COMBINED EFFECT OF YOGIC PRACTICES RESISTANCE AND PLYOMETRIC TRAINING ON SELECTED PHYSIOLOGICAL VARIABLE AMONG VOLLEYBALL PLAYERS

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Abstract

The purpose of the study was to investigate the combined effect of yogic practices, resistance and plyometric on selected physiological variables among volleyball players. To achieve the purpose of the present study, forty five volleyball players were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into three equal groups. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects (N=45) were randomly assigned to three equal groups of fifteen subjects each. The groups were assigned as yogic practices with resistance training (YPRTG), yogic practices with plyometric training (YPPTG) and control group (CG) in an equivalent manner. The three groups were participated the training for a period of twelve weeks to find out the outcome of the training packages. The three groups were statistically analysed by using analysis of covariance (ANCOVA) and Scheffe's post hoc test was applied to find out which pair of group is high among the others. The result of the study reveals that there was a significant improvement in the experimental groups on selected variables when compared to the control group after the completion of twelve weeks of yogic practices with resistance training and yogic practices with plyometrics training

Key words: Yoga, Resistance Training, Plyometric Training, Volleyball Players.

Introduction

Yoga is a science practiced in India over thousands of years. It produces consistent physiological changes and have sound scientific basis **(Iyengar, 1968)**. Yoga has been practised in India for over two millennia. Stories and legends from ancient times testify to the existence of yoga, and to the practitioners and divinities associated with it **(Ananda, 1982)**. Yoga is a science like all other sciences it is based on observation and experiment. This method of observation and experiment is regarded in the west as a distinctly modern innovation, but as a matter fact it was adopted in India in very ancient time by the seers of truth. Through the process of close observation and constant experiment they discovered the fine forces of nature, as also the laws that govern our physical, mental and spiritual being.

Resistance exercise using an array of different modalities has become popular over the past 70 years. **Avery and Faigenbaum** (2007) opines that regular strength training can mean the difference between spending your last years in a nursing home and spending them traveling, enjoying your family and doing recreational pursuits. However the concern for physical fitness is a common interest of every human being starting from infancy to aged. Today the people of every country are more concerned with physical fitness than ever before as it has become the vital part of winning sports competitions. In the modern scientific age in every field of human endeavour systematic, objective and scientific procedures are followed in accordance with principles based on experience, understanding and application of knowledge of science. Resistance training is well established effective methods of exercise for developing muscular fitness. **Fleck and kraemer (1988)** describe the primary goals of resistance training as improving muscular strength and endurance.

Plyometrics are power improvement workouts designed specifically for athletes and advanced exercisers who have a well-conditioned body. Training with this mode of exercise increase muscular strength and improve a specific skill whether it is to jump higher, jump longer, throw farther or hit harder. Systematic plyometric exercises follow a specific pattern of muscle contractions. These exercises use movements that develop the ability to generate a large amount of force quickly. The most common exercises from ordinary exercisers for this type are jumping rope, jumping jacks, throwing and catching ball on wall, and boxing with a punching bag. These are usually practiced under supervision by fitness experts or by athletes' coaches. There are techniques and rules to follow when training with plyometrics especially if you are training for a specific sport **(Chu, 1998).**

Methodology

The purpose of the study was to investigate the combined effect of yogic practices, resistance and plyometric training on selected physiological variables among volleyball players. To achieve the purpose of the present study, forty five volleyball players from were selected as subjects at random and their ages ranged from 18 to 25 years. The subjects were divided into three equal groups. The investigator selected the following variables for the present investigation.

TABLE - I

S.NO.	VARIABLES	TEST ITEMS	UNITS
1	Vital Capacity	Spirometer	In Litres
2	Resting Pulse Rate	Stethoscope	In beats/min
3	Systolic Blood pressure	Sphygmomanometer	In mmhg
4	Diastolic Blood Pressure		

True randomized experimental group design has been employed with three groups, namely yogic practices with resistance training group, yogic practices with plyometrics

training group and control group with 15 subjects each. Group I and II participated their respective treatments for a period of twelve weeks and no training were given to the control group. The three groups were statistically analysed by using analysis of covariance (ANCOVA). In case of significance of mean difference was observed on the criterion measure, as a post – hoc test, the Scheffe's test was applied to find out which pair of group is high among the others.

