

## Effects of Yoga on Hypertension, Diabetes and Cholesterol

**J.P.Pramod<sup>1</sup>, Adharapurapu Shree Vidhya<sup>2</sup> & Medichalam Sneha**

<sup>1</sup>Assistant professor, Stanley college of engineering and technology,  
affiliated to Osmania University, [jppramod@stanley.edu.in](mailto:jppramod@stanley.edu.in)

<sup>2</sup>B.Tech Student Dept of artificial intelligence and data science  
[shreevidhya440@gmail.com](mailto:shreevidhya440@gmail.com)

<sup>3</sup>B.Tech Student Dept of artificial intelligence and data science  
[snehamedichalam@gmail.com](mailto:snehamedichalam@gmail.com)

### ABSTRACT

Globally, Cardiovascular disease is becoming a leading cause of death. If the right measures are implemented, the risks associated with CVD can be reduced. One important factor in lowering the risk of CVD is yoga. Various yoga poses can aid with blood circulation, stress management, high blood pressure reduction, and many other things. Our bodies can battle diseases and stay in shape with the help of yoga. Numerous studies have indicated the significance of yoga. Exercise is also a very powerful tool in the body's fight against sickness. The heart benefits greatly from exercise and yoga in order to operate correctly.

**KEYWORDS** Yoga, Yoga Mudra, Hypertension, Cholesterol, Diabetes.

### INTRODUCTION:

Cardiovascular disease is a class of disorders that affects the heart or blood vessels. It is leading cause of death worldwide, with numerous causes contributing to its growth. In 2019, an estimated 17.9 million people died from cardiovascular disease, accounting for 32% of global deaths. 85% of these deaths were caused due to heart attacks or strokes. There are numerous risks associated with cardiovascular disease. The leading cause of cardiovascular disease is high blood pressure, generally known as hypertension. Persistent high blood pressure harms the arteries and raises the risk of heart attack and stroke. An increase risk of coronary artery disease can result from plaque buildup in the arteries caused by high levels of low density lipoprotein (LDL) cholesterol. Lipids, or fats, and the proteins that transport fats through the bloodstream make up lipoproteins in particular. LDL particles contain a lot of cholesterol and a very little protein. Too much LDL poses a risk to our health. The risk of cardiovascular disease is greatly increased by diabetes, especially type 2 diabetes. Diabetes-related high blood sugar can harm our blood vessels as well as our nerves that regulate our heart and blood vessels. Cardiovascular problems are very likely to strike people with diabetes. Another risk factor for cardiovascular disease is tobacco usage. Fatty acids (plaque) may accumulate inside the coronary arteries over time. This may decrease the heart's blood supply and raise the risk of a heart attack. The narrowing and blockage of coronary arteries is accelerated by smoking. Physical inactivity is also one of the leading causes of cardiovascular diseases. Physical activity lowers the high blood pressure and regulates cholesterol levels, which reduces the risk of cardiovascular diseases. A healthy diet is essential for patients with cardiovascular disease. Low-fat, low-cholesterol, and low-sugar foods are beneficial for lowering CVD risk. Yoga is especially good for persons with cardiovascular disease. Regular yoga practice benefits everyone. Yoga helps to balance our bodies, promotes flexibility, and manages blood pressure levels. Meditation helps to reduce our stress levels. Stress is another key cause of CVD. Excessive stress raises blood pressure and contributes to an unhealthy diet. Meditation helps to

keep our mind peaceful, which is good for our health. Yoga is basically a spiritual practice that aims to achieve harmony between the mind and the body through a very subtle science. It seeks to both make our body physically fit and rid our minds of mental impurities. It was thought that the practice of yoga began with the advent of civilization. In this mythology, Shiva is regarded as the yogi or Adiyogi, the first Guru. On the banks of the Himalayan lake Kantisarovar, several thousand years ago, Adiyogi bestowed to the fabled Saptarishis, or “seven sages”, the vast wisdom of yoga.

### **YOGA:-**

Yoga is basically a form of spiritual discipline that focuses on achieving mental and physical equilibrium. It is based on an incredibly delicate science. Well-being is both a science and an art. The Sanskrit word “yuj” (which means to “to unite”) is where the word “yoga” is originated. Yoga is a comprehensive practice that encompasses physical postures (asanas), breathing exercises (pranayama), meditation, and ethical principles. Yoga’s capacity to promote physical and mental relaxation is among its most obvious heart-healthy effects. Stress on an emotional level can have a number of negative physical repercussions, such as the release of chemicals that narrow blood vessels and raise blood pressure, such as cortisol and adrenaline.

