



THE EFFECT OF SELECTED PRANAYAMAS AND TRANSCENDENTAL MEDITATION ON HIGH BLOOD PRESSURE PATIENTS

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ABSTRACT

The purpose of the study was to determine the effect of selected Pranayama and Transcendental Meditation on High Blood Pressure patients.

The subjects were 32 male High Blood Pressure patients (medically certified) of Vedic Ashram, Farrukhabad (U.P.). The age of the subjects ranged from 35 to 50 years.

The subjects were equally assigned to the four groups by using random sampling procedure i.e. three experimental groups and a control group. The Experimental Group A (Pranayama Group) was administered Pranayama programme, Group B (Transcendental Meditation Group) was administered Transcendental Meditation programme, Group C (Combination of Pranayama and Transcendental Meditation) was administered in the combination of Pranayama and Transcendental Meditation programme and the control group was given no training.

The Resting Blood Pressure scores of the subjects were obtained by using Sphygmomanometer and Stethoscope.

The study was conducted for a period of twelve weeks in the month of August, September and October. The climate condition was rainy (humid) and atmosphere temperature was ranging from 25°C to 35°C.

Thirty two subjects were assembled in the Vedic Ashram at Farrukhabad in Uttar Pradesh at 6:00 am on alternate three days a week. Four groups comprising of 8 subjects each were formed i.e. three experimental groups and one control group.

Subjects of experimental groups were ready to learn Pranayam and Transcendental Meditation Teacher (an authorized expert Maharishi Mahesh Yogi Vedic Vishwavidyalaya) gave a performa to each subject of experimental groups. All the subject of experimental groups filled the Performa i.e. age, sex, occupation, religion and belief etc. Teacher gave a particular mantra separately to all the subjects of experimental group B and C.

Analysis of co-variance was used exclusively to compare the effect of three yogic experimental practices programme for primary High Blood Pressure patients. Findings show significant effect of all three experimental group in the primary High Blood pressure patients. The level of significance was set at 0.05 level.



The analysis of co-variance revealed that practice of Pranayama, Transcendental Meditation and combination of Pranayama and Transcendental Meditation had significant effect on Resting Systolic Blood Pressure ($F=40.947$, against required value of 2.96), Resting Diastolic Blood Pressure ($F=5.562$, against required value of 2.96).

KEYWORDS: *Pranayama, Transcendental Meditation, Systolic Blood Pressure, Diastolic Blood Pressure.*

INTRODUCTION

Blood pressure depends on the activity of the person. It varies in the same person on the same day at different times. It changes even while a person is sitting or standing. Immediately on standing, walking or running, Blood pressure varies. Hypertension is also dependent on the mental makeup of a person. Different people respond to similar situations differently. Pranayama affects arterial and venous blood flow far more favourably. With controlled abdomen one secures a larger quantity of oxygen during inhalation than with protracted abdomen.

The idea that an individual absorbs larger quantities of oxygen during Pranayama is a myth.

Pranayama trains the respiratory apparatus in such a way that during the remaining part of the day respiration is carried on most efficiently and larger quantities of oxygen are absorbed throughout the day ordinarily it would be possible.

Transcendental Meditation is the technique defined as "turning the attention inwards towards subtler levels of a thought until the mind transcends the experience of the subtlest level of thought and arrive at the source of the thought.

The Transcendental Meditation technique produces a statistically significant reduction in high blood pressure that is not found with other forms of relaxation, mediation, biofeedback or stress management. T.M frees the person with anti-views. T.M is a natural simple and intuitive technique that can be practiced comfortably for 20 minutes in a day. The new meta-analysis conducted by researchers at the NIH-funded Institute of Natural Medicine and Prevention at Maharishi University of Management and the University of Kentucky College of Medicine, reviewed randomized, controlled trials of all stress reduction and relaxation methods in participants with high blood pressure that have been published in peer-reviewed scientific journals.

REVIEW OF LITERATURE

Tony Baker(2005), researchers say that black adolescents with high normal blood pressure who practice transcendental meditation improve the ability of their blood vessels to relax and may reduce their risk of becoming adults with cardiovascular disease.

After eight months of meditation, these adolescents experienced a 21 percent increase in the ability of their blood vessels to dilate compared to a 4 percent decrease experienced by their non-mediating peers. Barnes, et al.(2004) reported that 15 minutes of twice daily transcendental meditation steadily lowered the blood pressure of 156 black, inner-city adolescents and their pressures tended to stay lower.

