

Yoga and Hypertension

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Hypertension, also known as high blood pressure, affects twenty-five percent of all American adults, and half of those are over the age of sixty. Studies suggest that yoga is effective in reducing high blood pressure, particularly the diastolic (lower) number, which is the most significant. One can experience the relaxing effects and long term benefits of yoga by committing to a daily routine of breathing exercises, asanas, and meditation. Yoga improves the body's strength and flexibility, teaches one how to relax mentally and physically, and assists in managing stress reactions such as muscle tension, rapid heart rate, constricted breathing, and anxiety (Yoga and High Blood Pressure, n.d.). Yoga experts recommend that individuals with high blood pressure only practice certain asanas while recognizing there are other asanas which should be avoided or modified by the use of props. In addition, the practices of pranayama and meditation are potentially beneficial for people who suffer from hypertension.

Health-care professionals attribute the pervasiveness of hypertension to the lifestyle of excess: smoking, too much alcohol, too much cholesterol and fat, too much salt, too much stress, and too much body weight (Payne and Usatine 2002, 174). High blood pressure is often called a silent killer because one can have it for years without knowing it. The fast pace of life and mental and physical pressure gives rise to psychological tensions.

Blood pressure refers to the amount of pressure in the arteries, which changes with each pump of the heart. Hypertension occurs when the pressure in the system gets high enough to start causing problems in the body. Conditions that cause the blood pressure

to rise are usually related to the blood vessels being either constricted or overfilled; in both cases, it takes more force to pump the blood through the vessels.

The blood pressure is measured with an instrument called a sphygmomanometer in millimeters of mercury. The highest pressure reached during each heart beat is called systolic pressure and lowest between two beats is known as diastolic pressure. The first gives the pressure of the contraction of the heart as it pushes the blood on its journey through the body and indicates the activity of the heart. The second represents the pressure present in the artery when the heart is relaxed and shows the condition of the blood vessels. The blood pressure is considered normal when it is 120/70, but may go up to 140/90 and still be normal. Within this range, the lower the reading, the better. Blood pressure between 140/90 and 160/95 is considered border line area. From 160/96 to 180/114, it is classed as moderate hypertension, while 180/115 and upwards is considered severe. A raised diastolic pressure is considered more serious than raised systolic pressure as it has a serious long term effect (High Blood Pressure, n.d).

When blood pressure rises above normal, the blood's normal pulsating is replaced by pounding; even a very slight rise in blood pressure is significant, since the heart beats over one hundred thousand times per day. This relenting battering is hard on the walls of the blood vessels and weakens them. The high pressure can also cause damage to various organs. In the kidneys, the excess pressure can damage the vessels that filter waste products from the blood, making the kidneys ineffective and leading to kidney failure. In the brain, a type of stroke can result when the damaged vessels rupture. Stroke is the third leading cause of death in the United States (after heart disease and cancer), and high blood pressure is the main risk factor. In the heart, the hammering damages the arterial linings, hastening cholesterol buildup which can lead to a heart attack. Uncontrolled hypertension also causes the heart muscle itself to work harder

and eventually lose its ability to pump effectively, a condition that can lead to congestive heart failure.

The practice of yoga and the lifestyle changes inherent in the yoga philosophy work together to calm the heart and mind and brings the circulatory system back into balance, and helps to avoid heart disease. Asanas calm the mind and balance the autonomous nervous system, the center that controls stress. The sympathetic and parasympathetic nervous system, which are involved in stress reaction become stabilized in the practice of asana resulting in the regulation of blood pressure.

The effects of hypertension on various systems such as the cardiovascular, respiratory and nervous systems and on various organs especially the heart, lungs, liver and kidneys can be lessened and eventually neutralized by the practice of certain asanas and pranayama.

Yoga Guru Patanjali has defined Yoga as steady and comfortable state of body and mind means asana; "Sthirsukham Asanam". During any exercise when the strain on muscle increases, the requirement for blood and oxygen increases. However, in yoga asanas, the requirement for blood and oxygen decreases as there are not strains and every muscle is relaxed and the requirement for blood and oxygen decreases. This also reduces the strain on the mind which then becomes stable and focused (Yoga and High Blood Pressure, n.d.).

The asanas which regulate the blood pressure, belong to the forward bends, supine, sitting, and the inversions group. However forward bends are the fundamental asanas to be practiced by persons suffering from high blood pressure, whereas Viparita Dandasana is the most beneficial asana for low blood pressure (Iyengar, 2003).

