

HYPERTENSION AND YOGA

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Introduction -

In normal course of blood circulation, the heart received impure blood in its right atrium and sends it to the right ventricle which further sends it to the lungs for purification. The purified blood from the lungs is sent back to the left atrium of the heart which passes it to the left ventricle. Then the blood is distributed to various body organs. Every bit of this blood transport step requires stipulated amount of pressure to carry the blood further. This is called blood pressure.

Due to certain physiological disorders of the lumen of the arteries constrict, their volume also reduces. This creates increased pressure inside the arteries which is then referred to as "Hypertension". Normally the blood pressure during systole (when the left ventricle contracts) should be not more than 120 to 130 mm / Hg. During Diastole (when the left ventricle relaxes) the pressure should be about 80 to 85 mm / Hg. When these values remain elevated for a considerable amount of time, the person is said to be "Hypertensive". High B.P. may have an hormonal cause among other causes leading to disruption of renin – angiotensin – aldosterone actions, high B.P. may also be as a result of renal disorders. The so called essential hypertension does not show definite correlation to any factor as yet.

Hypertension places patients at high risk for target organ damage including, retina, brain, heart, kidneys etc.

Observed Effects of Yoga on Blood Pressure

1. Regular practice of Yoga reduces blood pressure to the tune of 10 to 15 mm / Hg (observed facts, good evidence exists to support this observation)
2. Yoga can reduce weight loss which in turn reduces blood pressure.
3. Regular Yoga performers are less likely to suffer from Hypertension than their age & sex matched counterparts. This result has been studied and proven at our center.
4. The night 'dip' of blood pressure a phenomenon seen in normal people and which can be absent in some hypertensive is usually restored as observed at our center.
5. A casual Shavasana and Omkar chanting each can reduce the B.P. by about 10 – 15 mm / Hg even in an untrained person who may not practice Yoga regularly.

Probable mechanism achieved by practicing yoga which relieves Hypertension could be as follows.

1. Blood pressure increases by sustained activation of 'Flight & Fight' response of the body. Yoga effectively switches off the response and brings adrenaline levels down, thus reducing blood pressure. This postulate can be backed by good amounts of evidences.
2. The chronic stress induced sustained muscular contraction reduces lumen diameter of blood vessels in the muscles. It in turn increases blood pressure (just as compressing a water pipe increases force of water flow). Stretching of muscles and

relaxing the same as done in Yogic exercise reverts this effect.

3. Sustained muscular contraction sends hostile signals to the brain, alerting it to impending danger. This does secrete stress hormones and neurotransmitters associated with stress and high B.P. This possibly reverted by constant practice of Yoga.

4. Platelet agreeability and stickiness of blood increases inappropriately, tend to produce a 'hypercoagulable' state of blood, and increase blood pressure in turn. It is proven during preliminary studies, that regular practice of Yoga reduces Platelet aggregation.

5. Certain postures in Yoga do offer controlled pressure on kidneys and the adrenals thereby possibly regulating blood supply to these vital organs which mainly regulate B.P. through secretions of rennin, angiotensin, adrenalin etc.

6. Regular Yoga may reduce stress hormone 'aldosterone' which is a potent vasoconstrictor (which contracts blood vessels thus increasing B.P.). Preliminary evidences have noted this fact.

7. Preliminary studies also point out to the fact that regular Yoga practice may reduce 'Vasopressin' another stress hormone secreted by pituitary gland in the brain. Vasopressin increases B.P. by vascular contraction.

8. The medulla oblongata in the brain has the respiratory center and the vasomotor centre (which regulates the B.P.) side to side. Fast breathing in stressful situations tends to overspill the electric signals over vasomotor centre thus increasing B.P. Yoga and Pranayama in turn regulate breathing and hence may reduce the signal overspill from respiratory center, thus reducing B.P.