Patel and North(1975) assigned 34 hypertensive patients at random either to six weeks of pranayama method with biofeedback or to general relaxation. Both groups showed a reduction in blood pressure although the decrease was significantly greater for the pranayama group. The control group was then trained in pranayama relaxation and their blood pressure fell to that of the other group.

HYPOTHESIS

Research Scholar has substantially gone through literature available on high blood pressure and on the basis of that understanding it was hypothesized that there would be significant effect of selected Pranayamas, Transcendental Meditations and the combinations of both Pranayama and Transcendental Meditations practice on primary high blood pressure patients.

MATERIALS AND METHODS

Subjects: The subjects were 32 male High Blood Pressure patients (medically certified) of Vedic Ashram, Farrukhabad (U.P.). The age of the subjects ranged from 35 to 50 years.

The subjects were equally assigned to the four groups by using random sampling procedure i.e. three experimental groups and a control group. The Experimental Group A (Pranayama Group) was

administered Pranayama programme, Group B (Transcendental Meditation Group) was administered Transcendental Meditation programme, Group C (Combination of Pranayama and Transcendental Meditation) was administered in the combination of Pranayama and Transcendental Meditation programme and the control group was given no training.

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Subjects of experimental groups were ready to learn Pranayam and Transcendental Meditation Teacher (an authorized expert Maharishi Mahesh Yogi Vedic Vishwavidyalaya) gave a performa to each subject of experimental groups. All the subject of experimental groups filled the Performa i.e. age, sex, occupation, religion and belief etc. Teacher gave a particular mantra separately to all the subjects of experimental group B and C.

Study Design: Pre-test and Post-test randomized group design was employed in the study. Four groups were made of all the subjects, each group comprising of eight subjects, these groups participated voluntarily in the study. The subjects were equally assigned to the four groups by using random sampling procedure i.e. three experimental groups and a control group. At the end of 12 weeks the post- test was conducted for all the four groups.

The practice session conducted for a period of forty five minutes in The morning i.e. 6.00am to 6.45 am experimental group A (pranayama group) performed selected pranayama, experimented group B (Transcendental Meditation group) performed technique of Transcendental Meditations , group C performed combination of pranayama and Transcendental Meditations for forty five minutes on alternative days and control group did not practices in any special training programme.

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

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

Statistical Procedure: The analysis of Co-variance was applied to see the effect of selected Pranayamas, Transcendental Meditation and combination of Pranayamas and Transcendental Meditation on Primary High Blood Pressure patients. Further, to find out which training programme was more effective on primary High Blood Pressure patients the Post Hoc test was used with the level of significance which was set at 0.05 levels.

RESULTS AND DISCUSSION

TABLE 13
ANALYSIS OF CO-VARIANCE OF RESTING SYSTOLIC BLOOD PRESSURE FOR PRIMARY HIGH BLOOD PRESSURE PATIENTS OF EXPERIMENTAL GROUPS AND CONTROL GROUP
(In mm Hg)

	Pranaya ma Group	Tranisce ndental Meditat ion Group	Pranayama and Transcende ntal Meditation Group	Control Group	Source of Variance	Sum of Squares	d.f.	Mean sum of squares	F-ratio
Pre Test Means	147.000	147.750	148.500	148.000	Between groups	9.375	3	3.125	0.101
					Within groups	865.500	28	30.910	
Post Test Means	141.250	145.250	144.750	147.500	Between groups	160.375	3	53.458	1.807
					Within groups	828.500	28	29.589	
Adjusted Post Test Means	140.440	145.190	144.060	147.310	Between groups	117.434	3	39.145	40.947*
					Within groups	25.817	27	0.956	

Tab. $F_{.05}(3,28)=2.95$, $F_{.05}(3,27)=2.96$

* Significant at 0.05 level

Table 13 shows that the obtained 'F' value 40.947* was much greater than the tabulated 'F' value 2.96 required to be significant.

Since 'F' value was found significant Post Hoc mean comparison was employed to find out the difference in Resting Systolic Blood Pressure for Primary High Blood Pressure patients after 12 weeks of Pranayama, Transcendental Meditation and combination of Pranayama and Transcendental Meditation practice.

The post hoc test is presented in Table - 13.1.