There are several styles of yoga.

1. **Ashtanga Yoga:** Ashtanga yoga is a dynamic and structured style of yoga that consists of a precise sequence of postures practiced in a continuous, fluid way. Ashtanga yoga, created by K. Pattabhi Jois, emphasizes the synchronisation of breath movement (vinayasa), resulting in a strong, flowing practice that increases strength, flexibility, and endurance. The word “ashtanga” is formed of two Sanskrit words “ashta” and “anga”, in which, “ashta” signifies eight, and “anga” means limb. Ashtanga combines the eight limbs of yoga to create a comprehensive and holistic approach.
2. **Hatha Yoga:** Hatha yoga is one of the most popular and core kinds of yoga, emphasising physical postures (asanas), and breathing practices (pranayama). Hatha yoga is a type of yoga that focuses on the physical activities to help people master their bodies and minds. The word “Hatha” is derived from the terms “ha”, meaning sun, and “tha”, meaning moon.
3. **Iyengar Yoga:** Hatha yoga with an emphasis on alignment, precision, and using props to accomplish the right pose is known as Iyengar yoga. This type of yoga, which was created by B.K.S Iyengar, is renowned for both its healing properties and its painstaking attention to detail.
4. **Kripalu Yoga:** A contemporary kind of yoga called Kripalu was inspired by a traditional Hatha yoga technique. It is comprised of a series of non-repetitive physical postures combined with breathing techniques and relaxation techniques. Kripalu yoga seeks to direct the practitioner’s concentration inward, wherein the flow of prana, or life force energy, is the primary emphasis.
5. **Kundalini Yoga:** The goal of the spiritual discipline known as kundalini yoga is to awaken the kundalini, or the dormant energy, located at the base of the spine. To awaken this energy and enhance mental, physical, and spiritual well-being, it combines breathing exercises, mantra chanting, meditation, and relaxation.
6. **Yoga Nidra:** Yoga nidra, also known as yogic sleep in modern usage, is a state of consciousness that occurs between waking and sleeping and is usually induced by a guided meditation.
7. **Viniyoga:** Viniyoga is a Hatha yoga style that emphasises tailoring yoga practices to yogi’s unique needs. In Viniyoga, the Sanskrit terms “vi” and “ni” signify “adaptation”. It entails tailoring yoga techniques to the yogi’s specific mental, physical, and spiritual requirements.
8. **Yin Yoga:** Yin Yoga is a slow-paced technique and holds asanas for a longer period of time than any other yoga asanas. Advanced practitioners can hold a single asana for five minutes or longer.

## **YOGA ASANAS**

The physical postures that are practiced in yoga are called asanas. Every asana has a unique set of advantages and is meant to support mental clarity, spiritual development, and physical wellness. Yoga asanas strengthens and balances the body; promotes better respiratory and cardiovascular health; and helps control weight. It also encourages self-awareness, inner tranquility, and a feeling of oneness with the cosmos. There were few research that explained the connection between cholesterol and yoga. They chose the individuals with type 2 diabetes for a 2013 study. Individuals who took an oral hypoglycemic medication and practiced yoga for around 3 months demonstrated a reduction in LDL and cholesterol levels. There was an increase in HDL levels. A study that was carried out between 2006 and 2016 attempted to understand the relationship between yoga and hypertension. Records were roughly 8682 of individuals who did not perform yoga and about 1355 yoga practitioners were gathered. When compared to those who did not practice yoga, they discovered that those who did so had normal blood pressure.

## **HYPERTENSION**

When the force of the blood pushing against the walls of the arteria is constantly too great, we term it as a high blood pressure. Over time, this causes damage to the arteries and raises the risk of major consequences including heart attacks and strokes. Numerous studies have demonstrated the beneficial effects of yoga on high blood pressure. A report states that, pranayama practice may lower the vagal tone, which in turn lowers blood pressure.

## **DIABETES**

Our pancreas naturally produces the hormone insulin, which is necessary for our to be able to use glucose, or sugar, as a fuel. Insulin aids in the body's conversion of food into energy and aids in blood sugar regulation. An excessive amount of glucose, or blood sugar, can lead to development of diabetes. It appears when our body isn't reacting to the effects of insulin effectively, or when your pancreas produces too little or no insulin at all.

