

YOGIC TRADITION – A PERSEVERANCE IN RESTORING ORGANS OF THE HUMAN SYSTEM

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Abstract

Yoga is an ancient Indian way of life, which includes changes in mental attitude, diet, and the practice of specific techniques such as yoga asanas (postures), breathing practices (pranayamas), and meditation to attain the highest level of consciousness. The relationship between yoga practice and positive changes in health behaviors remains unclear. Only three studies were found examining relationships between yoga practice and aspects of health in individuals who practice yoga. These studies contributed valuable evidence that there may be a favorable relationship between regular yoga practice and BMI, diet, and weight maintenance. However, these studies looked only at yoga practice in general and did not examine the relative contributions of the different aspects of yoga practice. This review adds up additional information about yoga practice and its health benefits in our entire body functions. The practice of yoga enhances all the systems viz., pulmonary, circulatory, excretory, musculoskeletal and immune system.

Keywords: Yoga, Health benefits, Human system

1.Introduction

Yoga therapy in its present form is a new discipline, created by the marriage of traditional yoga with modern medicine. It is a specialization of yoga, which tailors yoga practices to the individual needs of people with health problems. It employs simple postural, breathing, relaxation and meditation practices, taking into account medical diagnoses and holistic factors. It emphasizes mind-body integration, extended awareness and the cultivation of a sense of harmony with the rest of life. It is applicable to many chronic conditions and can be used in conjunction with other complementary therapies. Prior experience of yoga is not required (Robin Monro, 1997).

Over the past few decades, yoga has become incorporated into hundreds of healthcare facilities, most commonly in large university medical centers. While research has shown yoga to be effective in reducing symptoms and improving outcomes in chronic health conditions, most patients seek yoga therapy on their own, as few primary care practitioners have incorporated yoga therapy into their practices (Alyson Ross, 2015).

Yoga, an ancient discipline that uses a combination of practices including physical poses, breath work, and meditation, is defined by Patanjali in the second yoga sutra as “the stilling of the changing states of the mind.” It has recently shown promise as an intervention targeting a number of outcomes associated with lifestyle-related health conditions including cardiovascular

disease, metabolic syndrome, diabetes, and cancer. While aerobic exercise long has been a valuable tool in combating these health conditions.

2. Yoga – Practice and Benefits

2.1 Digestive system

Communication between the gut microbiota and the brain, and its modulating effect on behavior, is an emerging and important field of research in human health and disease. The general thrust of such research is to establish a strong relationship between stress-related psychiatric symptoms such as anxiety with gastrointestinal disorders, a relationship that has become known as the gut-brain axis (Charlotte Watts and Singing Dragon, 2018)

Constipation and sleep disturbances commonly affect elderly population results in compromised physical and mental health. Mind-body interventions like yoga not only address the mental and physical health but also promote healthy ageing (Shree Ganesh et al., 2021).

Fortunately studies are showing that the practice of yoga can help to relieve symptoms of IBS. Through the practice of asana and pranayama we aim to calm the nervous system increasing parasympathetic nervous system activity and reducing sympathetic activity, allowing our digestive system to work more efficiently. Also through the postures we want to massage, stretch and tone the abdominal area to increase blood flow and help move gas and waste through the colon. However, in the case of severe diarrhoea, we would avoid too much pressing and twisting initially so as not to aggravate the condition (Bhumi Albertsen, 2017).

2.2 Respiratory System

Vital capacity, tidal volume and breath holding were significantly higher in short- and long-term meditators than nonmeditators. Long term meditators had significantly higher vital capacity and expiratory pressure than short term meditators. Diastolic blood pressure was significantly lower in both short- and long-term meditators as compared to nonmeditators. Heart rate was significantly lower in long term meditators than in short term meditators and nonmeditators. Lipid profile showed a significant lowering of serum cholesterol in short- and long-term meditators as compared to nonmeditators (Vyas R, Dikshit N).

As the mind is calmed the hyper reactivity that causes diseases such as bronchial asthma and nasal allergy is reduced. Yoga is considered to be a good exercise for maintaining proper health and also has a profound effect on the lung functions of the individuals (Vinayak P. Doijad, SurdiAD, 2012). It is claimed that yogic practices help in prevention, control and rehabilitation of many respiratory diseases.

