ORIGINAL RESEARCH PAPER

Volume-7 | Issue-3 | March-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ISOLATED AND COMBINED YOGIC PRACTICES AND COMBINED PLYOMETRIC TRAINING ON MUSCULAR STRENGTH AMONG SCHOOL LEVEL VOLLEYBALL PLAYERS

Physical Education

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ABSTRACT

The purpose of the study was to determine the isolated and combined yogic practices and plyometric training on muscular strength among school level Volleyball players. To achieve the purpose of the study, sixty (N=60) boys school Volleyball players in Sivagangai District, Tamilnadu, India were selected randomly as subjects during the year 2015-2016. They were divided randomly into four groups of fifteen each i.e., (n=15) Group-I underwent Yogic Practices, Group-II underwent Plyometric Training, Group-III underwent Combined Yogic Practices and Plyometric Training and Group-IV acted as Control. The Experimental groups underwent respective training period for three days per week for twelve weeks. The dependent variable selected for this study was Muscular Strength. All the subjects were tested prior to and immediately after the experimental period on the selected dependent variables. The data collected from the four groups prior to and post experimentation were statistically analyzed by analysis of covariance (ANCOVA). Since four groups were involved, whenever the obtained 'F' ratio for adjusted post test means was found to be significant, the Scheffe's test was applied as post hoc test to determine the paired mean differences. The experimental groups had significant increase on Muscular Strength when comparing to the control group.

KEYWORDS

Yogic practice, Plyometric, Muscular Strength

INTRODUCTION

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.

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 ***(Mira Mehta, 1994).***

The vital role played by yoga i.e. physical fitness, fitness related to health, skill and performance has assumed tremendous importance in recent times. The life style changes leading to positive energy balances has been the causative factor for many of the metabolic disorders like hypertension, diabetes malites, cardio vascular diseases and obesity and related problems. Yoga, which is a time tested method, has shown great positive influence on physical, mental, psychological, social and spiritual personalities of a person. With the above in background various research works have been undertaken to measure the changes that take place during yoga practice.

Plyometric training is known to be an intense form of exercise that requires maximal efforts to create the physiological change associated with elite athletic performance. This system became popular in the late 60's to the early 70's and was credited with being responsible for much of the East European success in athletics during that time. Since then, the use of plyometric training has evolved into a mainstay of the training and development programs of virtually all-sporting events. With this transition came many questions, including the age, gender and strength levels of the athletes who would benefit from this form of training. The fundamental reason to train with plyometric is to reduce the ground contact time that an athlete spends when running or jumping. This time is reduced as the athlete matures, gets stronger, and practices the skills of their game. To further enhance resistance training the athlete spends considerable time practicing the specific movement skills they wish to improve; namely, running and jumping. These two movement patterns are often thought of as genetic endowments and affected little by outside influences such as training programs. To the contrary, research has shown that virtually all athletes can positively influence their performance outcomes by using plyometric training on a regular basis. In order to implement this type of training with young athletes several factors must be considered. The first consideration is what controlled research studies tell us about this form of training and its effect on young children.

Plyometric training can take many forms, including jump training for the lower extremities and medicine ball exercises for the upper extremities. Jump training exercises were classified according to the relative demands they placed on the athlete. All the exercises are progressive in nature, with a range of low to high intensity in each type of exercise. The classification of exercises is jumps in place; standing jumps; multiple hops and jumps, bounding, box drills and depth jumps ***(Baechle, 1994).***

METHODOLOGY

To achieve the purpose of the study, sixty (N=60) boys school Volleyball players in Sivagangai District, Tamilnadu, India were selected randomly as subjects during the year 2015-2016. They were divided randomly into four groups of fifteen each i.e., (n=15) Group-I underwent Yogic Practices, Group-II underwent Plyometric Training, Group-III underwent Combined Yogic Practices and Plyometric Training and Group-IV acted as Control. The Experimental groups underwent respective training period for three days per week for twelve weeks. The dependent variable selected for this study was Muscular Strength. Muscular Strength was assessed through sit and reach test.

The data collected from the four groups prior to and post experimentation were statistically analyzed by analysis of covariance (ANCOVA). Since four groups were involved, whenever the obtained 'F' ratio for adjusted post test means was found to be significant, the Scheffe's test was applied as post hoc test to determine the paired mean differences the level of significant fixed at 0.05.

