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Impact of six weeks yoga exercise on selected physiological variables

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Abstract

The aim of this study was to discover out the impact of yoga exercise on selected physiological variables. For the current study thirty five male students of 8th and 12th standard from Model School, Rohtak (Haryana), were taken arbitrarily as the subjects for the study. The age of the subjects were ranging from 13 - 18 years. The variables taken for the current study were yoga exercise, quiescent heart rate and vital capacity. The data was together during the pre and post-test. For this study single group plan was used in which the pre-test was engaged prior to the yogic exercise and post-test was taken after six weeks of yoga exercise. For evaluating pre and post-test means of quiescent heart rate and vital capacity, descriptive examination and paired t-test were functional at 0.05 level of significant. The effect of the study showed that there was significant difference between pre and post-test of quiescent heart rate and vital capacity. On the basis of the findings it was finished that the yoga exercise may be conscientious for the enhancement of selected physiological variables like quiescent heart rate and vital capacity.

Keywords: Yoga Exercise, Physiological Variables, Quiescent Heart Rate, Vital Capacity.

Introduction

Yoga came to the attention of an educated western public in the mid 19th century along with other topics of Hindu philosophy. The first Hindu teacher to actively advocate and disseminate aspects of yoga to a western audience was Swami Vivekananda, who toured Europe and the United States in the 1890s (however, Vivekananda put little emphasis on the physical practices of Hatha Yoga in his teachings).

The physical asanas of hatha yoga have a tradition that goes back to at least the 15th century, but they were not widely practiced in India prior to the early 20th century. Hatha yoga was advocated by a number of late 19th to early 20th century gurus in India, including Tirumalai Krishnamacharya in south India, Swami Sivananda in the north, Sri Yogendra in Bombay, and Swami Kuvalayananda in Lonavala, near Bombay. In 1918, Pierre Bernard, the first famous American yogi, opened the Clarkstown Country Club, a controversial retreat center for well-to-do yoga students, in New York State. In the 1960s, several yoga teachers, most notably B.K.S. Iyengar, K. Pattabhi Jois, Swami Vishnu-devananda, and Swami Satchidananda became active and popular in the West [11, 13, 14]. A hatha "yoga boom" followed in the 1980s, as Dean Ornish, MD, a medical researcher and follower of Swami Satchidananda, connected hatha yoga to heart health, legitimizing hatha yoga as a purely physical system of health exercises outside of counter culture or esotericism circles, and unconnected to a religious denomination.

Since then, hatha yoga has been used as supplementary therapy for diverse conditions such as cancer, diabetes, asthma, and AIDS.

The more classical approaches of hatha yoga, such as Iyengar Yoga, move at a more deliberate pace, emphasize proper alignment and execution and hold asanas for a longer time. They aim to gradually improve flexibility, balance, and strength. Other approaches, such as Ashtanga or Power Yoga, shift between asanas quickly and energetically. More recently, contemporary approaches to yoga, developed by Vanda Scaravelli and others, invite students to become their own authority in yoga practice by offering principle-based approaches to yoga that can be applied to any form.

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Yoga has roots in India. The foundational text for yoga is the Yoga Sutra. Religious articles from a variety of views and beliefs have been published to try to show that Yoga is leading people from their previous beliefs into eastern religions. Some websites are wholly dedicated to this purpose, under names such as "Yogadangers.com" Evangelical Christian leader Albert Mohler is a critic of yoga, saying 'the embrace of yoga is a symptom of our postmodern spiritual confusion'

Yoga as exercise or alternative medicine is a modern phenomenon which has been influenced by the ancient Indian practice of hatha yoga. It involves holding stretches as a kind of low-impact physical exercise, and is often used for therapeutic purposes. Yoga in this sense often occurs in a class and may involve meditation, imagery, breath work and music.

Both the meditative and the exercise components of hatha yoga have been researched for both specific and non-specific health benefits. Hatha yoga has been studied as an intervention for many conditions, including back pain, stress, and depression. In general, it can help improve quality of life, but does not treat disease.

A survey released in December 2008 by the US National Center for Complementary and Integrative Health found that hatha yoga was the sixth most commonly used alternative therapy in the United States during 2007, with 6.1 percent of the population participating.

Even if you're not an athlete, knowledge about your heart rate can help you monitor your fitness level and it might even help you spot developing health problems.

Your heart rate, or pulse, is the number of times your heart beats per minute. Normal heart rate varies from person to person. Knowing yours can be an important heart-health gauge.

"As you age, changes in the rate and regularity of your pulse can change and may signify a heart condition or other condition that needs to be addressed," said Richard Stein, M.D., professor of medicine and cardiology at the New York University School of Medicine in New York City and a volunteer for the American Heart Association.

To get the most accurate reading, put your finger over your pulse and count the number of beats in 60 seconds, Stein said.

Your quiescent heart rate is the heart pumping the lowest amount of blood you need because you're not exercising. If you're sitting or lying and you're calm, relaxed and aren't ill, your heart rate is normally between 60 (beats per minute) and 100 (beats per minute), Stein said.

But heart rates lower than 60 don't necessarily signal a medical problem. It could be the result of taking a drug such as a beta blocker. A lower heart rate is also common for people who get a lot of physical activity or are very athletic, Stein said. Active people often have lower heart rates because their heart muscle is in better condition and doesn't need to work as hard to maintain a steady beat.

"Moderate physical activity doesn't usually change the resting pulse much," Stein said. "If you're very fit, it could change to 40. A less active person might have a heart rate between 60 and 100," he added. That's because the heart muscle has to work harder to maintain bodily functions, making it higher.

