



Health Impacts of Yoga and Pranayama: A State-of-the-Art Review

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Abstract

[Go to:](#) ☒ [Go to:](#) ☒

Thousands of years ago yoga originated in India, and in present day and age, an alarming awareness was observed in health and natural remedies among people by yoga and pranayama which has been proven an effective method for improving health in addition to prevention and management of diseases. With increasing scientific research in yoga, its therapeutic aspects are also being explored. Yoga is reported to reduce stress and anxiety, improves autonomic functions by triggering neurohormonal mechanisms by the suppression of sympathetic activity, and even, now-a-days, several reports suggested yoga is beneficial for physical health of cancer patients. Such global recognition of yoga also testifies to India's growing cultural influence.

Keywords: Anxiety, cancer, hypertension, pranayama, stress, yoga

INTRODUCTION

[Go to:](#) ☒ [Go to:](#) ☒

All the orthodox systems of Indian Philosophy have one goal in view, the liberation of the soul through perfection. The method is by Yoga.

- Swami Vivekananda.[1]

Yoga is an ancient discipline designed to bring balance and health to the physical, mental, emotional, and spiritual dimensions of the individual. It is long popular practice in India that has become increasingly more common in Western society. “Yoga” means union of our individual consciousness with the Universal Divine Consciousness in a super-conscious state known as *Samadhi*.^[1,2] The first book of humankind, *Rigveda*, mentions about yogic meditation by the wise, while *Yajurveda* exhorts us to practice yoga for enhancing mental health, physical strength, and prosperity. Upanishads are replete with yogic concepts. In addition, yoga-related terms like *pranayama* and *samadhi* occur repeatedly in *Bhagavad-Gita*. Ancient Indian *rishis* understood that performing *Raja-yoga* (procedure of concentration to liberate soul or *atma* from the bondage of *maya* into *paramatma*) always need a

healthy body – “*Sharirmadyam, khalu dharma sadhanam.*” So they developed “*Hatha yoga*,” which includes *asana, mudra, pranayama*, etc. “*Gharanda samhita*” said there were 84 lakh asanas from which 16 000 were best and only about 300 are popular. “*Hathayoga-pradipika*” again differentiates all asanas into four basic classes – *sidhyasana, padmasana, sinhasana*, and *vadrasana*. Besides, asana may be of two types – *dhyanasana* (a posture keeps spinal cord free and center of gravity shifts to other part like ribs) and *shasthyasana* (to get healthy body).

YOGA: THE HISTORIC OUTLOOK

Go to: ☒ Go to: ☒

In Indian religions, yoga (from the Sanskrit word meaning “yoking” or “joining”) is “the means or techniques for transforming consciousness and attaining liberation (*moksha*) from karma[3] and rebirth (*samsara*).”[4] It is “a practice by means of which a spiritual seeker strives, (1) to control nature to make the soul fit for union with the Oversoul (the true Self or *Atman-Brahman* or ”God”), and (2) to attain union with God and thus the liberation of the soul from the rounds of rebirth and death.”[5] Yoga is popularly understood to be a program of physical exercises (*asana*) and breathing exercises (*pranayama*).

Yoga began in India as early as 3000 B.C. [Table 1], according to archeological evidence.[6] It emerged in the later hymns of the ancient Hindu texts (Upanishads or Vedanta) (600–500 B.C.). It is mentioned in the classic Indian poem *Mahabharata* (400 B.C. - 400 A.D.) and discussed in the most famous part of that poem, the *Bhagavad Gita*. Yoga was systemized by Patanjali in the *Yoga Sutras* (300–200 B.C.). Patanjali defined the purpose of yoga as knowledge of the true “Self” (God) and outlined eight steps for direct experience of “Self.”

