

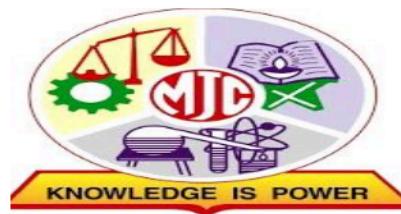
# **“Study Of Effect Of Yoga On Human Health”**

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*A project report submitted to KCES's*

*Moolji Jaitha College, Jalgaon*

*(An Autonomous College Affiliated to KBCNMU Jalgaon)*



*For the compliance of work performed under  
'Research Promotion Scheme for Budding Researchers'*

*In the faculty of Arts / Commerce / Science*

*By*

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*Under the guidance of*

***Prof. S. L. Kulkarni***

*Submitted to*

**DEPARTMENT OF STATISTICS**

**MOOLJI JAITHA COLLEGE , JALGAON**

*(2019-2020)*

KCES's Moolji Jaitha College , Jalgaon  
(An Autonomous College Affiliated to KBCNMU Jalgaon)  
M. J. College Sponsored  
Research Promotion Scheme for Budding Researchers  
2019 – 2020

## **CERTIFICATE**

This is to certify that Ms. Chhabdiya Durga Dilipkumar , Ms. Pathak Mayuri Arun , Ms. Bhavsar Shweta Vijay are the students of (T. Y. B.Sc.) Statistics have successfully completed their project entitled “Effect Of Yoga On Human Health” for the Research Promotion Scheme for Budding Researchers in Department of Statistics at Moolji Jaitha College , Jalgaon under my guidance and supervision during the academic year 2019-2020.

Mr. S. L. Kulkarni  
Project Guide  
Dept. Of **Statistics**

Dr. K. G. Khadse  
Committee Chairman

# ***DECLARATION***

I hereby declare that the project entitled “*Study Of Effect Of Yoga On Human Health*” completed and written by us under the supervision of **Prof. S. L. Kulkarni sir.** The present work is original and performed by us and previously not formed the basis for the award of any degree or diploma or other similar titles of this or any other University or examining body.

Ms. Chhabdiya Durga Dilipkumar

Ms. Pathak Mayuri Arun

Ms. Bhavsar Shweta Vijay

**Prof. S. L. Kulkarni**

**(Project Guide)**

Place : Jalgaon

Date : 25/02/2020

# **ACKNOWLEDGEMENT**

We would like to express our sincere thanks to **Prof. K. G. Khadse sir**, Head of the Department of Statistics, Mollji Jaitha College , Jalgaon for seeking us the desire permission for this project.

We take this opportunity to express our sense of gratitude to our project guide **Prof. S. L. Kulkarni** for his valuable guidance, immense support, motivation and encouragement to which we could complete our project work successfully.

Lastly , we express thanks to our friends for their help and support during the analysis and completion of project.

Ms. Chhabdiya Durga Dilipkumar

Ms. Pathak Mayuri Arun

Ms. Bhavsar Shweta Vijay

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## **INTRODUCTION**

Yoga is essentially a spiritual discipline based on an extremely subtle science, which focuses on bringing harmony between mind and body. It is an art and science of healthy living. The word ‘Yoga’ is derived from the Sanskrit root ‘Yuj’, meaning ‘to join’ or ‘to yoke’ or ‘to unite’. As per Yogic scriptures the practice of Yoga leads to the union of individual consciousness with that of the Universal Consciousness, indicating a perfect harmony between the mind and body, Man & Nature. According to modern scientists, everything in the universe is just a manifestation of the same quantum firmament. One who experiences this oneness of existence is said to be in yoga, and is termed as a yogi, having attained to a state of freedom referred to as mukti, nirvana or moksha. Thus the aim of Yoga is Self-realization, to overcome all kinds of sufferings leading to 'the state of liberation' (Moksha) or 'freedom' (Kaivalya). Living with freedom in all walks of life, health and harmony shall be the main objectives of Yoga practice."Yoga" also refers to an inner science comprising of a variety of methods through which human beings can realize this union and achieve mastery over their destiny.Yoga, being widely considered as an ‘immortal cultural outcome’ of Indus Saraswati Valley civilization – dating back to 2700 B.C., has proved itself catering to both material and spiritual upliftment of humanity.Basic humane values are the very identity of Yoga Sadhana.



