



## EFFECTS OF TWELVE WEEKS SELECTED PRANAYAMA PRACTICES ON PRIMARY HIGH BLOOD PRESSURE PATIENTS

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### ABSTRACT

**Background:** Yoga is becoming most popular science due to its positive effects on health. Prana (energy) and Ayama (to expand or control) from the word Pranayama. So it is the technique to change or control or expend the energy in the body. To determine the effects of selected pranayama practices on primary high blood pressure patients. **Materials and Methods:** The study was conducted on thirty (n = 30) randomly selected male people aged ranged was 30 - 50 years volunteered to participate in the study from Etawah district, India. Two groups were made of the total subjects, each group comprising of fifteen subjects, these subjects participated voluntarily in the study. The subjects were divided into one experimental groups and one control group. At the end of twelve weeks the Post-test was conducted for all the two groups. Blood pressure was measured with the help of Sphygmomanometer. **Results:** Table 3 and 4 shown that the both systolic and diastolic blood pressure were significantly lowered with a regular programme of Pranayama practice. The level of  $p \leq 0.05$  was considered significant. **Conclusion:** The result indicate that after twelve weeks of pranayama practice can be decreases resting systolic and diastolic blood pressure for primary high blood pressure patients.

**KEY WORDS:** Pranayama, Systolic Blood pressure, Diastolic Blood Pressure.

### INTRODUCTION

According to Ayurveda, health is "Prasanna aatmedriya manah swastha ityabidheeyate" (Sushutra 2007). The Pranayama which is an integral part of Yoga, energizer and balances the different systems of our body and controls the mind and other sense. Now a day's Pranayama and yogasanas are considered to be an important part of modern medicine. Yoga is the best lifestyle. Its main aim is to attain the unity of mind, body and spirit through asanas (muscle exercises), pranayama (breathing exercises), and meditation. (Roopa BA, Anita Herur, Shailaja, Patil, Shashikala GV, Surekharani Chinagudi.2011). Prana (energy) and Ayama (to expand or control) from the word Pranayama. So it is the technique to change or control or expend the energy in the body. (Agrwal, Sarvesh Kumar, 2004). Training to yoga respiration selectively increases the respiratory sensation, perhaps through its persistent conditioning of the breathing pattern (Florence et al., 2005). Perhaps one of the most powerful tools in yogic practices is the use of the breath to bring our consciousness back in tune with the Divine Cosmic Breath. This cosmic breath is the rhythm of life itself. Yoga breathing, or pranayama, is the science of breath control. Pranayama (breathing exercise), one of the yogic techniques can produce different physiological responses in healthy individuals (Upadhyay et al., 2008).

**Hypothesis:** There would be no significant effect of selected Pranayama practice on primary high blood pressure patients.

**Review of Literature:** Okonta, et al (2012) studied on Does Yoga Therapy Reduce Blood Pressure in Patients with Hypertension? : An Integrative Review. Yoga therapy is a multifunctional exercise modality with numerous benefits. Not only does yoga reduce high BP but it has also been demonstrated to effectively reduce blood glucose level, cholesterol level, and body weight, major problems affecting the American society. The completed integrative review provides guidelines for nursing implementation as a complementary treatment of high BP.

Pramanik T., et al. (March 2009) conducted a study on Immediate Effect of Slow Pace Bhastrika Pranayama on Blood Pressure and Heart Rate. It was noted that after slow bhastrika pranayamic breathing (respiratory rate 6/min) for 5 minutes, both the systolic and diastolic blood pressure decreased significantly with a slight fall in heart rate. Pranayama increases frequency and duration of inhibitory neural impulses by activating pulmonary stretch receptors during above tidal volume inhalation as in Hering Bruer reflex, which bring about withdrawal of sympathetic tone in the skeletal muscle blood vessels, leading to widespread vasodilatation, thus

causing decrease in peripheral resistance and thus decreasing the diastolic blood pressure.

