

Yoga as an integral tool for enhancing immunity and in the prevention and treatment of Covid 19

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Yoga is a vast canvas of principles and practices representing ancient sciences originated in India. It is also frequently referred as 'mind-body' practice. According to the school of sage Patanjali, yoga is divided into eight different components called as Astanga Yoga Viz. Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyan, and Samadhi. Controlling the faculty of mind for promoting mental well-being of the individual and the society at large is the main aim of Yoga practices. Integrating yoga as a way of life promotes serenity along with flexibility and strength of the body resulting in the optimal wellbeing.

In present scenario, the whole world is passing through an unprecedented situation due to Covid 19 pandemic. Psychological trauma resulting in the rise of various stress-related disorders have been reported during the lockdowns and quarantines in force. Higher anxiety and stress levels were reported worldwide during Covid 19 pandemic amongst health care workers (HCWs), quarantined population (suspected cases), convalescent individuals and also in Covid- 19 positive cases. This is primarily attributed to the sudden rise in the number of cases and inability to manage Covid 19 with medications available in the progressive stages of pandemic. It is becoming more evident that 'stress' associated with Covid 19 may worsen the severity of infection and may render otherwise healthy individuals susceptible to get the infection.

Novel coronavirus disease of 2019 referred as Covid 19, is the pathological manifestation by the infection due to SARS COV2 virus was declared pandemic by WHO in March, 2020. It affects the physical and mental health of the individual along with severe challenge to the socio- economic status. Covid 19 is affecting different body systems, especially the immune and respiratory systems. Immunity primarily depends on several physiological factors associated with psychological conditions such as stress, anxiety or depression. The immune response in Covid 19 is marked by the macrophages and neutrophils rushing to the site, initiating inflammation in the airways and whole of the respiratory tract, ultimately leading to pneumonia. These conditions are obvious especially in the second

wave of Covid 19. Death usually results due to pneumonia and acute respiratory distress syndrome - ARDS, where the deposition in alveoli and small blood vessels around alveoli impairs the gaseous exchange in the lungs. Therefore, managing and modulating the initial immune response could be the prime aim of the treatment strategies for COVID-19.

Different yoga techniques have been identified to reduce physical and mental stress, enhance lung functions, and modulate immunity at all levels. Yoga is a promising 'non-pharmacological' treatment method for several psychosomatic diseases to decrease the oxidative stress markers and up-regulate the expression of telomerase genes, such as telomerase reverse transcriptase and telomerase RNA. Meditation techniques in the yoga modules and 'mindfulness-based' treatment methods have proven immuno-modulatory effects. There are scholarly articles on pranayama and other breathing practices in yoga reportedly reducing the stress levels, controlling mood fluctuations such as anxiety and depression, thereby improving the quality of life. Regular practice of pranayama has numerous effects on the mind and body. Suryabhedana pranayama increases heat in body, increases vitality and can be prescribed to treat anxiety, depression and lack of energy. Ujjayi pranayama is beneficial for the throat, cardio-respiratory, nervous and digestive systems. Bhastrika pranayama energizes mind and body by maximizing the lung capacity. It helps to address and treat diseases such as sinusitis, bronchitis and it improves

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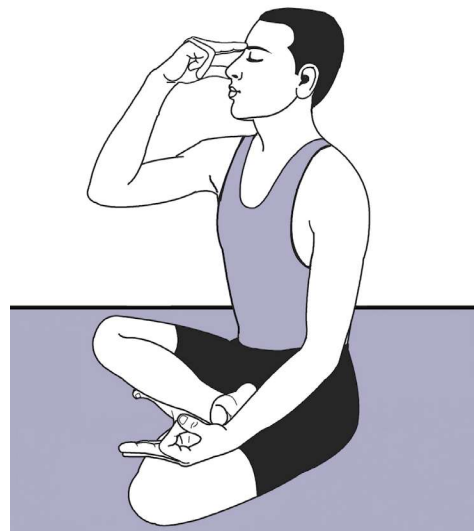
awareness and perceptive power of senses. Bhramari pranayama relieves tension, anger and anxiety. It possibly normalizes the blood pressure, brings down headache of all categories including migraine, and improves concentration and memory. Pranayama also regulates hypothalamic-pituitary-adrenal axis and various inflammatory processes. Regular Yoga practice improves mental health, by increasing tranquility, reducing stress, improving physical health, breathing and sleep. Meditation and mindfulness also improve psychological well-being and reduce stress and anxiety.

Yoga has been validated to improve quality of life, reduce fatigue and sleep disturbances in breast cancer patients. A protocol of yog therapy planned and propagated in India, specifically to manage diabetes reduced co-morbidity of dyslipidemia in diabetic patients. Yoga practices were also credited to limit stress-related inflammation and progressive systemic illnesses. Yoga intervention, including Pranayama and Asana increased CD4 cell count, a marker of helper T cells in HIV patients indicating improved immunity. Cytokines IL-1 β , IL-8, and Monocyte Chemotactic Protein-1 (MCP- 1) levels were reportedly reduced in the Yoga intervention (Pranava Pranayama) group. It is known that IL-1 β induces the brain cyclooxygenase-2 levels, which in turn has a vital role in the stress and pain management. It is also important to consider the role of IL-1 β as an anti- inflammatory target for chronic obstructive pulmonary disease. On the other side, IL-8, a



neutrophil chemo-attractant, is known to be elevated in the chronic pulmonary disorder patients including COPD, cystic fibrosis, acute respiratory distress syndrome and asthma. MCP-1 is known for its role in activation by macrophages, monocytes, lymphocytes, and airway epithelial cells. Based on the foregoing data, it is anecdotal that yoga affects the psycho-neuro-immune axis by marked reduction in inflammatory cytokines and improvement in mind-body communicative markers ensuring a better quality of life and abridged disease activity.

Recent studies have presented enough data to claim that breathing techniques, especially the expiratory techniques improve the lung functions, and fine-tune immune responses



in bronchial asthma patients. Bhastrika pranayama - the most popular among pranayama practices, improve lung functions in healthy individuals. Breathing techniques improve the pulmonary rehabilitation index in COPD cases that included diaphragmatic and pursed-lip breathing modes. Wellness yoga and breathing exercises improved ventilatory function marked by i) lowered respiratory rate and increase in tidal volume ii) forced vital capacity iii) increase in forced expiratory volume at the end of 1st second, maximum voluntary ventilation, peak expiratory flow rate and breath holding time.

Covid 19 continues to affect population across the globe, with alarming rates of morbidity and mortality. The world has opened eyes in search of remedial measures in both preventive and curative sectors. WHO and other strategic organizations are keen on the mainstream as well as alternate medical systems to combat this pandemic. Yoga practices and the best part of breathing techniques have proven effects to improve the respiratory tract functions, pick up respiratory system fitness ensuring the 'lung health'. Integrating yoga can be a breakthrough on the face of Covid 19, playing a major role in enhancing disease prevention and recovery among targeted representations.