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EFFECT OF 12 WEEKS REGULAR YOGA PRACTICE ON TEACHERS SUFFERING WITH HYPERTENSION

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ABSTRACT

Yoga is a remedy and highly effective in the treatment of high blood pressure. The present study aimed to evaluate the effectiveness of yoga in the treatment of high blood pressure. 10 male subjects suffering from high blood pressure volunteer for the study and after obtaining informed consent, yoga session was conducted in Jawahar Navodaya Vidyalaya, Orai, Jalaun, UP (India) for a period of 12 weeks. During the period of yoga practice the symptom relief in the subjects was assessed periodically by a sphygmomanometer. A very encouraging results were seen due to Practice of selected pranayama and Yogic asanas. Yoga is proved to be a best method to treat high blood pressure.

Keywords: Yoga, Hypertension.

1. Introduction

Today's work culture and lifestyle are causes of driving heart disease-related deaths in India. Heart disease has been accounted as India's most prominent cause of death and has been growing in tandem with a rapid shift in lifestyles brought a bout through India's rapid industrialization, increased migration to cities and economic growth. Sedentary lifestyles and occupation coupled with high -calorie low nutrient food, consumption of alcohol and tobacco have elevated mortality rate due to cardiovascular diseases.

High blood pressure is a medical condition in which the pressure of the blood pushing against the blood vessel walls is persistently high. High blood pressure forces the heart to work harder to pump blood throughout the body. When blood pressure is high for prolonged periods, hardening of the arteries, heart failure, and other ailments can develop. Blood pressure is measured in millimetres of mercury (mm HG) using two numbers, for example 120/80. The first number (the "systolic blood pressure") represents the pressure in your blood vessels when your heart beats. The second number (the "diastolic blood pressure") represents the pressure in your vessels when your heart rests between beats. Normal blood pressure is less than 120/80. Blood pressure of 140/90 and above is considered high. Raised diastolic pressure is considered more serious than raised systolic pressure as it has more serious long-term effects.

Many studies show that yoga can be a very effective and non-invasive way of reducing high blood pressure. It is particularly effective in reducing the diastolic number – which is the most important. It is suggested that people with high blood pressure should only practice certain asanas (postures), whilst acknowledging that there are other asanas that are not suitable for them. The yogic practices of meditation and pranayama (breathing exercises) are also particularly beneficial for people who suffer from high blood pressure.

2. Method and procedure:

Selection of subject

10 male Teachers suffering from high blood pressure volunteered for the present study. Their age was in between 40 to 55 years.

Detailed clinical history of each subject was taken. Informed consent was obtained from all the members. Regular yoga practice for 12 weeks was given to the teachers suffering from Hypertension. Their Blood Pressure recorded at their first visit and thereafter before and after the yoga session for every 7 days. The Blood Pressure measurements were recorded by using digital Blood Pressure apparatus with the subject seated. Blood pressure (BP) was recorded before and after the practice of pranayama and meditation. The systemic arterial blood pressure was recorded in millimetre of mercury (Hg) All the parameters were recorded between 6 and 8 am in order to avoid circadian variations.

All the subjects were well instructed to keep uniform dietary habits and received the same yoga training daily. The subjects were also advised not to change their lifestyle or perform any other physical exercises during yoga training.

Study protocol:

The yoga practice schedule consisted of

1. Pranayama - 15 mins.
2. Short break - 5 mins.
3. Meditation - 15 mins.
4. Selected Asanas -30 mins.

Pranayama which they performed were:

1. Bhastrika pranayama
2. Kapal Bhati pranayama
3. Anulom Vilom pranayama
4. Bhramari pranayama

Selected Asana which they practiced daily:

1. Uttanasana (Standing forward bend pose)
2. Viparita Karani (Legs-up-the-wall pose)
3. Adho mukha svanasana (Downward-facing dog pose)
4. Pashchimottanasana (Seated Forward Bend Pose)
5. Setu Bandhasana (Bridge pose)

Data were analyzed using SPSS. Paired T-test was used as statistical test for comparing pre and post test.

3. Results:

Table 1: Changes in Systolic and Diastolic Blood Pressure before and after yoga practice

Subject	PRE-TEST		POST TEST (After 12 weeks)	
	SYSTOLIC	DIASTOLIC	SYSTOLIC	DIASTOLIC
1	160	110	135	90
2	155	100	130	95
3	152	100	138	98
4	150	100	140	92
5	150	98	130	85
6	148	95	128	80
7	147	93	140	90
8	145	90	120	80
9	145	85	130	80
10	140	80	132	80

