EFFECT OF AQUATIC AND NON-AQUATIC TRAINING ON EXPLOSIVE POWER-HORIZONTAL AMONG MEN VOLLEYBALL PLAYERS

M.GOKUL RAJ,

Ph.D. Research Scholar,
Department of Physical Education, SRM IST, Kattankulathur, Tamil Nadu.

Dr. M. SENTHIL KUMAR,

Assistant Professor,

Department of Physical Education, SRM IST, Kattankulathur, Tamil Nadu.

Abstract

Aquatictraining has become the most popular form of physical fitness. Water is a natural environment where harmony between human nature and exercises can be achieved, an environment in which almost everyone can work hard without pain and relax at the same time. Non-aquatictraining follows the same schedule of aquatic training but on the land surface.The study attempts to estimate the influence of aquatic and non-aquatic training on explosive power-horizontal among men volleyball players.To attain the purpose, 45 men volleyball players from various colleges of University of Madras, Tamil Nadu were selected as subjects for this study and they were in 18 to 21 years of age. Equal division of three groups were made in which two experimental and one control groups and each group had 15 subjects. Pre-test was taken on explosive power-horizontalfrom the subjects before start of the training. Aquatictraining was allotted to Experimental Group I; non-aquatic training was allotted to Experimental Group II and another group called Control Group was allotted no training except their daily routine. Training period for the experimental groups was restricted to ten weeks. Post-test was taken once atten weeks of training period over. ANCOVA and Scheffe's post hoc test were employed to analyze the obtained data. The study affirmed that the Aquatictraining had significant influence on explosive power-horizontalin comparison withother groups.

Keywords: AquaticTraining, Non-AquaticTraining, Explosive Power-Horizontal, ANCOVA.

1. INTRODUCTION

Sports is the medium where we all utilize the abilities of our physique to perform skills and techniques. While perform sports activities, our body and mind are coordinate in an excellent manner. It enables us to eradicate our strains and spend our time in a pleasant way, without the thinking of day to day sorrows. It gives satisfaction that enable us more active in our works.

"Training is a systematic process of repetitive, progressive exercise or work, involving also learning process and acclimatization" (Arnheim, Daniel D., 1985).

"Sports training is a goal oriented long term process of preparation of sportsmen for higher performance. It involves use of training means and methods for improving various performances prerequisites" (Hardayal Singh, 1991).

The participation of games and sports activities that strengthen not only our external body but also enhance the functions of internal organs. Many of the people select this as their profession and gain fame as well as wealth. Sports play a good role in unite the people of a country.

"Physical fitness and wellness are one's richest possessions; they cannot be purchased, they are to be earned through regular and systematic fitness programme and positive lifestyle habits"(Uppal A K., et.al., 2004).

A person with optimum physical fitness is capable enough to perform activities efficiently and also recover from tiredness quickly. At present, life regularly depends upon our knowledge skills. In such conditions, people need more workouts to stay them fit in performing their movements easily with less energy.

The sports training aims at finding out the hidden reserves and makes the sportsperson aware of it. It also aims at further development of these reserves. The Sportspersons control their day to day routine in such a manner that they are able to do training once or twice a day with high effect. It is basically an educational process. So, it strives to develop all the aspects of personality. It is a continuous process of perfection, improvement and creation of means and methods of improving sports performance and factors of performance. (Hardayal Singh,1991).

"Motor-performance fitness emphasizes the development of those qualities that enhance the performance of physical activities such as sport. Moreover, motor-performance fitness is specific to the sport or activity in which the individual engages. Different combinations of motor-performance fitness components are needed, depending on the specific motor activity"(Wuest, Deboran A. et. al., 1992).

"The rate at which performance efficiency is develops during the sports training is largely depend upon the amount of training and competition. It has the decisive bearing on the improvement of performance efficiency and performance ability"(Arvind Bahadur Singh, 2012).

Water based exercise is predominantly for lower body exercise in a low impact, resistance based, environment. Although water-based exercise or training began with an emphasis on the elderly, that is no longer the case. The principles of water-based training are similar to land-based training; however, the techniques are different. The body is uplifted in water by process called buoyancy and since the viscosity or thickness of the water is greater than

air, movement of the body through the water provides an increased level of resistance (drag) over land-based exercise.

