

# Sudarshan Kriya Yoga: A Breath of Hope during COVID-19 Pandemic

## Abstract

Important counter measures to combat an infectious disease pandemic include vaccination, antiviral therapy, and immunomodulation therapy. Vaccinations are disease specific and moreover strain specific, so the protection provided is also specific and limited. Antiviral therapies are costly and require bulk production of drugs, hence globally there is an increased interest toward low-risk, cost-effective complementary alternative therapies, such as Yoga and Ayurveda to tackle the infectious pandemic, coronavirus disease 2019 (COVID-19). There is clinical evidence available on the potential complementary role of yogic practices in the management of noncommunicable and communicable diseases. Various online databases were searched for articles published between 2000 and 2020. Databases explored were Medline, EMBASE, Indian Citation Index, PsycINFO, Index Medicus for South-East Asia Region, and Google Scholar. All search results were screened, and articles related to keywords such as COVID-19, yoga therapy, and Sudarshan Kriya Yoga (SKY) were selected for data extraction. Quality of the studies included was evaluated on the basis of the construct validity, content validity, relevance, bias, credibility relating to information, and data sources. SKY is a unique yogic practice that includes specific sequential breathing techniques. It balances the autonomic nervous system and thus can alleviate anxiety, routine stress, depression, stress-related medical disorders, and posttraumatic stress. It potentiates natural host immune defenses that are essential to tackle a plethora of microbial infections. This narrative review article provides an overview of potential therapeutic benefits that SKY can offer to the population at large during this COVID-19 pandemic.

**Keywords:** *Coronavirus disease 2019, COVID-19, posttraumatic stress disorder, stress, Sudarshan Kriya Yoga, vagus nerve stimulation, yoga therapy*

## Introduction

The coronavirus disease 2019 (COVID-19) is a highly infectious rapidly spreading disease worldwide. The WHO has declared COVID-19 outbreak as a pandemic. Early stages of the disease include severe acute respiratory infection, with some patients rapidly developing acute respiratory distress syndrome, acute respiratory failure, and other serious complications. Asymptomatic individuals have been identified as potential sources of infection.<sup>[1]</sup>

The number of identified COVID-19 cases has been steadily growing, and till August 10, 2020, a total of 20 million registered cases of COVID-19 and 750,000 deaths have been reported globally.<sup>[2]</sup> Along with serious health problems, the disease has exerted a huge psychological impact on the public.

Individuals with certain preexisting diseases, such as cardiovascular disease (CVD),

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diabetes, and respiratory problems, are at a higher risk of developing COVID-19 complications. Frequent washing of your hands with soap, use of an alcohol sanitizer, wearing a mask, and social distancing are recommended precautions one can take to prevent contracting this disease.<sup>[3]</sup>

The prophylactic and therapeutic potentials of complementary alternative treatment modalities such as Ayurveda and Yoga are not really being explored during this global crisis which is paramount at this juncture. This review article highlights the possible role of Sudarshan Kriya Yoga (SKY), a unique breathing technique in combating this pandemic.

## Sudarshan Kriya Yoga

SKY, an advanced controlled cyclic rhythmic breathing technique, provides relief from multiple problems associated with mind, body, and emotions. It is

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**Sameer Anil Zope,  
Rakesh Anil Zope<sup>1</sup>,  
Gabriella Andrea  
Biri<sup>2</sup>,  
Charushila Sameer  
Zope<sup>3</sup>**

*Department of Periodontology,  
School of Dental Sciences,  
Krishna Institute of Medical  
Sciences Deemed University,  
<sup>3</sup>Sumeru Multispeciality Dental  
and Implantology Clinic,  
Karad, Maharashtra, India,  
<sup>1</sup>Sri Sri Ayurveda Kft. Budapest,  
Hungary, <sup>2</sup>Faculty of Pedagogy  
and Psychology, Eötvös Loránd  
University, Budapest, Hungary*

**Address for correspondence:**  
*Dr. Sameer Anil Zope,  
Department of Periodontology,  
School of Dental Sciences,  
Krishna Institute of Medical  
Sciences Deemed University,  
Satara, Karad - 415 110,  
Maharashtra, India.  
E-mail: aoldentist@gmail.com*

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taught by one of the largest nongovernmental, nonprofit organizations, the Art of Living (AOL) Foundation.<sup>[4]</sup> During this COVID-19 pandemic, AOL has provided solace to millions of people including frontline COVID warriors worldwide through its Online Breath and Meditation program.<sup>[5-7]</sup> In Sanskrit, the meaning of the term Sudarshan Kriya (SK) is “proper vision by purifying action.”

### **Influence of Sudarshan Kriya Yoga on Physiological Functions**

SKY practice slows heart rate, increases brain perfusion, prevents hypoxia/hypercapnia, improves attention and vigilance (via vagal afferents), and reinstates energy. SKY induces various autonomic effects including improved cognition, changes in heart rate, and improved bowel function through vagus nerve stimulation (VNS). Sequential breath variations in lengths, intensities, frequencies along with end-inspiratory and end-expiratory holds generate diverse stimuli from baroreceptors, sensory receptors, and multiple visceral afferents.<sup>[8]</sup> These stimuli affect diverse group of fibers within the vagus nerve resulting in physiological changes in various parts of the brain, such as thalamus, cortical areas, and limbic system, and they also affect multiple organs and glands. Vagal stimulation increases parasympathetic dominance resulting in increased normal respiratory sinus arrhythmia (RSA). Usually, low RSA is found in mental disorders, such as functional dyspepsia. For a detailed description of neurophysiological pathways, refer literature published by Brown<sup>[9]</sup> and Zope.<sup>[4]</sup>