Results and Discussion

The detailed procedure of analysis of data and interpretation were given below,

Table-II
Summary of Descriptive Statistics on Selected Physiological Variables among Volleyball Players

S.No	Variables	YPRTG		YPPTG		CG	
		Pre-Test Mean	Post-Test Mean	Pre-Test Mean	Post-Test Mean	Pre-Test Mean	Post-Test Mean
1	Vital Capacity	1.59	2.92	1.56	3.17	1.57	1.63
2	Resting Pulse Rate	74.06	70.66	74.13	70.20	74.46	74.26
3	Systolic Blood Pressure	123.86	120.80	123.53	120.60	123.93	124.06
4	Diastolic Blood Pressure	83.60	79.46	82.60	79.80	83.60	82.93

YPRTG = Yogic Practices with Resistance Training Group
YPPTG = Yogic Practices with Plyometric Training Group
CG = Control Group

The table II shows that the pre and post test means of three groups on selected physiological and performance variables of volleyball players.

Table - III

Analysis of Variance of Pre Test Scores on Selected Physiological Variables among Volleyball Players

Sl. No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
1	Vital Capacity	**BG**	0.008	2	0.004	0.06
		WG	2.34	42	0.05	
2	Resting Pulse Rate	**BG**	1.37	2	0.68	0.32
		WG	88.40	42	2.10	
3	Systolic Blood Pressure	**BG**	1.37	2	0.68	0.49
		WG	58.40	42	1.39	
4	Diastolic Blood Pressure	**BG**	10.00	2	5.00	3.05
		WG	68.80	42	1.63	

***** $P < 0.05$ Table F, df (2,42) (0.05) = 3.21

In table III, the results of analysis of variance of pre test scores on vital capacity (0.06), resting pulse rate (0.32), systolic blood pressure (0.49), diastolic blood pressure (3.05) were lesser than the table value of 3.21 indicating that it was not significant for the degrees of freedom (2,42) at 0.05 level of confidence indicating that the random sampling was successful.

Table-IV

Analysis of Variance of Post Test Scores on Selected Physiological Variables among Volleyball Players

Sl. No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
1	Vital Capacity	**BG**	20.61	2	10.30	65.31*
		WG	6.62	42	0.15	
2	Resting Pulse Rate	**BG**	148.57	2	74.28	22.18*
		WG	140.66	42	3.34	
3	Systolic Blood Pressure	**BG**	113.64	2	56.82	68.31*
		WG	34.93	42	0.83	
4	Diastolic Blood Pressure	**BG**	109.73	2	54.86	37.73*
		WG	61.06	42	1.45	

***** $P < 0.05$ Table F, df (2,42) (0.05) = 3.21

In table IV, the results of analysis of variance of post test scores on vital capacity (65.31), resting pulse rate (22.18), systolic blood pressure (68.31) and diastolic blood pressure (37.73) were greater than the table value of 3.21 indicating that it was significant for the degrees of freedom (2,42) at 0.05 level of confidence.

Table-V

Analysis of Covariance of Adjusted post test scores on Physiological Variables among Volleyball Players

Sl. No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
1	Vital Capacity	**BG**	20.57	2	10.28	72.42*
		WG	5.82	41	0.14	
2	Resting Pulse Rate	**BG**	153.91	2	76.95	23.51*
		WG	134.18	41	3.27	
3	Systolic Blood Pressure	**BG**	110.57	2	55.28	66.42*
		WG	34.12	41	0.83	
4	Diastolic Blood Pressure	**BG**	104.45	2	52.22	35.63*
		WG	60.08	41	1.46	

***** $P < 0.05$ Table F, df (2,41) (0.05) = 3.22

In table V, the results of analysis of covariance of adjusted post test scores on vital capacity (72.42, resting pulse rate (23.51), systolic blood pressure (66.42), diastolic blood pressure (35.63) were greater than the table value of 3.22 indicating that it was significant for the degrees of freedom (2,41) at 0.05 level of confidence.

