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The health benefits of yoga: A comprehensive review

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Abstract

Yoga, a mind-body practice with historical roots in ancient Indian philosophy, has gained global popularity due to its diverse physical, mental, and spiritual benefits. This article explores the evidence-based health benefits of yoga, including improvements in physical fitness, mental health, cardiovascular health, metabolic function, and quality of life. Drawing on scientific studies and clinical trials, the article emphasizes the holistic potential of yoga in preventive medicine and therapy.

Keywords: Strength, flexibility, anxiety, stress, diabetes, thyroid, immunity, cognitive

Introduction

Yoga is a 5,000-year-old practice originating from ancient India, encompassing physical postures (asanas), breathing techniques (pranayama), meditation (dhyana), and ethical precepts. While traditionally rooted in spiritual disciplines, modern yoga in the West often emphasizes physical health and stress management.

Modern yoga is most commonly associated with the physical practice of asana, a series of postures often weaved together in styles such as Vinyasa Flow or Ashtanga. Asana practice is generally intended to build strength and stamina, to improve flexibility, coordination and balance, and to relax the body. However, this provides only one small aspect of the tradition of yoga as a whole.

Patanjali's Yoga Sutras provide the traditional foundation of yoga, in which he outlines an eightfold path of the practice. Known as the 'Eight Limbs of Yoga,' this path offers a guide to individuals who are dedicated to creating a union between body, mind and spirit. (Yogapedia, n.d.)

In recent decades, scientific inquiry has validated many traditional claims about yoga's health benefits. Medical professionals now frequently recommend yoga as a complementary therapy for various chronic diseases, including anxiety, depression, cardiovascular conditions, and musculoskeletal disorders.

Physical Health Benefits

Slow movements and deep breathing increase blood flow and warm up muscles, while holding a pose can build strength. Yoga offers physical health benefits for people of all ages. And, if you're going through an illness, recovering from surgery or living with a chronic condition, yoga can become an integral part of your treatment and potentially hasten healing. A yoga therapist can work with patients and put together individualized plans that work together with their medical and surgical therapies. That way, yoga can support the healing process and help the person experience symptoms with more centeredness and less distress.

Yoga involves isometric holds, dynamic stretching, and sustained postures that significantly improve flexibility, joint mobility, and muscular strength. Regular practice helps prevent injuries and improves posture and balance. Yoga positively affects cardiovascular parameters by reducing blood pressure, improving heart rate variability, and enhancing endothelial function. The relaxation response induced by yogic breathing and meditation reduces sympathetic nervous system activity.

Mental Health Benefits: Studies have shown that yoga can be an effective complementary therapy for managing depression symptoms.

Yoga emphasizes mindfulness, the practice of being present in the moment without judgment, which can be beneficial for overall mental health. Yoga can be a valuable tool for promoting mental well-being and managing various mental health challenges. It offers a holistic approach to health, encompassing physical, mental, and emotional aspects.

One of the most widely recognized benefits of yoga is its ability to reduce stress. Through the regulation of breath and focused movement, yoga reduces cortisol levels and activates the parasympathetic nervous system. Yoga practices, especially those involving breathing techniques (pranayama) and mindful movement, can help lower the levels of stress hormones like cortisol, leading to a sense of calm and relaxation.

Yoga serves as an effective adjunct therapy for individuals suffering from mood disorders. Controlled breathing and meditation reduce the symptoms of generalized anxiety disorder, panic disorder, and clinical depression. Yoga improves glucose metabolism, insulin sensitivity, and lipid profiles in individuals with type 2 diabetes. Poses such as Dhanurasana and Matsyendrasana stimulate the pancreas and enhance insulin function. Pranayama and inversion poses have been shown to stimulate the endocrine system, supporting hormonal balance and alleviating conditions like hypothyroidism and PCOS.

