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## ROLE OF *YOGA* IN CARDIOVASCULAR DISEASES: A REVIEW

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### Abstract

*Yoga* is an ancient technique which offers several health benefits and helps to maintain normal health status. *Yoga* establishes harmony between body & mind; connects with nature, imparts happiness and peace in life. *Yoga* practices encompass several postures (*Asanas*) which promotes health and spiritual well being. *Yoga Asanas*, *Pranayama* and meditation, etc. are some techniques which help to detoxify body, enhance endurance, improve immune functions, relieve stress, anxiety, menopausal symptoms, back pain, migraine and cardiovascular diseases, etc. *Yoga* provides preventive and therapeutic measures towards the management of cardiovascular diseases. *Yoga Asana*, *Pranayama* and *Dhyana*, etc. imparts beneficial effects on cardiovascular system thus maintain normal rhythm of heart and prevent consequences of cardiovascular diseases. *Yoga* practices relieves health problems related to the improper functioning of heart i.e.; myocardial ischemia, arrhythmia, coronary heart disease and hypertension, etc. *Yoga* prevents diabetes mellitus; stress and anxiety therefore delay cardiovascular consequences of these diseases. This article emphasizes role of *Yoga* in cardiovascular diseases and related complications.

**Key-Words:** *Ayurveda, Yoga, Asana, Pranayama*

## Introduction

Heart is an important organ in human body that pumps blood throughout the vital organs of body. Heart functioning is very important for restoring normal physiology of human body. The disorders related to the heart affects quality of life and heart diseases are considered common causes of mortality in elderly population. Stress and diabetes mellitus are considered important causative factors of heart disease. The current scenario of life style also imparts risk of cardiovascular events. The classical and modern medical science emphasizes many approaches for treating heart diseases. *Yoga* is one such approach which relaxes mind and body thus acts as preventative as well as therapeutic measures to cure many diseases including cardiovascular problems. The major etiological factor of heart disease is stress and *Yoga* revives stress therefore prevent pathogenesis of heart diseases. *Yoga* prevents pathological progression of diabetes thus resist diabetes induce heart problems [1-4].

*Pathanjali* described eight components of *Yoga* i.e.; *Yama*, *Niyama*, *Asana*, *Pranayama*, *Pratyahara*, *Dharana*, *Dhyana* and *Samadhi*. The specific importance of these components of *Yoga* is as follows:

- *Yama* indicates moral behavior which is important for *Yogic* person.
- *Niyama* means healthy habits that always contributed towards the health and well being.
- *Asana* means specific *Yoga* postures which offer particular health benefits.
- *Pranayama* indicates breathing exercises that helps to improve respiration and lung's capacity.
- *Pratyahara* means sensory-motor activity withdrawal, this improves mortar coordination.
- *Dharana* indicates contents of the mind.
- *Dhyana* indicates meditation responsible for mental peace and relaxation.
- *Samadhi* denotes higher state of consciousness where person can relate himself / herself spiritually.

The basic components of *Yoga* as per modern science depicted in **Figure 1**, these components are inter-related and helps to establish coordination between body and mind. These *Yoga* practices improve strength, flexibility and relax body physically as well as mentally [3-6].



**Figure 1: Major components of *Yoga* Practices**

### *Yoga* for Heart Problems

*Yoga* relax body and mind, thus reduces stress and prevent excessive release of cortisol and adrenaline, these things are responsible for narrowing arteries and increasing blood pressure. In this way *Yoga* prevent artery to become narrow and resist rise in blood pressure by preventing release of cortisol and adrenaline.

The literature study evident that depression and anxiety can initiates cardiac event, *Yoga* especially meditation and *Pranayama* relives stress thereby suppress cardiac consequences of depression and anxiety. *Yoga* relaxes whole body therefore relieve stress induced blood pressure and prevent cardiac events associated with high blood pressure.

*Yoga* reduces frequency of Atrial fibrillation episodes, improves heart capacity, reduces inflammation, helps to quit smoking and drinking therefore reduces risk factors of heart disease associated with smoking and drinking. *Yoga* improves flexibility and strength

of heart muscle therefore boost cardiac output in patient suffering from low level of cardiac activity [7-9].

