

A Study on Physiological Variables Among Regular Yoga Practising Students and Non-Practising Students

T R Chowde Gowda

Assistant Director of Physical Education, Sri Sathya Sai Institute of Higher Learning, Brindavan Campus, Bangalore

Abstract

Background: The purpose was to study physiological variables among regular yoga practising students and non-practising students.

Methodology: The purpose of the study was to analyse “the physiological variables among yoga practitioners and non-yoga practitioners” For this purpose 20 yoga practitioners with the at-least participate state, inter-university and national level and 20 non-yoga practitioners with the college students, at least for a minimum experience in the particular event of three years and who were within the age group of 18 to 25 years were administered with the selected physiology. This selected physiological variable is basically designed to analyse three components, which are systolic, diastolic and resting heart rate. The statistical technique used to analyse the results of the data is the “t” - test to find out the significant differences between the groups.

Result of this Study: Based on the statistical analysis of data, the following conclusions have been drawn. **Systolic Blood** pressure of the experimental group showed significant improvement when compared to the control group.

Diastolic Blood pressure of the experimental group showed significant improvement when compared to the control group.

Resting pulse: The rate of the experimental group showed significant improvement when compared to the control group.

Keywords: Physiology, Yoga, Asanas, Pranayama, Blood Pressure.

Interdiction

The word Yoga is derived from the Sanskrit root yuj, meaning to bind, join, attach and yoke, to direct and concentrate one’s attention on, to use and apply. It also means union or communion. It also means the disciplining of the intellect, the mind, the emotions, the will, which that Yoga presupposes; it means a poise of the soul which enables one to look at life in all its aspects evenly. Yoga is one of the six orthodox systems of Indian philosophy. It was collated, co-ordinate and systematized by Patanjali in his classical work, the Yoga Sutras, which consists of 196 terse aphorisms in which it is stated that yoga is a state where all activities of the mind are channelized in one direction or the mind is free from distractions Yoga has also been described as wisdom in work or skillful living amongst activities, harmony and moderation. ‘Yoga is not for him who gorges too much, nor for him who starves himself. It is not for him who sleeps

too much, nor for him who stays awake. By moderation in eating and in resting, by regulation in working and by concordance in sleeping and waking, yoga destroys all pain and sorrow.

MEANING AND DEFINITION OF THE TERMS

YOGA

Yoga refers to traditional physical and mental disciplines originating in India. It is a very ancient and efficient system of disciplines and controls designed to produce the integration of the body, mind and spirit. It also achieves higher states of awareness and self-realization by methodical efforts to attain perfection.

RESTING PULSE RATE

It is the amount of times your heart beats per minute when you are at rest. A normal pulse rate for a health adult, while resting, can range from 60 to 100 beats per minute. For most accurate results, the RPR should be taken in the morning before getting out of bed.

BREATH HOLDING TIME

Breath holding time has been used in respiratory physiology as a measure of ventilatory response. The key to holding breath is to increase the efficiency with which body uses oxygen.

METHODOLOGY

In this chapter, the procedures adopted for selection of subjects, selection of variables, selection of tests, collection of data, instrument reliability, reliability of the data, orientation to the subjects, competency to the tester, training programme, test administration and statistical techniques were presented.

SELECTION OF SUBJECTS

The purpose of the study was to find out the comparative physiological variables among regular yoga-practising students and non-practising students. Forty yoga-practising students and non-practising students from Bangalore were selected as subjects at random, and they were divided into two equal groups of twenty subjects each, with ages ranging from 18 to 25 years, namely the experimental group and the control group. The experimental group underwent training for five days per week for six week in which the control group did not take any special training programme.

TABLE :1
SELECTION OF SUBJECTS

Sl. No	Groups	Subjects
1	Experimental group	20
2	Control group	20
Total		40

SELECTION OF VARIABLES

The researcher reviewed the scientific literature of the effect of yoga on selected physiological variables from various sources, such as books, journals, magazines and research papers. Taking into consideration the feasibility, criteria and availability of instruments, the following variables were selected.