This is the symbol of Yoga spelt as “OM” which represents the sound of the universe and can energize our chakras. The sounds and vibrations created while chanting om can calm our mind and central nervous system and produce feelings of peace, tranquility and unity and will align your mind, body and soul.

***Yoga is the journey of the Self, through the Self, to the Self.***

Few people realize that the tree of Yoga has grown in the rich soil of three great cultural traditions—Hinduism, Buddhism and Jainism. These are not only merely religions, as often thought, but entire and largely self-contained cultures which all have their cradle in India.

## OBJECTIVES :

- *Spreading awareness campaign of yoga among people.*
- *Yoga helps to cure behavioral disorders, nervous breakdown and manic depressions.*
- *To recommend people practicing yoga in their stressful working environment.*
- *Yoga can be seen not only as a way to get into shape but also as a tool for self healing.*
- *To attain higher level of consciousness and integrate moral values.*

## ***ORIGIN***

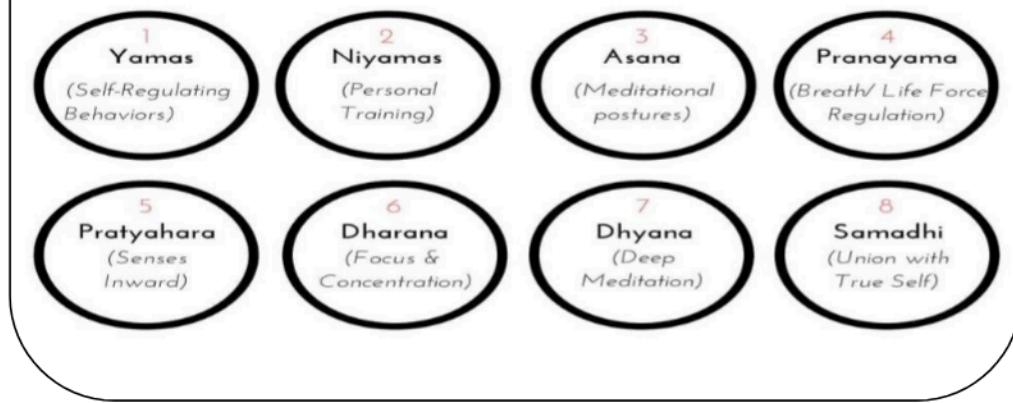
The classical Yoga period is defined by the Yoga Sutras, composed by sage Patanjali.

In Patanjali's Sutras; Yoga is presented in a standardized and approachable way. who is the pioneer of Yoga.

The word ‘sutra’ comes from the word ‘a thread’ and so the 195 Yoga Sutras are known as threads of wisdom.

Patanjali believed that every individual can achieve the “stilling of the ripples of the mind” and so composed them for mental and emotional purification and self-transcendence..

## The 8-Limbed Path of Raja Yoga



## ***YOGA TECHNIQUES***

In Bhagavad Gita Yogeshwar Krishna defines yoga as :

“Samatvam yoga ucchaye” - Equanimity of mind.

“Yogaha karmasu koushalam” - Yoga is skill in action.

The various types of Yogic practices from which everyone can get benefited are:

- (i) Yama and Niyama (Attitude Training Practices)
- (ii) Asana (Steady Postures)
- (iii) Pranayama (control of the breathing process)
- (iv) Mudras and Bandhas (seal and lock for energy)
- (v) Shat Kriya (six purification techniques)
- (vi) Dhyana (Meditation)

The Yoga thechniques used in our budding research project are:

