

Effect of yogic Practices on the blood pressure of middle age people

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Abstract

Yoga is an ancient Indian science and way of life, which influences the functioning of the brain and the rest of the body. Yoga has sound scientific basis and an ideal tool for improving positive physical and mental health of people regardless of their age. Thus, the present study is aimed to assess the effects of yoga on the blood pressure of middle age people by using pre and post test design. The study was carried out with 100 male participants aged 35-45 years. They were divided into two groups (control and experimental). In order to examine the effect of yoga, an intervention program was introduced to the experimental group. Result suggested that yogic practices normalize the blood pressure (systolic and diastolic) of middle age people.

KEYWORDS: yoga, physical and mental health, blood pressure, middle age people.

Introduction

In the present competitive scenario, consistently increasing rate of psychosomatic and psychological disorders, and feeling of frustration and dissatisfaction with life in general reflect the high blood pressure, hypertension being experienced by most of the people as a result of stressful situation. The real problems arise with the effects of stress over a long period of time. The body remains in a state of alert, without the downtime it sorely needs. The sustained physical and mental tension weakens the body's resistance to disease, making them more susceptible to viruses and other illnesses. The blood vessels, constricted to enable us to respond to stress, can go into spasm. It affects mainly autonomic, cardiovascular, and immune systems (McEwen & Stellar, 1993). This not only exhausts the body but also carries the risk of high blood pressure and more serious problems like heart disease.

Yoga is one of the most extraordinary spiritual sciences and recognized forms of exercise, stretching and meditation. It is like a gem of great proportions, containing many facets whose light can illumine the whole life with great meaning. It was originally developed in India over 5,000 years ago (Smith, Hancock, Blake-Mortimer & Eckert, 2006). It is one of the few spiritual traditions that has maintained an unbroken development throughout history. In contemporary societies, importance and need of yoga has been realized all over the world. Comprehending all aspects of the human being and the world of nature, it can unfold all the higher powers that are accessible to both internally and externally (Frawley, 2008).

Yoga is a practical aid, not a religion. The system of classical yoga was compiled by Patanjali in Yoga Sutra, he considered that yoga is the complete control of the operations of the mind (Frawley, 2008). These operations of the mind, called virittis, constitute all our mental activities from the deepest sub-conscious memories to the highest super-conscious insights. Patanjali was not referring to control of the mind in the ordinary sense but to a complete mastery of all levels of consciousness, including subliminal and cosmic layers not known to ordinary awareness or even to modern psychology.

Yoga is an ancient art based on a harmonizing system of development for the body, mind, and spirit. India. It teaches the ways of establishing harmony among various sides of life (Patel, 1993). Yoga practitioners view yoga as a holistic tool for self improvement and self-healing as well as a method to help reduce stress (Michie & Sandhu, 1994). Yoga provides the key to all developments as physical, psychological and spiritual, widely use in India as the technique of relief from stress and for improvement in physical and psychological health (Srivastava, 1999). Yogic exercises cater to the needs of each individual according to his or her specific needs and physical condition. They involve vertical, horizontal, and cyclical movements, which provide energy to the system by directing the blood supply to the areas of the body which need it most. In yoga, each cell is observed, attended to, and provided with a fresh supply of blood, allowing it to function smoothly. Regular practice of the stretches, twists, bends, and inversions (the basic movements of yoga poses) restores strength and stamina to the body. Poses together with the control of breath, rectify physiological, and psychological disorders (Malathi & Damodaran, 1999).

Yoga has been shown to have effects on most physiological systems of the body. A study (Khalsa, 2004) has been found that the benefits of yoga in diminishing the stress response, which includes the activity of the sympathetic nervous system and the levels of the stress hormone cortisol. Among the various biochemical effects of yoga, a decrease in the cortisol levels (Kamei, Torimui, Kimura, Ohno, Kumano & Kimura, 2000; West, Otte, Geher, Johnson & Mohr, 2004) and control of glucose levels in diabetic patients (Monro, Power, Coumar, Nagarathna & Dandona, 1992) have been reported after participating in yogic practices. It gives the practitioner not only a healthy body but also a sound mind. The practice of Yoga helps to eliminate these ailments, and disciplines the mind, emotions, intellect, and physical self. However, yoga was found to be an adjunctive technique to manage psychological and physical problems.