PHYSIOLOGICAL VARIABLES

- Blood pressure
- Resting pulse rate

SELECTION OF TESTS

The researcher had reviewed the scientific literature about the effect of selected yogic practices on physiological and psychological variables from various literature and selected the following test items, which are standardized, ideal and apt tests for the selected criterion variables. The test and equipment used for assessing the selected criterion variables are presented in Table 2.

Table 2
SELECTION OF TESTS

Sl. No	Criterion Variables	Test Items
1	Blood Pressure	Digital blood pressure monitor, Model – CH-432B By “Citizen”, Japan
2	Resting Pulse Rate	Digital blood pressure monitor, Model – CH-432B By “Citizen”, Japan

COLLECTION OF DATA

The data were collected on selected criterion physiological variables such as blood pressure, resting pulse rate by using a digital blood pressure monitor, respectively at prior to and immediately after the training programme.

INSTRUMENTS RELIABILITY

The required instrument such as measuring blood pressure, used for the study were purchased from reputable companies, and they were new and in good working condition. Hence, their calibrations were accepted as accurate enough to serve the purpose of the study.

COMPETENCY OF THE TESTER

All the physiological measurements in this study were taken by the investigator with the assistance of a lab technician to ensure that the technique of conducting tests was mastered by both the investigator and the lab technician through several practice sessions in the testing procedure.

TRAINING PROGRAMME

For the experimental group, the training was given for six weeks for five days per week. The training session included loosening exercises, Suryanamaskar, asanas, Pranayama, meditation and relaxation. The daily programme lasted for approximately 60 minutes. The subjects underwent their respective training programs as per the schedules under the supervision of the investigator. Each session was conducted only in the evening time between 5.30 to 6.30 p.m. During the experimental period control group did not participate in any of the training.

ADMINISTRATION OF TEST PHYSIOLOGICAL TESTING

1. Blood Pressure

Purpose: To measure Systolic and Diastolic pressure levels.

Equipment

Digital blood pressure monitor,
Model – CH – 432B
By “Citizen”, Japan.

Procedure

The subject was made to sit in a comfortable position and asked to take deep breaths five or six times before measuring blood pressure. An arm cuff was wound around the left upper arm tightly. The elbow was rested on a table so that the section of the upper arm is at the height of the heart. The air connector is inserted from the cuff into the tube socket at the mainframe until it is tightly connected. The START button was pressed to measure the levels of systolic and diastolic blood pressure.

Scoring: The levels of systolic and diastolic blood pressure will be score of test.

2. Resting pulse rate

Purpose: To measure resting pulse rate per minute

Equipment

Digital blood pressure monitor,
Model – CH – 432B
By “Citizen”, Japan.

Procedure: The subject was made to sit in a comfortable position to test the resting pulse rate by using a digital blood pressure monitor.

Scoring: The number of pulses in one minute will be the score of the test.

STATISTICAL TECHNIQUES

For the purpose of the study, only two groups consisting 20 subjects were selected at random. Group ‘A’ practised with loosening exercises, Suryanamaskar, asanas, Pranayama, meditation and relaxation for six weeks and Group ‘B’ was not exposed to all these. After the training period, all subjects were tested on selected criterion variables at different stages, such as pre and post-test.

The data collected from the subjects were tested statistically to find out the significant differences of geriatrics men. The statistical technique used to analyse the results of the data is the “t” - test to find out the significant differences between the groups.

Analysis of data and result of the study:

The chapter deals with the mode of analysis of data pertaining to the A study on physiological variables among regular yoga practitioners and non-yoga practitioners.

The study consists of two categorical variables.

a) The second variable relates to the one variable determining the physiological variable among the selected subjects. The selected physiological variables are: systolic, diastolic and resting pulse rate.

