



## RELATIVE EFFECT OF YOGA PRACTICES AND PHYSICAL EXERCISES ON SYSTOLIC AND DIASTOLIC BLOOD PRESSURE OF UNTRAINED MEN

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### Abstract

*The purpose of the study was to find out the effect of yoga practice and physical exercises on systolic and diastolic blood pressure of untrained men. To achieve the purpose of the study the investigator selected forty five untrained men as subject in the age group of 40 years to 45 years. They were divided into three equal groups of fifteen each (n=15) at random. Group-I performed yoga practice, group-II performed physical exercises and group-III acted as control. ANCOVA was used to find out the adjusted mean difference between the groups. The result of the study reveals that due to the effect of yoga practice and physical exercises the systolic and diastolic blood pressure of the untrained men were significantly decreased. However, no significant differences were found between yogic practices and physical exercise groups in altering the systolic and diastolic blood pressure.*

**Keywords:** Yoga practice and Physical exercises, systolic and diastolic blood pressure.

### INTRODUCTION

Recent research has shown that mind plays a more vital role in ensuring total health. Yoga is an effective way of dealing with mind, which in turn helps in dealing with any psychosomatic diseases/disorders like Hypertension. Yoga and meditation has helped to control blood pressure. Adopting a proper life-style and doing Yoga - a way of life, one can surely prevent as well as cure hypertension. Yoga is also beneficial in speedy rehabilitation of a patient. Yoga exercises are considered as the best exercises to increase the body tone and strength against different diseases. Research study on the yoga exercises reveals its beneficial role on physical health of a person. Scientific literature gives scholarly reviews on the benefits of yoga exercises in different health conditions. It was evaluated that yoga interventions show benefits superior to exercises in all studies. All research studies found in the scientific literature for the comparison of yoga and exercise.

Physical exercise is any bodily activity that enhances or maintains physical fitness and overall health or wellness. It is performed for various reasons. These include strengthening muscles and the cardiovascular system, honing athletic skills, weight loss or maintenance and for enjoyment. Frequent and regular physical exercise boosts the immune system, and helps prevent the "diseases of affluence" such as heart disease, cardiovascular disease, Type 2 diabetes and obesity. It also improves mental health, helps prevent depression, helps to promote or maintain positive self-esteem, and can even augment an individual's sex appeal or body image, which again is also linked with higher levels of self-esteem. Childhood obesity is a growing global concern and physical exercise may help decrease the effects of childhood obesity in developed countries.

Exercise aims at building up stamina on the other hand yoga needs regular practice to attain perfection. Yoga must have a Guru or a Teacher to impart the knowledge of yoga. On the other hand one need not learn exercises from a trainer. These are some of the differences between yoga and exercises. Exercise is also a type of physical activity, but there is the intent and purpose of improving certain aspects of health. Exercise is planned physical activity that leads to visible improvement in health and general well being. Physical exercises are repetitive movements whereas yoga exercise involves very little movement and only postures maintained for a period of time. Physical exercises lay emphasis on strong movements of muscles whereas yoga opposes violent movements.

Physiological functions of the body may be improved by exercise. In order to assess the training impact on systolic and diastolic blood pressures among untrained men, the investigator selected yoga practice and physical exercises as the independent variable. Information related to the impact of yoga practice and physical exercises on systolic and diastolic blood pressures among untrained men is scanty. So the present study is planned.

### METHODOLOGY

#### SELECTION OF SUBJECT AND VARIABLE

To achieve the purpose of the study the investigator selected forty five untrained men from the inhabitants of Nagercoil, Kanyakumari District, Tamil Nadu, India as subject in the age group of 40 to 45 years. They were divided into three equal groups of fifteen each (n=15) at random. Group-I performed yoga practice, group-II performed physical exercises and group-III acted as control. All the subjects selected for the

experimental treatment was subjected to medical evaluation and certification from a doctor ensuring their health capacities to undergo the training program. The dependent variables selected were systolic and diastolic blood pressures.

**TRAINING PROGRAMME**

The experimental group-I subjects underwent yoga training programme for six days a week for twelve weeks. The training programme was conducted during the morning sessions between 5.30 -6.30 am. The subjects performed each asanas four to six times and the duration of each repetition is one to three minutes. The following yogasanas such as padmasana, sarvagasana, bhujangasana, dhanurasana, salabhasana, shavasana, vajrasana and halasana were included in the training programme.