A person's vital capacity can be measured by a wet or regular spirometer. In combination with other physiological

measurements, the vital capacity can help make a diagnosis of underlying lung disease. Furthermore, the vital capacity is used to determine the severity of respiratory muscle involvement in neuromuscular disease, and can guide treatment decisions in Guillain-Barré syndrome and myasthenic crisis.

A normal adult has a vital capacity between 3 and 5 litres. A human's vital capacity depends on age, sex, height, mass, and ethnicity.

Lung volumes and lung capacities refer to the volume of air associated with different phases of the respiratory cycle. Lung volumes are directly measured, whereas lung capacities are inferred from volumes.

Vital capacity is the maximum amount of air a person can expel from the lungs after a maximum inhalation. It is equal to the sum of aspiratory reserve volume, tidal volume, and expiratory reserve volume.

Objectives of the study

- To discover out the significant difference between pre and post-test of quiescent heart rate.
- To discover out the significant difference between pre and post-test of vital capacity.

Methodology

Selection of Subjects

For the current study total 35 male students with age ranging between 13-18 years and studying in 8th & 12th standard were arbitrarily selected as subject from Model School, Rohtak (Haryana).

Selection of Variables

Keeping the feasibility criterion in mind, the researcher selected the following variables for the present study:

- Quiescent Heart Rate
- Vital Capacity

Experiment and Training Schedule

For this research, single group was used in which the pre-test was chosen prior to the yoga exercise and post-test was taken after six weeks of yoga exercise. Selected Yoga Asanas and Pranayam were given to subjects on Six days i.e. (Monday to Saturday) sessions per week. Each yoga session consisted of 10 minutes of Pranayamas, 10 minutes of dynamic warm-up exercises, 30 minutes of asanas, and 10 minutes of supine relaxation in Savasana.

Result and Findings of the Study

Table 1: Descriptive and comparative statistics of pre and post-test of quiescent heart rate

Variable	Test	N	Mean	S.D	t-value	P-value
Quiescent Heart Rate	Pre	35	72.49	5.21	6.43	0.00
	Post	35	67.21	4.97		

*significant at 0.05 level

Table 1 reveals that the mean and SD of pre and post-test of resting heart rate are 72.49±5.21 and 67.21±4.97 respectively. This confirms that significant difference exists between the means of pre and post-test in relation to quiescent heart rate.

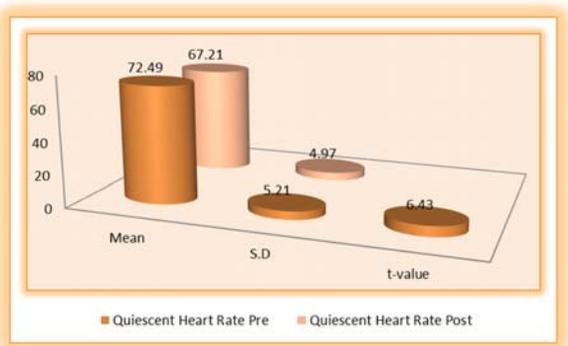


Fig 1: Graphical representation mean values of pre and post-test in relation to quiescent heart rate

Table 2: Descriptive and comparative statistics of pre and post-test of vital capacity

Variable	Test	N	Mean	S.D	t-value	p-value
Vital Capacity	Pre	35	3.15	0.74	2.83	0.00
	Post	35	2.98	0.78		

*significant at 0.05 level

Table 2 reveals that the mean and SD of pre and post-test of vital capacity are 3.15 ± 0.74 and 2.98 ± 0.78 respectively. This confirms that significant difference exists between the means of pre and post-test in relation to vital capacity.

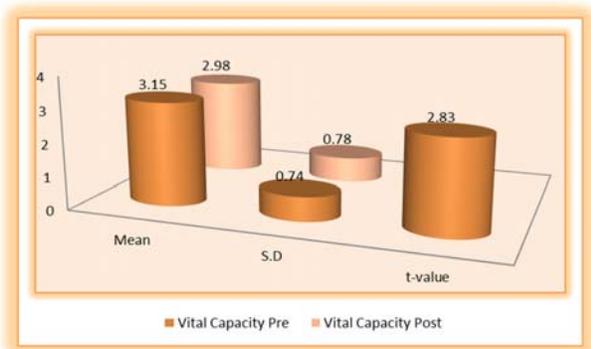


Fig 2: Graphical representation mean values of pre and post-test in relation to vital capacity

Discussion of Findings

The result of the study revealed significant improvements in the variables such as quiescent heart rate and vital capacity due to yoga exercise on the selected group. Participation in yoga exercise resulted in significant development in selected physiological variables such as resting heart rate and vital capacity on selected group when compared between pre and post-test.

Similar study conducted by Susanta Jana in 2013 An Assessment of Force Expiratory Volume and Forced Vital Capacity of Active and Inactive Middle Aged Female to achieve the purpose of the study was to compare the level of Forced Expiratory Volume in One Second and Forced Vital Capacity of active and inactive middle aged female. It was observed that there was significant difference in Forced Expiratory Volume in One Second and Forced Vital Capacity between active and inactive women. Results showed active women have greater Forced Expiratory Volume in One Second and Forced Vital Capacity in comparison to inactive women.

Conclusions

On the basis of findings of the study, the results of the study indicate that the significant difference was found in pre and post-test of resting heart rate and vital capacity.

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