



## **Comparison of Yoga and Physical Exercise on Selected Physical Variables**

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### **ABSTRACT**

The purpose of this study is to find the comparison of yoga practice and physical exercise on breath holding time, resting pulse rate and blood pressure (both systolic and diastolic). For this purpose, thirty females who were working in various schools and colleges and aged between 35 and 40 years from various places around Meerut City in Uttar Pradesh, were selected. They were alienated into three equal groups, each group consisted of ten subjects, in which group – I underwent yoga practice, group – II underwent physical exercise and group – III acted as control group who did not participate in any special training. The training period for this study was five days a week for regular twelve weeks. Prior to and after the training period the subjects were tested for resting pulse rate, breath holding time and blood pressure (systolic and diastolic). The selected criterion variables were tested with arterial pressure, holding the breath for maximum duration in seconds and sphygmomanometer. The collected were analysed by applying analysis of covariance (ANCOVA). Whenever the F ratio found to be significant, Scheffé S test was applied to find out which of the paired mean to be significant. It was concluded from the outcome of the study, after the yoga practice and physical exercise periods, both the training groups altered reduced resting pulse rate and blood pressure and improves the breath holding time.

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**KEYWORDS:** Yoga Practices, Physical exercise, breath holding time, resting pulse rate and blood pressure.

### **INTRODUCTION**

Yoga is science of right living and as such, is suggested to be incorporated in daily life routine. Yoga focus on synchronisation between mind and body. According to Swami SatyanandSaraswathi “Yoga is not an ancient myth buried in unconsciousness rather It is the most valuable inheritance of the present. It is the essential need of today and the culture of tomorrow”.



Regular practice of Asana maintains the physical body in an optimum condition and stimulates fitness even in an unhealthy body. Yoga has a deeper significant value in the development of the physical, mental and spiritual personality. On the contrast pure exercises only have a physical effect on the muscles and bones. Physical exercises are performed quickly and with a lot of heavy breathing. Yoga asanas are performed slowly with relaxation and concentration.

## **METHODS**

This study under examination involves the experimentation of yoga practice and physical exercise on breath holding time, resting pulse rate and blood pressure (systolic and diastolic). For this purpose, thirty female subjects those who were working in schools and colleges, and aged between 35 and 40 years from various places near Meerut City, Uttar Pradesh were selected. The selected thirty subjects were randomly divided into three equal groups of ten each, out of which group - I (n = 10) underwent yogic practice, group - II (n = 10) underwent physical exercise training and group - III (n = 10) remained as control. The training programme was carried out for five days per week during morning session only (6 am to 8 am) for continuous twelve weeks. Breath holding time was measured by holding the breath for maximum duration in seconds, resting pulse rate was measured by measuring the arterial pressure (pulse) per minute at resting condition and blood pressure was measured by using sphygmomanometer.

## **ANALYSIS OF DATA**

The data collected prior to and after the experimental periods on breath holding time, resting pulse rate and blood pressure (systolic and diastolic) on yoga practice group, physical exercise group and control group were analysed and presented in the following table -I.

### **Table – I**

Analysis of Covariance and 'F' ratio for Breath Holding Time, Resting Pulse Rate and Blood Pressure (systolic and diastolic) for Yoga Practice Group, Physical Exercise Group and Control Groups



Variable Name	Group Name	Yoga Practice Group	Physical Exercise Group	Control Group	'F' Ratio
Resting Rate numbers)	Pre-test Mean $\pm$ S.D	82.60 $\pm$ 2.675	83.70 $\pm$ 3.466	83.60 $\pm$ 2.221	0.461
	Post-test Mean $\pm$ S.D.	81.10 $\pm$ 2.331	82.10 $\pm$ 3.281	84.10 $\pm$ 3.143	2.684
	Adj. Post-test Mean $\pm$ S.D.	81.772	81.716	83.912	10.527*
Breath Holding Time (in seconds)	Pre-test Mean $\pm$ S.D	31.20 $\pm$ 1.549	30.50 $\pm$ 1.354	31.30 $\pm$ 2.83	0.466
	Post-test Mean $\pm$ S.D.	32.80 $\pm$ 1.398	32.40 $\pm$ 1.506	31.20 $\pm$ 2.486	2.00
	Adj. Post-test Mean $\pm$ S.D.	42.644	42.789	40.966	9.819*
Systolic Blood Pressure	Pre-test Mean $\pm$ S.D	132.90 $\pm$ 5.17	135.30 $\pm$ 7.21	134.20 $\pm$ 5.77	0.386
	Post-test Mean $\pm$ S.D.	131.30 $\pm$ 4.62	134.10 $\pm$ 6.94	134.80 $\pm$ 6.51	0.920
	Adj. Post-test Mean $\pm$ S.D.	132.507	132.958	134.735	9.011*
Diastolic Blood Pressure	Pre-test Mean $\pm$ S.D	88.90 $\pm$ 4.202	90.50 $\pm$ 4.743	88.70 $\pm$ 4.084	0.514
	Post-test Mean $\pm$ S.D.	86.70 $\pm$ 4.473	88.80 $\pm$ 4.709	89.10 $\pm$ 4.332	0.842
	Adj. Post-test Mean $\pm$ S.D.	87.168	87.663	89.769	14.442*

\* Significant at .05 level of confidence.