Patil Smita V, et al (2016) conducted a study on changes in blood pressure indices before and after pranayama practice among young volunteers. There was significant decrease ( $p=0.001$ ) in heart rate, systolic Blood Pressure, pulse pressure, mean arterial pressure, Rate Pressure Product & double pressure product after pranayama practice. There was decrease in diastolic BP also after pranayama practice but this change was not statistically significant. **CONCLUSION:** Regular practice of Pranayama has potential to enhance the beneficial effects by decreasing blood pressure indices & increasing cardiac efficiency in an individual.

Chintamani, et al (2015) studied on Effects of short term pranayama on certain cardiovascular risk factors. A significant decrease in heart rate and systolic blood pressure were observed while diastolic blood pressure, blood total cholesterol and HDL cholesterol levels did not show any significant change after 10 weeks of pranayama.

Bhavanani A.B., et al (2011) conducted a study on immediate effect of Sukha pranayama on cardiovascular variables in patients of hypertension. Post-intervention statistical analysis revealed a significant ( $p < .05$ ) reduction in HR and a highly significant ( $p < .001$ ) reduction in systolic pressure, pulse pressure, mean arterial pressure, rate-pressure product, and double product with an insignificant fall in diastolic pressure.

## MATERIALS AND METHODS

**Subjects:** Thirty male primary high blood pressure patients were selected at randomly from Etawah district

## RESULTS

**Table 3: ANOVA Table of Systolic Blood Pressure**

Source of Variation	SS	df	MS	F	P-value
Between Groups	51.57	1	51.57	20.53	0.000116
Within Groups	65.28	26	2.51		
Total	116.85	27			

**Table 4: ANOVA Table of Diastolic Blood Pressure**

Source of Variation	SS	Df	MS	F	P-value
Between Groups	46.28	1	46.28	16.16	0.000443
Within Groups	74.42	26	2.86		
Total	120.71	27			

Table 3 have shown that the p value 0.000116 is less than the F value 20.53 ( $p=0.000116 < F= 20.53$ ) that means the significant difference found between control and treatment group of systolic blood pressure, table 4 also shown that the p value 0.000441 is less than the F

(Uttar Pradesh) in the age group ranging between 35 to 50 years. The requirements of the study were explained to all the subjects. All the subjects readily agreed to undergo the testing and training programmes.

**Study Design:** Pre-test and Post-test randomized group design was employed in the study. Two groups were made of the total subjects, each group comprising of fifteen subjects, these subjects participated voluntarily in the study. The subjects were divided into one experimental groups and one control group. At the end of twelve weeks the Post-test was conducted for all the two groups.

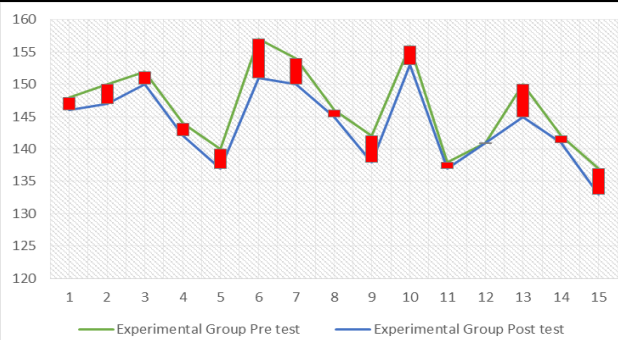
Group Experimental (Pranayama group) performed selected Pranayama in different combination. The practice session was conducted for a period of 45 minutes in the morning i.e. 6:00 am to 6:45 am on alternate days i.e. Monday, Wednesday and Friday for a duration of 12 weeks.