Table-VI

Scheffe's Post-Hoc Test for the Selected Physiological Variables among Volleyball Players

Sl. No	Variables	Means			Mean Difference	CI
		YPRTG	YPPTG	CG		
1	Vital Capacity	2.91	3.18	---	0.27	0.34
		2.91	---	1.63	1.28*	
		---	3.18	1.63	1.55*	
2	Resting Pulse Rate	70.62	70.17	---	0.45	1.67
		70.62	---	74.33	3.71*	
		---	70.17	74.33	4.16*	
3	Systolic Blood Pressure	120.79	120.62	---	0.17	0.84
		120.79	---	124.04	3.25*	
		---	120.62	124.04	3.42*	
4	Diastolic Blood Pressure	79.42	79.87	---	0.45	1.11
		79.42	---	82.89	3.47*	
		---	79.87	82.89	3.02*	

From the table VI it can be seen that the mean differences between yogic practices with resistance training and control group, yogic practices with plyometric training and control group of vital capacity (1.28, 1.55), resting pulse rate (3.71, 4.16), systolic blood pressure (3.25, 3.42), diastolic blood pressure (3.47, 3.02) respectively, greater than the confidential interval value (0.34, 1.67, 0.84, 1.11) respectively, which was significant at 0.05 level of confidence. The mean differences between yogic practices with resistance training and yogic practices with plyometric training of vital capacity (0.27), resting pulse rate (0.45), systolic blood pressure (0.17), diastolic blood pressure

(0.45) respectively, lesser than the confidential interval value (0.34, 1.67, 0.84, 1.11) which was insignificant at 0.05 level of confidence.