Table 1	
1500-1000 BC	Early Vedic Period
1000-500 BC	Upanishads
500-200 BC	Classical Period
200 BC - 500 AD	Medieval Period
500-1500 AD	Early Modern Period
1500-1800 AD	Classical Period
1800-1900 AD	Modern Period
1900-2000 AD	Contemporary Period

Table 1
The history of yoga and world religions

Yoga, as practiced and taught in India, entered the Western world in the 19th century with the translation of basic yogic texts. Following attendance at the World Parliament of Religions in Chicago in 1893, Swami Vivekananda introduced yoga to the USA. He lectured widely on the practice, founded the Vedanta Society, and authored many books.[7] Then yoga was promulgated in the West by the numerous teachers who studied in eastern countries (principally India), many of whom immigrated to America in the early 20th century. In the 20th century numerous versions of yoga were developed and taught. Numerous books aided the growth of a yoga practicing community in the USA. In the 1950s, “an almost faddish burst of interest in hatha yoga” occurred in the USA. During the decade, yoga spread through health and beauty salons.[8] Indian teachers immigrated to the USA during this period, founding centers and publishing books that helped to popularize the movement. In the 1950s and 1960s several important books were published on yogic techniques and then in 1970s yoga rapidly expanded, with the founding of numerous yoga centers and professional associations. Yoga became especially popular among adherents of New Age ideas.[9]

ASTHANGA YOGA

Go to: ☒ Go to: ☒

Yoga (*asthanga*) is often depicted metaphorically as a tree and comprises eight aspects, or “limbs” [Patanjali codified the ancient marvel of yoga as *asthanga* which is one of the six schools of Indian philosophy and is known as *Yoga Darshan*[2]]: *yama* (universal ethics), *niyama* (individual ethics),

asana (physical postures), *pranayama* (breath control), *pratyahara* (control of the senses), *dharana* (concentration), *dyana* (meditation), and *samadhi* (bliss).[10] Each limb is connected with the whole, in the same way that bodily limbs are all connected [Table 2]. If someone pulls the body by the leg, the rest of the body will automatically follow. In the same way, when one pulls one of the eight limbs of yoga, the others will naturally come. They are not stages to be achieved in succession.[10]

Table 2

Yama	Non-violence, truthfulness, non-stealing, non-attachment, non-jealousy, non-greed
Niyama	Cleanliness, contentment, devotion, self-discipline, meditation
Asana	Postures
Pranayama	Breath control
Pratyahara	Withdrawal of the senses
Dharana	Concentration
Dhyana	Meditation
Samadhi	Bliss

Table 2
Astanga yoga

YOGA AND PRANAYAMA: BENEFICIAL HEALTH IMPACTS

Go to: ☒ Go to: ☒

Many people in the USA today claim to practice yoga for its health benefits without consciously adopting Hindu religious perspectives which underlies the practice and usually become apparent in more advanced stages of instruction. Elementary courses of *hatha yoga* focus on physical exercises consisting of various postures and breathing techniques. A growing body of research evidence supports the belief that certain yoga techniques may improve physical and mental health through down-regulation of the hypothalamo pituitary adrenal (HPA) axis and the sympathetic nervous system.

The stress and stress-induced disorders like hypertension and angina are fast growing epidemics and bane of “modern” society. The holistic science of yoga is the best method for prevention as well as management of stress and stress-induced disorders. Numerous studies have shown yoga to have an immediate down-regulating effect on both the HPA axis responses to stress. Effectiveness of yoga against stress management is well established.[14] It was also found that brief yoga-based relaxation training normalizes the function of the autonomic nervous system by deviating both sympathetic and parasympathetic indices toward more “normal” middle region of the reference values.[15] Studies show that yoga decreases levels of salivary cortisol,[16,17] blood glucose,[18,19] as well as plasma rennin levels, and 24-h urine nor-epinephrine and epinephrine levels.[20] Yoga significantly decreases heart rate and systolic and diastolic blood pressures.[20–22] These studies suggest that yoga has an immediate quieting effect on the HPA axis response to stress. While the precise mechanism of action has not been determined, it has been hypothesized that some yoga exercises cause a shift toward parasympathetic nervous system dominance, possibly via direct vagal stimulation.[23] Shapiro *et al.* [24] noted significant reductions in low-frequency heart rate variability – a sign of sympathetic nervous system activation – in depressed patients following an 8-week yoga intervention. Regardless of the pathophysiologic pathway, yoga has been shown to have immediate psychological effects: decreasing anxiety[16,17,25,26] and increasing feelings of emotional, social, and spiritual well-being.[27] Several literature reviews have been conducted that examined the impact of yoga on specific health conditions including cardiovascular disease[28] metabolic syndrome,[23] diabetes,[29] cancer,[30] and anxiety. [14] Galantino *et al.*[31] published a systematic review of the effects of yoga on children. These reviews have contributed to the large body of research evidence attesting to the positive health benefits of yoga. The purpose of this article is to present a comprehensive review of the literature regarding the impact of yoga on a variety of health outcomes and conditions.