### **Importance of *Yoga* poses in cardiac functioning:**

- ✓ Standing pose helps to strengthen the cardiac reserve.
- ✓ Forward bends pose imparts soothing effects and control heart rate.
- ✓ Inverted pose boost contractility of heart muscle thus improves heart functioning.
- ✓ Back bending pose helps in lengthening cardiac muscle and septum.
- ✓ Twisting pose helps to stretches wall of the heart thus improves stamina of heart.

### **Role of *Pranayama*:**

*Pranayama* improves capacity of lungs and purify *Prana* which is a vital energy that nourish whole body. This practice prevents blockage of heart and detoxify body *via* process of controlled respiration. *Pranayama* effectively supply purify *Prana* through *Nadis* to the vital organs of body thus maintain functioning of all organs and reduces cardiac load. *Pranayama* improves rhythm of the heart thus prevent consequences of disease like arrhythmia and reduces risk of coronary blockage. *Pranayama* improves contraction of heart thereby boost cardiac pumping and maintain blood supply to whole body.

### **Mechanism of Physiological Effects of *Yoga* in Heart Diseases:**

Neurohumoral effects of *Yoga* decreases serum cortisol, aldosterone and catecholamine levels thus prevent chances of heart problems associated with increased level of these chemicals inside the body. *Yoga* and meditation increases melatonin and  $\gamma$ -amino butyric acid responsible for mental and physical relaxation therefore imparts soothing effects and reduces stress induced cardiac events. *Yoga* practice decrease level of stress marker i.e.; 8-hydroxydeoxyguanosine and increases endorphin levels thus mitigates effects of stress and related cardiovascular events.

Regular practice of *Yoga* reduces oxidative stress and prevents radical induced oxidative damage of tissue and muscles. *Yoga* practice resist release of inflammatory

mediator thereby reduces chances of inflammatory patho-physiology of coronary artery disease and other vascular diseases.

*Yoga* boosts up endothelial functioning and improves bioavailability of nitric oxide responsible for vasodilatation and enhanced cardiac efficiency. The optimum level of nitric oxide prevents chances of coronary obstruction and maintains proper blood supply to the heart.

*Yoga* offers insulin-sensitizing effects by decreasing leptin resistance thus reduces chances of diabetes mellitus which is one of the causative factor of heart diseases.

The abnormalities in the neurohormonal system and heightened neuronal adrenergic activity can leads conditions like heart failure, hypertension, acute myocardial ischemia, post-operative arrhythmias and coronary artery vasospasm, etc. *Yoga* control neurohormonal system and neuronal adrenergic activities thus prevent chances of these diseases related to the heart.

*Yoga* controls circulatory and metabolic functioning of body, the effects on circulatory system helps to maintain normal flow of blood and retain blood supply to the heart and from the heart therefore reduces risk of heart failure and ischemia. The *Yoga* regularizes metabolic activities thus resist pathogenesis of metabolic disorders such as; obesity and diabetes which are considered as prime cause of heart problems.

Meditation restores cardiac output, maintains cerebral blood flow and alters neurohormonal system therefore improves electrophysiological activity of the brain which is important for retaining cardiac rhythm.

Meditation induces relaxation and imparts feeling of well being; satisfaction and restore level of enthusiasm, these all positive effects of *Yoga* and meditation significantly improves cardiac functioning and reverse effects of neural cardiovascular events.

Physiologically *Yoga* decreases catecholamine release which results reduction in blood pressure and heart rate. Parasympathetic nervous system gets activated during meditation and power *Yoga* boost sympathetic system thus *Yoga* & meditation helps to balance sympathetic-parasympathetic axis which play important role in cardio-pulmonary activities [2-5].

### **Important *Yoga* Poses for Heart:**

- *Tadasana*
- *Vrikshasana*
- *Bhujangasana*
- *Veerabhadrasana*
- *Ardha Matsyendrasana*

### **Conclusion**

*Yoga* improves overall health, reduces stress, control hypertension, prevent coronary atherosclerosis, resist chances of heart failure and ischemia, etc. Regular practice of *Yoga* accompanied with meditation helps to maintain cardiac hemodynamics, blood lipids and functioning of vessels, etc. thus prevent pathological triggering of heart diseases. *Yoga* suppresses complication of coronary atherosclerosis since this ancient practice boost circulatory functioning and prevent thickening of coronary vessels by burning excess fat. *Yoga* significantly reduces pathological progression of diabetes, obesity and depression/stress, etc. which are considered as major causes of heart problems.

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