## **CHOLESTEROL**

A waxy substance called cholesterol is present in our body's cells . This cholesterol is necessary for the body to produce healthy cells. However, an excess of cholesterol can poses a threat to our heart. Our blood contains cholesterol that is bounded to proteins. Lipoprotein is the term for this mixture of proteins and cholesterol.

## **HIGH DENSITY LIPOPROTEIN**

The good cholesterol, also known as high-density lipoprotein, transports excess cholesterol from our blood to the liver, where it is eliminated by the liver.

## **LOW DENSITY LIPOPROTEIN**

The bad cholesterol, or the low-density lipoprotein, is what causes plaque to accumulate in our arteries. Our bodies' excess cholesterol can cause symptoms including heart attacks and strokes. In order for our bodies to remain healthy, this harmful cholesterol must be decreased.

## **YOGA MUDRAS**

Mudra is a synonym for mark, gesture, or stamp. Yoga mudras are symbolic hand and finger movements that are commonly used to enhance the internal journey and promote energy flow in the subtle body. According to Ayurveda, the five elements (vayus) that make up the body are fire, air, water, space, and earth. Ancient theories state that for a body to be healthy, all five of these elements must be in balance. An imbalance in the body, caused by an excess or shortage of any of the five elements, is the root cause of diseases.

Thumb- Represents fire

Index finger- Represents air

Middle finger- Represents space

Ring finger- Represents earth

Little finger- Represents water

### **APAN VAYU MUDRA**

Mritsanjeevani mudra, or Apan Vayu Mudra, is a strong mudra. It was thought that this mudra prevented heart attacks and helped save lives. Additionally, this mudra can aid lowering excessive blood pressure. The Apan Vayu mudra practice could aid in diabetes management. In addition to clearing cardiac obstructions, this mudra can aid in preventing respiratory problems. In order to perform this mudra, the index finger is folded and touched the base of the thumb. The thumb tip is contacted with the tips of middle and ring fingers. The little finger stays pointed outward and straight.

### **LINGA YOGA MUDRA**

The Linga yoga mudra is a hand gesture that balances the fire element in our bodies, raising our body temperature. To execute this mudra, make sure both hands' fingers are firmly intertwined. Hold the left hand's thumb up and encircle it with the right hand's thumb and index finger. This mudra keeps our minds at ease and lowers our blood sugar levels. Chanting of "OM" mantra can aid in maintaining focus.

### **SHIVA LINGA MUDRA**

Shiva Linga Mudra is a potent hand emotion that represents the union of Shiva and Shakti powers. To perform this mudra, put your left hand at the navel level with the palm facing up. With your right hand, make a fist and place it over your left. Extend your thumb upwards, resembling the Shiva Linga. The masculine force of Shiva is symbolised by the right hand with the upright thumb, while the feminine energy of Shakti is represented by the left hand. This mudra keeps our minds relaxed and tranquil while assisting us in overcoming tension and anxiety. This mudra boosts immunity while also assisting with the weight loss. It aids in reducing all of the negative energies that are present around us.

### **SURYA MUDRA**

In yoga, the Surya mudra is a hand gesture that is thought to symbolise the sun. Our body's fire element is balanced by this mudra. By lowering the amount of harmful cholesterol in our bodies, this mudra helps lower our risk of heart attacks. To perform this mudra, sit in Padmasana pose with your back erect. Place the tips of both the ring fingers at the base of the thumbs after bending them. Place your thumbs gently on top of your ring fingers. This mudra also aids in better digestion and lowers anxiety.

### **PRANA MUDRA**

The hand gesture known as the Prana mudra symbolises the life force and vitality. This mudra balances the earth, fire, and water aspects in our body while igniting the energy within. To make this mudra, contact the tips of the little finger, ring finger, and thumb while maintaining the straightness of the remaining fingers. The blood sugar levels can be lowered with the aid of this mudra. It also aids in enhancing blood circulation.

### **1. PADANGUSTHASANA**

Padangusthasana, often known as big toe pose, is a standing forward bend yoga pose with numerous benefits, including those for heart health. This pose reduces the stress by keeping our minds calm, and releasing tension in our body. Lower stress levels promote heart health and reduce the risk of cardiovascular disease. Regular practice of Big Toe pose reduces high blood pressure. The mild stretching of our bodies, in this pose might cause a reduction in blood pressure. This pose enhances flexibility. As soon as we step forward and release the posture your blood

circulation will improve. This lessens the symptoms of stress and anxiety while also promoting and boosting energy. Tension in the neck and head is relieved by the calm, deep breathing, and prana flow.