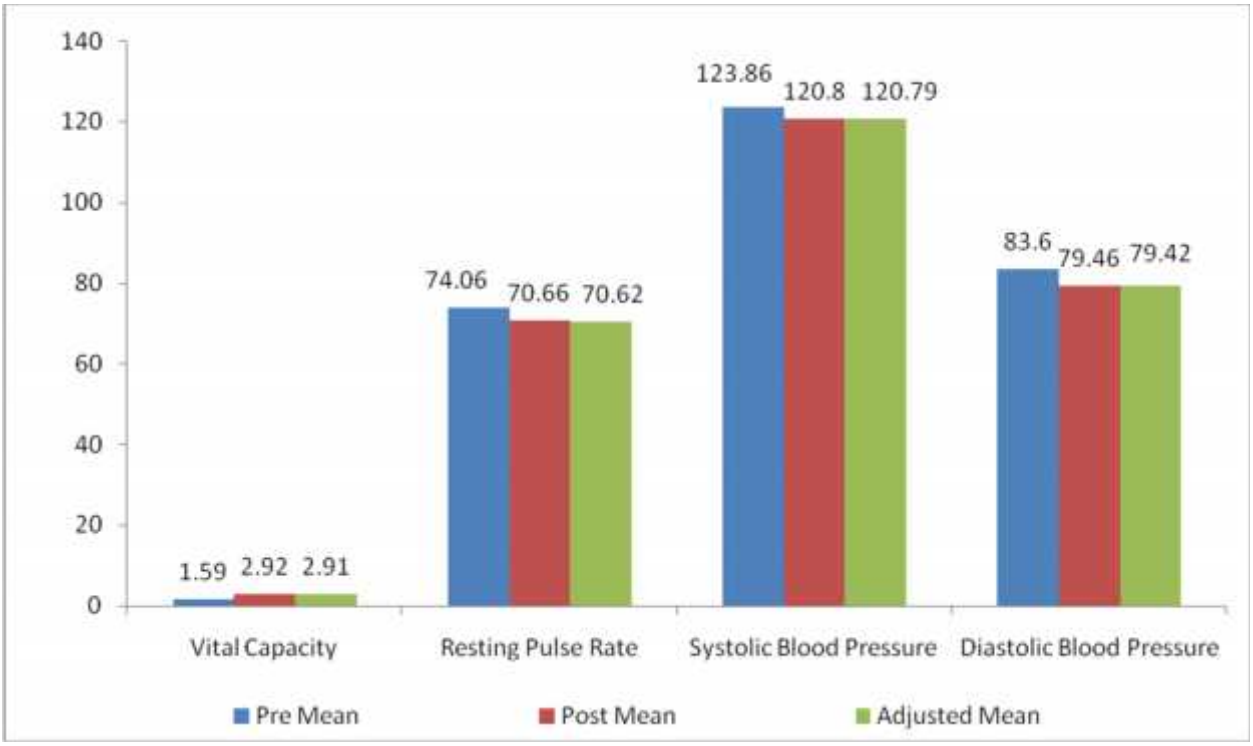

Figure-I Shows the Mean Values of Yogic Practices with Resistance Training Group on Physiological Variables among Volleyball Players

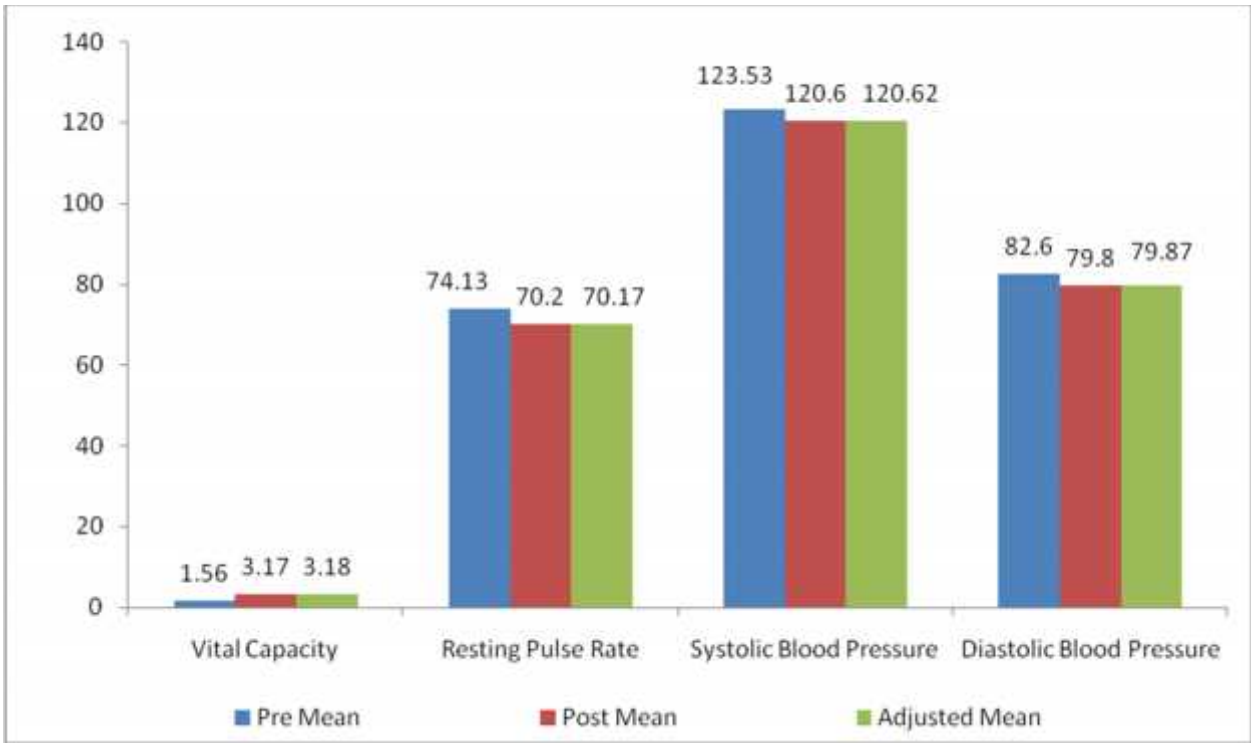

Figure-II Shows the Mean Values of Yogic Practices with Plyometric Training Group on Physiological Variables among Volleyball Players