The data collected and scores calculated for statistical treatment were subjected to the following statistical analysis:

1. Mean and standard deviation for each physiological variable were calculated across both regular yoga practitioners and non-yoga practitioners..

2. The difference between the performance of regular yoga practitioners and non-yoga practitioners, among each of the physiological variables was further tested for significant difference as per the student ‘t’ test.
3. Significant difference at 0.05 level. Significance as per the ‘t’ test was established for all the selected physiological variables.

Table: 3

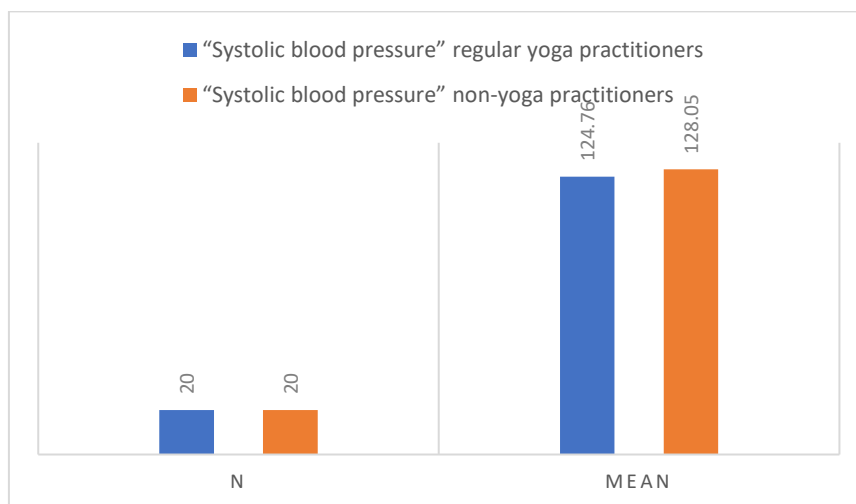
Average score, standard deviation and ‘T’ test score of regular yoga practitioners and non-yoga practitioners. of “Systolic blood pressure”.

Blood Pressure	Particulars	N	Mean	S. D	‘T’ test score
“Systolic blood pressure”	regular yoga practitioners	20	124.76	6.86	3.24*
	non-yoga practitioners	20	128.05	7.16	

Significance level at 0.05

The average score among the physiological variables “systolic BP” among the regular yoga practitioners and non-yoga practitioners were 124.76 and 128.05, respectively, number of subjects being 20. The standard deviation was 6.86 and 7.16. The ‘T’ test score was 3.24*.

When the average score among physiological variables “systolic BP”, the quality of “systolic BP” was more among the regular yoga practitioners and the ‘t’ test value of 3.24* shows that there existed significant difference among regular yoga practitioners and non-yoga practitioners in the variable “systolic BP” at 0.05 level of significance according to the ‘t’- test.



Figur-1

Mean score, yoga practitioners and non-yoga practitioners. of “Systolic blood pressure”.

Table: 4

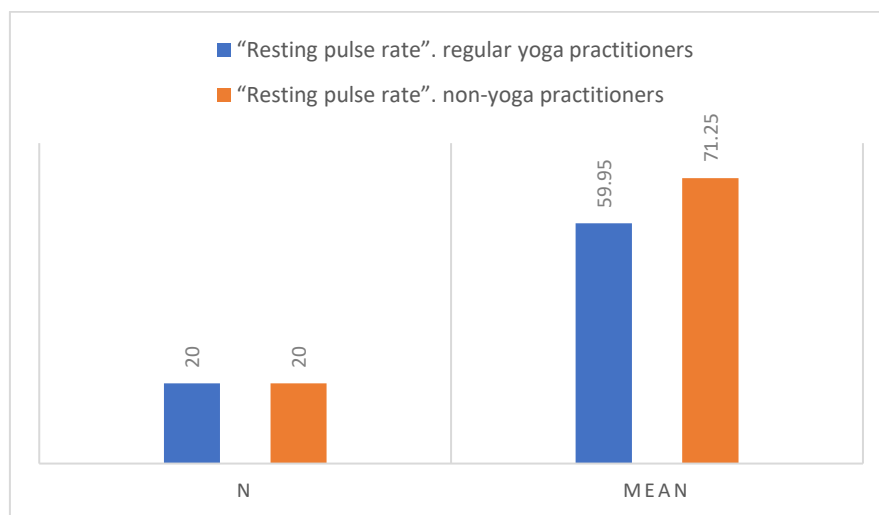
Average score, standard deviation and ‘T’ test score of regular yoga practitioners and non-yoga practitioners. of “Diastolic blood pressure”.