1. Assume a straight posture, placing your hands to the sides and your feet together.
2. Exhale deeply and lift your arms above your head.
3. Exhale, bending at the hips and folding forward while maintaining a long spine.
4. Hold your big toe with index and middle fingers.
5. Take a deep breath to lengthen your spine, and then gently pull on your toes to increase the stretch as you exhale. Keep your neck and hand at ease.
6. Hold the position for a duration of 30 to 60 seconds.
7. Let go of your toes, put your hands on your hips, arch your back, take a deep breath and stand up straight.

## **2. BALASANA:**

Balasana, often known as the child's posture, is a simple yoga asana that is suitable for both beginners and advanced practitioners. It is a great asana for extending and relaxing your back, hips, thighs, and ankles. In addition to the physical benefits, the asana allows you to reconnect with your inner self. This stance helps to reduce our stress. This asana brings comfort by gently placing our foreheads on the ground. This asana may assist lower our blood pressure. The limbic system, which triggers the fight reaction in the body in response to strong emotions like fear and rage, may be activated by this pose. It might promote calmness and release tension. It also improves blood flow to the brain.

1. Start by getting down on your knees. Sit on your heels and place your big toes together.
2. Take a deep breath, then extend your back.
3. Bend forward and place your body between your thighs as you exhale. Place the forehead down on the earth.
4. You can either bring your arms to the side of your body with your palms facing up or extend them outward with your hands facing down.
5. Shut your eyes, let your shoulders drop, and take a deep breath.
6. Hold the position for a few minutes.
7. Return to a seated position by softly pushing yourself while releasing.

## **3. SUKHASANA**

The "easy pose", or "Sukhasana", is a fundamental sitting pose used in yoga and meditation. The terms "sukha" (which means ease or comfort) and "asana" (which means position or posture) are the source of the phrase. People with high blood pressure participated in a study where the affects of sukhhasana were seen. According to this study, a sukhhasana combined with a few easy breathing techniques may help reduce blood pressure.

1. Begin by sitting on a yoga mat, which elevates your hips and allows you to sit comfortably.
2. Cross your legs at the shins, widen your knees, and place your feet beneath the opposing knee.
3. Sit upright and extend your back.let your shoulders relax.
4. Make a had gesture, such as the Gyan Mudra, with your thumb and index finger touching.
5. Shut your eyes gently and relax.
6. Breath deeply and steadily while concentrating on your breathing and letting your thoughts drift.

## **4. TADASANA**

Tadasana is a basic yoga stance that emphasises standing tall and strong . It is sometimes referred to as mountain pose. The Sanskrit terms "Tada" meaning mountain and "asana" meaning stance or posture, are the roots of the word "Tadasana". Both novice and experienced yogis can perform this pose. Those suffering from heart conditions can benefit greatly from this stance. Tadasana facilitates deep breathing by opening up the lungs. It facilitates



stress management. Tadasana enhances attention and aids in mental relaxation. Additionally, it enhances blood circulation, which is beneficial to the health of our bodies.

1. Maintain a straight posture by placing your hands on your sides and feet together.
2. Gently join your hands, lift them above your head, and attempt to extend your body as much as you can by elevating your heels.
3. Aim to maintain the posture for a few minutes.
4. Let out a breath and return to the staring position.
5. Carry out the position 3-5 times.

### **5.DHANURASANA**

The bow posture, also known as Dhanurasana, is a full yoga asana because it may strengthen and tone the abdominal muscles and back. Stretching the front portion of the body, which includes the groins, hip flexors, ankles, thighs, throat, and abdomen, and chest is also beneficial. According to a research involving diabetics, holding Dhanurasana pose for 3-7 minutes may help in controlling blood sugar levels.

1. Place your hands and legs together while you lie on your abdomen.
2. Gently bring your legs up to your hips by folding them at the knee joint.
3. Make an effort to hold both sides of the ankles
4. Take a calm breathe now, elevate your upper body, and try to bring your legs back by keeping your hands straight.
5. Maintain the posture for about 10-20 seconds
6. Exhale slowly and return to the beginning position.

### **6. PASCHIMOTTANASANA**

The yoga pose known as Paschimottanasana or seated forward bend, stretches the entire back body, from the calves to the spine. It is well renowned for its relaxing properties as well as digestive system advantages. This pose may assist in lowering our body's cholesterol levels. This posture stimulates the pancreas, an organ in the abdomen that produces insulin, and help control blood sugar levels, may help lower stress levels in the body.