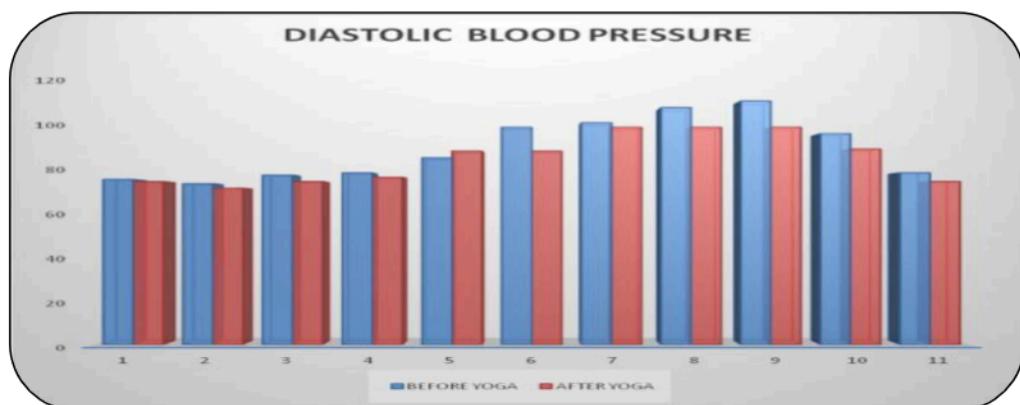
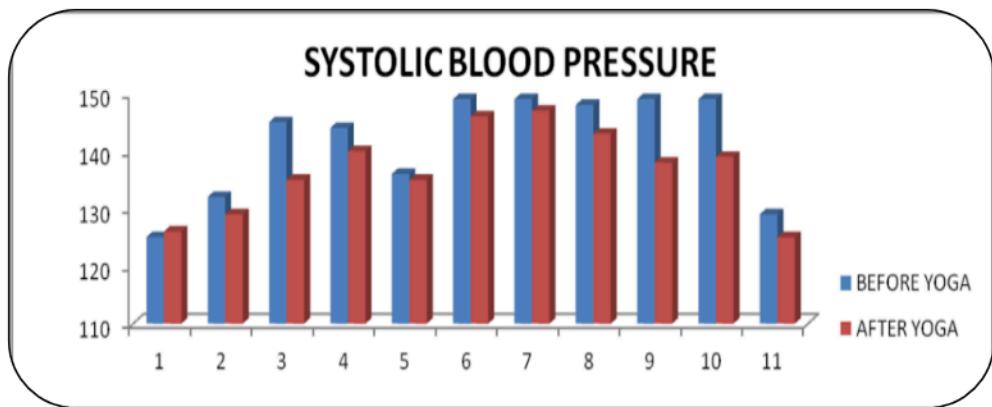
- Surya Namaskaar
- Meditation (Dhyana)
- Pranayama

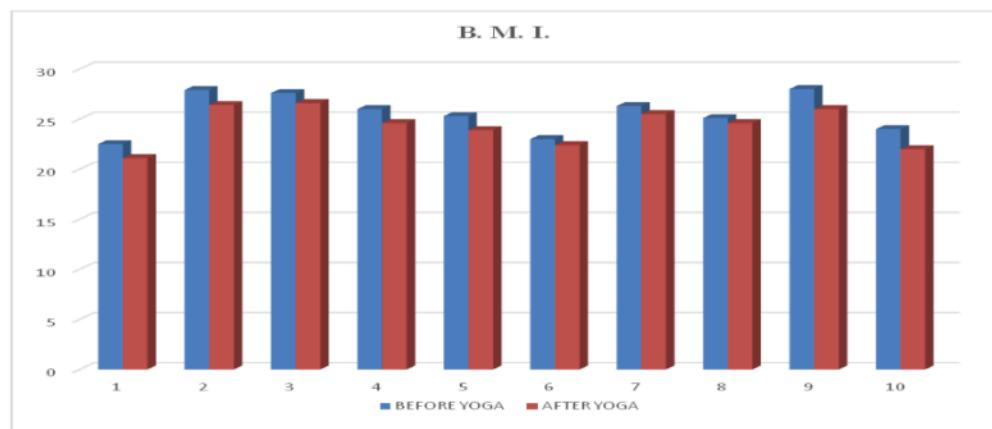
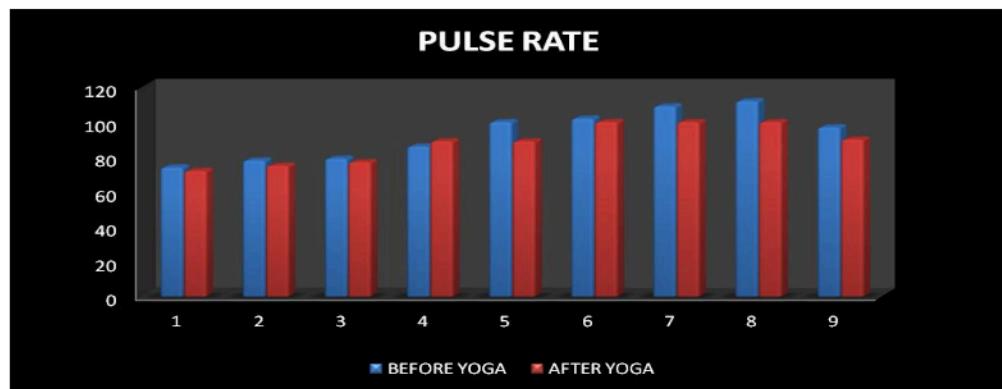
## **DATA DESCRIPTION**