Blood Pressure	Particulars	N	Mean	S. D
“Diastolic blood pressure”.	regular yoga practitioners	20	74.85	2.629*
	non-yoga practitioners	20	78.50	

Significance level at 0.05

The average score among the physiological variables “diastolic BP” among the regular yoga practitioners and non-yoga practitioners was 74.85 and 78.50, respectively, number of subjects being 20. The standard deviation was 6.70 and 6.19. The ‘T’ test score was 2.63*.

When the average score among physiological variables “diastolic BP”, the quality of “diastolic BP” was more among the regular yoga practitioners and the ‘t’ test value of 2.63* shows that there existed significant difference among regular yoga practitioners and non-yoga practitioners in the variable “diastolic BP” at 0.05 level of significance according to the ‘t’- test.



Figur-2

Mean score, yoga practitioners and non-yoga practitioners. of “Diastolic blood pressure”.

Table: 5

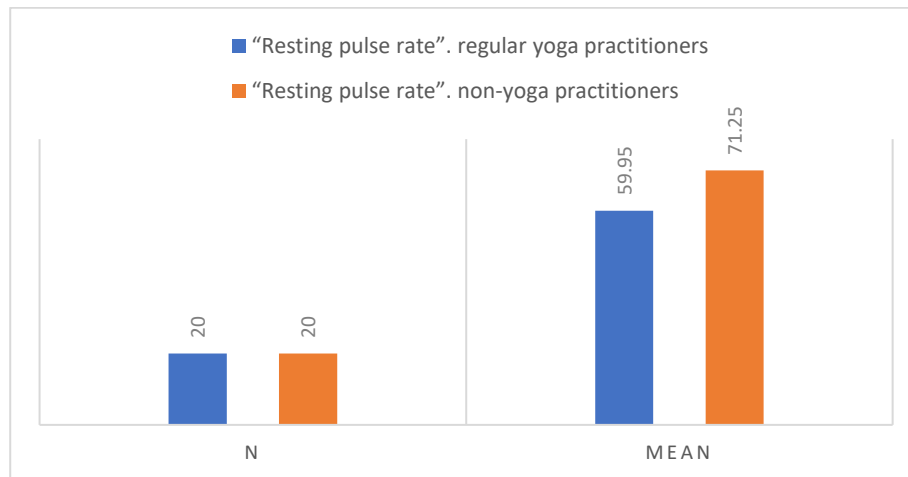
Average score, standard deviation and ‘T’ test score of regular yoga practitioners and non-yoga practitioners. of “Resting pulse rate”.

Pulse Rate	Particulars	N	Mean	S. D
“Resting pulse rate”.	regular yoga practitioners	20	59.95	6.412*
	non-yoga practitioners	20	71.25	

Significance level at 0.05

The average score among the physiological variables “resting pulse rate” among the regular yoga practitioners and non-yoga practitioners were 59.95 and 71.25, respectively, number of subjects being 20. The standard deviation was 6.82 and 3.19. The ‘T’ test score was 6.412*.

