

# Immediate Effect on Heart Rate in the Final Position of Selected Asanas

## Abstract

Aim of this study was to find out the effect on heart rate (HR) in the final position of selected asanas. This study was limited to the 16 selected asanas and also to the untrained male of different ages. Total 111 subjects were selected for the study from the different cities. The selected subjects have knowledge of asanas. The pre data was measured in the laying position and post data was measured in the final position of asana. t – test was used to analyze the data. The result of this study indicates that heart rate was increased in all asanas except in Shavasana. Maximum increase in heart rate was noticed in Shirshasana and in shavasana heart rate was lower than the normal.

**Keywords:** Heart Rate, Position of Asanas.

## Introduction

Heart rate indicates that man is alive and in the absence of heart rate human being considered as a dead. The contraction and relaxation process will occurred in the heart throughout the life. The contraction of heart is known as heart rate. When heart contracts, it pump the blood in the blood vessels and blood start to flow in the body. Heart maintains the blood supply throughout the life.

On the basis of previous researches and available literature it is concluded that heart rate was affected by training and exercise. Beside this heart rate was also influenced by posture, age, emotion, gender, physical health, and atmosphere. Posture is important factors out of these factors. Asanas are most important part of yoga. In asanas people mold body in different postures and maintain it for some time which is depend on their capacity. According to the available literature there are eighty four lakhs asanas. Asanas are nothing but the pattern of sitting of different species used by them for comfortable sitting. According to the Patanjali “Sthir – Sukham – Asaman” that mean steady and comfort sitting position is known as asanas. All most every asanas might be influenced the HR in different ways. Every asanas creates pressure or changes on human body and it may be varied for every asanas. This pressure/ changes are temporary or permanent. Permanent changes can be visible after long practice but temporary changes can be visible immediately or during the performance. So effect of any activity on human being could be studied from two angles i.e. the immediate effect/ change (E/C) and long term affect/ change (E/C). The immediate E/C of any activity was more than the long term E/C. In the same way these effects are different in trained and untrained persons. In trained person these changes are very less but in untrained person these changes are high. These points motivate the researcher to conduct a study.

## Aim of the Study

To check the immediate effect on heart rate in the final position of asanas on untrained person this study was conducted and its objective was to (1) compare the post data and pre data mean of each asanas, (2) compare the combine post data means of each asana.

## Review of Literature

Gunde, Bera and Gore were study to evaluate the effects of some selected yogasanas and similar type of exercises on selected neuro physiological variables like ECG, blood pressure, EEG, SpO2, respiratory rate, pulse rate. Significant increase in the heart, blood pressure, pulse rate and respiratory rate was found when asanas is performed as a exercise.

Gore, Kulkarni, Bhogal, Oak and Bera study on 48 residential school boys (age 10 to 15 years) were tested for training and detraining effect of yoga on EEG alpha, and autonomic function. 45 min yoga intervention for 45 days was given to experimental group whereas no training was given to the control group. The trend of result in experimental



**A K Diwaker**

Assistant Professor,  
Deptt.of Physical Education,  
Dr Ram Manohar Lohiya  
Government Degree College,  
Bidhuna, Auraiya, U.P.

group showed increase in alpha index by 10% in heart, no change was notice in blood pressure and respiration rate decreased by 2 beats/ min in comparison to detraining phase.

Chakraborty, study to compare the effect of specific exercise, asanas and clinical findings (Resting heart rate, Respiratory rate, Blood pressure, Hemoglobin) of the adults. After experimental programme it was observed that in case of exercise group revealed that resting heart rate, respiratory rate, hemoglobin contain, systolic blood pressure and diastolic blood pressure improved but found insignificant under t –test. In case of asana group resting heart rate, respiratory rate, and hemoglobin contain, insignificantly, but systolic blood pressure and diastolic blood pressure improved significantly.

Standing Position asanas –	Tadasana (AS1), Vrikshasana (AS3), Padmasana (AS5), Parvatasana (AS7), Viparitha Karni (AS9), Halasana (AS11), Shalabhasana (AS13), Makarasana (AS15),	Trikonasana (AS2), Utkatasana (AS4), Vajrasana (AS6), Paschimothanasana (AS8), Sarvangasana (AS10), Shirshasana (AS12), Bhujangasana (AS14), Shavasana (AS16)
Sitting position asanas –		
Inverted position asanas –		
Laying position asanas –		

Total 111 subjects (One Hundred Eleven) were selected from different places on the basis of availability. Selected subjects have knowledge of yoga. Heart rate was tested variable and measured automatically by the instrument, it was number of beats per minute. Pre – data or normal HR was measured after giving 5 to 10 minutes of rest in shavasana/ supine position. It was taken once in the beginning of the data collection and common for all 16 asanas, whereas as the post data for all 16 asanas was different and collected in 2 days. Data of HR was collected in the final position of every asanas by an instrument. In between the two asanas 2 to 5 minute of rest in supine/ prone position was given to the subjects, so that he comes in normal condition and

Divya and Shenbagavalli, study to find out the effects of gymnastics exercise and yoga exercise or asanas on college student. Vital capacity, Heart rate, Breath holding time, systolic blood pressure, and diastolic blood pressure are takes as dependent variable. Researcher found that gymnastic exercise training and yoga practice have significantly vital capacity, breath holding time, heart rate and systolic blood pressure.

