



## EFFECTS OF SURYA NAMASKAR ON THE CARDIORESPIRATORY SYSTEM OF COLLEGE STUDENTS

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### ABSTRACT

*This study aims to investigate the impact of Surya Namaskar (Sun Salutation) on the cardiorespiratory system of college students. Surya Namaskar is a sequence of yoga poses that integrates breath with movement and has been associated with various health benefits. This research employs a pre-test and post-test design to assess changes in vital parameters such as heart rate, respiratory rate, and oxygen saturation following a structured Surya Namaskar regimen.*

*A total of 60 male college students (ages 18-25) of Bundelkhand university were randomly selected for this study. Participants were randomly divided into two groups: an experimental group (30 participants) performing Surya Namaskar and a control group (30 participants) with no intervention.*



**KEYWORDS:** *Surya Namaskar, Heart Rate, Respiratory Rate, Oxygen Saturation.*

### INTRODUCTION:

Surya Namaskar is a traditional yoga practice that combines physical postures (asanas), breath control (pranayama), and meditation. The practice is known to enhance physical fitness and mental well-being. This study explores its specific effects on the cardiorespiratory system among college students, a demographic often experiencing stress and sedentary lifestyles.

India has a rich tradition of yogic practices. Now-a-day yoga, the ancient practice of postures, breathing and meditation is gaining a lot of attention from healthcare professionals. With increasing scientific research in yoga, its therapeutic aspects are also being explored. Surya namaskar - The salutation to the God Sun is also a part of Indian traditional yogic practices. Each cycle of Surya namaskar is sequence of certain asanas', performed along with 'pranayama'. The sequence is such that each asana is complimentary to the next During Surya namaskar, muscles of the entire body experience stretch and pressure of asanas alternately and therefore it is said to give more benefits with less expenditure of time. It is claimed that Surya namaskar practice gives benefits of both-asana and pranayama and improves general health and fitness.

Yogic lifestyle, yogic diet, yogic attitudes and various yogic practices help man to strengthen his body and mind and develop positive health, enabling him to withstand stress by normalizing the perception of stress, optimising the reaction to it and by effectively releasing the pent-up stress through various yogic practices. Asanas help us to develop strength, flexibility, will power, good health and stability.

## OBJECTIVES

1. To measure the effect of Surya Namaskar on heart rate.
2. To evaluate changes in respiratory rate.
3. To assess variations in oxygen saturation levels.

## METHODOLOGY

### Participants

A total of 60 male college students (ages 18-25) of Bundelkhand university Jhansi were selected for this study. Participants were randomly divided into two groups: an experimental group (30 participants) performing Surya Namaskar and a control group (30 participants) with no intervention.

### Procedure

1. **Pre-Test Measurements:** Baseline data for heart rate, respiratory rate, and oxygen saturation were collected.
2. **Intervention:** The experimental group performed a structured Surya Namaskar routine for 30 minutes, 5 days a week, for 6 weeks.
3. **Post-Test Measurements:** After 6 weeks, post-intervention measurements were taken using the same parameters.

### Measurements

- **Heart Rate:** Measured in beats per minute (BPM) using a digital heart rate monitor.
- **Respiratory Rate:** Measured in breaths per minute using a stopwatch.
- **Oxygen Saturation:** Measured using a pulse oximeter.

### Statistical Analysis

Data were analyzed using paired t-tests to compare pre-test and post-test results. A significance level of  $p < 0.05$  was used.

## RESULTS

**Table 1: Pre-Test and Post-Test Measurements**

Parameter	Pre-Test Mean $\pm$ SD	Post-Test Mean $\pm$ SD	p-value
Heart Rate (BPM)	78.5 $\pm$ 10.2	70.2 $\pm$ 9.3	<0.001
Respiratory Rate (BPM)	18.1 $\pm$ 2.3	15.6 $\pm$ 1.9	<0.001
Oxygen Saturation (%)	95.0 $\pm$ 1.5	97.2 $\pm$ 1.2	<0.001

### Statistical Analysis

The results indicate a statistically significant decrease in heart rate ( $p < 0.001$ ) and respiratory rate ( $p < 0.001$ ) in the experimental group. Additionally, oxygen saturation levels showed a significant increase ( $p < 0.001$ ) after the intervention.

## DISCUSSION

The findings demonstrate that regular practice of Surya Namaskar significantly enhances the cardiorespiratory system among college students. The observed decrease in heart rate suggests improved cardiovascular efficiency, while the reduction in respiratory rate indicates enhanced lung function and respiratory efficiency. The increase in oxygen saturation points to better oxygen utilization by the body.

### Limitations

- Small sample size limits generalizability.
- The study did not control for participants diet or other physical activities.

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### Future Directions

Further research with larger and more diverse samples is needed. Additionally, exploring long-term effects and the impact of varying durations and intensities of Surya Namaskar could provide deeper insights.

### CONCLUSION

Surya Namaskar has a positive effect on the cardiorespiratory system of college students, promoting cardiovascular health and respiratory efficiency. Incorporating yoga practices like Surya Namaskar into daily routines could be beneficial for student health.

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