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) management including the reduction in symptoms, complications, and exacerbations, improved exercise tolerance, improved health status, and reduced mortality. Some of these goals can be achieved by initiating breathing exercises in these patients (Vestbo J et al., 2013). It is found that Yoga has been shown to be beneficial in patients having COPD. Yoga also improves the diffusion capacity

in this group. It has been found that helps in reducing the associated stress and anxiety and help in improving the quality of life (Holland AE et al., 2012).

Tuberculosis is an epidemic disease, affecting approximately one-third of the world's population. It has been found that this particular condition is prevalent in men rather than women it has been also found in the minorities, socially and economically lower classes (Liu XC et al., 2014, Soni R et al., 2012). Some of the important yoga poses are helpful in tuberculosis. Bhastrika (Bellows Breath), Kapalbhata (Cleansing Breath), Nadishodhan (Anulome- Vilome) are beneficial pranayamas for TB patients (Hofmann SG et al., 2015). Forward and backward bending movements, and stretching poses may also good. Yoga enhance the internal stamina and reduces the stress (Pascoe MC et al., 2015, Fulambarker A et al., 2012).

2.3 Cardiovascular system

In addition to the traditional risk factors described earlier, cardiac autonomic dysfunction, as evidenced by reduced HR variability and baroreflex sensitivity, has been identified as an independent predictor of CV mortality and myocardial infarction. yoga increased HR variability, increased vagal output, and decreased sympathetic arousal. Furthermore, given the bidirectional flow of the vagus nerve, it is believed that the practice of yoga directly influences the central nervous system, resulting in favorable emotional, cognitive, and behavioral responses.

Enhanced automaticity, triggered activity, and re-entry are key factors in the initiation and maintenance of cardiac arrhythmias. Yoga can potentially decrease arrhythmias by reducing sympathetic nervous system activity and promoting parasympathetic output, thereby decreasing automaticity. Similarly, anxiety and depression scores, BP, and HR significantly improved during this period (Fulambarker A et al., 2012). This study established yoga as a favorable adjunct to medical therapy for paroxysmal atrial fibrillation. In addition, Wahlstrom et al reported improved mental health scores in patients with paroxysmal atrial fibrillation after a 12-wk yoga program involving light movement and deep breathing.

Patients with established coronary artery disease (CAD) are at increased risk for future coronary events and death. Secondary prevention, which includes medications and lifestyle modifications, has been shown to reduce this risk significantly (Soni R et al., 2012).

Increased neurohormonal activation via the sympathetic nervous system and the renin-angiotensin system is key factors in the progression of heart rate. Drugs blocking these systems have been shown to have mortality benefit in patients with chronic heart failure (Liu XC et al., 2014). Through its modulatory effects on the autonomic nervous system, yoga is known to reduce HR and BP in patients with HF.

2.4 Reproductive system

Adopting a regular yoga practice can improve the quality of sperm if one has issues with sperm count or motility. Practicing yoga is also proven to be excellent for prostate health, warding off prostate disorders, and reducing the size of prostate if it has got enlarged. Adopting a regular yoga practice can reduce stress and anxiety levels also, which can improve the overall

health of reproductive organs, as it has proven that having less stress in life can improve sex-life and helps to treat mild erectile dysfunction (ED).

The stress and stress-induced disorders are fast growing epidemics and bane of “modern” society. The holistic science of yoga has proven to be the best method for prevention as well as management of stress and stress-induced disorders by immediately down regulating effect on both the HPA axis response to stress (Pallav Sengupta et al., 2013). It was also found that brief yoga-based relaxation training normalizes the function of autonomic nervous system by deviating both sympathetic and parasympathetic indices toward more “normal” middle region of the reference values.

Yoga can help couples experiencing the challenges of infertility by increasing clarity of mind, maintaining homeostasis, and giving them real power while undergoing the therapeutic rigors of ART. When patients recognize the state of their bodies, they can achieve physical relaxation, have a better sense of themselves and begin to treat their problems with more interest and strength. Patients can report to their doctors more easily about the state of their bodies and their sensations in ART cycles (Sara DarbandiMahsa et al., 2017). Yoga can also improve fertility rates in ART by diminishing stress and modifying the body’s hormonal secretions, ANS, genital health, and sexual arousal.

2.6 Endocrine system

The endocrine system, together with the nervous system, regulates all the activities of the body. The endocrine glands influence the function of the body by releasing hormones into the blood stream. Hormones are chemicals that modify the activities of particular cells, and eventually affect the body’s tissues and organs. They adjust metabolic operations in response to what is available and what the body needs. They also influence growth, maturation, sexual development, pregnancy and response to stress.