Respiratory and Immune System Benefits

Pranayama improves respiratory efficiency, vital capacity, and oxygen saturation. These effects are beneficial for asthma patients and those with bronchial issues. Yoga reduces inflammatory cytokines and boosts immune-modulatory functions. Meditation is known to lower pro-inflammatory gene expression and enhance immune surveillance. Yoga, particularly pranayama techniques, helps increase lung capacity and improve oxygen intake, which is crucial for optimal bodily functions. Exercises like Bhujangasana (Cobra Pose) and Matsyasana (Fish Pose) work to strengthen the muscles of the chest and abdomen, which are essential for breathing.

Yoga enhances blood circulation throughout the body, including the lungs, ensuring efficient oxygen delivery and waste removal. Certain yoga poses, like Uttanasana (forward bend), can help clear congestion in the sinuses and improve airflow.

Neurological and Cognitive Benefits

Yoga enhances concentration, memory, and executive functioning. MRI studies have shown increased gray matter volume in brain regions associated with attention and emotional regulation. Regular yoga practice may delay age-related cognitive decline and promote neuroplasticity. Meditation practices increase cortical thickness and improve synaptic connectivity. Yoga, particularly when combined with meditation, enhances brain plasticity, the brain's ability to adapt and reorganize itself, leading to better memory and learning capabilities, according to Atmabodh Wellness. Yoga promotes mindfulness and awareness, which are crucial for improving focus and concentration. Regular practice can help reduce mental distractions and improve mental clarity, according to Habuild.

Yoga's ability to lower stress hormones like cortisol and improve emotional regulation directly impacts cognitive function. By reducing stress, yoga helps improve working memory, attention, and decision-making abilities. Studies using MRI scans have shown that yoga can increase the

volume of gray matter in the brain, particularly in areas related to stress regulation and emotional processing, according to Mapmygenome. It also impacts the default mode network (DMN), which is involved in rumination and mind-wandering.

Yoga practice can influence neurotransmitters like GABA and dopamine, which are vital for brain function, mood regulation, and cognitive performance. Yoga has shown promise as a complementary therapy for various neurological conditions, including multiple sclerosis, epilepsy, and Parkinson's disease, according to a study in the Annals of Indian Academy of Neurology.

Yoga as Complementary and Preventive Medicine

Yoga is now integrated into hospital wellness programs, mental health therapies, and lifestyle medicine protocols. Its non-invasive, low-cost, and holistic nature makes it ideal for preventive healthcare and long-term disease management. Yoga is a well-known antidote to stress and can improve sleep patterns, which are often disrupted by anxiety and stress. Yoga can be a valuable addition to conventional medical treatments for conditions like asthma, arthritis, diabetes, hypertension, depression, and liver problems. Yoga can help lower blood pressure, improve blood flow, and reduce the risk factors associated with heart disease. Studies have shown that yoga can be effective in reducing pain, including chronic pain conditions and pain experienced during cancer treatment. Yoga can be a powerful tool for managing depression and improving overall psychological health. Yoga can be incorporated into daily routines to maintain physical fitness, flexibility, and strength. Yoga practices like meditation can improve focus, concentration, and reduce mental clutter, leading to a greater sense of well-being.

The holistic approach of yoga can inspire individuals to adopt healthier habits in their diet and lifestyle. Yoga classes and retreats can foster a sense of belonging and support, contributing to a positive and healthy lifestyle. Yoga can complement conventional medical treatments by addressing the physical, mental, and emotional aspects of health. Yoga is a relatively inexpensive and accessible form of healthcare, particularly in resource-strained settings. Yoga can potentially reduce the need for certain medications, especially for conditions like anxiety, depression, and chronic pain.

Conclusion

Yoga is a time-tested practice with profound effects on physical, mental, and emotional health. It offers a multifaceted approach to well-being, integrating movement, breath, and mindfulness. As research continues to support its benefits, yoga is poised to play a critical role in global public health as a preventive and complementary therapy. Research studies have shown the benefits of yoga, more research is needed to understand the mechanisms of action and long-term effects, especially in specific populations and for certain conditions. Standardized yoga protocols and assessment methods are needed to ensure consistent results and facilitate integration into mainstream healthcare.

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