



## ASSESSMENT OF MUSCULAR ENDURANCE OF COLLEGE LEVEL VOLLEYBALL PLAYERS IN THRISSUR DISTRICT OF KERALA THROUGH SELECTED ISOLATED AND COMBINED YOGIC PRACTICES AND HYDROTHERAPY TREATMENT

**Dr. V. A. MANICKAM**

Assistant Professor, Department of Physical Education and Health Sciences, Alagappa University, Karaikudi,-630 004, Tamilnadu, India.

**ANEESH RAJAPPAN**

Department of Physical Education, College of Co-operation Banking and Management, Kerala Agricultural University, Thrissur, Kerala.

### ABSTRACT

Aim of this study was to assess the Muscular Endurance of College level Volleyball players in Thrissur District of Kerala through selected isolated and combined Yogic Practices and Hydrotherapy. To achieve this purpose, for this study, sixty (N=60) student from Kerala Agricultural University, Thrissur, Kerala India, were selected as subjects at random. The subjects will be divided randomly into four groups of fifteen each (n=15) namely Group-I underwent yoga practices, group-II underwent Hydrotherapy treatment, group-III underwent combined yogic practices and Hydrotherapy treatment and group IV acted as control. The athletes' age ranged between 18 and 21 years. All the Experimental groups undergo their respective training for 12 weeks in addition to the regular training as per College curriculum. Among various general fitness variables, Muscular Endurance only was selected as dependent variable and it was assessed by Bent Knee Sit-up test. The data was collected from the three groups prior to and post experimentation on Muscular Endurance was statistically analyzed by using Analysis of Covariance (ANCOVA). Hence, whenever they obtained f-ratio value was significant the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases 0.05 level of significance was fixed. The results of the study showed there was a significant difference among the selected groups, further the results showed, combined yogic practices and hydrotherapy group was better than other groups on the development of Muscular Endurance.

### KEYWORDS

Yogic Practices, Hydrotherapy, Combined Training, Muscular Endurance

### INTRODUCTION

Sports training are a scientifically based and pedagogically organized process which through planned and systematic, effect on performance ability and performance readiness aims at sports activities that require rapid force production (*Gualdi and Zaccagni 2001*).

Yoga is an ancient Indian practice dealing with the well being of human mind, body and spirit. The principles of yoga, called Yogasutra, were given by Patanjali, a saint philosopher and a physician, who lived around 3 centuries before Christ. He is known as the founder of yoga. These sutras are timeless and hold true even today. They help you to lead a blissful life by improving your physical, emotional and spiritual well-being. Yoga is a series of exercises that is performed to improve health and flexibility. People of any age, sex or any fitness level can practice yoga. The beauty of yoga is that it is highly flexible, so you can modify yoga techniques to meet your need. If you have mobility problems, use chair to perform yoga. Office-goers can try the deep-breathing practices to relieve their stress (*Gharote, 1976*).

Yoga is the oldest known science of self-development, originated in ancient India. Yogic practice is a physical and mental exercises practiced throughout the world. Many research studies of the past report that yogic training improves the physical & mental fitness level as well as the performance of sports persons in various sports disciplines.

Yoga can help to check any imbalance in muscular development and will enable both mind and body to function more efficiently. Practicing of yoga asanas strengthen the muscles, release physical tension and improve concentration and poise. Yoga makes limbs balanced strong and relaxed. The standing poses improve balance and muscle flexibility. Yogic practice can help players to relax and replenish their energy after strenuous games. It also promotes calm, clear thinking even in situations that call for fast reactions. Yoga stretches and strengthens all muscles of body and brings peace and calm to the mind and spirit.

### METHODOLOGY

This study was designed to assess the Muscular Endurance of College level Volleyball players in Thrissur District of Kerala through selected isolated and combined Yogic Practices and Hydrotherapy. To achieve this purpose, for this study, sixty (N=60) student from Kerala Agricultural University, Thrissur, Kerala India, were selected as subjects at random. The subjects will be divided randomly into four groups of fifteen each (n=15) namely Group-I underwent yoga practices, group-II underwent Hydrotherapy treatment, group-III underwent combined yogic practices and Hydrotherapy treatment and group IV acted as control. The athletes' age ranged between 18 and 21 years. All the Experimental groups undergo their respective training for 12 weeks in addition to the regular training as per College curriculum. Among various general fitness variables, Muscular Endurance only was selected as dependent variable and it was assessed by Bent Knee Sit-up test. The data was collected from the three groups prior to and post experimentation on Muscular Endurance was statistically analyzed by using Analysis of Covariance (ANCOVA). Hence, whenever they obtained f-ratio value was significant the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases 0.05 level of significance was fixed.

### ANALYSIS OF THE DATA

The data collected from the experimental groups and control group on prior and after experimentation on selected variables were statistically examined by analysis of covariance (ANCOVA) was used to determine differences, if any among the adjusted post test means on selected criterion variables separately. Whenever they obtained f-ratio value in the simple effect was significant the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases 0.05 level of significance was fixed.

The Analysis of covariance (ANCOVA) on Muscular Endurance of yoga practices group, Hydrotherapy group, combined group and control group, have been analyzed and presented in Table-I.