1. Take a seat on the floor and spread your legs wide. Maintain a straight spine and point your toes in your direction.
2. Exhale deeply and lift your arms above your head.
3. Lean forward and bend at the hips as you release the breath. Please extend your hands to your feet. Strive to use your feet to hold your hands.
4. Extend your spine as you inhale. Fold more deeply and tuck your chest in toward your thighs as you release the breath. Maintain the position for a duration of 30-60 seconds.
5. Take a deep breath and raise your torso back up, putting your arms overhead as you sit back down. After exhaling, bring your arms down to your sides.

### **7. SARVANGASANA:**

The shoulder stand, or sarvangasana, is a basic yoga pose with many physical and physiological advantages. The shoulders are the main limb in the asana since entire body rests on them. Pressure is applied to the neck as well, which activates the thyroid gland. The thyroid gland aids in increasing metabolism, which in turn aids in weight loss and the fight against excessive cholesterol.

1. Place your arms at your sides and lie flat on your back.
2. Raise your legs gradually until they are 90 degrees from your body.
3. As you raise your hips and lower back off the ground, support them with your hands.
4. Align your torso, shoulders, and knees in a straight line by straightening your body.

5. Hold the position for a few breaths.
6. Return your body to the starting posture slowly.

## CONCLUSION

Yoga, with its combination of physical postures, breathing exercises and mediation, offers significant benefits for people with cardiovascular disease (CVD). Regular practice of yoga manages stress levels, hypertension, cholesterol levels, which are critical for health of the heart. Practicing yoga regularly can help in reducing the risk of heart disease, by lowering cholesterol levels and improving overall stress management. The main risk of cardiovascular disease is physical inactivity. Yoga's emphasis on mindfulness and relaxation can reduce symptoms of depression and anxiety, which are often linked to poor cardiovascular health. Yoga mudras are essential for controlling diabetes, high blood pressure, and cholesterol. When combined with meditation and breathing techniques, these hand motions can assist balance the body's energy flow and encourage calm. Regular application of certain mudras, can boost the body's inherent healing abilities, promote better circulation, and lessen stress-all of which are important for regulating cholesterol, blood pressure, and blood sugar. Including yoga mudras in a holistic health regimen can help manage these chronic diseases more effectively, promoting general health and a healthier way of life.

## REFERENCES

1. Yatendra Kumar Sharma, Dr. Sushil Sharma, Dr. Ekta Sharma. Scientific benefits of yoga: A Review. International Journal of Multidisciplinary. 2018; 3: 144-148.
10. Patel S. and Kumar, K. A study on the effect of Yoga and diet-control on Body mass index and cholesterol level of the Obese Youth. International Journal of Science and Consciousness. 2016; 2: 13-17.
2. Dr. A Maria Therese, Praveena, R. and Dr. Murali, R. Yoga: Effective therapy to reduce blood pressure among hypertensive clients. International Journal of Development Research. 2016; 6: 7761-7765.
3. Sunitha S, Chandra Prakash Sharma. Mudra Therapy and Its Classification. International Journal of Health Sciences and Research. 2021; 11: 118-126.
4. Pratheek Sharma, Harshith Beria, Praveen Kumar Guptha, Sumathra Manokaran, A.H. Manjunatha Reddy. Prevalence of Hypertension and Its Associated Risk Factors. Journal of Pharmaceutical Sciences and Research. 2019; 11: 2161-2167. ISSN: 0975-1459.
5. Debbie L Cohen. Yoga and Hypertension. J Yoga Phys Ther; 2013.
6. Nisha Shantakumari, Shiefa Sequeira, and Rasha El deeb. Effects of a Yoga Intervention on Lipid Profiles of Diabetes Patients with dyslipidemia. Indian Heart J. Mar 2013; 65: 127-131.
7. Nithin Chaudary and Nidhi Tyagi. Diabetes mellitus: An Overview. International Journal of Research and Development in Pharmacy and Life Science. 2018; 7: 3030-3033.
8. Isha S, Deshpande S, Ganpat TS, Nagendra HR. Yoga module for heart disease. J Mahatma Gandhi Inst Med Sci; 2015.
9. Mahmood L. Nonpharmacological cholesterol-lowering approach: Managing cholesterol naturally. CHRISMED J Health RES 2015; 2: 193-8.