Hypertension

It is well known that many antihypertensive agents have been associated with numerous undesirable side effects. In addition to medication, moderately intense aerobic exercise is well known to lower

blood pressure. Interestingly, it has been very convincingly demonstrated in a randomized controlled study that even a short period of regular yogic practice at 1 h/day is as effective as medical therapy in controlling blood pressure in hypertensive subjects.[32] Yoga, together with relaxation, biofeedback, transcendental meditation, and psychotherapy, has been found to have a convincing antihypertensive effect.[33] The mechanism of yoga-induced blood pressure reduction may be attributed to its beneficial effects on the autonomic neurological function [Figure 1]. Impaired baroreflex sensitivity has been increasingly postulated to be one of the major causative factors of essential hypertension.[20] The practice of yogic postures has been shown to restore baroreflex sensitivity. Yogic asanas that are equivalent to head-up or head-down tilt were discovered to be particularly beneficial in this regard. Tests proved a progressive attenuation of sympatho-adrenal and renin-angiotensin activity with yogic practice. Yogic practice, through the restoration of baroreceptor sensitivity, caused a significant reduction in the blood pressure of patients who participated in yoga exercise.[20,34] Yoga has proven efficacy in managing secondary cardiac complications due to chronic hypertension. Left ventricular hypertrophy secondary to chronic hypertension is a harbinger of many chronic cardiac complications, such as myocardial ischemia, congestive cardiac failure, and impairment of diastolic function. Cardiovascular response to head-down-body-up postural exercise (*Sarvangasana*) has been shown to be particularly beneficial in preventing and treating hypertension-associated left ventricular hypertrophy and diastolic dysfunction. In one study, the practice of sarvangasana for 2 weeks caused resting heart rate and left ventricular end diastolic volume to reduce significantly. In addition, there was mild regression of left ventricular mass as recorded in echocardiography.[35]

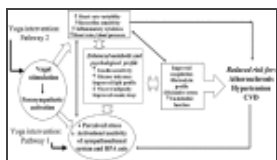


Figure 1

Hypothesized pathways by which yoga intervention may enhance cardiovascular risk profile

Coronary atherosclerosis

In a randomized controlled study, patients with angiographically proven coronary artery disease who practiced yoga exercise for a period of 1 year showed a decrease in the number of anginal episodes per week, improved exercise capacity and decrease in body weight. Serum cholesterol levels (total cholesterol, LDL cholesterol and triglyceride levels) also showed greater reductions as compared with control groups. It is evident in recent studies that yoga can control LDL cholesterol[36] and hypertension.[33] Revascularization procedures were required less frequently in the yoga group. Follow-up angiography at 1 year showed that significantly more lesions regressed in the yoga group compared with the control group. Thus, yoga exercise increases regression and retards progression of atherosclerosis in patients with severe coronary artery disease.[37] However, the mechanism of this effect of yoga on the atherosclerotic plaque remains to be studied. Lipid lowering and plaque-stabilizing effects of yoga exercise seem to be similar to that of statin drugs (HMG CoA reductase inhibitors). It is important to carry out biochemical and immunological studies among practitioners of yoga to see whether it has similar mechanisms of action to statins that have favorable effects on atherosclerosis and vascular properties other than those attributed to cholesterol lowering. Statin activity is associated with the increased production of nitric oxide in the vascular endothelium, which has local vasodilator properties in addition to anti-atherogenic, antiproliferative, and leukocyte adhesion-inhibiting effects. It is also known to enhance endothelium-dependent relaxation, inhibit platelet function, and inhibit the activity of endothelin-1, a potent vasoconstrictor and mitogen. Statins also reduce inflammatory cytokines.[38] There may be some parallels between the pharmaco-