The following yoga practices can be effective in the management of high blood pressure: Savasana, Virasana, Uttanasana, Janu Sirsasana, Setu Bandha Sarvangasana, Adho Mukha Svanasana, and Baddha Konasana. Forward bends should be practiced with bolsters, blankets and straps if necessary. Stress gets released from the sense organs, eyes, nose, throat and tongue. The sympathetic nervous system becomes rested and creates a positive effect on the other systems. Blood pressure becomes stable when the sense organs, the brain and the sympathetic nervous system are relaxed. The horizontal position of the spine in these asanas allows the heart to slow down, as there is no stress to pump the blood against gravity to the brain. The heart rate and the cardiac output simultaneously slow down and blood pressure is controlled (Iyengar, 2003).

Although Uttanasana and Adhomukha Svanasana are categorized as standing asanas, they are actually forward bending standing poses and have a similar effect on the nervous system. When these two poses are practiced with the head resting on props, the blood flows more freely into the aortic arch and the carotid sinuses. This extra perfusion into these volume sensitive structure inhibits the vasomotor center and blood pressure become stabilized (Iyengar, 2003).

Supine poses such as Supta Baddhakonasana and Supta Padangusthasana 2 allow the abdominal region to spread and relax. This relaxation is not only beneficial to the entire organic body, but is also soothing for the nerves. Those suffering from high blood pressure should practice sitting asanas such as Baddhakonasana, Virasana and Upavista Konasana. Often people with high blood pressure have difficulty in their breathing and these poses due to their erect position, soften the diaphragm and remove

tension from the ribs and the intercostal muscles which helps one breathe easier (Iyengar, 2003).

Inversions such as Halasana, Setubandha Sarvangasana and Viparita Karani rests and rejuvenates the nerves and reduce the sympathetic tone immediately. Regular practice of these asanas keeps the blood pressure under control. In Setubandha Sarvangasana the diaphragm and lungs are under control and lifted which helps stabilize the blood pressure (Iyengar, 2003).

The amount the blood pressure increases in the head during an inversion depends mainly on how far above the head the heart is, and how far above the heart the legs and trunk are placed. Therefore, a mildly inverted posture like Adho Mukha Svanasana, which lifts the heart only a little above the head and does not elevate the legs, only increases pressure in the head a little. Setu Bandha Sarvangasana (lying on bolsters, legs horizontal, feet at hip level) increases pressure in the head somewhat more because the legs and trunk are slightly above the heart, and the heart is slightly above the head. Salamaba Sarvangasana increases pressure in the head even more, because the legs and trunk are raised to their maximum vertical position above the heart, and the heart is raised somewhat higher above the head than in Setu Bandha Sarvangasana. Sirsasana increases blood pressure in the head the most because the legs and trunk are maximally elevated and the head is as far below the heart as it can be.

Several asanas should be avoided by people with high blood pressure and other asanas should be practiced with props or modified in some manner in order to prevent injury. For example, Vrksasana can be practiced; however, it is better if the arms are not raised overhead. Utthita Trikonasana can be practiced by turning the head to gaze downward

in the final expression of the pose with the option of leaving the hand on the waist instead of raising it overhead; Halasana should be practiced with the legs supported on props; Virabhadrasana I can be practiced without raising the hands overhead and Virabhadrasana II and III should be avoided; Adho Mukha Svanasana can be practiced by placing one's head on a bolster or block with the ears level between the arms; and Adho Mukha Vrksasana and Sirsasana should not be practiced (High Blood Pressure and Inversions, n.d.).

The fastest and most effective way to reduce reaction to stress is to change the breath, and an immediate way to improve breathing is to improve posture. In yoga, the back and stomach muscles are strengthened allowing one to sit and stand straighter; this technique releases pressure on the heart and lungs and allows one to breathe easier (Yoga and High Blood pressure, n.d.).

Pranayama, the formal practice of controlling the breath, lies at the heart of yoga. It has a mysterious power to soothe and revitalize a tired body, a flagging spirit, or a wild mind. The ancient sages taught that prana, the vital force circulating through the body, can be cultivated and channeled through a panoply of breathing exercises. In the process, the mind is calmed, rejuvenated, and uplifted. Pranayama serves as an important bridge between the outward, active practices of yoga, asana and the internal surrendering practices that lead into deeper states of meditation (Prescriptions for Pranayama , n.d.).