Table 13.1
POST HOC MEAN DIFFERENCE COMPARISON OF RESTING SYSTOLIC BLOOD PRESSURE FOR PRIMARY HIGH BLOOD PRESSURE PATIENTS OF EXPERIMENTAL GROUPS AND CONTROL GROUP

Pranayama group	Transcendental Meditation group	Combination of Pranayama and Transcendental Meditation group	Control group	Mean difference	Critical difference
140.44	145.19			4.75*	1.003
140.44		144.06		3.62*	1.003
140.44			147.31	6.87*	1.003
	145.19	144.06		1.13*	1.003
	145.19		147.31	2.12*	1.003
		144.06	147.31	3.25*	1.003

* Significant at 0.05 level.

Table – 13.1 indicates that the adjusted post test mean differences between all groups were higher than the critical difference 1.003 required to be significant at 0.05 level.

The findings implies that Pranayamas practice had decreased Resting Systolic Blood Pressure for Primary High Blood Pressure patients

more than combination of Pranayamas and Transcendental Meditation Group and followed by Transcendental Meditation group after twelve weeks of practice.

The graphical representation of mean comparison of Resting Systolic Blood Pressure for Primary High Blood Pressure Patients of experimental groups and Control Group after twelve weeks of experimental treatment is presented in Figure-4.