physiological effects of statin therapy and the changes brought about by the practice of yoga in the internal milieu. This change in the internal milieu triggered by the practice of yoga may well be mediated by a neurohormonal mechanism.

Serum lipid profile and body weight

Obesity and increased body weight are strong risk factors for ischemic heart disease and hypertension. Yoga has been found to be particularly helpful in the management of obesity. A randomized controlled study revealed that practicing yoga for a year helped significant improvements in the ideal body weight and body density.[39] The regular practice of yoga has shown to improve the serum lipid profile in the patients with known ischemic heart disease as well as in healthy subjects.[36] The mechanism of the beneficial effect of yoga in the management of hyperlipidemia and obesity cannot be explained by simple excess caloric expenditure since the practice of asanas does not bring about increased, rapid large muscle activity and energy generation. However, the efficacy of yoga in the management of hyperlipidemia and obesity is of significance.

Cardiorespiratory efficiency and physical fitness

Madanmohan *et al.*[40] have reported that yoga training of 6 weeks duration attenuates the sweating response to step test and produces a marked increase in respiratory pressures and endurance in 40 mmHg test in both male and female subjects. In another study, they reported that 12 weeks of yoga practice results in a significant increase in maximum expiratory pressure, maximum inspiratory pressure, breath holding time after expiration, breath holding time after inspiration, and hand grip strength.[41] Joshi *et al.*[42] have also demonstrated that 6 weeks of pranayama breathing course resulted in improved ventilatory functions in the form of lowered respiratory rate, and increases in the forced vital capacity, forced expiratory volume at the end of first second, maximum voluntary ventilation, peak expiratory flow rate, and prolongation of breath holding time. Similar beneficial effects were observed by Makwana *et al.*[43] after 10 weeks of yoga practice. An increase in inspiratory and expiratory pressures suggests that yoga training improves the strength of expiratory and as well as inspiratory muscles. Respiratory muscles are like skeletal muscles. Yogic techniques involve isometric contraction which is known to increase skeletal muscle strength. Breath holding time depends on initial lung volume. Greater lung volume decreases the frequency and amplitude of involuntary contractions of respiratory muscles, thereby lessening the discomfort of breath holding. During yoga practice, one consistently and consciously over-rides the stimuli to respiratory centers, thus acquiring control over the respiration. This, along with improved cardio-respiratory performance, may explain the prolongation of breath holding time in yoga-trained subjects.

Yogic techniques are known to improve one's overall performance and work capacity.[44] Physical fitness not only refers cardiorespiratory fitness and muscular strength, but also coordination and flexibility i.e. the full range of physical qualities which can be understood as an integrated measurement of all functions and structures involved in the performance.[45–48] In adults, low physical fitness (mainly cardiorespiratory fitness) seems to be a stronger predictor of both cardiovascular and all-cause mortality than any other well-established risk factors.[49] Sharma *et al.* [50] conducted a prospective controlled study to explore the short-term impact of a comprehensive but brief lifestyle intervention based on yoga, on subjective well-being in normal and diseased subjects. Normal healthy individuals and subjects having hypertension, coronary artery disease, diabetes mellitus, or a variety of other illnesses were included in the study. They reported significant improvement in the subjective well-being scores of 77 subjects within a period of 10 days as compared

to controls. Therefore, even a brief intervention can make an appreciable contribution to primary prevention as well as management of lifestyle diseases. Oken *et al.*[51] found that hatha yoga practices for 6 months by seniors (65–85 years) resulted in significant improvement in quality of life and physical measures compared to walking exercise and wait-list control groups.