RESULTS

The analysis of dependent 't'-test on the data obtained Muscular Strength of the subjects in the Pre-test and Post-test of Yogic Practices group, Plyometric Training group, Combined Yogic Practices and Plyometric Training group and Control group have been presented in Table-1

Table – 1 THE SUMMARY OF MEAN AND DEPENDENT 't' TEST FOR THE PRE AND POST TESTS ON MUSCULAR STRENGTH OF EXPERIMENTAL GROUPS AND CONTROL GROUP

Mean	Yogic Practices Group – (I)	Plyometric Training Group – (II)	Combined Yogic Practices and Plyometric Training Group – (III)	Control Group-(IV)
Pre- test mean	15.07	15.27	15.47	14.33
Post-test mean	18.07	18.87	21.53	14.60
't'-test	2.92*	3.42*	6.60*	0.25

Significant at 0.05 level.

(Table value required for significance at .05 level for 't'-test with df 14 is 2.15)

Table - 1 shows that the pre-test mean on Muscular Strength of Yogic Practices group, Plyometric Training group, Combined Yogic Practices and Plyometric Training group and Control group are 15.07, 15.27, 15.47 and 14.33 respectively. The post-test mean are 18.07, 18.87, 21.53 and 14.60 respectively. The obtained dependent t-ratio values between the pre and post test means on Muscular Strength of Yogic Practices group, Plyometric Training group, Combined Yogic Practices and Plyometric Training group and Control group are 2.92, 3.42, 6.60 and 0.25 respectively.

The table value required for significant difference with df 14 at 0.05 level is 2.15. It was concluded that Experimental groups such as Yogic Practices group, Plyometric Training group, and Combined Yogic Practices &Plyometric Training group had registered significant improvement in Muscular Strength.

The results of the Analysis of Covariance on Muscular Strength of the pre, post, and adjusted test scores of Yogic Practices group, Plyometric Training group, Combined Yogic Practices and Plyometric Training group and Control group are presented in Table –2.

Table – 2 ANALYSIS OF COVARIANCE ON MUSCULAR STRENGTH OF EXPERIMENTAL GROUPS AND CONTROL GROUP

Test	Yogic Practices Group – (I)	Plyometric Training Group – (II)	Combined Yogic Practices and Plyometric Training Group – (III)	Control Group-(IV)	Source of Variance	Sum of Squares	df	Mean Squares	F ratio
Pre Test Mean	15.07	15.27	15.47	14.33	Between	11.00	3	3.67	1.52
					Within	134.93	56	2.41	
Post Test Mean	18.07	18.87	21.53	14.60	Between	367.73	3	122.58	37.72*
					Within	182.00	56	3.25	
Adjusted Post Test Mean	18.04	18.71	21.24	15.08	Between	268.71	3	89.57	41.18*
					Within	119.64	55	2.18	

Significant at 0.05 level of confidence
(**Muscular Strength** Scores in **Counts**)

Table value for df (3, 56) at 0.05 level = 2.76 Table value for df (3, 55) at 0.05 level = 2.78

The above table-2 shows that the pre-test mean values on Muscular Strength of Yogic Practices group, Plyometric Training group, Combined Yogic Practices and Plyometric Training group and Control group are 15.07, 15.27, 15.47 and 14.33 respectively. The obtained 'F' ratio of 1.52 for pre-test scores was lesser than the table value of 2.76 for degrees of freedom 3 and 56 required for significance at 0.05 level of confidence on Muscular Strength.

The post test mean values on Muscular Strength of Yogic Practices group, Plyometric Training group, Combined Yogic Practices and Plyometric Training group and Control group are 18.07, 18.87, 21.53 and 14.60 respectively. The obtained 'F' ratio of 85.85 for post-test scores was higher than the table value of 37.72 for degrees of freedom 3 and 56 required for significance at 0.05 level of confidence on Muscular Strength.

The adjusted post-test means on Muscular Strength of Yogic Practices group, Plyometric Training group, Combined Yogic Practices and Plyometric Training group and Control group are 18.04, 18.71, 21.24 and 15.08 respectively. The obtained 'F' ratio of 41.18 for adjusted post-test scores was higher than the table value of 2.78 for degrees of freedom 3 and 55 required for significance at 0.05 level of confidence on Muscular Strength.

The results of the study indicate that there are significant differences among the adjusted post test means of Yogic Practices group, Plyometric Training group, Combined Yogic Practices and Plyometric Training group and Control group in Muscular Strength performance.

To determine which of the paired means have a significant difference, the Scheffe's test is applied as Post hoc test and the results are presented in Table – 3.