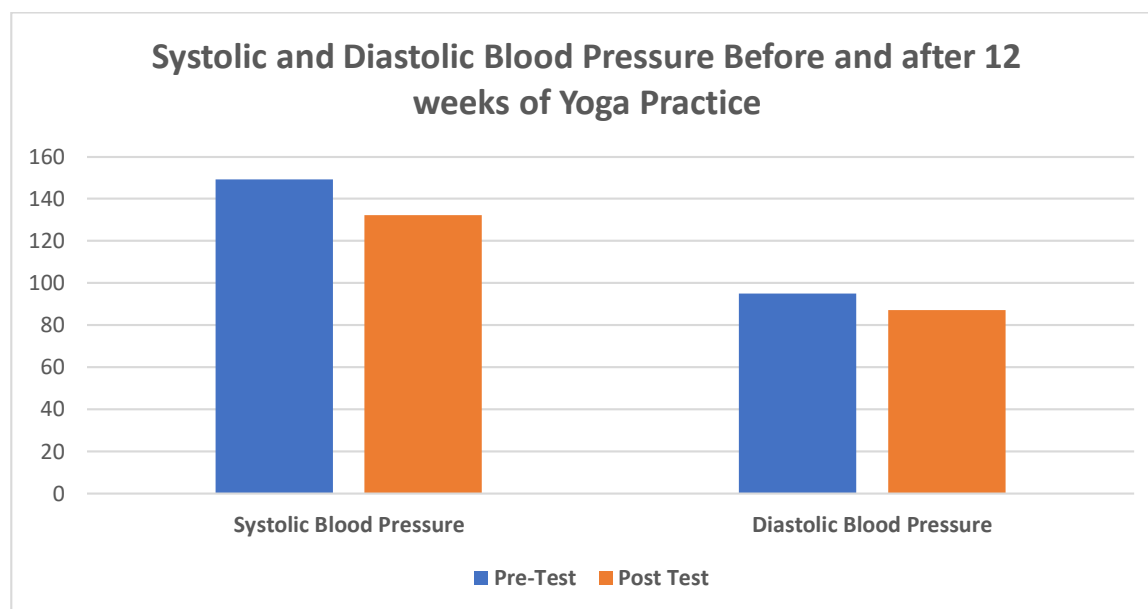


Table 2. Statistical analysis of systolic blood pressure levels at first and last visit.

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1	systolic_pre	10	5.633	1.781
	systolic_post	10	6.183	1.955

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 systolic_pre - systolic_post	16.900	7.093	2.243	11.825	21.974	7.534	9	.000

Table 3. Statistical analysis of diastolic blood pressure levels at first and last visit.**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 diastolic_pre	95.10	10	8.582	2.713
diastolic_post	87.00	10	6.896	2.180

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 diastolic_pre diastolic_post	8.100	6.367	2.013	3.545	12.655	4.023	9	.003

The results were analyzed by Paired 't' test. P -value < 0.05 was considered significant. From the above table, changes in Systolic and Diastolic blood pressure are highly significant in our study.

4. Discussion:

Work pressure, change in lifestyle such as increased stress, unhealthy diet, decreased physical activities, more consumption of tobacco or caffeine or alcohol or smoking all caused increased incidences of cardiovascular diseases. Stress is a major factor responsible for high blood pressure and heart disease. Yoga acts as a natural relaxant that calms the mind and soothes the nervous system reducing our stress response and its harmful effects. In the present study, we got a significant decrease in systolic and diastolic blood pressure. Cardiovascular functions are controlled by neural factors as well as others like temperature, hormones, etc. of these, neural factors primarily concern the autonomic nervous system which plays a major role in maintaining and regulating cardiac functions, e.g. systolic and diastolic blood pressure. Imbalances in these lead to cardiovascular disorders such as hypertension, ischemia, infarction, etc. Yoga by modulating autonomic activity with increased parasympathetic tone and reducing sympathetic tone decreases Systolic and diastolic blood pressure. In the present study, a significant reduction in systolic and diastolic blood pressure can be due to alteration of autonomic activity with parasympathetic predominance and relatively reduced sympathetic tone. This autonomic modulation in yoga is mediated through alteration of breathing patterns which induces various central and autonomic mechanisms as well as mechanical and hemodynamic adjustments causing both tonic and phasic changes in cardiovascular functioning. Pranayama is composed of complex breathing that calm body and mind. The main aim of pranayama is to regulate breathing. It acts by making breathing slow and deep. Slow breathing acts by a generalized decrease in the excitatory pathways regulating respiratory and cardiovascular systems. A neural control mechanism is the same for the respiratory and cardiovascular system, so alteration in one system will modify the functioning of the other. Slow and deep breathing inflates lungs to its maximum capacity. This inflation stretches pulmonary stretch receptors which result in decreased sympathetic tone in skeletal muscle blood vessels resulting in peripheral vasodilatation and decreased peripheral resistance and thus decreases diastolic blood pressure. During the practice of pranayama, one concentrates on the act of breathing which diverts attention from worries and distresses him. This stress-free state of mind evokes relaxed responses in which parasympathetic nerve activity overrides sympathetic activity. Meditation acts by reducing stress-induced sympathetic overactivity. Thereby it decreases arterial tone and peripheral resistance resulting in lowering of diastolic blood pressure. Regular practice of yoga improves baroreflex sensitivity and decreases sympathetic tone that restores blood pressure to normal levels in patients of essential hypertension.

Another mechanism by which yoga reduces systolic and diastolic blood pressure is by reducing activation of hypothalamic pituitary- adrenal axis or by direct stimulation of vagus nerve which acts by shifting the autonomic nervous system balance from sympathetic to parasympathetic resulting in positive changes in cardiac vagal functions, mental wellbeing by decreasing stress and energy state and in related neuroendocrine, metabolic and inflammatory responses.

5. Conclusion:

It has been observed in our study that the regular practice of yoga helps to improve cardiovascular function. When a person follows an active lifestyle, takes healthy food, takes required sleep, does regular exercise and yoga, it will reduce the chances of cardiovascular diseases. Yoga may do it by parasympathetic dominance over the sympathetic system, which will bring improvement in cardiovascular endurance.

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