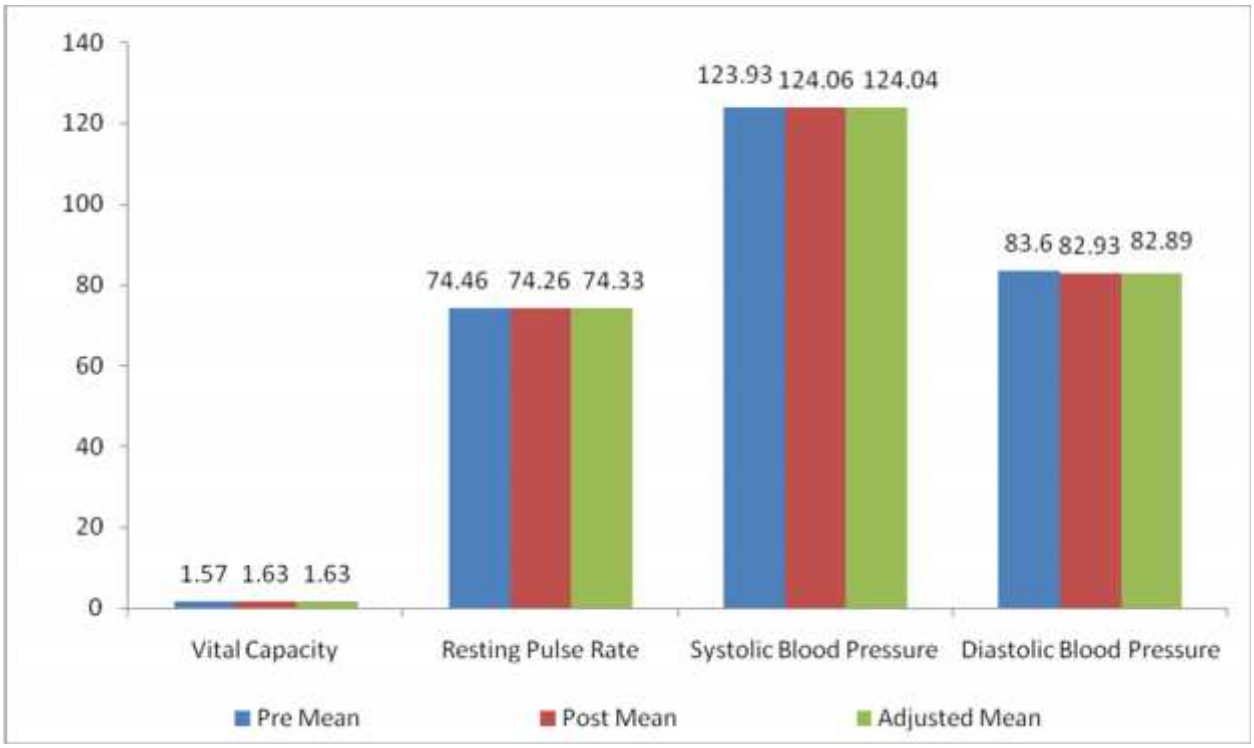

Figure-III Shows the Mean Values of Control Group on Physiological Variables among Volleyball Players

Conclusions

In the light of the study undertaken with certain limitations imposed by the experimental conditions, the following conclusions were drawn.

- The result of the study reveals that there was a significant improvement in the experimental groups on selected variables when compared to the control group after the completion of twelve weeks of yogic practices with resistance training and yogic practices with plyometric training.
- The yogic practices with resistance training group has showed better performance on diastolic blood pressure than the other two groups.
- The yogic practices with plyometric training group also showed better performance on vital capacity, resting pulse rate and systolic blood pressure than the control group.

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