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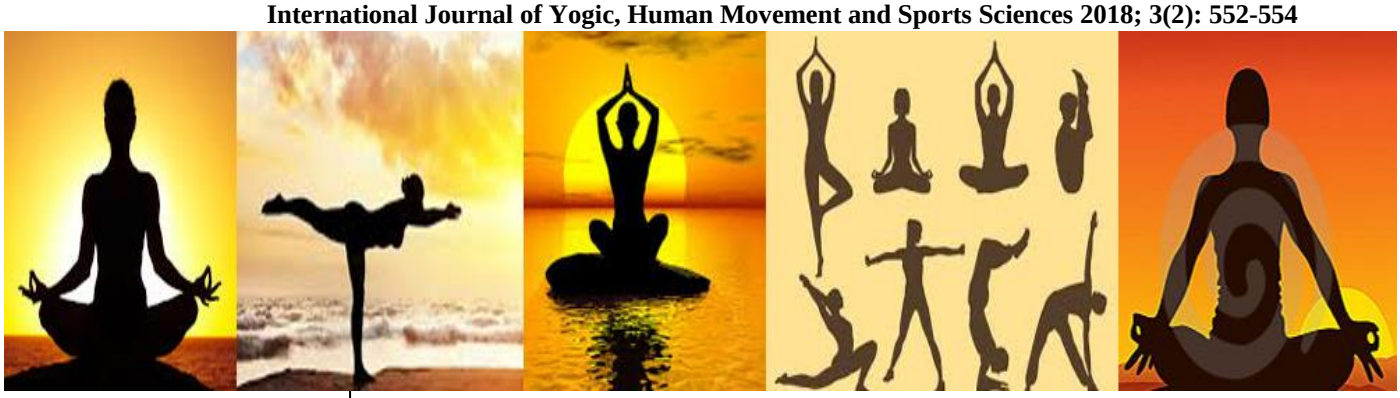

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Impact of twelve week yogic exercise on blood pressure of senior citizens

Seemant Kumar Dubey and Kalpana Sharma

Abstract
This study was focused on impact of Yogic exercise on senior citizen of rural area of Anoopshahr tehsil. The researchers administrated the common yoga protocol as a research tool given by Ministry of AYUSH, Government of India, for this study. 15 subjects of age 60-65 years has taken, yogic exercise program was given for 12 weeks on alternate days for 45-60 minutes, most appropriate design pretest post test was used and found significant difference in selected physiological variable i.e. resting heart rate, systolic and diastolic blood pressure.

Keywords: Impact, twelve week yogic exercise, blood pressure, senior citizens

1. Introduction
"Yoga is an invaluable gift of ancient Indian tradition. It embodies unity of mind and body; thought and action; restraint and fulfillment; harmony between man and nature and a holistic approach to health and well-being. Yoga is not about exercise but to discover the sense of oneness with ourselves, the world and Nature. By changing our lifestyle and creating consciousness, it can help us to deal with climate change. Let us work towards adopting an International Yoga Day." Shri Narendra Modi said while addressing United Nations General Assembly (UNGA) on September 27, 2014.

A thousand years before the birth of Christ and for five subsequent centuries, it has been theorized that yoga flourished in cities known today as India and Pakistan (Chaline, 2001). People practiced yoga to become closer to God. Yoga literally means to 'yoke' or to be in union (Satchidananda, 1990). According to the Yoga Sutras of Patanjali, yoga is the "science of the mind" (Satchidananda, 1990,). Richard Freeman, a student and teacher of yoga for 38 years, in an interview with Bonnie Horrigan (2004), describes yoga as "a meditative discipline and a way of gaining insight into the nature of the mind and reality." He believes that "yoga is ultimately freedom or liberation, and its benefit is much more than simply good health".

2. Methodology
This study was focused on impact of Yogic exercise on senior citizen of rural area of Anoopshahr tehsil. The researchers administrated the common yoga protocol as a research tool for this study. This protocol started with Prayer (2 Minutes) and followed by Sadilaja (6 Minutes), Yogaasana (18 Minutes), Kapaalabhaati (3 Minutes), Pranayama (6 Minutes), Dhyana (8 Minutes) and end with Sankalpa (2 Minutes). Yogic exercise program organized alternate days total 45-60 minutes and up to twelve weeks for 15 senior citizens. The experimental group underwent to these yoga practices for twelve weeks from 5:30 am. Based on the review of past studies and in consultation with the experts in the field of study it was decided to explore the improvement in selected physiological variables in rural senior citizen as subjects, by administering the yogic exercise with pre and post evaluation.