Diabetes mellitus

Yoga has been shown to be a simple and economical therapeutic modality that may be considered as a beneficial adjuvant for non insulin dependant diabetes mellitus (NIDDM) patients. In a group of diabetics who practiced yoga regularly, there was a significant reduction in the frequency of hyperglycemia and area index total under the oral glucose tolerance test curve. This experimental study showed that there was also a decrease in the need for oral hypoglycemic to maintain adequate blood sugar control in the population that practiced yoga.[52] Chaya *et al.*[53] reported a significant decrease in fasting plasma insulin in the yoga practitioners. They also found that long-term yoga practice is associated with increased insulin sensitivity and attenuation of the negative relationship between body weight or waist circumference and insulin sensitivity. Manjunatha *et al.*[54] studied the effect of four sets of asanas in random order for 5 consecutive days and observed that the performance of asanas led to increased sensitivity of B cells of the pancreas to the glucose signal. They proposed that this increased sensitivity is likely to be a sustained change resulting from a progressive long-term effect of asanas. The mechanism of the anti-glycemic activity of yoga exercise has yet to be described. A mechanism of neurohormonal modulation involving insulin and glucagon activity remains a possibility.

Neurohormonal activity

Increased intrinsic neurohormonal activity has been associated with increased predisposition to ischemic heart disease. This may explain how general stress in life contributes to increased risk of myocardial disease. Level of adverse neurohormonal activity can be quantitated by the measurement of specific markers in serum and urine. It has been described that regular practitioners of yoga asanas showed a significant reduction in the markers of intrinsic neurohormonal activity such as urinary excretion of catecholamines, aldosterone, as well as serum testosterone and luteinizing hormone levels. In an experimental study, they also showed an increase in the urinary excretion of cortisol.[20] Yoga-based guided relaxation helped in the reduction of sympathetic activity with a reduction in heart rate, skin conductance, oxygen consumption, and increase in breath volume - the clinical signs of neurohormonal activity, thus facilitating protection against ischemic heart disease and myocardial infarction.[55]

Reproductive functions and pregnancy

Studies have shown that practice of yoga orchestrates fine tuning and modulates neuro-endocrine axis which results in beneficial changes in the practitioners. Schmidt *et al.*[34] found a reduction in urinary excretion of adrenaline, noradrenaline, dopamine, and aldosterone, a decrease in serum testosterone and luteinizing hormone levels and an increase in cortisol excretion, indicating optimal changes in hormones. Kamei *et al.*[56] found changes in brain waves and blood levels of serum cortisol during yoga exercise in 7 yoga instructors and found that alpha waves increased and serum cortisol significantly decreased.

Narendran *et al.*[57] found that yoga practices including physical postures, breathing, and meditation practiced by pregnant women 1 h daily resulted in an increase in birth weight, decrease in preterm

labor, and decrease in IUGR either in isolation or associated with PIH, with no increased complications. Beddoe *et al.* [58] found that women practicing yoga in their second trimester reported significant reductions in physical pain from baseline to post intervention. Women in their third trimester showed greater reductions in perceived stress and trait anxiety. From this, it is clear that yoga can be used to prevent or reduce obstetric complications.

