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## Yogic exercises' effect on physiological variables in Shimla's residential school boys

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### Abstract

The present study aims to assess the impact of yoga practices on selected physiological indicators in school kids. There were expected to be substantial variations in physiological variables due to yogic exercises' influence on physiological variables in Shimla residential school boys. The present study recruited 48 boys from S.V.M. School, Vikas Nagar, Kasumpti, Shimla, Himachal Pradesh. A random sample strategy was utilized to acquire data. The present study employed a pre-test and post-test chosen group comprising a control and an experimental group. Data were obtained before and after eight weeks of training. The variables undertaken in the study were systolic blood pressure, diastolic blood pressure, pulse rate, vital capacity and forced capacity. The data were examined using the dependent t-test. The criterion of significance was fixed at  $p < 0.05$ . There exists a significant difference in the diastolic blood pressure and pulse rate. And the other side exists no significant difference in systolic blood pressure, vital capacity and forced vital capacity. The study found that diastolic blood pressure and pulse rate dramatically enhanced due to the impact of eight weeks of yoga exercises. Still, the systolic blood pressure, vital capacity and forced vital capacity were significantly enhanced due to the effects eight-week but the enhanced level is low, that's why the result is not significant for yoga exercises in Shimla's residential school boys.

**Keywords:** Yogic exercises, blood pressure, pulse rate, vital capacity, forced vital capacity, shimla and school boys

### Introduction

The word yoga is derived from Sanskrit grammar; the verb root is "Yuj" in Sanskrit grammar. Sanskrit literature on yoga employs the term in all three senses. 1 Yuj Samdhau: Integration; 2 Yuj Sayamane: Control; and 3 Yujir Yoge: Joining So far, the first two interpretations are concerned; all the literature and schools of Yogic Sādhnā-s have universally recognised these meanings. Patañjali, the original school of the Yogic discipline, seems to embrace the idea of yoga as integration as the first commentator of Patañjalayogasūtram on Vyāsa in his commentary writes: Yogaḥ Samādhiḥ. Yoga is Samādhi. Patanjali does not agree to the alternative sense of Yuj, i.e., Yujir Yoge, 'joining.' Because Patañjali's thesis is dependent on Sāṃkhyan metaphysics and Sāṃkhyan believes in the separation of Puruṣa from that of Prakṛti. Purua has been misidentified as such (Goel, 2007) <sup>[1]</sup>.

"Unity of the individual self with the universal self" is the definition of yoga. The phrase yoga means "to unite," "union," "to combine," or "to join," alluding to the physical, mental, moral, intellectual and spiritual evolution of a person's personality. Regular yoga movement helps our body stay in shape by regulating our weight. Frequent exercise boosts the capacity to provide oxygen, eliminate waste and boost task capacity. It also stimulates blood flow (Vitale, 1973) <sup>[3]</sup>. Exercise increases the amount of haemoglobin and erythrocytes in the blood. In addition, blood arteries are shown to keep elasticity and suppleness when stressed systematically, likely owing to the beneficial impact on the heart (Lal, 2015) <sup>[5]</sup>. Aerobicity involves living or functioning with oxygen. Aerobic or endurance exercises are those in which vast muscle groups are trained in a rhythmic, repetitive manner for extended periods. Aerobics is a good strategy for decreasing the proportion of body fat and achieving other metabolic benefits of fitness.

Aerobics also boosts musculoskeletal fitness while building strength, flexibility and coordination.

Aerobics is a steady physical conditioning strategy that enhances cardiorespiratory exercise over a sufficiently long duration to generate beneficial changes in the body (DEBNATH, 2018) [4]. To undertake any work, we require energy and even while at rest, some physiological operations must be carried out within the body. For this aim, several calories of energy were used. As the intensity and length of labour increase, the demand for fuel in the working muscles likewise increases. Organs that provide necessities should cope with this need.

Because of this, the present study explored whether yoga modifies the blood pressure, pulse rate, vital capacity and forced vital capacity of lung function, which depend on the adherence of respiratory organs (lungs, thorax, airway resistance and respiratory muscle strength). Regular asanas, pranayama and meditation maintain the body in an optimum state and support a healthy physique. Through the practice of asanas and pranayama, regulated energy is released and experienced, hence creating confidence in all aspects of life.

**Methodology**

This study aimed to investigate the influence of yoga practices on selected physiological markers in school boys. It was expected that there would be major significant changes in the chosen physiological variables due to the impact of yogic exercises on physiological variables in Shimla residential school boys. The study randomly selected 48 school boys

from S.V.M. Schools, Vikas Nagar, Kasumpti, Shimla, Himachal Pradesh. The present study adopted a pre-test and post-test random-group design. All participants were treated with Yoga Abhyāsa (practices) for two months. The Yoga Abhyāsa (practice) was held eight weeks between 8 a.m. and 9:30 a.m. under the direct supervision of a certified yoga instructor. A paired t-test was used to investigate the pre-and post-test differences. The significance level was established at 0.05 levels ( $p < 0.05$ ).