- Mode Of Data Selection :

Here , we have collected data of yogies from different yoga classes like Mrs. Sharayu Vispute mam classes (ramanand nagar , jalgaon.) (Table 1), Gurav sir's classes(raisoni farm , near mehroon , jalgaon) (Table 2) and Chanchlani classes(sindhi colony , bhusaval) (Table3). We have collected data on the primary basis . The data collected is related to blood pressure , pulse rate , diabetes , weight , etc. of the yogies . We got interacted with the yogies with the help of questionnaire. The questionnaire is mentioned in the last.

## **GRAPHICAL REPRESENTATION**





## **STATISTICAL TECHNIQUES**

- Summary :

In Statistics, a t-test can be represented as a statistical hypothesis test where the test statistic supports a student's t distribution, if the null hypothesis is established. In Paired T-Test, they compare the means of two groups of observations. The observations must be randomly assigned to each of the two groups so that the difference in response seen is due to the treatment and not because of any other factors. If two samples are given, then the observation of one sample can be paired with the observation of the other sample. This test can be used in making observations on the same sample before and after an event. Now, let us discuss what is paired t-test, its formula, table and the procedure to perform the paired t-test in detail.

- Paired t-Test Definition :

The paired t-test gives a hypothesis examination of the difference between

population means for a set of random samples whose variations are almost normally distributed. Subjects are often tested in a before-after situation or with subjects as alike as possible. The paired t-test is a test that the differences between the two observations are zero.

Let us assume two paired sets, such as  $X_i$  and  $Y_i$  for  $i = 1, 2, \dots, n$  such that their paired difference are independent which are identically and normally distributed. Then the paired t-test concludes whether they notably vary from each other.

- Paired t-Test Formula :

Paired t-test is a test which is based on the differences between the values of a single pair, that is one deducted from the other. In the formula for a paired t-test, this difference is notated as  $d$ . The formula of the paired t-test is defined as the sum of the differences of each pair divided by the square root of  $n$  times the sum of the differences squared minus the sum of the squared differences, overall  $n-1$ .

The formula for the paired t-test is given by :

$$t = \frac{\Sigma d}{\sqrt{\frac{n(\Sigma d^2) - (\Sigma d)^2}{n-1}}}$$

where,  $\Sigma d$  is the sum of the differences ,

$n$  is the sample size.

- Characteristics of Paired t-Test:

- The data is taken from subjects who have been measured twice.
- 95% confidence interval is obtained from the difference between the two sets of joined observations.

- Procedure Of Paired t-Test :

- a) Let us take two sets of data that are related to each other, say  $X$  and  $Y$  with  $x_i \in X, y_i \in Y$ . where  $i = 1, 2, \dots, n$ . Follow the steps given below to find the paired t-test.
- b) Assume the null hypothesis that the actual mean difference is zero.
- c) Determine the difference  $d_i = y_i - x_i$  between the set of observation.
- d) Compute the mean difference.
- e) Calculate the standard error of the mean difference, which is equal to  $S_d / \sqrt{n}$ , where  $n$  is the

total number, and  $S_d$  is the standard deviation of the difference.

- f) Determine the t-statistic value.
- g) Refer to the T-distribution table and compare it with the  $t_{n-1}$  distribution. It gives the p-value.

The paired t-test is mathematically equivalent to one of the hypothesis tests of a two-way anova without replication. The paired t-test is simpler to perform and may sound familiar to more people. You should use two-way anova if you're interested in testing both null hypotheses (equality of means of the two treatments and equality of means of the individuals); for the horseshoe crab example, if you wanted to see whether there was variation among beaches in horseshoe crab density, you'd use two-way anova and look at both hypothesis tests. In a paired t-test, the means of individuals are so likely to be different that there's no point in testing them.

If you have multiple observations for each combination of the nominal variables (such as multiple observations of horseshoe crabs on each beach in each year), you have to use two-way anova with replication.

If you ignored the pairing of the data, you would use a one-way anova or a two-sample t-test. When the difference of each pair is small compared to the variation among pairs, a paired t-test can give you a lot more statistical power than a two-sample t-test, so you should use the paired test whenever your data are in pairs.