Objective

The present study is an attempt to examine the effects of yoga on the blood pressure of middle age people.

Sample

The study was carried out with 100 male participants aged 35-45 years. They were randomly selected from the various professional institutions of Varanasi city. They were serving White Collar jobs. They were interested and willing to participate in the present study. In order to examine the effect of yoga on blood pressure, participants were divided into two groups (control and experimental). Both groups were exposed to pre and post-test. Intervention program was introduced to experimental group only.

Method and procedure

- **Blood Pressure** was measured by Sphygmomanometer.

Procedure: The participant was asked to get relaxed. The cuff of the Sphygmomanometer was wrapped on the left arm of the participants just above the elbow. The cuff was then connected to pressure pump and manometer. After closing out the valve of the pressure pump, pressure in the inflatable rubber bag was rapidly raised to 180 MM. Hg by pumping, which was sufficient to shut off the brachial artery, so that the flow of blood through the artery got arrested and radial pulse disappeared. The sound of pulsation monitored by keeping the “Chest piece” of the stethoscope as the pressure over the artery was gradually lowered by opening.

- **Intervention program**

The intervention program was scheduled for 12 weeks and 5 days in a week. Yogic practices were introduced to the participants approximately over 1 hour and 30 minutes in the morning. All the participants were encouraged to attend the session regularly. The yogic practices have been taught by the experts. Intervention program consisted of the following steps:

- ❖ **Warming up** (5 minutes): The program started with the participants in a standing position. The participants inhale and exhale while moving their arms over their head and then bringing their arms back to the center of their chest focusing on balance, breathing, releasing tension and posture.
- ❖ **Suryanamaskar** (15 minutes): It comprised a series of twelve postures. One round of Suryanamaskar has been completed by practicing the twelve postures twice.
 - I. **Pranamasana (the prayer pose)**
 - II. **Hasta Uttanasana (the raised arms pose)**
 - III. **Padahasthasana (the hand to foot pose)**
 - IV. **Asva Sancalanasana (the equestrian pose)**
 - V. **Parvatasana (the mountain pose)**
 - VI. **Astanga Namaskara (salute with eight limbs)**
 - VII. **Bhujangasana (the serpent pose)**
 - VIII. **Parvatasana (the mountain pose)**
 - IX. **Asva Sancalanasana (the equestrian pose)**
 - X. **Padahasthasana (the hand to foot pose)**
 - XI. **Hasta Uttanasana (the raised arms pose)**
 - XII. **Pranamasana (the prayer pose)**
- ❖ **Asanas** (20 minutes): The participants have been instructed to practice of some asanas for the relaxation of the body and the mind as:
 - **Tadasana**
 - **Trikonasana**
 - **Ugrasana**
 - **Paschimottanasana**
 - **Makarasana**
 - **Shavasana**
- ❖ **Parnayam** (15 minutes): Pranayams have been practiced at least 15 minutes after asanas as:

- Anulome-Viloma
- Bhramari

All five pranas could be balanced and regulated through pranayams:

- Prana - Inhalation
- Samana - Retention/Contraction
- Vyana - Retention/Expansion
- Udana - Exhalation/Expression
- Apana - Exhalation/Elimination

❖ **Om Chanting** (05 minutes):

Results and Discussion

The data has been analyzed by using descriptive statistics as mean, median, standard deviation etc. In order to assess the significance mean difference between control and experimental groups (post test), Analysis of Co-variance (ANCOVA) was used. The level of significance was *0.05.

In the present study, blood pressure was the measurement of the force applied to the walls of the arteries as the heart pumps through the body. The pressure was determined by the force blood pumped, size and flexibility of the arteries. There were two types: systolic & diastolic.