**Table 1:** Schedule two months of training in yogic activity

Activity	Repetition	Duration
Om chanting	3	3 Min.
Warming up exercises	0	7 Min.
Standing Asan	1	10 Min.
Laying Asan (prone position)	1	10 Min.
Laying Asan (spine position)	1	10 Min.
Sitting position	1	10 Min.
Pranayama	1	9 Min.
Om chanting		

**Results**

Following eight weeks of practicing yogic exercises, there would be a significant enhancement in blood pressure, pulse rate, and forced vital capacity. The obtained 't' ratios for the changes in mean values of blood pressure, pulse rate, vital capacity, and forced vital capacity before and after the yogic training are analysed and presented in Table 2.

**Table 2:** Significance difference in mean scores between the pre and post-test of blood pressure, pulse rate, vital capacity and forced vital capacity

Sr. No.	N	Variables	Test	Mean	S. D	S.E.M	Mean difference (mean loss)	'T'	Level of Significance
1	48	Systolic Blood Pressure	Pre	119.96	9.09	1.31	2.25	1.19	Not Significant
			Post	122.21	9.46	1.37			
2	48	Diastolic Blood Pressure	Pre	76.71	6.58	.949	3.042	2.48	Significant
			Post	79.76	5.36	.780			
3	48	Pulse Rate	Pre	73.56	8.03	1.16	10.08	6.47	Significant
			Post	63.48	7.28	1.06			
4	48	Vital Capacity	Pre	2.94	.566	.082	.0100	.091	Not Significant
			Post	2.96	.503	.073			
5	48	Forced Vital Capacity	Pre	2.81	.558	.080	.0317	.285	Not Significant
			Post	2.84	.537	.077			

Significant at 0.05 level

Table 2, Shows the acquired 't' ratios for pre-test and post-test mean changes in the selected variable of blood pressure, systolic blood pressure. The t-value testing the difference between averages from the pre-test to post-test was determined to be 1.19, which is not significant; diastolic blood pressure, the t-value testing the difference between means from pre-test to post-stage was computed to be 2.48, which are substantial, pulse rate the t-value testing the difference between means from pre-test to post-test stage was calculated to be 6.47 which is significant, vital capacity the t-value assessing the difference between means from pre-test to post stage was computed to be 0.091 which is not substantial and forced vital capacity the t-value evaluate the difference between means from pre-test to post-test stage was calculated to be 0.285 which is not significant even at 0.05 level of significance, Table value of 2.00 at a 0.05 significance level in the pre-test and post-test scores. The mean pre-test and post-test scores among groups are shown in a graphical representation in Figure 1.

**Discussion**

The study findings indicate the presence of both significant and non-significant changes in the physiological variables. When examining the impact of yoga on the physiological factors of the boys who participated, the findings indicated a substantial reduction in both pulse rate and diastolic blood pressure (measured in millimetres of mercury) after eight weeks of practising yoga. When comparing the measurements taken before and after the training, the individuals who participated in yogic training had notable improvements in several physiological factors, including diastolic blood pressure and pulse rate.

Karak, Jana, & Manna (2015) [9] did similar research. Research done at S.B.S.S. Mahavidyalaya, Goaltore, Paschim Medinipur, West Bengal, indicated that daily yoga practice can considerably lower the morbidity and death from cardiovascular illnesses in college-going male students aged 18-22 years. According to the study, the practice reduced weight, BMI, fat percentage, systolic and diastolic blood pressure and pulse rate. The initial average pulse rate was

78.6; however, it decreased dramatically to 72.50 after six months of practicing yoga. The mean systolic blood pressure was 127.50, while the mean diastolic blood pressure was 88.60. This study aims to assess the effect of yoga on anthropometrical and physiological characteristics in adult males aged 40-45 years. Thirty volunteers were randomly selected for the study and their parameters were assessed before and after six months of regular yoga instruction. The findings can inspire kids to engage in physical activities and preserve their health. The study evaluated the impact of yoga on the anthropometrical and physiological characteristics of college-going students aged 18-22 years. A total of 30 participants underwent pre- and post-yoga training, during which physiological variables were measured by monitoring blood pressure and pulse rate before and after six months of consistent yoga practice. Significant differences were shown in weight, BMI, fat percentages, systolic and diastolic blood pressure, pulse rate and other measurements. The mean pulse rate before yoga was 78.60, which fell dramatically to 72.50 after six months of practice. The mean systolic blood pressure before yoga was 127.50, lowered to 120.50 after six months. Among males 45 years of age and older, the study also revealed significant differences in pulse rate, systolic blood pressure and diastolic blood pressure. The study identified substantial disparities in anthropometrical and physiological characteristics in adult males over 45. After six months of yoga practice, the pulse rate and systolic and diastolic blood

