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Jitendra Singh Gurjar

Ph.D. Scholar, LNIPE Gwalior,
Madhya Pradesh, India

Dr. Pramod Kumar Das

Assistant Professor, LNIPE
Gwalior, Madhya Pradesh, India

Physiological effects of Surya Namaskara: An experimental study

Jitendra Singh Gurjar and Dr. Pramod Kumar Das

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Abstract

The purpose of the study was found out the effect of Surya Namaskara on selected physiological variables of School students. The selected physiological variables were systolic blood pressure, diastolic blood pressure, resting heart rate, and vital capacity. 50 male students of School were randomly selected from Birla Nagar Football Club Gwalior. Pre and post measurement of selected physiological variables data were analyzed by paired 't' test. The result shows that there were significant effects on selected physiological variables such as resting heart rate, vital capacity, systolic and diastolic blood pressures.

Keywords: Physiological variables, physiological effects

Introduction

Yogasana is mentioned for the first time in the Atharva Veda Samhita (1500 BCE), which uses the term asana in a specifically Yogic context. Yoga is derived from the Sanskrit word yuj, which means 'to join' and means 'unity' or 'oneness'. In spiritual terms, this unity or joining is described as the union of the individual consciousness with the universal consciousness.

The Sanskrit word 'asana' comes from a verbal root that means to sit or be present. Asanas means "to be established in a specific posture" in the Yoga tradition, and the textual context indicates the latter meaning. Several references in the Vedas, Brahmanas, and Upanishads indicate that the practices must have existed prior to their being recorded.

Suryanamaskar (SN) is a dynamic sequence of yogic postures performed in synchrony with the breath. Despite a number of reports on the effect of yoga training on pulmonary functions, respiratory pressures, handgrip strength and endurance, and cardiovascular parameters, scientific literature on the physiological effects of SN, which is an integral part of modern yoga training, is lacking. For many years, there was only one scientific study on this practice, and that study only included two subjects. Many researchers have recently conducted studies on energy cost and cardiorespiratory changes during practice, as well as cardiorespiratory fitness parameters. They also concluded that SN is an excellent form of aerobic exercise because it incorporates static, stretching, and dynamic movements.

The physical, mental, social, and spiritual aspects of human life are all important. Human health is divided into three dimensions: physical, mental, and social. Surya (sun) refers to the sun in Sanskrit, and Namaskara means 'Salutations'. Surya namaskara was passed down from the Vedic era's enlightened sages. The sun represents spiritual consciousness and was worshipped on a daily basis in ancient times. Salutations to the sun are the basic translation of surya namaskara. It is a very old tradition that has existed since the Vedic period. The physical foundation of practise connects twelve asanas that are dynamically performed in a series. Sunrise is the best time to practise surya namaskara because it is the most peaceful time of day. Practice in the open air, facing the rising sun, whenever possible. The sun setting is also an excellent time to practice because it stimulates the digestive fire. Each cycle of surya namaskara is a sequence of specific 'asana' performed in conjunction with 'pranayama'. The asana sequence is designed so that each asana complements the next.

Surya namaskara causes muscles throughout the body to stretch and contract alternately, so it is said to provide more benefits with less time spent.

Corresponding Author:

Jitendra Singh Gurjar

Ph.D. Scholar, LNIPE Gwalior,
Madhya Pradesh, India

Method and Material

50 male school students were randomly selected from Birla Nagar Football Club Gwalior.

Procedure

Criterion Measures

| S. No. | Variables | Equipment/test | Measures in |
|--------|--------------------------|-------------------------------------|-------------|
| 1 | Systolic Blood Pressure | Sphygmomanometer | MmHg |
| 2 | Diastolic Blood Pressure | Sphygmomanometer | MmHg |
| 3 | Resting heart/pulse rate | Pulpatory Method (Pulse Rate Count) | Numbers |
| 4 | Vital capacity | Spirometer | Litres |

After pretest 12 weeks training schedule were introduced. The subjects were asked to perform on Surya Namaskar daily for 25 minutes each followed by five minute relaxation period, 6 times per week for a period of 12 weeks in morning session. When performing training schedule, subjects were instructed to hold each posture for duration of one inhalation or exhalation depending on the movement being performed. The subjects 50 were divided in two equal groups. The groups were assigned the name as follows: Experimental Group and control group.

Statistical Procedure

Pre and post measurement of selected physiological variables and data were analysed by paired 't' test.

Findings

Table 1: Descriptive Statistics of Selected Physiological Variables of Experimental Group

| S. No. | Variables | Pre Test | | Post Test | |
|--------|--------------------------|----------|-------|-----------|-------|
| | | Mean | SD | Mean | SD |
| 1 | Resting Heart Rate | 73.16 | 5.28 | 71.28 | 4.57 |
| 2 | Vital Capacity | 2.13 | 0.53 | 2.34 | 0.41 |
| 3 | Systolic Blood Pressure | 118.72 | 11.06 | 115.11 | 10.88 |
| 4 | Diastolic Blood Pressure | 76.36 | 8.43 | 72.17 | 7.53 |

Table 1 shows the descriptive data of selected physiological variables of experimental group.