Table: 1 Shows the Analysis of Co-Variance between the Means of Experimental and Control Groups on Blood Pressure (Systolic) measure.

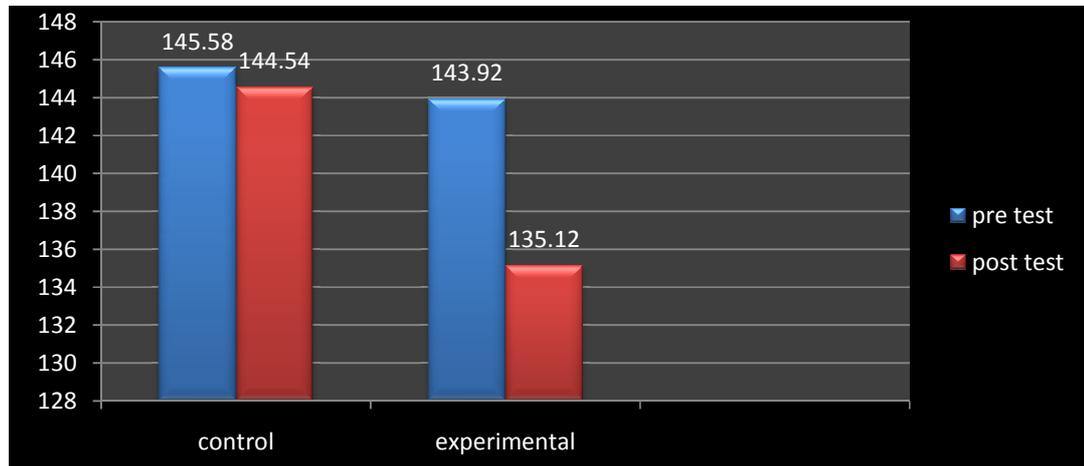
Blood Pressure (Systolic)	Control	Experimental	SV	df	SS	MSS	F ratio
Pre test	145.58	143.92	B	1	68.89	68.89	3.05
			W	98	2211.86	22.57	
Post test	144.54	135.12	B	1	2218.41	2218.41	109.26*
			W	98	1989	20.30	
Adjusted Post-test	144.433	135.227	B	1	2054.87	2054.87	102.05*
			W	97	1953.02	20.13	

* Significant at 0.05 level of significance, $df(1, 98) = 3.94$, $df(1, 97) = 3.94$

Table 1 Shows the analysis of Co-variance between the mean scores of experimental and control groups on Blood Pressure (Systolic) measure respectively. It was reported significant difference (109.265*) between the mean scores of post-test of control and experimental groups, whereas no significant difference (3.052) between the

mean scores of pre-test of control and experimental groups was found. With respect to Adjusted Post Test Means (APTM) of control (mean = 144.433) and experimental (mean = 135.227) groups, significant difference (F-ratio= 102.058*) was quite evident.

Graph: 1 Shows the mean difference between pre-test and post-test of control and experimental groups on Blood Pressure (Systolic) measure.



Graph 1 Shows the mean difference between pre-test and post-test of control and experimental groups on Blood Pressure (Systolic) measure. It has been indicated clear mean difference between pre-test (mean = 143.92) and post-test (mean = 135.12) of experimental group due to the exposure of intervention program. Whereas less mean difference between pre-test (mean = 145.58) and post-test (mean = 144.54) of control group was found.