The experimental group-II performed physical exercises six days per week for twelve weeks. In the present study, the physical exercise protocol consisted of three set of eight aerobic exercises, starting with slow followed by fast repetitions. The work rest ratio of 1:1 between exercises and 1:3 between sets was given.

**COLLECTION OF THE DATA**

The pretest data was collected prior to the training programme and posttest data was collected immediately after the twelve weeks of yoga practice and physical exercises, from the experimental groups and a control group.

**EXPERIMENTAL DESIGN AND STATISTICAL TECHNIQUE**

The data collected from the three groups prior to and post experimentation on selected dependent variables were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Since three groups are involved, whenever the obtained 'F' ratio value was found to be significant for adjusted post test means, the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases the level of confidence was fixed at 0.05 for significance.

**RESULT**

The pre and post test data collected from the experimental and control groups on systolic and diastolic blood pressure is statistically analyzed by ANCOVA and the results are presented in table-I.

**TABLE I**  
**ANALYSIS OF COVARIANCE ON SYSTOLIC AND DIASTOLIC BLOOD PRESSURE OF EXPERIMENTAL AND CONTROL GROUPS**

Variable	Yogic Practice Group	Physical Exercise Group	Control Group	S o v	Sum of Squares	Df	Mean Squares	'F' ratio
Systolic Blood Pressure	118.10	117.20	122.60	B	457.98	2	228.99	10.93*
				W	858.29	41	20.93	
Diastolic Blood Pressure	79.05	78.48	81.67	B	51.95	2	25.97	10.90*
				W	97.69	41	2.38	

(The required table value for significance at 0.05 level of confidence with degrees of freedom degree of freedom 2 and 41 is 3.22)

\*Significant at .05 level of confidence

Table-I showed that the adjusted post test means on systolic blood pressure of yogic practices, physical exercise and control groups are 118.10, 117.20 and 122.60 respectively. The obtained 'F' ratio value of 10.93 on systolic blood pressure are greater than the required table value of 3.22 for the degrees of freedom 2 and 41 at 0.05 level of confidence. It was observed from this finding that significant differences existed among the adjusted post test means of experimental and control groups on systolic blood pressure.

Table-I also showed that the adjusted post test means on diastolic blood pressure of yogic practices,

physical exercise and control groups are 70.05, 78.48 and 81.67 respectively. The obtained 'F' ratio value of 10.90 on diastolic blood pressure are greater than the required table value of 3.22 for the degrees of freedom 2 and 41 at 0.05 level of confidence. It was observed from this finding that significant differences existed among the adjusted post test means of experimental and control groups on diastolic blood pressure.

Since, the adjusted post test 'F' ratio value was found to be significant the Scheffe's test was applied as post-hoc-test to determine the paired mean differences, and it is presented in table-II.

**TABLE II**  
**SCHEFFE’S TEST FOR THE DIFFERENCE BETWEEN THE ADJUSTED POST TEST PAIRED MEANS OF**  
**SYSTOLIC AND DIASTOLIC BLOOD PRESSURE**

Variable	Adjusted Post Test Means			Difference between Means	Confidence Interval
	Yogic Practice Group	Physical Exercise Group	Control Group		
Systolic Blood Pressure	118.10	117.20		0.90	3.75
	118.10		122.60	4.50*	3.75
		117.20	122.60	5.40*	3.75
Diastolic Blood Pressure	79.05	78.48		0.57	0.87
	79.05		81.67	2.62*	0.87
		78.48	81.67	3.19*	0.87