- Assumptions :

As a parametric procedure (a procedure which estimates unknown parameters), the paired sample *t*-test makes several assumptions. Although *t*-tests are quite robust, it is good practice to evaluate the degree of deviation from these assumptions in order to assess the quality of the results. In a paired sample *t*-test, the observations are defined as the differences between two sets of values, and each assumption refers to these differences, not the original data values. The paired sample *t*-test has four main assumptions:

- ✓ The dependent variable must be continuous (interval/ratio).
- ✓ The observations are independent of one another.
- ✓ The dependent variable should be approximately normally distributed.
- ✓ The dependent variable should not contain any outliers.

## **DATA ANALYSIS**

For systolic Blood Pressure before doing yoga, we have hypothesis as (for **Table 1**) :

H0 : There is no significance difference between Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

H1 : There is significance decrease in Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$\mathbf{T1= 4.97032} \quad \mathbf{TAB t = 0.835169}$$

For diastolic Blood Pressure , before doing yoga ,we have hypothesis as (for **Table 1**) :

H0 : There is no significance difference between Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

H1 : There is significance decrease in Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$\mathbf{T2= 4.490183} \quad \mathbf{TAB t = 0.835169}$$

For systolic Blood Pressure after doing yoga, we have hypothesis as (for **Table 1**) :

H0 : There is no significance difference between Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

H1 : There is significance decrease in Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$\mathbf{T3= 4.628448} \quad \mathbf{TAB t = 0.835169}$$

For diastolic Blood Pressure after ,we have hypothesis as (for **Table 1**) :

H0 : There is no significance difference between Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

H1 : There is significance decrease in Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$\mathbf{T4= 3.183381} \quad \mathbf{TAB t = 0.835169}$$

For pulse rate before doing yoga, we have hypothesis as (for **Table 1**) :

H0 : There is no significance difference between pluse rate before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

H1 : There is significance decrease in pulse rate before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$\mathbf{T5= 4.699804} \quad \mathbf{TAB t = 0.835169}$$

For pulse rate after doing yoga, we have hypothesis as (for **Table 1**) :

$H_0$  : There is no significance difference between pulse rate before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

$H_1$  : There is significance decrease in pulse rate before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$T6= 3.200546$$

$$TAB t = 0.835169$$

For BMI after doing yoga, we have hypothesis as (for **Table 1**) :

$H_0$  : There is no significance difference between in BMI before doing yoga and after doing yoga ( for a period of 3 months ) i.e.  $\mu_1 = \mu_2$ .

$H_1$  : There is significance decrease in BMI before doing yoga and after doing yoga ( for a period of 3 months) i.e.  $\mu_1 > \mu_2$ .

$$T7 = 4.691956$$

$$TAB t = 0.835169$$

For systolic Blood Pressure before doing yoga, we have hypothesis as (for **Table 2**) :

$H_0$  : There is no significance difference between Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

$H_1$  : There is significance decrease in Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$T8= 0.49552$$

$$TAB t = 0.834468$$

For diastolic Blood Pressure , before,we have hypothesis as (for **Table 2**):

$H_0$  : There is no significance difference between Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

$H_1$  : There is significance decrease in Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$T9= 2.441405$$

$$TAB t = 0.834468$$

For systolic Blood Pressure after doing yoga, we have hypothesis as (for **Table 2**) :

$H_0$  : There is no significance difference between Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

$H_1$  : There is significance decrease in Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$T10= 2.441405$$

$$TAB t = 0.834468$$

For diastolic Blood Pressure after ,we have hypothesis as (for **Table 2**) :

$H_0$  : There is no significance difference between Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

H1 : There is significance decrease in Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$T11= 1.572608 \quad TAB t = 0.834468$$

For pulse rate before doing yoga, we have hypothesis as (for **Table 2**) :

H0 : There is no significance difference between pulse rate before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

H1 : There is significance decrease in pulse rate before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$T12= 2.229308 \quad TAB t = 0.834468$$

For pulse rate after doing yoga, we have hypothesis as (for **Table 2**) :

H0 : There is no significance difference between pulse rate before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

H1 : There is significance decrease in pulse rate before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$T13= 1.69879 \quad TAB t = 0.834468$$

For BMI after doing yoga, we have hypothesis as (for **Table 2**) :

H0 : There is no significance difference between BMI before doing yoga and after doing yoga ( for a period of 3 months ) i.e.  $\mu_1 = \mu_2$ .