### TABLE - I ANALYSIS OF COVARIANCE ON MUSCULAR ENDURANCE OF YOGA PRACTICES GROUP HYDROTHERAPY GROUP AND CONTROL GROUP

Adjusted Post-test Means				Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
Yoga Practices Group	Hydrotherapy Group	Combined Yoga Practices and Hydrotherapy Group	Control Group					
17.56	18.25	19.56	15.19	Between	133.70	3	44.57	67.53*
				Within	36.19	55	0.66	

**\* Significant at .05 level of confidence (Muscular Endurance Scores in Numbers)**  
**(The table value required for Significance at .05 level with df 3 and 55 is 2.77)**

Table I shows that the adjusted post test mean values of Muscular Endurance for yoga practices group, Hydrotherapy group, combined yoga practices and hydrotherapy group and control group are 17.56, 18.25, 19.56 and 15.19 respectively. The obtained F-ratio of 67.53 for adjusted post test mean is more than the table value of 2.77 for df 3 and 55 required for significant at 0.05 level of confidence.

The results of the study indicate that there are significant differences among the adjusted post test means of yoga practices group, Hydrotherapy group, combined yoga practices and hydrotherapy group and control group on the development of resting pulse rate.

To determine which of the paired means had a significant difference, the Scheffe's test was applied as Post hoc test and the results are presented in Table II.

**TABLE - II THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED POST TEST PAIRED MEANS ON RESTING PULSE RATE**

Adjusted Post-test Means				Mean Difference	Confidence Interval
Yoga Practices Group	Hydrotherapy Group	Combined Yoga Practices and Hydrotherapy Group	Control Group		
17.56	18.25			0.69*	0.29
17.56		19.56		2.00*	0.29
17.56			15.19	2.37*	0.29
	18.25	19.56		1.31*	0.29
	18.25		15.19	3.09*	0.29
		19.56	15.19	4.37*	0.29

**\* Significant at .05 level of confidence**

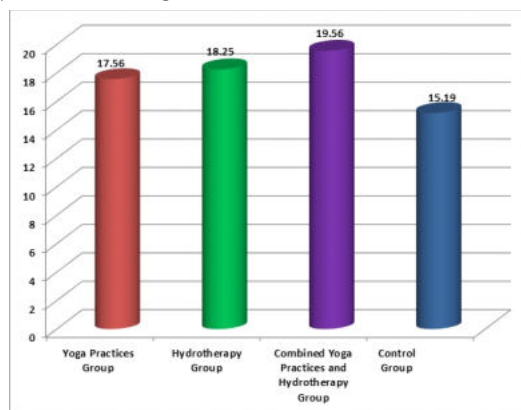
Table II shows that the adjusted post test mean differences on Yoga Practices Group and Hydrotherapy group, Yoga Practices Group and Combined Yoga Practices and Hydrotherapy Group, Yogic Practices group and Control group, Hydrotherapy group and Combined Yoga Practices and Hydrotherapy Group, Hydrotherapy and Control group, Combined Yoga Practices and Hydrotherapy Group and Control group are 0.69, 2.00, 2.37, 1.31, 3.09 and 4.37 respectively. The values are greater than the confidence interval value 0.29, which shows significant differences at 0.05 level of confidence.

It may be concluded from the results of the study that there is a significant difference in Muscular Endurance between the

adjusted post test means of Yoga Practices Group and Hydrotherapy group, Yoga Practices Group and Combined Yoga Practices and Hydrotherapy Group, Yogic Practices group and Control group, Hydrotherapy group and Combined Yoga Practices and Hydrotherapy Group, Hydrotherapy and Control group, Combined Yoga Practices and Hydrotherapy Group and Control group. However, the improvements of Muscular Endurance were significantly higher for Combined Yoga Practices and Hydrotherapy Group than yoga practices group, Hydrotherapy group and control group.

It may also be concluded that Yoga Practices and Hydrotherapy Group is better than Yoga Practices Group, Hydrotherapy group and control group in improving Muscular Endurance.

The adjusted post test mean values of Yogic practices group, Hydrotherapy Group, Combined Yoga Practices and Hydrotherapy Group and Control group on Muscular Endurance are graphically represented in the Figure -I.



**Figure -I: The adjusted post test mean values of Yogic practices group, Hydrotherapy Group, Combined Yoga Practices and Hydrotherapy Group and Control group on Muscular Endurance**

**CONCLUSION**

From the analysis of the data, the following conclusions are drawn.

1. The Experimental groups namely, yoga practices group and Hydrotherapy group had significantly improved in resting pulse rate.
2. Significant differences were also noted between yoga practices group and Hydrotherapy group in resting pulse rate.

The yoga practices group was found to be better reduction of resting pulse rate, than the Hydrotherapy group and control group.

**REFERENCES**

1. Gharote, M.L (1976), "Contribution of yoga to the field of Physical Education" India
2. Gualdi-Russo E, Zaccagni L. (2001), Somatotype, role and performance in elite volleyball players, J Sports Med Phys Fitness, 41(2):256-62.