2.1. Selection of Variables
The researchers reviewed the available literatures pertaining to this study from internet, books, journals, and research papers and selected following physiological variables:

Table 1: Physiological variable and Measuring Technique

S. No.	Variable	Equipments/ Test Items	Unit of Measurement
1.	*Systolic Blood Pressure*	*Sphygmomanometer*	*mmHg*
2.	*Diastolic Blood Pressure*	*Sphygmomanometer*	*mmHg*
3.	*Resting Heart*	*Stopwatch*	*Seconds*

2.2. Yoga Practices/Programme

The Common Yoga Protocol given by Ministry of AYUSH, Government of India for awareness of Yoga. In which, Yoga Practices describe in systematic and proper manner for all age groups. The common yoga protocol was used in this study.

Table 2: Yoga Training Programmme and Timing

S. No.	Activity	Components	Duration
1	Prayer	*Meditative Posture with Namaskara Mudra and ending with Yoga Mudrasana*	2 minutes
2	Sadilaja / Chaalan Kriyas/ Loosening Practices	*Neck, Shoulders, Trunk& Knees movements*	6 minutes
3	Yoga Asana	**A. Standing Postures** 1. *Taadaasan* 2. *Vrikshaasan* 3. *Pada-hastaasana / Uttaanaasana* 4. *Ardha Chakraasana* 5. *Trikonaasana* **B. Sitting Postures** 6. *Bhadraasana/Baddha konaasan* 7. *Vajrasana/Veerasana* 8. *Ushtraasana* (*Ardha for bigginners)* 9. *Shashankaasan* 10. *Utthana Mandukasana* 11. *Marichyaasana/Vakraasana* **C. Prone Lying Postures** 12. *Makaraasana* 13. *Bhujangaasana* 14. *Shalabhaasana* **D. Supine Lying Postures** 15. *Setubandhasana* 16. *Utthanapaadaasana* 17. *Ardha Halasana* 18. *Pavana Muktaasana* 19. *Shavaasana*	18 minutes
4	Kapaalabhaati	3 cycles of 40 strokes each, Each cycle will be followed deep breathing	3 minute
5	Pranayama	(i) Nadi Shodhana / AnulomaViloma Pranayama (5 rounds) (ii) Sheetali Pranayama (5 rounds) (iii) Bhraamari Pranayama (Bhramari Rechaka) (5 rounds)	6 minutes
6	Dhyana/ Meditation	Meditative Posture (eyes closed) and hands in Jnana / Gyana Mudra	8 minutes
7	Sankalpa	I commit myself to always be in a balanced state of mind. It is in this state that my highest self-development reaches its greatest possibility. I commit to do my duty to self, family, at work, to society, and to the world, for the promotion of peace, health and harmony.	2 minutes

2.3. Statistical Techniques

To find out the significance between the pre and post-test means 't' test was applied for evaluation of selected variables of rural senior citizen

Results

Comparison of selected physiological variables in pre and post training periods and the effect of twelve week yoga practice of rural senior citizen are shown here. The Calculation of mean and 't' value of selected physiological variables between the pre and post periods of the experimental group were furnished in table 3.

Table 3: Computation of 't' Ratio Between The Pre and Post Tests on Physiological Variables. *Significance at 0.05 levels

S. No.	Variables		Test	$\bar{d}$	σ_d	't' Ratio
4	Resting Heart Rate		Pre Post	**7.6**	6.15	4.77
5	Blood Pressure	Systolic	Pre Post	8.53	9.54	3.46
		Diastolic	Pre Post	9.33	9.405	3.839

Significant at .05 level t value required to be significant at = 2.131 *****Paired 't' test applied due to both pre and post data has been taken from the same population.

The table 3 show that the obtained mean of differences value in selected physiological variables of resting heart rate, systolic and diastolic blood pressure of pre and post test scores of experimental group were 7.6, 8.53, 9.33 respectively. The value of σ_d of these physiological variables respectively 6.15, 9.54, 9.405. The obtained 't' ratio is 4.77,

3.46 and 3.839 respectively. The tabulated value is 2.131 at 0.05 level of confidence for the degree of freedom 1 and 14. The obtained 't' ratio of resting heart rate, systolic blood pressure and diastolic blood pressure was 4.77, 3.46 and 3.839 respectively, is greater than the tabulated value 2.131.

4. Discussion and Findings

The results of the study clearly indicate that twelve week yogic exercise program brought significant improvement in the selected physiological variables of Resting heart rate, systolic blood pressure and diastolic blood pressure of rural senior citizen. The finding of resting heart rate shows significant improvement similar to 12 week yoga programme also show significant improvement in the physiological variables of resting heart rate, vital capacity and peak expiratory flow rate of male students by *Rayat Sunil* (2015).

5. Conclusion

Yogic exercise with its Asanas, Pranayama and meditation is a way to good health. A thousand years before the birth of Christ and for five subsequent centuries, it has been theorized that yoga flourished in cities known today as India and Pakistan. There were rural senior citizen show significant improvements in selected physiological variable like resting heart rate, systolic and diastolic blood pressure through twelve week yoga programme. When yoga becomes a lifestyle, it effects a radical transformation in an individual. Any health conscious person can turn to yoga and reap the benefits it offers.

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