H1 : There is significance decrease in BMI before doing yoga and after doing yoga ( for a period of 3 months) i.e.  $\mu_1 > \mu_2$ .

$$T14= 1.572608 \quad TAB t = 0.834468$$

For systolic Blood Pressure before doing yoga, we have hypothesis as (for **Table 3**) :

H0 : There is no significance difference between Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

H1 : There is significance decrease in Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$T15 = -1.10881 \quad TAB t = 0.832825$$

For diastolic Blood Pressure , before we have hypothesis as (for **Table 3**) :

H0 : There is no significance difference between Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

H1 : There is significance decrease in Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$\mathbf{T16= -1.83509} \quad \mathbf{TAB t = 0.837871}$$

For systolic Blood Pressure after doing yoga, we have hypothesis as (for **Table 3**) :

$H_0$  : There is no significance difference between Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

$H_1$  : There is significance decrease in Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$\mathbf{T17= 1.158407} \quad \mathbf{TAB t = 0.837871}$$

For diastolic Blood Pressure after ,we have hypothesis as (for **Table 3**) :

$H_0$  : There is no significance difference between Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

$H_1$  : There is significance decrease in Blood Pressure before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$\mathbf{T18= 0.683468} \quad \mathbf{TAB t = 0.837871}$$

For pulse rate before doing yoga, we have hypothesis as (for **Table 3**) :

$H_0$  : There is no significance difference between pluse rate before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

$H_1$  : There is significance decrease in pulse rate before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$\mathbf{T19= 1.074494} \quad \mathbf{TAB t = 0.837871}$$

For pulse rate after doing yoga, we have hypothesis as (for **Table 3**) :

$H_0$  : There is no significance difference between pluse rate before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 = \mu_2$ .

$H_1$  : There is significance decrease in pulse rate before doing yoga and after doing yoga ( for a period of 15 days ) i.e.  $\mu_1 > \mu_2$ .

$$\mathbf{T20= 1.085805} \quad \mathbf{TAB t = 0.837871}$$

For BMI after doing yoga, we have hypothesis as (for **Table 3**) :

$H_0$  : There is no significance difference between in BMI before doing yoga and after doing yoga ( for a period of 3 months ) i.e.  $\mu_1 = \mu_2$ .

$H_1$  : There is significance decrease in BMI before doing yoga and after doing yoga ( for a period of 3 months) i.e.  $\mu_1 > \mu_2$ .

$$\mathbf{T21= 3.359337} \quad \mathbf{TAB t = 0.837871}$$

# CONCLUSION

No.	Hypothesis	Cal t	Tab t	Conclusion
1	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	4.970243	0.835169	Reject H0
2	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	4.490183	0.835169	Reject H0
3	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	4.628448	0.835169	Reject H0
4	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	3.183381	0.835169	Reject H0
5	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	4.699804	0.835169	Reject H0
6	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	3.200546	0.835169	Reject H0
7	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	4.691956	0.835169	Reject H0
8	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	0.49552	0.834468	Reject H0
9	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	2.441405	0.834468	Reject H0
10	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	2.441405	0.834468	Reject H0
11	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	1.572608	0.834468	Reject H0
12	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	2.229308	0.834468	Reject H0
13	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	1.69879	0.834468	Reject H0
14	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	1.572608	0.834468	Accept H0
15	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	-1.10881	0.837871	Accept H0
16	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	-1.83509	0.837871	Reject H0
17	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	1.158407	0.837871	Reject H0
18	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	0.683468	0.837871	Reject H0
19	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	1.074494	0.837871	Reject H0
20	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	1.085805	0.837871	Reject H0
21	$H_0 : \mu_1 = \mu_2 ; H_1 : \mu_1 > \mu_2$	3.359337	0.837871	Reject H0

- ❖ After a period of 15 days of continuous yoga for 1 hour daily, there is a reduction in B.P. and pulse rate.
- ❖ After a period of 3 months of continuous yoga for 1 hour daily, there is a reduction in B.M.I.(Body Mass Index)
- ❖ After a period of 3 months of continuous yoga for 1 hour daily, yoga helps to improve sleep and peace of mind ( 93% of people in the sample are favorable).
- ❖ After a period of 3 months of continuous yoga for 1 hour daily, yoga helps to improve immune and digestion system (94.5% of people in sample are favourable).
- ❖ After a period of 3 months of continuous yoga for 1 hour daily, yoga helps to improve muscle strength and posture ( 95% of people in sample are favourable).