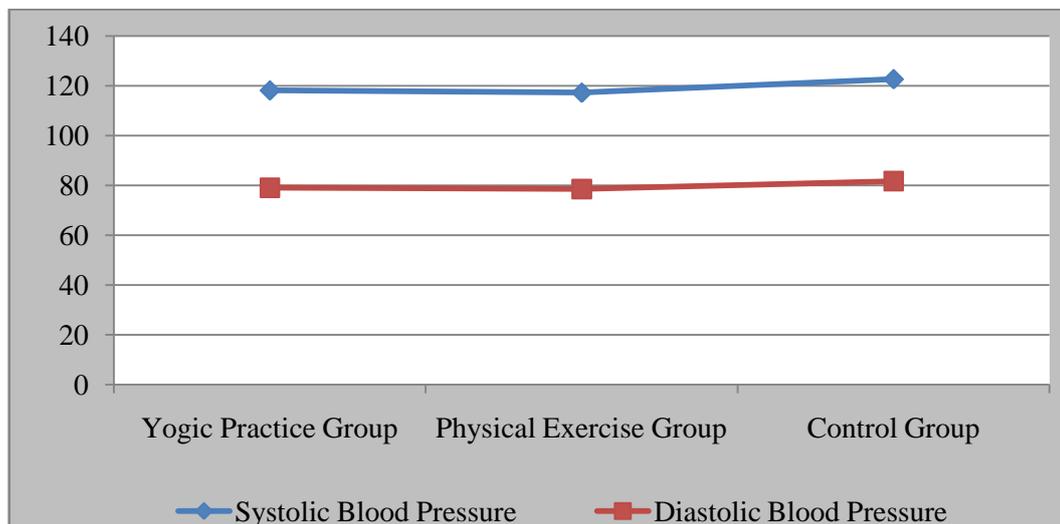
\*Significant

Table-II showed that there was significant difference existed between yogic practices and control groups, physical exercise and control groups on systolic and diastolic blood pressure. Since, the mean differences are higher than the confidence interval values. However, no significant differences were found between yogic practices and physical exercise groups on systolic and diastolic blood pressure, since, the mean differences are lesser than the confidence interval values. It reveals that

both experimental groups had significantly decreased the systolic and diastolic blood pressure. However, no significant differences were found between yogic practices and physical exercise groups in altering the systolic and diastolic blood pressure.

The pre, post and adjusted post test mean values on systolic and diastolic blood pressure of the experimental and control groups is graphically represented in figure- I for better understanding.

**FIGURE I**  
**ADJUSTED POST TEST MEAN SCORES OF EXPERIMENTAL AND CONTROL GROUPS ON SYSTOLIC AND DIASTOLIC BLOOD PRESSURE**



**DISCUSSION**

Yoga has tremendous health benefits for our heart. The gentler forms of yoga lower blood pressure because the asanas (*yoga poses, postures, and yoga positions*) keep blood flowing evenly throughout our body while we focus on our breathing. People suffering from hypertension can benefit through yoga tremendously, doing hatha yoga can lower heart rate and

blood pressure. Many practitioners claim that power yoga is an excellent form of cardio conditioning, which strengthens core muscles while it keeps blood and oxygen circulating throughout our body.

The positive effect of yoga practices on high blood pressure has been confirmed in various studies. Yoga significantly decreases heart rate and systolic and diastolic blood pressure (Selvamurthy, *et al.*, 1998;

Damodaran, *et al.*, 2002; McCaffrey, Ruknui, Hatthakit & Kasetsoomboon, 2005). Hagins, States, Selfe and Innes (2013) systematically reviewed the effectiveness of yoga for reducing blood pressure in adults with hypertension and recommended that Yoga can be an effective intervention for reducing blood pressure. Okonta (2012) presented an evidence-based integrative research review that validates yoga therapy as an effective complementary treatment in the management of high blood pressure (BP). Raub (2002) find that practice of hatha yoga may help control such physiological variables as blood pressure, respiration, HR and metabolic rate to improve overall exercise capacity.

Hagberg, Park and Brown (2000) analyzed the most recent review of the effects of exercise training on patients with hypertension. These results continue to indicate that exercise training decreases blood pressure (BP) in approximately 75% of individuals with hypertension, with systolic and diastolic BP reductions averaging approximately 11 and 8mm Hg, respectively. Women may reduce BP more with exercise training than men, and middle-aged people with hypertension may obtain greater benefits than young or older people. Gillett and Elsenman (1987) in their study determined the effect of 16 weeks aerobic dance programme and was concluded significant improvement in the physiological variables such as breath holding time and heart rate. Dengel *et al.*, (1998) observed that six month programme of aerobic exercise training plus weight loss intervention substantially lower BP and improves glucose and lipid metabolism in obese, sedentary, hypertensive men.

## CONCLUSION

The result of the study reveals that due to the effect of yoga practice and physical exercises the systolic and diastolic blood pressure of the untrained men was significantly decreased. However, no significant differences were found between yogic practices and physical exercise groups in altering the systolic and diastolic blood pressure. Hence, it is suggested that, in both healthy and diseased populations, yoga and physical

exercise are equally effective in improving a variety of health-related outcome measures.

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