The buoyancy factor provides support for the body, thereby reducing the likelihood of muscle, bone and joint injuries. Buoyancy is defined as the ability of water to support a body's weight. Items float or buoyant in water because they displace an amount of water that weighs the same as the item itself. To simplify, an item floats when it displaces its own weight in water.

Aqua training reduces impact on joints, reduces stress on joints by decreasing weight bearing, tones muscles, provides resistance in both eccentric (elongation) and concentric (contraction) muscle movements, improved balance and posture, increases flexibility, reducing capability for injury, allows special populations to exercise easily, equivalent calorie burn as land-based exercise. Because of the reduced influence of gravity, joints can easily be moved through the full range of motion without excess joint stress helping to improve flexibility. Deep Water-based running exercises can provide an augmented or alternate training regimen for runners who need to reduce the chronic effects of land-based running due to impact injuries.

Since the effects of gravity are reduced in water, impact is reduced while resistance to the movement is increased due to fluid dynamics. A water-based exercise or training programme can burn more calories than a comparable land-based class due to the increased resistance to movement while providing an increase in muscle strength and endurance.

Strength gains are not as good as weight bearing exercises on land since the buoyancy of the water reduces the weight. The speed of body movements through the water will subsequently be slower due to the increase in resistance. The equivalent level of physical fitness can be accomplished in water-based exercises as with land-based exercises.

Explosive poweris the ability to release maximum muscular force in the shortest time as in executing a standing broad jump (Baumgartner, Ted A., et.al., 1987).

II. Methodology

The purpose of the study was to evaluate the effect of aquatic and non-aquatic training on explosive power-horizontal among men volleyball players**.**To achieve the purpose of the study, 45 men volleyball players from various colleges of University of Madras, Tamil Nadu were selected as subjects for this study and they were in 18 to 21 years of age. They were separated into three groups in which one group exposed to aquatic training, second group exposed non-aquatic training and the third group acted as control group.

True random group design was implemented in this study which consisting of a pre-test and post-test. The subjects (n=45) were randomly separated into three equal groups of fifteen subjectsin each group. The groups were Experimental group Iassigned as aquatic traininggroup, group IIassigned as non-aquatic traininggroup and group III ascontrol group respectively. The investigator administered standing broad jump test to measure explosive power-horizontal. Pre-test was conducted for all the subjects on explosive power-horizontal. The experimental groups participated in their respective aquatic and non-aquatic training for a period of ten weeks. The post-test was conducted on explosive power-horizontalafter tenweeks of aquatic and non-aquatic training.

Statistical Techniques

The following statistical techniques were used to find out effect of aquatic and non-aquatic training on explosive power-horizontal among men volleyball players.

Analysis of covariance (ANCOVA) statistical technique was used to test the adjusted post test mean differences among the experimental groups. If the adjusted post test result was significant, the Scheffe's post-hoc test was used to determine the significance of the paired mean differences (Thirumalaisamy R., 1997).

III. Results onExplosive Power-Horizontal

TABLE I
Computation of Analysis of Covariance of Explosive Power-Horizontal
(Scores in Meters)

	Aquatic Training Group	Non-Aquatic TrainingGroup	Control Group	Sources of Variance	Sum of Squares	df	Mean squares	Obtained F-ratio
Pre-test Mean	2.35	2.32	2.31	B W	0.02 0.21	2 42	0.01 0.01	1.51
Post-test Mean	2.54	2.40	2.32	B W	0.40 0.19	2 42	0.20 0.01	44.18
Adjusted post-test Mean	2.52	2.41	2.33	B W	0.26 0.01	2 41	0.13 0.01	592.74

Table F-ration at 0.05 level of confidence for 2 and 42 (df) = 3.22, 2 and 41 df = 3.23
*: Significant

Table I shows the analyzed data on explosive power-horizontal. The pre-test means of explosive power-horizontal were 2.35 for aquatic training group, 2.32 for non-aquatic training group and 2.31 for control group. The obtained F-ratio 1.51 was lesser than the table F-ratio 3.22. Hence the pre-test was insignificant at 0.05 level of confidence for the degrees of freedom 2 and 42.