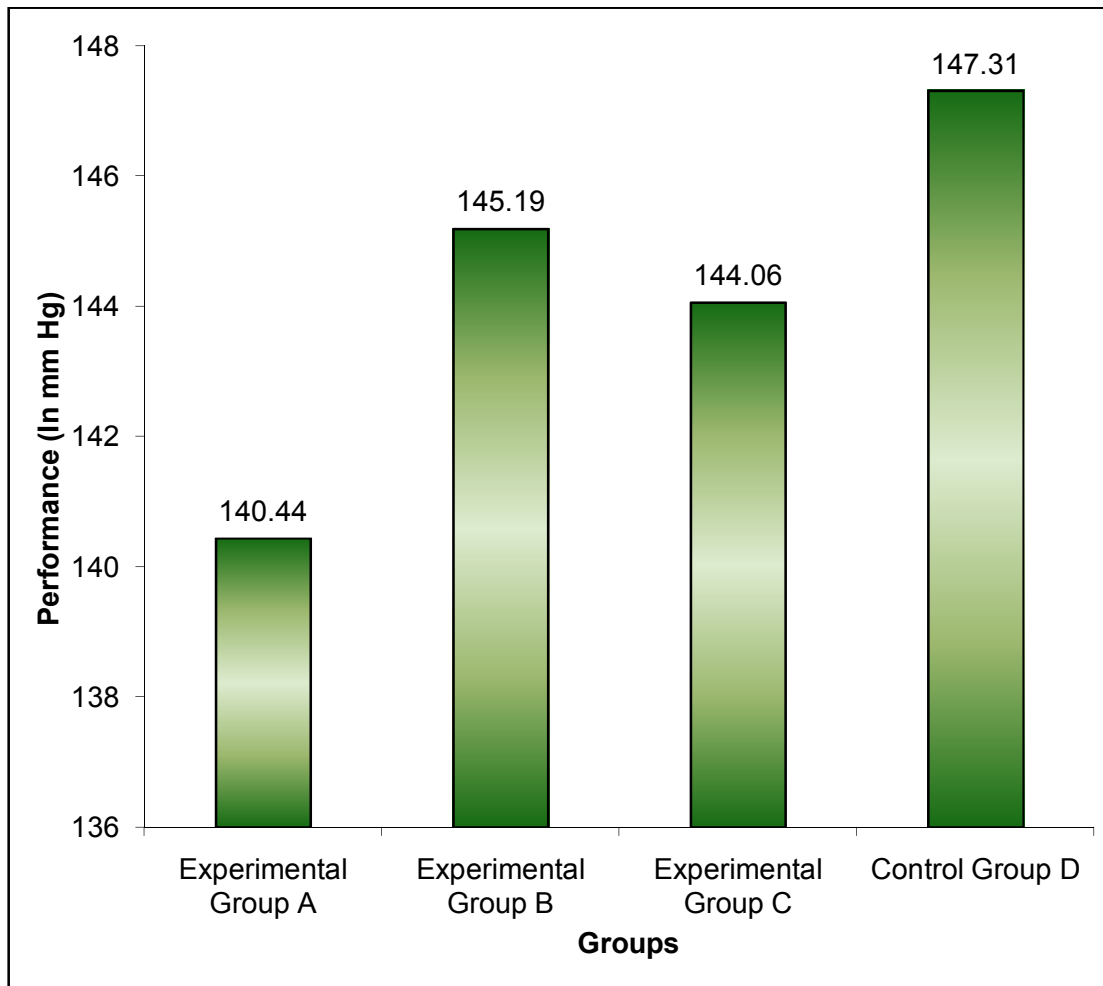


Fig 4. Graphical representation of mean comparison of Resting Systolic Blood Pressure for Primary High Blood Pressure Patients of Experimental Groups and Control Group

TABLE 14
ANALYSIS OF CO-VARIANCE OF RESTING DIASTOLIC BLOOD PRESSURE FOR PRIMARY HIGH BLOOD PRESSURE PATIENTS OF EXPERIMENTAL GROUPS AND CONTROL GROUPS
(In mm Hg)

	Pranayama Group	Transcendental Meditation Group	Pranayama and Transcendental Meditation Group	Control Group	Source of Variance	Sum of Squares	d.f.	Mean sum of squares	F-ratio
Pre Test Means	93.75	94	95	94.75	Between groups	8.5	3	2.833	0.337
					Within groups	235	28	8.393	
Post Test Means	90.5	92.25	91.75	94.75	Between groups	76.375	3	25.458	2.437
					Within groups	292.5	28	10.446	
Adjusted Post Test Means	89.875	91.875	91.125	94.375	Between groups	58.407	3	19.469	5.562*
					Within groups	103.946	27	3.850	

Tab. $F_{.05}(3,28) = 2.95$, $F_{.05}(3,27) = 2.96$

* Significant at 0.05 level

It may be assumed from the Table-14 that the obtained 'F' value 5.562* was much greater than the tabulated 'F' value 2.96 required to be significant.

Since 'F' value was found significant Post hoc mean comparison was employed to find out the difference in Resting Diastolic Blood Pressure for Primary High Blood Pressure patients after 12 weeks of Pranayama, transcendental meditation and combination of Pranayama and transcendental meditation practice.

The post hoc test is presented in Table - 14.1.

TABLE 14.1
POST HOC MEAN DIFFERENCE COMPARISON OF RESTING DIASTOLIC BLOOD PRESSURE FOR PRIMARY HIGH BLOOD PRESSURE PATIENTS OF EXPERIMENTAL GROUPS AND CONTROL GROUP

Pranayama group	Transcendental Meditation group	Combination of Pranayama and Transcendental Meditation group	Control group	Mean difference	Critical difference
89.875	91.875			2*	1.919
89.875		91.125		1.25	1.919
89.875			94.375	4.5*	1.919
	91.875	91.125		0.75	1.919
	91.875		94.375	2.5*	1.919
		91.125	94.375	3.25*	1.919

* Significant at 0.05 level.

Table – 14.1 indicates that the adjusted post test mean differences between four groups namely Pranayama Group and Transcendental Meditation Group, Pranayama Group and Control Group, Transcendental Meditation Group and Control Group and combination of Pranayama and Transcendental Meditation Group and Control Group were higher than the critical difference 1.919, except Pranayama group and combination of Pranayama and Transcendental Meditation Group and Transcendental Meditation Group and combination of Pranayama and Transcendental Meditation Group mean difference was lesser than the critical difference 1.919 required to be significant at 0.05 level.

The findings implies that Pranayama practice had decreased Resting Diastolic Blood Pressure for Primary High Blood Pressure patients more than combination of Pranayamas and Transcendental Meditation group and followed by Transcendental Meditation group after twelve weeks practice.

The graphical representation of mean comparison of Resting Diastolic Blood Pressure of primary high blood pressure patients of experimental groups and Control group after twelve weeks of experimental treatment is presented in Figure 5.