Table – 3 THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED POST TEST PAIRED MEANS ON MUSCULAR STRENGTH

Adjusted Post-test Means				Mean Difference	Confidence Interval
Yogic Practices Group – (I)	Plyometric Training Group – (II)	Combined Yogic Practices and Plyometric Training Group – (III)	Control Group-(IV)		
18.04	18.71			0.66	1.55
18.04		21.24		3.19*	1.55
18.04			15.08	2.97*	1.55
	18.71	21.24		2.53*	1.55
	18.71		15.08	3.63*	1.55
		21.24	15.08	6.16*	1.55

Significant at 0.05 level of confidence

Table-3 shows that the adjusted post test mean differences on Muscular Strength between Yogic Practices group and Combined Yogic Practice and Plyometric Training group, Yogic Practices group and Control group, Plyometric Training group and Combined Yogic Practice and Plyometric Training group, Plyometric Training group and Control group and Combined Yogic Practice and Plyometric Training group and Control group are 3.19, 2.97, 2.53, 3.63 and 6.16 respectively, which are greater than the confidence interval value of 1.55 on Muscular Strength at 0.05 level of confidence.

Further the table-3 shows that the adjusted post test mean differences on Muscular Strength between Yogic Practices group and Plyometric Training Group is 0.66, which is less than the confidence interval value of 1.55 on Muscular Strength at 0.05 level of confidence.

The results of the study showed that there was a significant difference between Yogic Practices group and Combined Yogic Practice and Plyometric Training group, Yogic Practices group and Control group, Plyometric Training group and Combined Yogic Practice and Plyometric Training group, Plyometric Training group and Control group and Combined Yogic Practice and Plyometric Training group and Control group on Muscular Strength. Further the results of the study showed that there was no significant difference between Yogic Practices group and Plyometric Training Group on Muscular Strength.

The above data also reveal that Combined Yogic Practice and Plyometric Training group had shown better performance than Yogic Practices group, Plyometric Training group and Control group in Muscular Strength.

The pre and post mean values of Yogic Practices group, Plyometric Training group, Combined Yogic Practices and Plyometric Training group and Control group on Muscular Strength are graphically represented in the Figure -1.

The adjusted post mean values of Yogic Practices group, Plyometric Training group, Combined Yogic Practices and Plyometric Training group and Control group on Muscular Strength are graphically represented in the Figure –2.

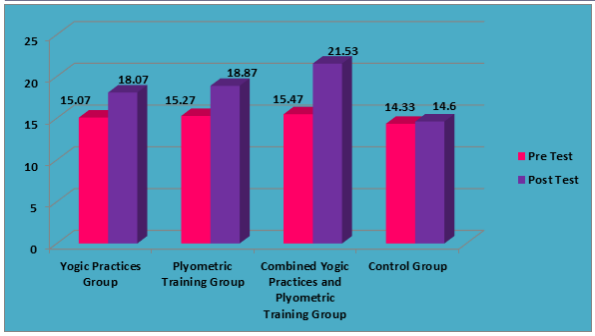

Figure:1 The Pre and Post test Mean values of Yogic Practices group, Plyometric Training group, Combined Yogic Practices and Plyometric Training group and Control group on Muscular Strength (In Counts)

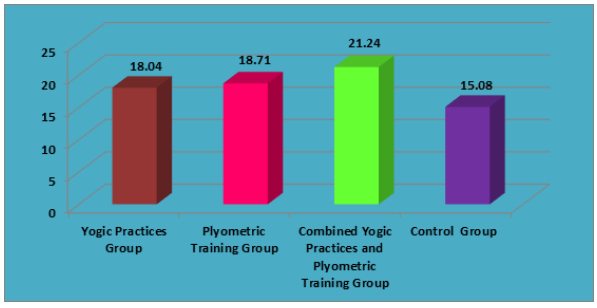

Figure: 2 The Adjusted Post Mean Values of Yogic Practices group, Plyometric Training group, Combined Yogic Practices and Plyometric Training group and Control group on Muscular Strength (In Counts)

CONCLUSION

The present result of the study confirmed that all the three experimental groups had significant increase on muscular strength when comparing to the control group, due to twelve weeks of Yogic Practices group, Plyometric Training group, Combined Yogic Practices and Plyometric Training group. However the Combined Yogic Practices and Plyometric Training group was better than the other two experimental groups to increase the muscular strength.

REFERENCES

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