Recent study findings presented at the American Society of Hypertension's annual meeting state it may be a good idea to take some deep breaths when feeling stressed. Recent research conducted at the Kaleida Health-Millard Fillmore Hospital in Buffalo, New York, reinforces previous findings that suggest pranayama may help lower blood

pressure (Take a Deep Breath, n.d.). Researchers took 12 people between the ages of 22 and 55 with normal blood pressure and subjected them to mental stress for five minutes by asking them to perform a frustrating mathematical task. Then they compared the use of controlled breathing; inhaling and exhaling at a rhythmic pace - with listening to classical music, nature sounds, or no intervention, to measure how long it takes for blood pressure levels to return to normal. Results show that classical music made systolic blood pressure (SBP) -- the top number that reflects blood pressure when the heart contracts -- drop to pre-stressed levels after an average time for 2.9 minutes; nature sounds worked in 3.0 minutes, and doing nothing normalized SBP after 3.7 minutes. Deep breathing, however, returned SBP to normal after just 2.7 minutes (Take a Deep Breath, n.d.). Diastolic blood pressure (DBP) was slower to return to normal, but after four minutes, readings had dropped by 11.2 percent with yogic breathing, compared to 2.7 percent for the group doing nothing. This suggests that DBP would return to normal levels more quickly with yogic breathing. Lead researcher B. H. Sung, an associate professor of medicine at the State University of New York at Buffalo believes that even hypertensive patients would have similar results, although the higher the blood pressure, the more time it would take for the pressure to come down. "B. H. Sung and her co-researchers speculate yogic breathing may work by relaxing muscles that constrict blood vessels and changing the signals sent to the brain that announce stress to the body. Sung believes the technique may prove an effective complementary form of therapy to medication and lifestyle change for hypertensives" (Take a Deep Breath, n.d.). As for those with normal blood pressure, adds Sung, "Luckily, our findings suggest that something as simple as deep breathing, even for those who've never been exposed to yoga before, can help to reduce the effects of constant daily stress, including rise in blood pressure" (Take a Deep Breath, n.d.).

Another technique beneficial for people with high blood pressure is the practice of meditation. Medical researchers in the United States have been studying meditation for more than 35 years, and the growing body of evidence is finally sinking in. The ancient technique has shown to aid in the treatment of conditions as varied as cancer, sleep disorders, headaches, depression, psoriasis, chronic pain, high blood pressure and aging; and researchers say that's only the beginning (Edy, September/October 2000). Meditation creates balance in the functioning of the nervous system and in the body mind complex. When the complete body is relaxed, it gives enough rest to the muscles and various organs, one can handle stressful situations in efficient ways and the functioning of the brain is improved by increasing concentration and memory (Yoga and High Blood Pressure, n.d.). Meditation allows one to access an inner source of strength and personal power, creating a support system that builds confidence and self esteem, helping one to enjoy the present moment and increase self awareness.

Another benefit of meditation is the ability to completely quiet the mind. There are many meditation methods. Some are passive and others are active; not in the physical sense, but in the sense that one actually does something during meditations. Individuals who meditate learn to focus their awareness and direct it onto an object, the breath, a phrase or word, a mantra repeated silently, a memorized inspirational phrase or an image in the mind's eye. Researchers have documented immediate benefits in terms of lowered blood pressure, decreased heart and respiratory rate, increased blood flow, and other measurable signs of the relaxation response. Meditation can calm an agitated mind, creating optimal physical and mental health; undo the sense of separateness, which is the common root of fear and misery; unify consciousness, putting one in touch with the higher self and connect to a higher consciousness (Peacefulmind's Cross Training Support Program n.d.).

In the appendix of his book Light on Yoga, B. K. S. Iyengar recommends the following practice for individuals suffering from high blood pressure: Halasana; Janu Sirsasana; Ardha Badha Padma Pashchimottanasana; Triang Mukhaikapada Pashchimottanasana; Pashchimottanasana; Virasana; Siddhasana; Padmasana; Savasana. Nadi Sodhana Pranayama without retention. Meditation with closed eyes (if the blood pressure is very high than it is better to do Ujjayi Pranayama in the lying position without pillows first for the first 5 minutes and then to perform Nadi Sodhana Pranayama and immediately do Savasana for 15 minutes (Iyengar, 1966, 490).

In conclusion, the practice of yoga, pranayama and meditation are useful tools for people who suffer from high blood pressure. Modern medical science treats the blood pressure but not the underlying reason for mental strain. When one takes medications, the blood pressure can return to normal for sometime but when the effect of the medication is over, the blood pressure again rises. Thus, a better remedy is to try and remove all underlying reasons for mental stress and strain. The practice of yoga asanas, pranayama, and meditation contribute to achieving mental peace, greater general health and well being.

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