There are seven major endocrine glands in the body: pineal, pituitary, thyroid and parathyroid (separate but located together), thymus, pancreas, adrenals and gonads. Each of these glands produce particular hormones, which affect the body differently. The pituitary gland is the master of all the glands, it releases hormones that regulate and influence all their functions.

There are many disorders that derive from the endocrine system. Most of the linked with either too much or, more commonly, too little production of hormones. The result of this hyper- or hypo activity means damage to other systems the body. There are specific yoga techniques that may aid in regulating these conditions. The goal of any yoga practice in relation to the endocrine system is to restore and maintain balance. E.g. For hypo-functioning of a gland we want to stimulate the area of that gland, and for hyper-functioning we would want to soften and relax that same area.

2.7 Musculoskeletal system

Movement therapies such as yoga and tai chi have been shown to reduce chronic pain associated with musculoskeletal and joint diseases. All types of exercise may benefit those with musculoskeletal disorders; however, exercise programs must be adjusted for persons with physical limitations and pain. Studies have demonstrated the role of exercise in relieving pain, disrupting the chronic pain cycle, and increasing mobility in seniors. Taylor, Dodd, Shields, and Bruder compared 38 studies involving movement therapies for chronic pain and concluded that there was strong evidence that therapeutic exercise was effective in reducing chronic pain and were beneficial for patients across a variety of chronic diseases, including musculoskeletal conditions.

Yoga as an effective therapy for musculoskeletal pain and disability is the subject of this systematic review. Roughly 16 million people in the United States practice some form of yoga, with 61% reporting that yoga is important for maintaining health. Only 6.1% of Americans reported that a doctor or therapist had recommended yoga to them. Yoga is a philosophy and practice that connects the body, breath, and mind to energize and balance the whole person. This mindbody therapy involves physical postures, breathing exercises, and meditation to improve overall well-being. Yoga is one of the strategies that can be used to meet the nationally established guidelines for muscle strengthening, flexibility, and balance activities in older adults (McCaffrey R, Park J (2012)).

Yoga has been used to alleviate musculoskeletal pain and has been associated with significant improvement in range of motion and function, decreased tenderness, lower levels of depressive symptoms, and decreased pain during activity in patients with musculoskeletal disorders.

2.8 Nervous System

Autonomic nervous system consists of two limbs; sympathetic nervous system and parasympathetic nervous system. Although individual asan and pranayam practices can selectively affect sympathetic or parasympathetic nervous system, the overall effect of yoga practice is to bring a state of parasympathetic dominance. Vempati and Telles (2002) assessed the effect of yoga based guided relaxation on autonomic variables and found that power of the low frequency component of heart-rate variability spectrum reduced, whereas the power of high frequency component increased, suggesting a reduced sympathetic activity. The results suggest that sympathetic activity decreased after yoga based guided relaxation.

There was also evidence of decreased autonomic arousal and psychophysiological relaxation, heart rate and respiratory rate reduction and improved somatic steadiness demonstrated by decreased errors in steadiness test. They suggested that practicing yoga may help to bring about a balance and optimization of autonomic functions. Physiological basis of galvanic skin resistance is change in sympathetic tone occurring in the skin and subcutaneous tissue in response to a change in affective state of the subject. Changes in peripheral autonomic tone alter sweating and cutaneous blood flow, which in turn change galvanic skin resistance.

2.9 Excretory system

Chronic kidney disease (CKD) has increasingly been recognized as emerging health problem in India. The major contributory factors leading to the development of CKD are diabetes and hypertension. In Canada, 1.9–2.3 million people have CKD

The imbalance of human excretory system arises due to the improper diet including excessive protein consumption, non vegetarian foods and alcohol. The instability of the excretory system can be removed by the practice of yoga. Regular exercise of yoga makes the internal imbalance of the body to come to normalcy and it helps to rejuvenate the working level of the systems.

Management of CKD includes management of its complications such as fluid retention, electrolyte imbalance, metabolic acidosis, bone disease, anemia, and cardiovascular abnormalities. In end-stage renal disease, kidney function can only be replaced by dialysis or by a kidney transplant. Dialysis is not a permanent cure as the patient requires it regularly. Kidney transplantation offers the best outcomes and quality of life (QOL). However, not every candidate is suited for kidney transplantation. Patients with immunocompromised state and those having HIV or active hepatitis were not considered for transplantation because of increased risk of opportunistic infections. The presence of potentially harmful antibody against the donor's kidney is another absolute contraindication to transplant (Rajendra Kumar Pandey et al., 2017).