Stress and anxiety

Since the 1970s, meditation and other stress-reduction techniques have been studied as possible treatments for depression and anxiety. One such practice, yoga, has received less attention in the medical literature though it has become increasingly popular in recent decades. Available reviews of a wide range of yoga practices suggest they can reduce the impact of exaggerated stress responses and may be helpful for both anxiety and depression. It mainly acts via down-regulating the HPA axis that trigger as a response to a physical or psychological demand (stressor) [Figure 2], leading to a cascade of physiological, behavioral, and psychological effects, primarily as a result of the release of cortisol and catecholamines (epinephrine and norepinephrine). [59] This response leads to the mobilization of energy needed to combat the stressor through the classic “fight or flight” syndrome. Over time, the constant state of hypervigilance resulting from repeated firing of the HPA axis can lead to deregulation of the system and ultimately diseases such as obesity, diabetes, autoimmune disorders, depression, substance abuse, and cardiovascular disease. [60,61]



Figure 2

The impact of stress on the hypothalamic–pituitary–adrenal (HPA) axis and the sympathetic nervous system. *Yoga has been shown to have significant beneficial effects in these items

In this respect, yoga functions like other self-soothing techniques, such as meditation, relaxation, and exercise. By reducing perceived stress and anxiety, yoga appears to modulate stress response systems. This, in turn decreases physiological arousal e.g., reducing the heart rate, lowering blood pressure, and easing respiration. There is also evidence that yoga practices help increase heart rate variability, an indicator of the body's ability to respond to stress more flexibly. A small but intriguing study further characterizes the effect of yoga on the stress response. In 2008, researchers at the University of Utah showed that among control subjects and yoga practitioners, by functional MRIs, that yoga practitioner had the highest pain tolerance and lowest pain-related brain activity during the MRI. The study underscores the value of techniques, such as yoga, that can help a person regulate their stress and, therefore, pain responses. [62] Tooley *et al.* [63] found significantly higher plasma melatonin levels in experienced meditators in the period immediately following meditation compared with the same period at the same time on a control night. It was concluded that meditation can affect plasma melatonin levels. It remains to be determined whether this is achieved through decreased hepatic metabolism of the hormone or via a direct effect on pineal physiology. Either way, facilitation of higher physiological melatonin levels at appropriate times of day might be one avenue through which the claimed health promoting effects of meditation occur. In another study, Harinath *et al.* [64] evaluated the effects of 3 month hatha yoga practice and Omkar meditation on melatonin secretion in healthy subjects. Yoga group subjects practiced selected yogic asanas for 45 min and pranayama for 15 min during the morning, whereas during the evening hours these subjects performed preparatory yogic postures for 15 min, pranayama for 15 min, and meditation for 30 min daily for 3 months. Results showed that yoga

practice for 3 months resulted in an improvement in cardiorespiratory performance and psychological profile. The plasma melatonin also showed an increase after 3 months of yogic practice. Also, the maximum night time melatonin levels in the yoga group showed a significant correlation with well-being score. These observations suggest that yogic practices can be used as psychophysiologic stimuli to increase endogenous secretion of melatonin, which, in turn, might be responsible for improved sense of well-being. In some other studies, it has been found that subjects trained in yoga can achieve a state of deep psychosomatic relaxation associated with highly significant decrease in oxygen consumption within 5 min of practicing *savitri pranayama* (a slow, rhythmic and deep breathing) and *shavasana*. [65]

Mood and functioning

In a German study published in 2005, women who described themselves as “*emotionally distressed*” are treated with 90-min yoga classes a week for 3 months. At the end of 3 months, women in the yoga group reported improvements in perceived stress, depression, anxiety, energy, fatigue, and well-being. Depression scores improved by 50%, anxiety scores 30%, and overall well-being scores by 65%. Initial complaints of headaches, back pain, and poor sleep quality also resolved much more often in the yoga group than in the control group. Another 2005 study examined the effects of a single yoga class for inpatients at the New Hampshire psychiatric hospital, 113 participants among patients with bipolar disorder, major depression, and schizophrenia it is found after yoga class, tension, anxiety, depression, anger, hostility, and fatigue dropped significantly. Further controlled trials of yoga practice have demonstrated improvements in mood and quality of life for elderly, people caring for patients with dementia, breast cancer survivors, and patients with epilepsy.[66]

