, lifted it and then sprinted across the starting line on the way back.

**Scoring:** The score was elapsed time recorded in seconds

## 5. Analysis And Interpretation Of Results

In the previous chapter the methodology in details has been presented. After the data collection was over, the data were analyzed by using **Independent ‘t’ Test** the results have been narrated, interpreted and discussed logically with scientific reasoning to arrive to conclusion.

**Shuttle Run Group Statistics**

Group	N	Mean	Std. Deviation	Std. Error Mean
Experimental	25	-0.32	0.59	0.11
Control	25	-0.64	2.74	0.54

**Table: Shuttle Run Independent Samples Test**

	Leven’s Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	T	df	Sig. (2-tailed)	Mean Diff.	Std. Error of Diff.
Equal variances assumed	4.54	0.038	0.57	48	0.57	0.32	0.56
Equal variances not assumed			0.57	26.22	0.57	0.32	0.56

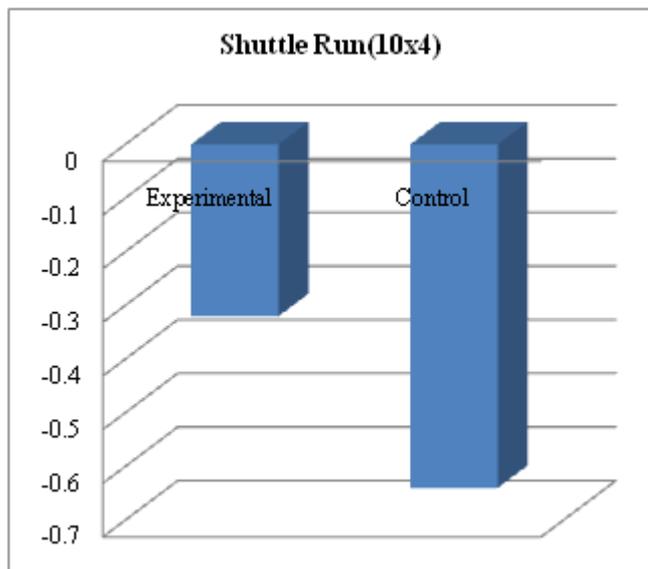
## Shuttle Run Group Statistics

Change in Shuttle run performance of experimental group was -0.32 and standard deviation 0.59 and that for control group it was -0.64 and standard deviation 2.74. (Table) Change of performance was compare with independent sample ,t” test. Equality of variances was tested by

Levenes”s test for equality of variances ,F” value 4.54 which was found statistically significant at 0.05 significance level. (p=0.038) This indicates that variances was equal mean difference between change Shuttle run score of experimental and control group was 0.32 (Table).

The mean difference between control and experimental was tested by Independent samples ,f" test where ,f" value was 0.57 (df=48) which was statistically not significant at 0.05 significance level(p=0.57). This indicates that Experimental group has shown significant growth in Shuttle run performance than control group.

<http://www.unm.edu/~lkraivit/ article %20folder/aqua.html>.



**Figure:** Graphical representation Mean Difference of Shuttle Run (10x4)

## 6. Conclusion

The observation of the experimental data, within limitations, help to conclude that, there was significant improvement in Shuttle run performance of school going girls underwent the Aqua training programme.

### Contribution to the Knowledge

- This study contributed one scientific as well as innovative schedule of aqua exercises that are found useful for the high school girls.
- Since majority of the school girls does not participate in physical activity, the result of the present study may be a motivating factor.
- This study proved that the girl students can actively participate in physical as well as aquatic activities without fear and aqua exercise training can help them to achieve physical fitness.

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