## **RESULT**

- ✓ Daily practice of yoga helps to reduce Blood Pressure , Pulse Rate , B. M. I. , etc.
- ✓ Yoga helps to built the cessation of modification of mind.

## **APPENDIX**

### **For table 1 :**

MTB > CDF 0.995;

SUBC> T 24.

### **Cumulative Distribution Function**

Student's t distribution with 24 DF

x      P( X <= x )

**0.995    0.835169**

### **For table 2 :**

MTB > CDF 0.995;

SUBC> T 21

### **Cumulative Distribution Function**

Student's t distribution with **21** DF

x      P( X <= x )

**0.995    0.834468**

### **For table 3 :**

MTB > CDF 0.995;

SUBC> T 53.

### **Cumulative Distribution Function**

Student's t distribution with **53** DF

x      P( X <= x )

**0.995    0.837871**

## **REFERENCES**

### **Books :**

- Richard J. Larsen & Morris L. Marx ( 5<sup>th</sup> Edition) “*Introduction To Mathematical Statistics*”.
- Prof. P. G. Dixit , Prof. V. R. Pawgi & Prof. P. S. Kapre ( Nirali Publication) “*Sampling Distributions And Inference*”.

## **SOFTWARES**

- Minitab
- Microsoft Excel

## **WEBSITES**

- ❖ [www.statisticssolutions.com/manova-analysis...](http://www.statisticssolutions.com/manova-analysis...)
- ❖ [byjus.com/maths/paired-t-test](http://byjus.com/maths/paired-t-test)
- ❖ [www.statstutor.ac.uk/resources/uploaded/paired-t-test.pdf](http://www.statstutor.ac.uk/resources/uploaded/paired-t-test.pdf)

**Date:** \_\_\_\_\_

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The questionnaire is given as follows :

#### Personal Information

1. Name: \_\_\_\_\_(optional)

2. Age

\_\_\_\_18 to 35 , \_\_\_\_ 35 to 60 , \_\_\_\_ 60 and above

3. Gender

\_\_\_\_Female , \_\_\_\_ Male

4. Occupation

\_\_\_\_servcies , \_\_\_\_ business , \_\_\_\_other

#### Study Factors

Q1. Height & Weight :

1) Weight

Before doing yoga - \_\_\_\_\_ ,

After 3 months of doing yoga - \_\_\_\_\_

2) Height - \_\_\_\_\_

3 ) BMI - \_\_\_\_\_

Q2. Blood Pressure :

1) Before doing yoga - \_\_\_\_\_ ,

After doing yoga - \_\_\_\_\_

After 15 days of doing yoga :

1) Before doing yoga - \_\_\_\_\_ ,

After doing yoga - \_\_\_\_\_

Q3. Pulse Rate :

1) Before doing yoga - \_\_\_\_\_ ,

After doing yoga - \_\_\_\_\_

After 15 days of doing yoga :

1) Before doing yoga - \_\_\_\_\_ ,

After doing yoga - \_\_\_\_\_

Q4. Diseases

1) Do you have diseases ?

Yes       No

Before doing yoga - \_\_\_\_\_ ,

After 15 days of doing yoga - \_\_\_\_\_

2) Whether yoga is useful in controlling sugar level in your blood ?

Yes       No

Q5. Doing yoga makes you happy?

Yes       No

Q6. Does yoga makes any good effect on your sleep?

Yes       No

Q7. Doing yoga helps you to improve your concentration power ?

Yes       No

Q8. Doing yoga boosts your immune system ?

Yes       No

Q9. Does doing yoga gives relief to your joint pain ?

Yes       No

Q10. Does doing yoga builds your muscle strength ?

Yes       No

Q11. Doing yoga perfects your posture ?

Yes       No

Q12. Does doing yoga protects your spine?

Yes       No

Q13. Doing yoga maintains your nervous system ?

Yes       No

Q14. Does doing yoga gives you peace of mind ?

Yes       No

Q15. Do you have IBS and other digestive problem?