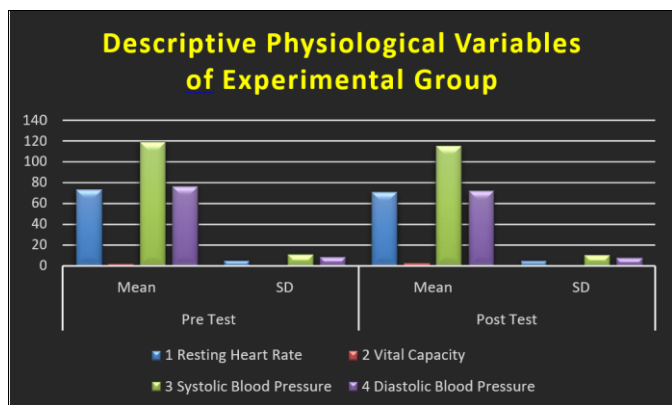


Fig 1: Graphical representation of Descriptive Statistics of Selected Physiological Variables of Experimental Group

Table 2: Descriptive Statistics of Selected Physiological Variables of Control Group

| S. No. | Variables | Pre Test | | Post Test | |
|--------|--------------------------|----------|-------|-----------|-------|
| | | Mean | SD | Mean | SD |
| 1 | Resting Heart Rate | 74.11 | 5.19 | 73.94 | 5.03 |
| 2 | Vital Capacity | 2.83 | 0.63 | 2.84 | 0.68 |
| 3 | Systolic Blood Pressure | 119.50 | 10.88 | 119.67 | 10.76 |
| 4 | Diastolic Blood Pressure | 76.27 | 8.13 | 77.06 | 9.77 |

Table 2 shows the descriptive data of selected physiological variables of control group

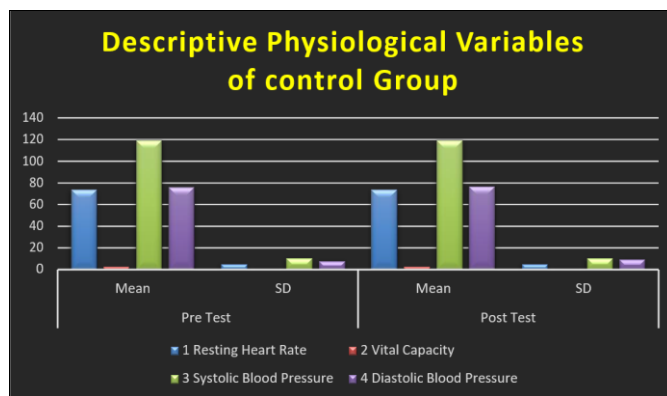


Fig 2: Graphical representation of Descriptive Statistics of Selected Physiological Variables of Control Group

Table 3: Significance Differences between Pre and Post Test Means of Experimental and Control Group in Selected Physiological Variables

| S. No. | Variables | t-ratio | |
|--------|--------------------------|--------------|---------|
| | | Experimental | Control |
| 1 | Resting Heart Rate | 2.98* | 1.31 |
| 2 | Vital Capacity | 3.07* | 0.73 |
| 3 | Systolic Blood Pressure | 4.21* | 1.59 |
| 4 | Diastolic Blood Pressure | 3.67* | 1.42 |

*t value required to significant at 0.05 level of confidence

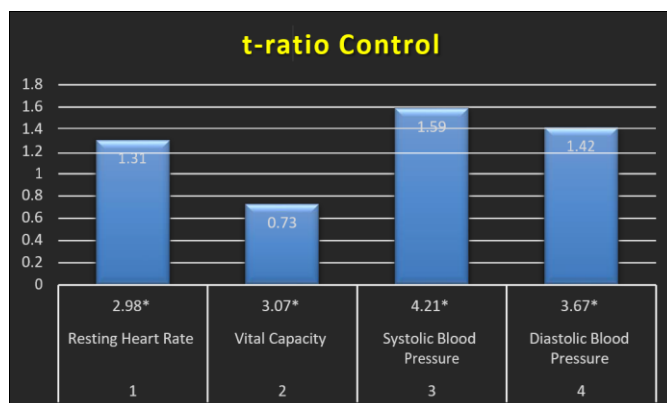


Fig 3: Graphical representation of Significance Differences between Pre and Post Test Means of Experimental and Control Group in Selected Physiological Variables

Discussion of findings

Table 3 shows that there are significant effects on selected physiological variables such as resting heart rate, vital capacity, systolic and diastolic blood pressures. M. Fondran Kristine conducted a study on the effects of surya namaskara yoga practice on resting heart rate and blood pressure, flexibility, muscular endurance and perceived well-being in healthy adults, this study is supported the our results. Therefore, surya namaskar there should be practiced daily to get above beneficial effects. Surya namaskar is the combination of asana and pranayama, it is simple to practice, consumes only less time so that college students can practices every day.

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