pressure dramatically lowered. However, the study results indicated no significant difference in systolic blood pressure, vital capacity, or forced vital capacity after eight weeks of yoga practice. When compared between pre and post-test, participation in yoga training did not significantly grow in chosen physiological variables such as systolic blood pressure, vital capacity and forced vital capacity in the selected group. A similar study was conducted by Mishra, Pandey & Dubey (2015) [8], which examined the effect of eight weeks of yogic training on selected physiological variables. The study employed a single-group design, with pre-tests completed before and after eight weeks of yoga instruction. Participants were given six weekly yoga sessions, including pranayamas, active warm-up exercises, asanas and savasana. Descriptive statistics and paired t-tests were used to analyse the data. Results demonstrated substantial variations in resting heart rate and vital capacity between pre and post-training. The resting heart rate's mean and standard deviation were  $76.12 \pm 5.953$  and  $71.36 \pm 5.415$ , respectively. Vital capacity had a mean of  $3.50 \pm 0.518$  and a standard deviation of  $3.67 \pm 0.527$ , respectively. These results demonstrate significant differences between pre and post-training assessments. This study's results indicated no significant difference in systolic blood pressure, vital capacity, or forced vital capacity. This has several possible causes, including geographical conditions and different yogic exercises.

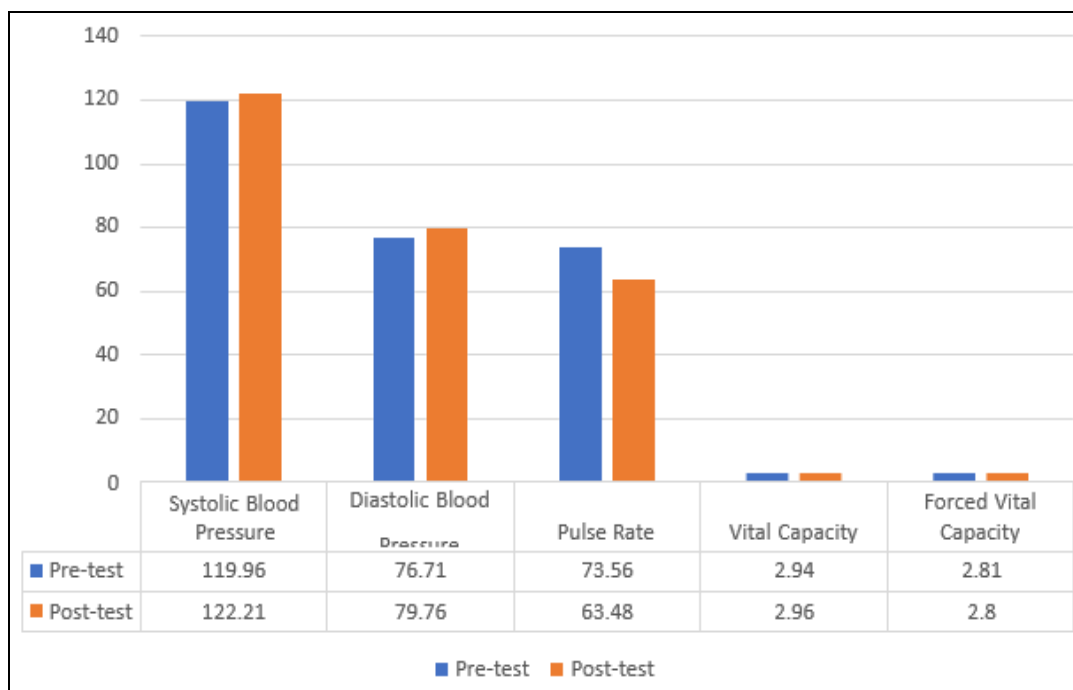


Fig 1: Graphical representation of mean

**Conclusions**

- Yogic movements did not significantly alter the systolic blood pressure of secondary school boys for eight weeks. However, the systolic blood pressure of secondary school boys has elevated by (2.25 mmHg) after eight weeks.
- The diastolic blood pressure of secondary school boys is dramatically changed by the practice of yoga activities for a minimum duration of 8 weeks. However, the diastolic blood pressure of secondary school boys increased by (3.042 mmHg) after eight weeks.
- The pulse rate of secondary school boys is dramatically altered by the practice of yoga activities for a minimum

- duration of eight weeks. However, the pulse rate of secondary school males dropped by (10.08 min) after eight weeks.
- The vital capacity of secondary school boys was not considerably impacted by the practice of yoga activities for eight weeks. However, the essential capacity of secondary school boys improved by (0.0100 ml) after eight weeks.
- The forced vital capacity of secondary school boys was not considerably influenced by the practice of yogic activities over eight weeks. However, the forced vital capacity of secondary school boys was enhanced by

(0.0317 ml) after eight weeks.

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