All these therapeutic modalities are expensive and beyond the reach of majority of patients in India. Besides, such procedures are focused on treating the manifestation of disease and not the underlying cause of disease. Researches in the past have shown that yoga does play an important role in controlling hypertension and diabetes. In one study, it was found that the Corpse pose (shavasana) reduces blood pressure and the need for antihypertensive medication. Another study showed that yoga is effective in reducing blood pressure, blood glucose level, serum cholesterol, and body weight.

Some yogas like Makarasana, Suptapavanamuktasana, Pavanamuktasana, Agnisara asana, Utkatasana, Nauli, Uttanamudukasana. Basti is also helpful to cure problems with excretory system.

2.10 Lymphatic System

The lymphatic system has two very important functions: *Protect and Move*. Yoga supports the system in its main function of moving lymph—which is a fluid containing infection-fighting white blood cells—throughout the body. The lymphatic system affects our ability to cleanse and detoxify, starting with the collection of *ama*, or waste material, that needs to be moved through the body and eliminated.

When the lymph is functioning properly, natural toxins are easily flushed, and you are left feeling vibrant and eager to live fully. The lymphatic system is essential to our health and crucial to our immunity and the detoxification processes of the body. This system needs support when it comes to getting the job done because it doesn't have a pump like the heart. It requires a

little extra stimulation, which can be brought about through certain movements, repetitive practices, and specific placements of pressure and stress on the body.

Breaking a sweat, walking, jogging, and jumping are incredibly effective practices for the lymphatic system. Raising the arms above the level of the heart also helps tone the system and drains lymph from the upper body.

Yoga supports our lymphatic system by awakening natural movements and placing the body in poses that directly stimulate and energize the healthy movement of lymph. And we find an even deeper beauty in the practice because, beyond just the action itself, yoga leaves us with the inspiration to continue our forward momentum and do it again.

2.11 Immune System

In response to stress, activation of Hypothalamo-Pituitary-adrenal Axis (HPA) results in secretion of Corticotrophin-Releasing Factor (CRF) from hypothalamus. CRF stimulates the secretion of ACTH from pituitary, which further activates the adrenal glands to produce glucocorticoids, which are powerful immune regulators. The effects of glucocorticoids on cellular and humoral immune responses is quite complex. Although the overall effect of glucocorticoids on immune/inflammatory responses at the cellular level is immunosuppressive, this effect may result from suppression of many stimulatory components of immune cascade and stimulation of some immunosuppressive or anti-inflammatory elements. The relatively greater sensitivity of components of cellular immunity to glucocorticoid suppression tends to shift immune response from a cellular to humoral pattern during stress (Aravind Gopal et al., 2011).

Yoga has a significant effect in ameliorating the autonomic, endocrine, and psychological changes brought about by the examination stress. Yoga most probably acts through the cerebro-cortico-limbic pathways on the hypothalamus and the anterior pituitary systems. It thus influences the HPA in such a way that the activation of this system is optimized and a balance is created between the sympathetic and parasympathetic limbs of the autonomic nervous system when the subject is faced with a threat (which in present case is the examination stress).

Conclusion

One mechanism that would explain the effectiveness of yoga interventions compared with exercise interventions is that, in addition to the benefits of increased physical activity associated with the physical practice of yoga poses, yoga appears to downregulate the Hypothalamic-Pituitary-Adrenal (HPA) axis and the Sympathetic Nervous System (SNS) response to stress, possibly via direct vagal stimulation. Repeated firing of the HPA axis and SNS can lead to dysregulation of the system and ultimately diseases such as obesity, diabetes, autoimmune disorders, depression, substance abuse, and cardiovascular disease. Numerous studies have shown yoga to have an immediate downregulation effect on both the SNS/HPA axis response to stress by decreasing cortisol and blood glucose, as well as norepinephrine and epinephrine levels. Yoga significantly decreases heart rate, systolic and diastolic blood pressure, and inflammation, and yoga increases levels of Immunoglobulin A and Natural Killer Cells. In

addition to the immediate SNS and HPA-axis effects, yoga improves outcomes associated with chronic SNS/HPA-axis activation: blood cholesterol; body composition including: BMI, body weight, and waist circumference; fatigue; and sleep in healthy and diseased populations.

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