Yes       No

## DATA SETS

Table 1 (Females)

C	Name	Age	Gender		
				Before yoga	After 3 months
1	SAI JOSHI	20	F	20.5	19.6
2	SHARAYU VISPUTE	32	F	23	20.5
3	MONI SHARMA	45	F	32.5	29
4	NEHA DUGGAD	19	F	19.5	18.8
5	KUNJAL MEHATA	56	F	33.3	31.6
6	PRAMILA MEHATA	62	F	34.6	30.7
7	SMITA MEHATA	66	F	31.1	28.9
8	MEERA MEHATA	28	F	28.4	26.7
9	SAMIRA MEHATA	25	F	23.7	22.9
10	KIRAN MEHATA	23	F	23.6	22.1
11	RUPALI TAYADE	36	F	27	28.5
12	PRAJKTA SHIRSATH	18	F	19.1	19.5
13	RASHMI RAMKRUSHNA	18	F	18.4	18.4
14	ANUSHKA JAGTAP	18	F	17.6	18.4
15	SAVITA KUNCHALGIRIKAR	68	F	26.6	25

16	SWANANDI PATIL	35	F	29.4	28.5
17	PALLAVI RAJPUTE	36	F	24	24.8
18	VARSHA SONAR	40	F	24.2	23
19	PRITI PATIL	39	F	28.6	26.9
20	VIJAYA NARKHEDE	33	F	28	26.4
21	SUGANDHA PATIL	47	F	29.7	27.9
22	BAYADI VERMA	70	F	27.9	26.6
23	PRIYA SUBHEDAR	55	F	21.4	19
24	UTKARSHA RATHI	56	F	25.5	23.1
25	AASHA PATIL	71	F	19.8	19

B.P.				pulse rate		
Before	After	(After 15 days) before	(After 15 days) after	Before	After	15days before
124/78	129/89	120/81	125/89	75	84	73
122/82	125/81	122/80	126/85	74	79	73
136/70	141/69	135/72	139/69	81	89	79
120/81	129/76	122/79	126/80	72	78	71
139/78	145/86	132/80	139/84	79	84	75
139/76	145/80	131/80	138/77	79	84	75
128/75	134/79	125/78	129/80	72	75	71
129/65	136/70	125/69	132/75	75	82	73
120/78	127/82	122/79	125/78	73	76	71
124/77	129/82	123/79	126/80	72	79	71
126/82	135/86	124/78	129/78	76	87	74
122/80	124/82	120/82	126/81	76	79	72
122/81	125/84	122/80	126/83	76	80	75

| 125/61 | 122/69 | 125/70 | 120/85 | 74 | 80 | 72



135/85	142/89	137/87	143/92	100	112	94	102
138/86	145/90	135/89	142/91	106	118	102	115
139/90	146/95	138/85	145/87	110	116	102	118
128/84	132/89	125/86	130/88	87	96	89	98
122/90	116/95	125/96	111/95	110	112	105	112

48	DIVYA TEJAWANI	51	F	62	62
49	NANDA GURNANI	39	F	73	71
50	KANTA AUNTY	42	F	74	70
51	MEENA AUNTY	39	F	68	60
52	RADHA SANDHANI	59	F	100	95
53	SAVITA ROHERA	31	F	65	61
54	GEETA SATWANI	56	F	84	82

Table 3 (females)

Sr no.	Name	Age	Gender	BMI	
				Before yoga	After 3 months of yoga
1	sarita chandani	32	F	73	72
2	komal ahuja	38	F	55	53
3	savita	36	F	48	50
4	rakhi makadiya	45	F	76	73
5	mala chandwani	48	F	76	75
6	laxmi mulchandani	35	F	85	84.5
7	soniya rohra	40	F	65	62
8	prajapati	69	F	74	73
9	soni	45	F	85	83
10	jiya radhani	49	F	75	73.5
11	sanjna	60	F	75	74.5
12	palak ratnani	37	F	55	55
13	bhaghshree pinjani	35	F	70	69
14	bhavika dudhani	35	F	80	78
15	vinita	38	F	56	54

16	bharti dhodani	42	F	66		65
17	pushpa gogiya	48	F	70		70
18	bharti karda	21	F	41		44
19	jaya	41	F	70		70
20	preeti chandwani	56	F	78		70
21	ranjana chandwani	45	F	85		79
22	sunita darda	54	F	95		88
23	deepa gogiya	44	F	70		65
24	rani nagdev	66	F	65		61
25	muskan talrija	35	F	78		71
26	shweta	24	F	74		59
27	rajani jumnani	53	F	82		77
28	koona lulla	27	F	66		66