**List of selected pranayama (without retention of breath) are as follows:**

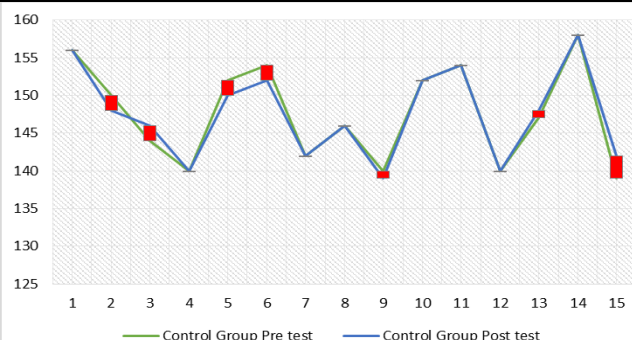
1. Anulom Viloma Pranayama
2. Sitkari Pranayama
3. Sitali Pranayama
4. Ujjayi Pranayama
5. Bhastrika Pranayama

**Statistics:** The Analysis of Co-variance (ANCOVA) was applied to see the effect of selected Pranayama practices on Primary High Blood Pressure patients was used with the 0.05 level of significance.

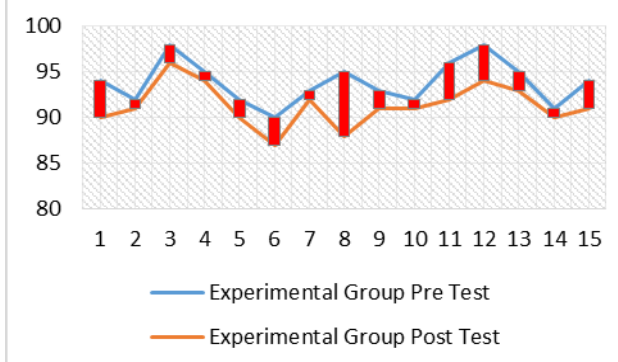
value 16.16 ( $p=0.000441 < F=16.16$ ), significant difference found between control and treatment group of diastolic blood pressure therefore the null hypothesis would be rejected.



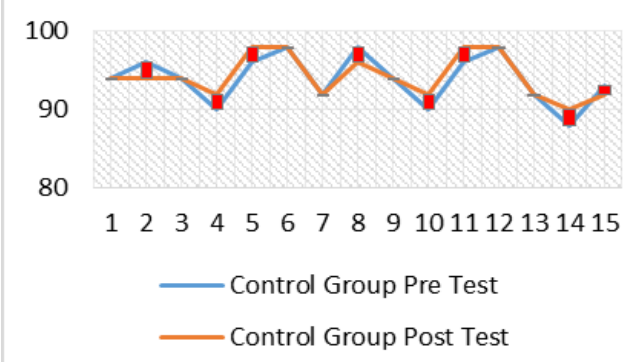
**Figure 1: Comparison of Experimental Group Systolic Blood Pressure**



**Figure 2: Comparison of Control Group Systolic Blood Pressure**



**Figure 3: Comparison of Experimental Group Diastolic Blood Pressure**



**Figure 4: Comparison of Control Group Diastolic Blood Pressure**

### DISCUSSION OF FINDINGS

Table 3 and 4 have shown that the both systolic and diastolic blood pressure were significantly lowered with a regular programme of Pranayama practice. The study showed the changes in the Blood Pressure as a result of Pranayama practices. Pranayama increases frequency and duration of inhibitory neural impulses by activating pulmonary stretch receptors during above tidal volume inhalation as in Hering Bruer reflex, which bring about withdrawal of sympathetic tone in the skeletal muscle blood vessels, leading to widespread vasodilatation, thus causing decrease in peripheral resistance and thus decreasing the diastolic blood pressure.

Our results are consistent with those reported by other studies of pranayama practices on blood pressure i.e. Okonta, et al (2012), Pramanik T. et al (March 2009), Patil Smita V, et al (2016), Chintamani et al (2015) and Bhavanani A.B., et al (2011), K. Makwana et al (1988), Joyotsana R. Bharashankar et al. (2003), S. Telles et al. (1993).

### CONCLUSION

The result indicate that after twelve weeks of pranayama practice can be decreases resting systolic and diastolic blood pressure for primary high blood pressure patients. Due to the Vagal cardiac and pulmonary mechanisms are linked, and improvement in one vagal limb might spill over into the other. Baroreceptor sensitivity can be enhanced significantly by slow breathing (supported by a small reduction in the heart rate observed during slow

breathing and by reduction in both systolic and diastolic blood pressure).

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