Cancer

Earlier reviews have reported that yoga is beneficial for people with cancer in managing symptoms such as fatigue, insomnia, mood disturbances and stress, and improving quality of life.[67] However, until now the size of the effect has not been quantified. But in some studies, it is found that yoga may have positive effects on psychological health of cancer patients [Figure 3]. Many cancer patients experience cancer-related psychological symptoms, including mood disturbances, stress, and distress. [67] Ledesma and Kumano[68] showed mindfulness-based stress reduction programs may indeed be helpful for the mental health of cancer patients. Thus, yoga may have long-term psychological effects for patients with cancer. According to the some review,[30] no significant differences were observed on the measure of physical health. Because of the limited number of studies and different measurement tools, the effects of yoga on physical health in people with cancer remain unclear. Only one study[69] examined the effects of yoga on physical fitness; therefore, future study could include outcome measures that not only include subjective feelings in questionnaires but also include physical performance, physical strength, endurance, and flexibility. All studies included in the meta-analysis investigated participants with a diagnosis of cancer; however, the types of cancer varied among studies. Of the 10 included studies, 7 investigated breast cancer, 2 recruited mixed cancer populations, and 1 included patients with lymphoma. The result of Cohen's study on lymphoma[70] showed no significant differences between groups in terms of anxiety, depression, distress, or fatigue; thus, it has little influence on our result. Therefore, since the majority of studies focused on breast cancer, future research needs to examine the use of yoga among male cancer patients and female non-breast cancer patients. In addition, various factors are associated with the execution of the intervention such as yoga styles and treatment doses that may influence effect size. Four different styles of yoga were used

among the included studies: restorative, integrated, hatha, and Tibetan. Treatment dose, including duration and frequency, and the adherence to yoga intervention and home practice may also affect treatment outcome. According to the Carson's study of yoga for women with metastatic breast cancer, [71] patients who practiced yoga longer on a given day were much more likely to experience less pain and fatigue and greater invigoration, acceptance, and relaxation on the next day. In summary, most of the studies show potential benefits of yoga for people with cancer in improvements in psychological health. But, more attention must be paid to the physical effects of yoga and the methodological quality of future research, as well as to improve these areas in the future.



Figure 3

Demonstrates positive outcomes of Yoga program for cancer-related fatigue in breast cancer survivors

RISKS OF YOGA PRACTICE

[Go to:](#) ☒ [Go to:](#) ☒

Although many forms of yoga practice are safe, some are strenuous and may not be appropriate for everyone. In particular, elderly patients or those with mobility problems may want to check first with a clinician before choosing yoga as a treatment option. Only one incident has been reported in the surveyed medical literature associated with the risks due to the practice of yoga. The serious case that has been reported is of a female practitioner developing thrombosis of vertebrobasilar artery due to an intimal tear and subsequent stroke. This was attributed to adopting an unusual neck posture during yoga practice.[72] Yoga, although not entirely risk-free, can be considered a safe form of exercise if practiced under the guidance and supervision of a qualified trainer. But for many patients dealing with depression, anxiety, or stress, yoga may be a very appealing way to better manage symptoms. Indeed, the scientific study of yoga demonstrates that mental and physical health are not just closely allied, but is essentially equivalent. The evidence is growing that yoga practice is a relatively low-risk, high-yield approach to improving overall health.

CONCLUSION

[Go to:](#) ☒ [Go to:](#) ☒

In summary, this review postulates that mind-body exercise such as yoga couples sustained muscular activity with internally directed focus, producing a temporary self-contemplative mental state. It also triggers neurohormonal mechanisms that bring about health benefits, evidenced by the suppression of sympathetic activity. Thus, it reduces stress and anxiety, improves autonomic and higher neural center functioning and even, as shown in some studies, improves physical health of cancer patients. However, there is a definite need for more directed scientific work to be carried out to elucidate the effects and the mechanisms of such effects of yoga on the human body in health and disease. Considering the scientific evidence discussed thus far, it is fair to conclude that yoga can be beneficial in the prevention and cure of diseases.

Footnotes

[Go to:](#) ☒ [Go to:](#) ☒

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