When the average score among physiological variables “resting pulse rate” the quality of “resting pulse rate” was more among the regular yoga practitioners and the ‘t’ test value of 3.24* shows that there existed significant difference among regular yoga practitioners and non-yoga practitioners in the variable “resting pulse rate” at 0.05 level of significance according to the ‘t’- test.



Figur-3

Mean score, yoga practitioners and non-yoga practitioners. of “Resting pulse rate”.

DISCUSSION ON FINDINGS:

The results of the study A study on physiological variables among regular yoga practitioners and non-yoga practitioners” have been discussed in this chapter. As the topic indicates, the study was basically framed to understand the selected physiological variables existing among the regular yoga practitioners and non-yoga practitioners. The study also aimed at bringing out the difference in the selected physiological variables among the above-mentioned groups so that it could be analysed, and the reasons for some could be interpreted. The result of the study has a solo complexion where regular yoga practitioners are better in all of the physiological parameters. This concept can be better understood by studying the following table and figure the

CONCLUSION

The purpose of the study was to analyses “the physiological variables among yoga practitioners and non-yoga practitioners” For this purpose 20 yoga practitioners with the at-least participate state, inter-university and national level and 20 non-yoga practitioners with the college students, at least for a minimum experience in the particular event of three years and who were within the age group of 18 to 25 years were administered with the selected physiology. This selected physiological variable is basically designed to analyze tree components, which are systolic, diastolic and resting heart rate.

1. **Systolic Blood:** pressure of the experimental group showed significant improvement when compared to the control group.
2. **Diastolic Blood** pressure of the experimental group showed significant improvement when compared to the control group.
3. **Resting pulse:** The rate of the experimental group showed significant improvement when compared to the control group.

REFERENCE

1. B.K.S. Iyengar (2008), *Light on Yoga*, Noida: Harper Collins Publishers, India, P.P.19-461.
2. B.K.S.Iyengar (2001), *Yoga – The Path to Holistic Health*, New Delhi: Harper Collins Publishers, India, P.P.19-235.
3. B.K.S. Iyengar (1993), *Light on Pranayama*, New Delhi: Harper Collins Publishers, India, P.P.3-31.
4. Gharote.M.L (1990), *Applied Yoga*, Lonavala: Kaivalyadhama, S.M.Y.M.Samiti, Maharashtra, PP.13-26.
5. Mangal. S.K, *Statistics in Psychology and Education*, (1992), New Delhi: Tata Mc Graw-Hill Publishing Company, P.231.
6. Barnes, Davis, Murzynowski, Treiber, “Impact of meditation on resting and ambulatory blood pressure and heart rate in youth”, *Psychosomatic Medicine*, Vol 66, Nov-Dec 2004
7. Caroline Smith, Heather Hancock, Jane-Blake Mortimer, Kerena Eckert, “A randomized comparative trial of Yoga and relaxation to reduce stress and anxiety”, *Complementary Therapies in Medicine*, Volume15, Issue 2, June 2007, p. 77-83
8. Geetanjali Sharma MD, KK. Mahajan MD, Luv Sharma MD, “Shavasan-Relaxation technique to combat stress”, *Journal of Bodywork and Movement Therapies*, Volume 11, Issue 2, April 2007, p. 173-180
9. Khalsa Ds, Amen D, Hanks c, Money N, Newber A, ”Cerebral Blood flow changes during changing meditation”, *Nucl Med Commun*, 2009 Dec; 30(12):956-61.
10. M Javnbakht, R. Hejazi Kenari, M Ghasemi, “Effects of yoga on depression and anxiety of women”, *Complementary Therapies in Clinical Practice*, Vol. 15, Issue 2 (May 2009), p. 102-104
11. Maharana Satyapriya, Hongasanda R. Nagendra, Raghuram Nagarathna, Venkataram Padmalatha, “Effect of integrated yoga on stress and heart rate variability in pregnant women”, *International Journal of Gynecology & Obstetrics*, Volume104, Issue 3, March 2009, p. 218-222