

**ROLE OF YOGA IN PRIMARY AND SECONDARY PREVENTION OF  
CARDIOVASCULAR DISEASES: A NARRATIVE REVIEW**

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**ABSTRACT**

Yoga and Modern medicine are not mutually exclusive to each other. While modern medicine has a definitive role in terms of its treatment and management of acute illnesses and emergency conditions, Yoga offers services in terms of preventive, promotive and rehabilitative methods in addition to many management methods to tackle modern illnesses. Several studies have shown that yoga and/or meditation can control risk factors for cardiovascular disease like hypertension, type II diabetes and insulin resistance, obesity, lipid profile, psychosocial stress and smoking. Some randomized studies suggest that yoga/meditation could retard or even regress early and advanced coronary atherosclerosis. However, there are many limitations with reported studies and large trials with improved and uniform methodologies and long term outcomes are required to confirm these findings. In view of the existing evidence, it appears appropriate to incorporate yoga/meditation for primary and secondary prevention of cardiovascular diseases.

**KEYWORDS:** Yoga, Modern medicine, Hypertension, Diabetes, Atherosclerosis, Metabolic Syndrome.**1. INTRODUCTION**

The word “Yoga” is derived from Sanskrit word “Yuj” meaning to join or unite.<sup>[1]</sup> It is defined in the Oxford Handbook of Complementary Medicine as an “ancient Indian practice involving postural exercises, breathing control and meditation”.<sup>[2]</sup> Yoga has its origin in India around 4000 years ago but it has now become increasingly popular in the western countries.<sup>[3-7]</sup> In common parlance, yoga has two broad types: pranayama and asanas. Pranayama is the practice of controlling the breath, which is the source of our prana, or vital life force. Asana is referred to pose or posture of the body to help master the body and enhance the body's functions. Patanjali in ashtanga yoga defines asana as steady and relaxed pose.<sup>[8]</sup> Recognizing its importance, the United Nations has declared June 21 as the “International Day of Yoga”.<sup>[9]</sup> It is based on five basic principles: proper relaxation, proper exercise, proper breathing, proper diet, positive thinking and meditation.<sup>[10]</sup> It is also described as a “lifestyle poly pill” due to its impact on one's lifestyle.<sup>[11]</sup>

As yoga has become increasingly popular as a form of exercise, it may be an important intervention for the primary and secondary prevention of CVDs, since high levels of physical activity play a major role in preventing obesity and CVDs.<sup>[11]</sup> This paper reviews the existing evidence related to the effects of yoga on various conditions related to cardiovascular health such as

hypertension, diabetes, metabolic syndrome, cardiac arrhythmia, obesity, oxidative stress, atherosclerosis, psychological stress etc.

**2.1 Hypertension**

Several RCTs and meta-analysis have demonstrated long term modest effect in reducing blood pressure.<sup>[12-14]</sup> In earlier studies, Shavasana (Corpse posture) and transcendental meditation (TM) were reported to lower both systolic and diastolic blood pressure significantly.<sup>[13,16]</sup> Recently, randomized controlled trials (RCTs) and meta-analysis have also reported the immediate and long-term beneficial effects of yoga among pre-hypertensive and mildly hypertensive patients.<sup>[17-23]</sup> Based on the available evidences, American Heart Association(AHA) has also suggested that it is reasonable for all individuals with blood pressure >120/80 mmHg to consider trial of alternative approaches such as yoga as an adjunct method to lower blood pressure when clinically appropriate.<sup>[24]</sup>

**2.2 Diabetes Mellitus**

Several studies and meta-analysis have concluded that yoga can be considered as add-on intervention for management of diabetes due to its impact on glycaemic control, lipid levels, blood pressure, psychological well-being and body weight.<sup>[25-30]</sup> However Innes et al. has concluded that due to the methodological limitations of existing studies, better evidence is required to confirm

the potential benefits of yoga programs among diabetic patients.<sup>[31]</sup>

### 2.3 Metabolic syndrome

Regular practice of yoga has been shown to improve several components of metabolic syndrome such as insulin resistance, body mass index, waist circumference, dyslipidaemia, blood pressure, and HbA1C.<sup>[32-37]</sup>

### 2.3 Inflammation and Oxidative Stress

Yoga for 12–16 weeks results in a significant decline in fibrinogen and increase in fibrinolytic activity.<sup>[37,38]</sup> It has also shown to reduce oxidative stress.<sup>[39-41]</sup> Sarvottam et al. demonstrated a significant reduction in plasma IL-6 and an increase in plasma adiponectin following a 10-day yoga intervention.<sup>[42]</sup>

### 2.4 Atherosclerosis

Both early and advanced atherosclerosis measured by carotid intima-media thickness, a measure of peripheral atherosclerosis and surrogate measure of coronary atherosclerosis, has been shown to be significantly reduced by regular practice of yoga along with other life style modifications.<sup>[43-44]</sup>

### 2.5 Cardiac arrhythmias

Yoga is also shown to be an adjunctive approach for the management of cardiac arrhythmias such as atrial fibrillation and premature ventricular ectopics.<sup>[45-47]</sup>

### 2.6 Obesity

Yoga has been found to be especially helpful in the management of obesity and improvement in serum lipid profile in patients with known coronary heart disease, diabetes as well as in healthy subjects.<sup>[29,30,42,48-50]</sup>

### 2.7 Psychological problems

Yoga has a lot to offer in terms of psychosomatic disorders and stress related disorders such as diabetes, asthma, irritable bowel syndrome, hypertension and other functional disorders. Yoga impacts negative affecting states such as anxiety, depression and stress, improves cognitive function and adherence to healthy lifestyle behaviours.<sup>[51]</sup> Few other studies also suggest that stress can be reduced significantly with regular practice of yoga and meditation.<sup>[52-54]</sup> Thus Yoga may be incorporated into structured cardiac rehabilitation programs as an adjunct to improve the psychological symptoms associated with cardiovascular events in addition to improving patients' cognitive and cardiovascular functions.

### 2.8 Allopathic Medicine and Yoga

Yoga and modern medicine are not mutually exclusive, but complementary systems. Their combination can provide us with a holistic health care that will take care of the mental health including psychosomatic health of the population.<sup>[55]</sup> While modern medicine has a lot to offer mankind in its treatment and management of acute illnesses and emergency conditions, Yoga offers services

in terms of preventive, promotive and rehabilitative methods in addition to many management methods to tackle modern lifestyle illnesses.<sup>[56]</sup> Modern medicine is materialistic and concerned primarily with our body and drugs are the cornerstone of management in it. In contrast, yoga is a holistic system for the integrated development of our physical, mental as well as spiritual aspects. Modern medicine has also recognized the fact that relaxation of mind is essential for a healthy body and mind. Practice of yoga disciplines, strengthens, quietens and relaxes our body and mind.<sup>[57]</sup>

## 3. CONCLUSION

Globally, there is now greater awareness about complementary and alternative health systems such as Yoga and their practice too is increasing globally. Yoga is potentially beneficial in many health related conditions including cardiovascular diseases. However, large multicentre well-planned randomized trials are needed to confirm the beneficial impact of yoga on cardiovascular health. Based on existing scientific literature, yoga is found to be a cost-effective and beneficial supportive therapy without any reported side effects. In the current era of non-communicable and lifestyle disorders, with greater political support for alternative and complementary therapies and recognition by international health agencies like World Health Organization, it appears appropriate to incorporate yoga in the public health systems and integrate with modern medicine for primary, secondary and even tertiary prevention of cardiovascular diseases.

### Conflict of interest

The authors declare that there are no conflicts of interest.

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