#### Material and Method

The present study was delimited to the untrained male candidate of different age and also delimited to the sixteen asanas which are divided into four different groups depends on the position of asanas.

prepares himself for the next asana. For determining significant difference exist between per data and post data of HR correlated't' test was used. For determining significant change in gain score of HR on different asanas, an analysis of variance (ANOVA) and LSD post hoc test was used to check mean pair differences. Gain scores for selected variables were calculated by the following method "Post data – Pre data". The +ve value of gain indicates that post data value was higher than the pre data (normal) value and –ve value of gain indicates that post data value was lower than the pre data (normal) value.

#### Result

The data was analyzed and results of the study was presented in the different tables-

**Table - 1**  
**'t' Test Value of Heart Rate**

S No	Name of Asana		Normal	Mean	M. Diff	't' – test
1	Tadasana	AS1	71.315	82.180	10.865	13.317*
2	Trikonasana	AS2	71.315	87.775	16.459	21.498*
3	Vrikshasana	AS3	71.315	82.586	11.270	17.217*
4	Utkatasana	AS4	71.315	90.495	19.180	25.074*
			<b>71.315</b>	<b>85.759</b>	<b>14.444</b>	
5	Padmasana	AS5	71.315	81.207	9.892	16.469*
6	Vajrasana	AS6	71.315	80.486	9.171	15.390*
7	Parvatasana	AS7	71.315	85.360	14.045	15.549*
8	Paschimothanasana	AS8	71.315	90.676	19.360	22.141*
			<b>71.315</b>	<b>84.432</b>	<b>13.117</b>	
9	Viparitha Karni	AS9	71.315	91.189	19.874	25.563*
10	Sarvangasana	AS10	71.315	92.162	20.847	21.325*
11	Halasana	AS11	71.315	94.414	23.099	26.078*
12	Shirshasana	AS12	71.315	95.613	24.297	23.689*
			<b>71.315</b>	<b>93.345</b>	<b>22.030</b>	
13	Shalabhasana	AS13	71.315	93.901	22.586	24.150*
14	Bhujangasana	AS14	71.315	86.486	15.171	20.589*
15	Makarasana	AS15	71.315	73.225	1.910	4.215*
16	Shavasana	AS16	71.315	69.586	-1.730	-3.321*
			<b>71.315</b>	<b>80.800</b>	<b>9.485</b>	

\* Significant at 0.05 level with df (110) = 1.658

It is clear from the table – 1 that obtained value of ‘t’ for all asanas are higher (irrespective of the ± value) than the tabulated value of ‘t’ (1.658) at 0.05 level, that means there was a significant difference between the pre data of HR and post data of HR. The negative (-ve) value of ‘t’ for asanas AS16 indicates that HR was lower than the normal and positive (+ve ) value of other asanas indicate that HR was higher than the normal.

**Table – 2**  
**Asana Wise Mean Difference on Gain Score of Heart Rate**

1-	AS12		24.297	
2-	AS11		23.099	
3-	AS13		22.586	1.711
4-	AS10	1.739	20.847	
5-	AS9		19.874	
6-	AS8		19.360	
7-	AS4		19.180	1.667
8-	AS2		16.459	
9-	AS14		15.171	1.288
10-	AS7	1.126	14.045	
11-	AS3		11.270	
12-	AS1		10.865	
13-	AS5		9.892	
14-	AS6		9.171	2.099
15-	AS15		1.910	
16-	AS16		-1.730	

LSD post hoc test value CD is 2.166

**Note :-** Bracket indicate that there is no significant difference in the groups.

Table – 2 clearly indicates that gain HR of AS12 had a significantly higher and superior to all other 15 asanas. No significance difference was found AS12, AS13 and AS11. During the inverted asanas HR was increased maximum. In AS16 HR was lower than the normal. AS16 shows –ve value that means during this asana HR was lower than the normal.

**Conclusion**

Maximum increase was noticed in AS12, AS11, AS13, AS10 and AS9. All these asanas except AS13 come under the category of inverted asanas. So it was concluded from the study that inverted asanas had higher heart rate than the standing position, lie position and sitting position asanas. In inverted position, return blood to the heart was increased and heart pumps more blood against the gravity, which may increase the HR.

In the group of laying position asana AS13 has maximum increase in the heart rate. AS12 has highest increase in heart rate and no significance difference was noticed in AS12, AS11 and AS13. Subject performs asanas AS13 in prone position and lifts his legs as high as possible and keeps this position without any support which may increase pressure on heart. That’s why the heart rate may be increased.

In the final position of asanas AS13 legs are lifted upward above the heart. So this position is little

bit similar to the inverted asanas. So the heart rate was higher than the other laying position asanas.

During the AS16 HR was decrease whereas in the other 15 asanas HR was increased. This increased was maximum in AS12 and lowest in AS16. Both AS15 & AS16 were relaxing asanas. In AS16 subject feel more relax and comfort in compare to AS15.

Minimum increase in heart rate was notices in AS16 & AS15 (laying position asanas) then AS5 & AS6 (Sitting position asanas) then AS1 & AS3 (Standing position asanas) and no significance difference was found in AS1, AS3, AS5 & AS6. This is also noticed that heart rate was increased as the heart moves above the ground level.

In the final position of different asanas heart rate (except in AS16) was increased. AS12 is considered as the most difficult asanas because HR was increased maximum. The present study had found that some of the asanas which can give high increase in the HR. As asanas are perform by many peoples and in all age groups. It is suggested that people who are having cardiac problem must aware about those asanas, which can give a high increase in their heart rate. They should also use expert guidance and must consult their doctor before performing any difficult asanas.

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