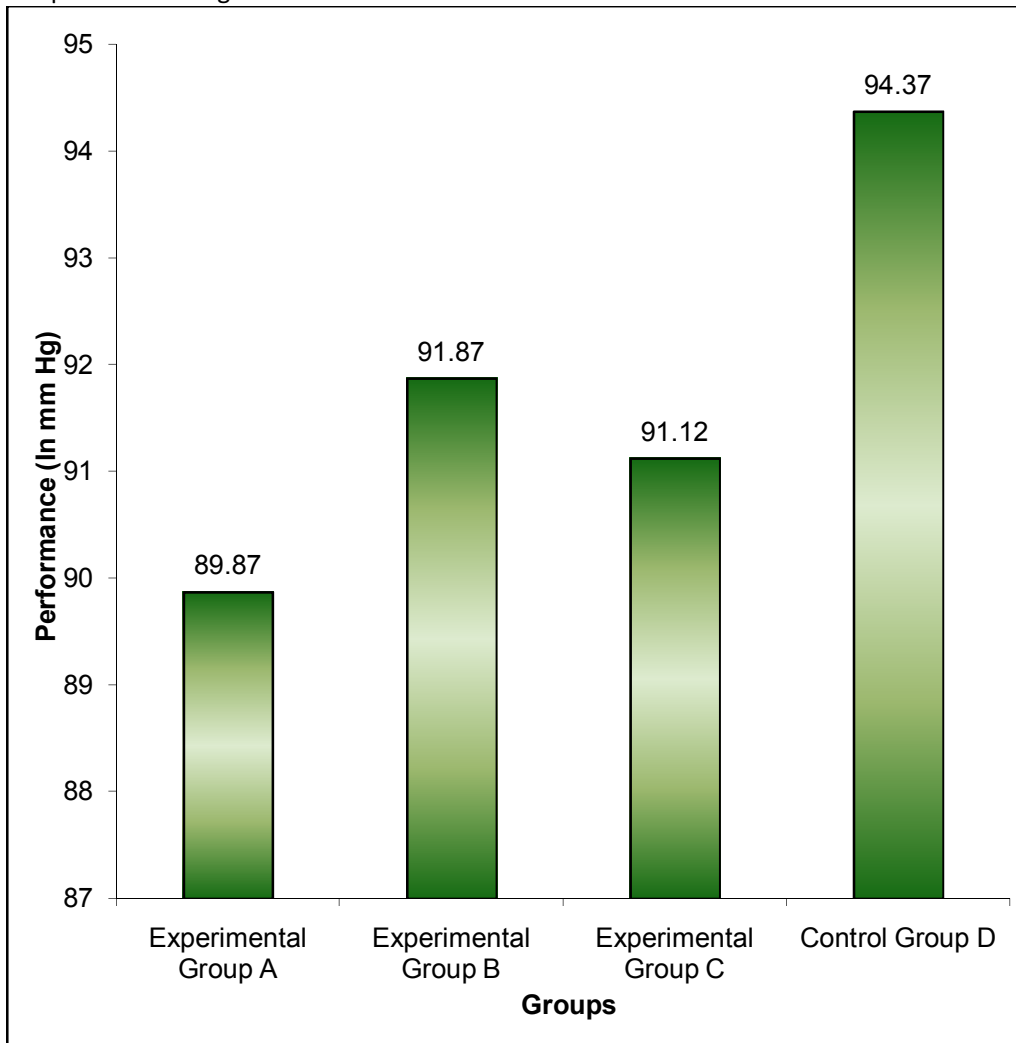


Fig 5. Graphical representation of mean comparison of Resting Diastolic Blood Pressure for Primary High Blood Pressure Patients of Experimental Groups and Control Group

CONCLUSION

On the basis of obtained results and within the limitations of this study, the following conclusions were drawn:

- 1) In case of Resting Systolic Blood Pressure Pranayama, Transcendental Meditation and combination of Pranayama and Transcendental Meditation had shown significant change in comparison to control group. But combination of Pranayama and Transcendental Meditation Group was more effective than Transcendental Meditation group, whereas Pranayama Group was more effective than that of Transcendental Meditation Group and combination of Pranayama and Transcendental Meditation Group. Thus it may be concluded that the Pranayama programme was the best in improving the Resting Systolic Blood Pressure.
- 2) In case of Resting Diastolic Blood Pressure, Pranayama, Transcendental Meditation and Combination of Pranayama and transcendental meditation had improved performance significantly in comparison to control group. But combination of Pranayama and Transcendental Meditation Group was more effective than Transcendental Meditation Group, whereas Pranayama Group was more effective than that of Transcendental Meditation Group and combination of Pranayama and Transcendental Meditation Group. Thus it may be concluded that the Pranayama programme was the best in improving the Resting Diastolic Blood Pressure.

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