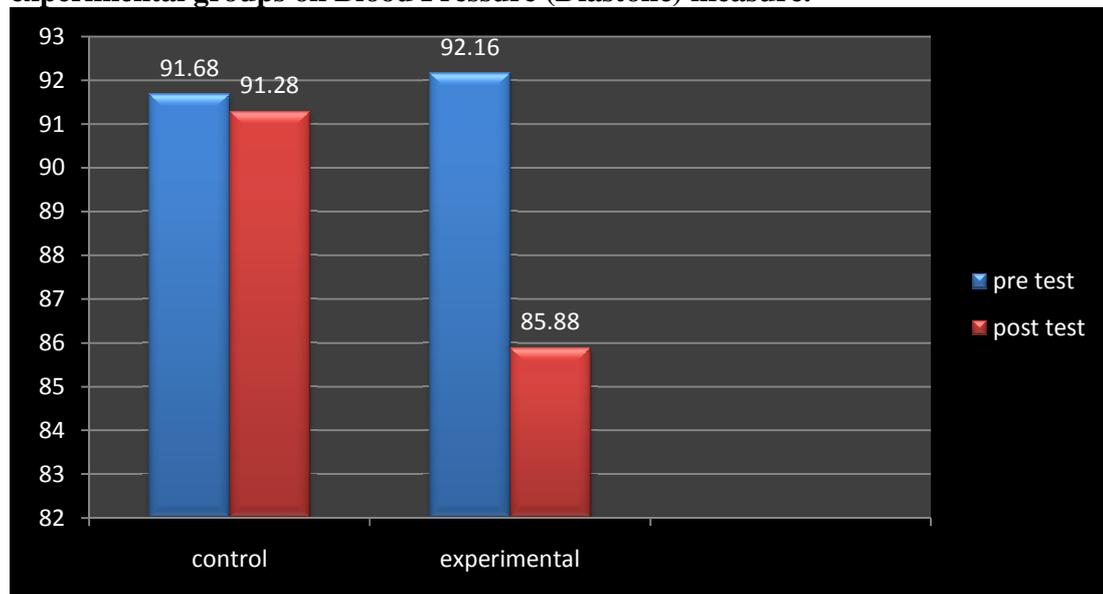
Table: 2 Shows the Analysis of Co-Variance between the Means of Experimental and Control Groups on Blood Pressure (Diastolic) measure.

Blood Pressure (Diastolic)	Control	Experimental	SV	df	SS	MSS	F ratio
Pre test	91.68	92.16	B	1	5.760	5.76	0.474
			W	98	1191.60	12.15	
Post test	91.28	85.88	B	1	729.00	729.00	76.216*
			W	98	937.00	9.505	
Adjusted Post-test	91.263	85.897	B	1	716.36	716.36	74.609*
			W	97	931.35	9.60	

* Significant at 0.05 level of significance, df (1, 98) = 3.94, df (1, 97) = 3.94

Table 2 Shows the descriptive analysis of the data (mean, median, SD, etc.) and analysis of Co-variance between the mean scores of experimental and control groups on Blood Pressure (Diastolic) measure respectively. It was reported significant difference (76.216*) between the mean scores of post-test of control and experimental groups, whereas no significant difference (0.474) between the mean scores of pre-test of control and experimental groups found. With respect to Adjusted Post Test Means (APTMs) of control (mean = 91.263) and experimental (mean = 85.897) groups, significant difference (F-ratio= 74.609*) was found. It has been reported normal level of blood pressure due to the exposure of yogic practices.

Graph: 2 Shows the mean difference between pre-test and post-test of control and experimental groups on Blood Pressure (Diastolic) measure.



Graph 2 Shows the mean difference between pre-test and post-test of control and experimental groups on Blood Pressure (Diastolic) measure. It has been indicated clear mean difference between pre-test (mean = 92.16) and post-test (mean = 85.88) of experimental group due to the exposure of intervention program. Whereas less mean difference between pre-test (mean = 91.68) and post-test (mean = 91.28) of control group was found.

Our findings suggested that practicing yoga has positive effect on blood pressure. This indicates a significant improvement in normalizing the blood pressure of middle age people. Practicing yoga reduces the stress and increases relaxation, which may have a favorable effect on blood pressure and heart rates. Findings similar to those of the present study have been reported in other studies (Bhargava, Gogate & Mascarenhas, 1988; Arambula et al., 2001; Pawlow & Jones, 2002; Shenbagavalli & Divya, 2010).

The finding of the present study suggested that yogic practices have a greater positive impact on physical and mental health. It could be helpful to manage blood pressure and hypertension by practicing yoga regularly and properly.

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