The post-test means were 2.54 for aquatic training group, 2.40 for non-aquatic training groupand 2.32 for control group. The obtained F-ratio 44.18 was greater than the table F-ratio

3.22. Hence, the post-test was significant at 0.05 level of confidence for the degrees of freedom 2 and 42.

The adjusted post-test means were2.52 for aquatic training group, 2.41 for non-aquatic training groupand 2.33 for control group. The obtained F-ratio 592.74was greater than the table F-ratio 3.23. Hence the adjusted post-test was significant at 0.05 level of confidence for the degrees of freedom 2 and 41.

TABLE II

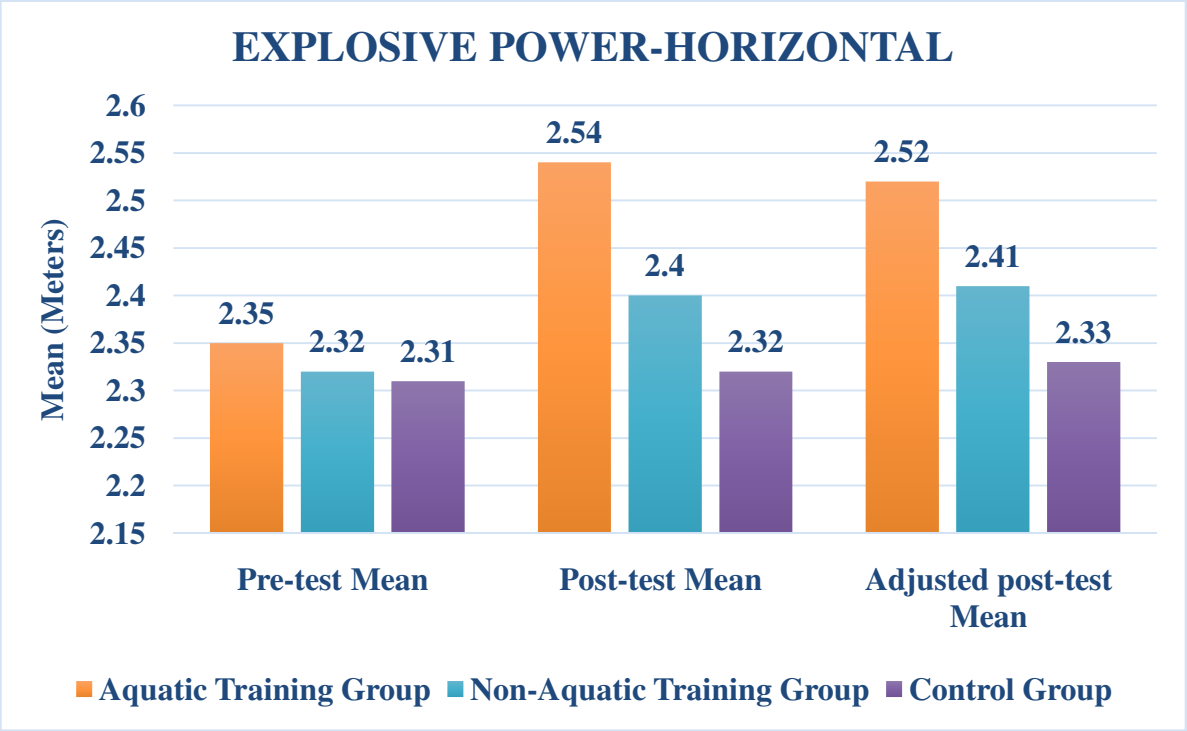
Computation of Analysis of Scheffe's Post-Hoc Test of Explosive Power-Horizontal (Scores in Meters)

Aquatic Training Group	Non-Aquatic Training Group	Control Group	Mean Difference (MD)	C.I Value
2.52	2.41		0.11*	0.09
2.52		2.33	0.19*	
	2.41	2.33	0.08	

* : Significant

Table II shows the scheffe's post-hoc test of ordered adjusted final mean difference of explosive power-horizontal for different groups. The difference between aquatic training group and non-aquatic training group was 0.11, aquatic training group and control group was 0.19 and non-aquatic training group and control group was 0.08 Hence,first and second group comparisons were significant and the third group comparison wasinsignificant.

Figure-1 Bar Diagram on Pre-Test Mean, Post-Test Mean and Adjusted Post-Test Mean of Explosive Power-Horizontal



IV. Conclusions

- The study was concluded that ten weeks ofaquatic training group had better improvement on explosive power-horizontal than other groups.
- The research showed thatnon-aquatic training group also had significant improvement on explosive power-horizontal than control group.

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