(The table value required for significance at .05 level of confidence with df 2 and 27 and 2 and 26 were 3.35 and 3.37 respectively).

Further to determine which of the paired means has a significant improvement, Scheffè S test was applied as post-hoc test. The result of the follow-up test is presented in Table - II.



**Table - II**

Scheffé S Test for the Difference Between the Adjusted Post-Test Mean of Breath Holding Time, Resting Pulse Rate and Blood Pressure (systolic and diastolic)

<b>Adjusted Post-test Mean of Breath Holding Time</b>				
<b>Yoga Practice Group</b>	<b>Physical Exercise Group</b>	<b>Control Group</b>	<b>Mean Difference</b>	<b>Confidence interval at .05 level</b>
81.772		83.912	2.14*	1.35
81.772	81.716		0.058	1.35
	81.716	83.912	2.196*	1.35
<b>Resting Pulse Rate</b>				
42.644		40.966	1.678*	1.18
42.644	42.789		0.145	1.18
	42.789	40.966	1.823*	1.18
<b>Systolic Blood Pressure</b>				
132.507		134.735	2.228*	1.439
132.507	132.958		0.451	1.439
	132.958	134.735	1.777*	1.439
<b>Diastolic Blood Pressure</b>				
87.168		89.769	2.601*	1.331
87.168	87.663		0.495	1.331
	87.663	89.769	2.106*	1.189

\* Significant at 0.05 level of confidence.



## **Results**

The training intensity for yogic practice and physical exercise was shown in appendices. Before applying the experiment all the subjects of the yoga practice, physical exercise and control groups were attended the pre-test, which was conducted a day prior to the commencement of the training and the data were collected on breath holding time, resting pulse rate and blood pressure (systolic and diastolic). After twelve weeks of training the post-test was conducted one day after the training period to find out any changes in the criterion variables. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, among the experimental groups and control group on selected criterion variables separately. In all the cases, .05 level of confidence was fixed to test the significance, which was considered as an appropriate. Since there were three groups were involved in this study, the Scheffé S test was used as pos-hoc test and it was shown in Table - II.

After applying the analysis of covariance, the result of this study showed that there was a significant difference among yoga practice, physical exercise and control groups on the changes in breath holding time, resting pulse rate and blood pressure after twelve weeks of training. The criterion variables such as, breath holding time was improved for both the yoga practice group and physical exercise group and resting pulse rate, systolic and diastolic blood pressure has significantly decreased after the yoga practice, physical exercise period. Further, comparing the adjusted post-test means of all the criterion variables, such as, breath holding time, resting pulse rate and systolic and diastolic blood pressure, both the training groups were significantly increased the performance after twelve-week training period, when compared with the control group. Basically the yoga practice and physical exercise has tremendously improved the physiological parameters.

## **Conclusion**

Breath holding time has improved for both the experimental groups, such as yogic practice group and physical exercise group, when compared with the control group. The results of this study also shown that there was a substantial decrease in resting pulse rate for yogic practice group and physical exercise group. The blood pressure has also decreased in yogic practice group and physical exercise group when compared with the control group.



## **Appendices Selection of Asanas**

The experimental factor selected is the yogaAsanas and it's been innumerable. So, the scholar consulted with experts in the field of yoga Asana, then selected the following yogaAsanas:

**YogaAsanas:** Suryanamaskar, Vrikshasana, Trikonasana, Padmasana, Vakrasana, Bhujangaasana, Salabhasana, Paschimottasana, Matiysyaasana, Hal asana,shavasana

**Pranayama:** Ujjaiyi, Bhastrika, Nadisudhi

## **Physical Exercises**

1. Warming up

**2. Physical Exercises:** Neck rotation, Arms forward and back ward rotations, flexed arm forward and back ward rotations, Trunk Twists, Squat Thrusts, Sideward lunges, Opposite toe touches, Slide leg raising, Sit-ups, Pushups, Burpees, Heels Raise.

**3. Cool Down**

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