

## Effect of Six-Week Aqua Strength Training on Selected Motor Abilities of College Athletes

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### ABSTRACT

The present study was conducted to examine the effect of six-week aqua strength training on selected motor abilities among college athletes. The purpose of the study was to evaluate changes in speed, agility, and quickness following a structured aquatic training program. Twenty male college athletes aged 18 to 25 years were selected as participants. The subjects were randomly assigned to an experimental group (n = 10), which underwent aqua strength training, and a control group (n = 10), which continued their regular routine without specialized training.

Pre-tests were administered prior to the intervention, and post-tests were conducted after six weeks of training. Speed, agility, and quickness were measured using standardized test protocols. The data were analyzed using a paired-sample t-test to determine significant differences between pre-test and post-test scores.

The results indicated significant improvements in speed, agility, and quickness in the experimental group ( $p < .05$ ), whereas no significant changes were observed in the control group. The findings suggest that aqua strength training is an effective method for enhancing selected motor abilities among college athletes.

**Keywords:** aqua training, aquatic resistance training, motor abilities, speed, agility, quickness

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## INTRODUCTION

Games and sports have been documented throughout history as both recreational and competitive activities. In modern society, sport plays a significant role at the individual, community, national, and global levels. It contributes not only to physical health but also to social integration, economic development, and cross-cultural exchange. Physical education focuses on fundamental motor skills such as walking, running, jumping, and throwing, which are structured into organized games and sports.

Aquatic training has gained popularity due to its unique physiological and biomechanical advantages. When exercising in water, individuals must adapt to properties such as buoyancy, viscosity, hydrostatic pressure, and water resistance. Buoyancy reduces the impact stress on joints, bones, and muscles, making aquatic exercise safer compared to land-based training.

Water aerobics, also known as aquatic fitness or aquafit, is performed in shallow water and combines aerobic conditioning with resistance training. Aquatic resistance training requires participants to be partially or fully submerged, utilizing water resistance to enhance muscular strength, endurance, and neuromuscular coordination.

Due to the unloading effect of buoyancy, aquatic training enables athletes to train with reduced musculoskeletal stress while still improving performance-related components such as speed, agility, and quickness. Therefore, the present study aimed to examine the effect of a six-week aqua training program on selected motor abilities of college athletes.

## DELIMITATIONS AND LIMITATIONS

### Delimitations

1. The study was limited to twenty college athletes from the University of Calicut, Kerala.
2. The age of the subjects ranged from 18 to 24 years.
3. The sample size was restricted to  $N = 20$ .
4. Ten athletes were assigned to the experimental group, and ten to the control group.
5. The training duration was limited to six weeks.
6. The selected bio-motor abilities were speed, agility, and quickness.

### Limitations

1. Previous sports experience of the subjects was not controlled.
2. Dietary intake was not monitored or standardized.
3. Motivation levels during training and testing were not measured.
4. Environmental factors were not controlled.

## SELECTION OF VARIABLES

The optimal development of an athlete largely depends on bio-motor abilities. The integration of bio-motor abilities with skill proficiency helps athletes achieve optimal performance. Taking these factors into consideration, the following variables were

selected to observe changes resulting from the training intervention:

### **Bio-Motor Abilities**

1. Speed
2. Agility
3. Quickness

### SELECTION OF TESTS

The present study was undertaken primarily to assess the impact of Aqua training on bio motor abilities. The investigator analyzed various available literatures, had consulted the experts in the field of physical education and selected the following standardized test items to collect relevant data on the selected dependent variables and they are presented in table-I.

Sl. No	Criterion variables	Test items	Unit of Measurements
1	Speed	50meters dash	Seconds
2	Agility	Shuttle run	Seconds
3	Quickness	Choice-response test.	Seconds

### TRAINING SESSION

Each work out session was lasted for 75 to 90 minutes.

### AQUA TRAINING EXERCISES

<b>EXERCISES</b>			
Sl. No.	Low intensity	Medium intensity	High intensity
1	Pool press ups	Float and pull	jump twist
2	Sweep through	Kettlebell Squat	V-shaper
3	Ballet jump	Chest & back press	Front squat
4	Pressure punch	Leg extension	Lateral pull
5	Float and pull	Jumping jacks	----- ---
6	Military press	Lunges	Tuck jump
7	Bear hugs	Partner pull	-----
8	Lunge walk	Weighted high knees	Take off

## FINDINGS

### Speed

The data on speed were analyzed using the paired-sample t-test.

The mean values of the experimental group in the pre-test and post-test were 6.18 and 5.92 seconds, respectively. The corresponding standard deviations were 0.321 and 0.292. The calculated t-value was 5.751, which was greater than the critical value of 2.101 at the 0.05 level of significance (df = 18).

Thus, a significant improvement was observed in speed among the experimental group.

In the control group, the calculated t-value was 0.559, which was lower than the critical value, indicating no significant improvement.

#### PRE AND POST TEST SCORE OF SPEED

Control Factors	Pre test		Post test		df	t value
	N	SD	N	SD		
Experimental	10	0.321	10	0.292	18	5.751*
Control	10	0.139	10	0.137	18	0.559

\* Significant at 0.05 level of confidence. The table value result for significance is 2.101.

### Agility

The data on agility of the pre-test score and post-test were statistical analysis by t-test and presented in the table.

#### PRE AND POST TEST SCORE OF AGILITY

Control Factors	Pre test		Post test		df	t value
	N	SD	N	SD		
Experimental	10	0.466	10	0.423	18	5.009*
Control	10	0.230	10	0.170	18	1.220

\* Significant at 0.05 level of confidence. The table value result for significance is 2.101.

Table shows the number of subjects, standard deviation and 't' value of agility of experimental and control group. The mean values of experimental group pre and posttest were 12.247 and 11.936 and that of control group pre and post were 12.253 and 12.234. The standard deviation of experimental and control group pre and post were 0.466, 0.423 and 0.230, 0.170 respectively. The above table indicates that, there was a significant difference between the pre and post test performance on agility of

experimental group, since the calculated 't' value of 5.009 is higher than tabulated 't' value of 2.101 at 0.05 level of significance. Here control group shown no significant difference.

### Quickness

The data on quickness of the pre-test score and post-test were statistical analysis by t-test and presented in the table.

**PRE AND POST TEST SCORE OF QUICKNESS**

Control Factors	Pre test		Post test		df	t value
	N	SD	N	SD		
Experimental	10	0.088	10	0.074	18	5.4*
Control	10	0.080	10	0.087	18	1.280

\* Significant at 0.05 level of confidence. The table value result for significance is 2.101.

Table shows the mean values of experimental group pre and post test were 1.746 and 1.684 and that of control group pre and post were 1.71 and 1.724. The standard deviation of experimental and control group pre and post were 0.088, 0.074 and 0.080, 0.087 respectively.

The above table indicates that, there was a significant difference between the pre and post test performance on quickness of experimental group, since the calculated 't' value of 5.4 is higher than tabulated 't' value of 2.101 at 0.05 level of significance with 18 degrees of freedom. No significant difference were noted from the results on control group.

### DISCUSSION OF FINDINGS

The findings of the study revealed that the experimental group (aqua trainees) showed significant improvement in speed, agility, and quickness, whereas no significant differences were observed in the control group.

Systematically designed and scientifically monitored aqua training programs can enhance motor abilities by improving neuromuscular coordination and muscular strength while reducing joint stress.

It can therefore be concluded that a six-week aqua strength training program significantly improves selected motor abilities among college-level athletes. The inclusion of aqua training in the workout schedule may help coaches and trainers achieve improved athletic performance.

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