Recent literature on assessment of cardiac autonomic tone in individuals with and without affective spectrum disorders following regular SKY practice revealed that SKY practice decreased sympathetic activity, increased parasympathetic activity, and improved sympathovagal balance. Decrease in conductance was associated with decrease in sympathetic activity and improved heart rate variability (HRV). Hence, researchers concluded that long SKY may serve as a tool to protect and improve cardiovascular health due to its beneficial effect on cardiac autonomic tone, cardiorespiratory coupling, and psychophysiological relaxation.<sup>[10,11]</sup>

According to the neurophysiological model of VNS by yogic breathing, SKY modulates hypothalamic–pituitary–adrenal (HPA) axis via vagal afferents to the hypothalamus and anterior pituitary. This induces increased production of hormones such as prolactin, oxytocin, and vasopressin, decreased production of cortisol and adrenocorticotropic hormone, and normalization of serum brain-derived neurotrophic factor level. These changes in levels of hormones and neuropeptides are associated with the profound antidepressant effects of SKY.<sup>[12-16]</sup>

In a nutshell, regulation of neuroendocrine function, enhanced autonomic function, improved social bonding, and emotional processing following regular practice of SKY may be ascribed to VNS and activation of the

amygdale, stria terminalis, hippocampus, hypothalamus, and limbic system.<sup>[8,17]</sup>

### **Effects of Sudarshan Kriya Yoga on Immune Response**

Host immunity is an essential tool that enables the body to eradicate microbial infections. Hampered immune system as characterized by lymphopenia is one of the important features in cases of COVID-19 infection.<sup>[18]</sup>

Hence, the role of innate immunity to tackle the viral load becomes very essential. These natural innate immune defenses (i.e., natural killer [NK] cells and interferon) are important in the initial days after the infection till the lymphocytes undergo division and differentiation into cells, which are capable to mount a robust immune response.<sup>[19]</sup>

Maintenance of healthy respiratory system is a very important strategy in preventing morbidity and mortality associated with the SARS-CoV-2 virus infection. There are numerous scientific studies that report improved pulmonary function in patients with chronic obstructive pulmonary disease (COPD) following regular practice of yogic exercises. Recently, an interventional pilot study on COVID-19 patients based on tele-yoga in Milano, Italy, has shown promising results in improved pulmonary function and overall recovery of the patients. The intervention included a 4-min video clip of simple breathing practice.<sup>[19]</sup>

Among various integrative medicine modalities, SKY is one of the widely practiced approaches throughout the world. Previous literature has shown that SKY may provide numerous benefits for patients and contribute significantly to the well-being of healthy people.

Qu *et al.* assessed and compared possible rapid changes in global gene expression profiles in the peripheral blood mononuclear cells (PBMCs) among healthy SKY practitioners and individuals following control regimen of listening to relaxing music and a nature walk. The authors reported that the SKY practices exhibited a rapid (within 2 h of beginning of practice) and significantly greater gene expression (approximately 3-fold) changes in PBMCs compared with the control regimen. Significantly increased expression of AVIL gene in the PBMCs is observed upon SKY practice. This increase of AVIL is associated with the increase in cytotoxicity of NK cells. Nuclear factor erythroid 2 was another gene that showed increased expression by SKY practice but not by the control regimen. This has favorable effects on platelet production and megakaryocyte maturation. Thus, it can be speculated that a SKY program may have additional health benefits over exercise plus simple relaxation, through various effects at the molecular level.<sup>[20]</sup>

In a study on cancer survivals that had undergone their standard therapy, Kochupillai *et al.* observed a significant increase in NK cells at 12 and 24 weeks of the SKY practice compared to baseline.<sup>[21]</sup>

A flow cytometric study was carried out in All India Institute of Medical Sciences (AIIMS) to evaluate changes in NK cell counts and T-lymphocyte subsets (T-helper and suppressor T-cells) in the peripheral blood of cancer patients, AOL teachers, and normal controls. The authors reported significantly higher NK cell counts in AOL teachers as compared to cancer patients and normal individuals. There was no significant difference observed in NK cell counts among normal individuals and cancer patients. AOL teachers and normal controls had significantly higher T-lymphocyte subsets as compared to cancer patients. NK cells belong to Group I innate lymphocytes, which can rapidly respond to tumor cells and virally infected cells in the absence of major histocompatibility complex and antibodies. In addition, through antibody-dependent cell cytotoxicity, it can neutralize target cells, if they are opsonized by antibodies.<sup>[22]</sup>

Subramanian *et al.* demonstrated that performing SK and Sudarshan Kriya and Pranayam (SK and P) for 3 weeks significantly decreased neutrophils, platelets, total cholesterol, triglycerides, and very low-density lipoprotein, which were found to be elevated during examination stress. Further reduction in the levels was seen after 6 weeks of practice. Lymphocyte count was also increased after SK and P practice, which signifies that the practice of SK and P improves immunity.<sup>[23]</sup> Previous studies have also demonstrated significantly higher counts of total T-cells and their T-helper subsets in SK and P practitioners.<sup>[24]</sup>

Human beta-defensin-2 (HBD-2), which is a dynamic multifunctional peptide and an important element of the local epithelial defense system of the oral mucosa, skin, and respiratory tract, plays an important role in protecting these surfaces from infection.<sup>[25-27]</sup> At the protein level through a toll-like receptor 1/2 mechanism, HBD induces increased interleukin (IL)-6, IL-1 $\beta$ , and IL-8 in human monocytes. It amplifies immune response by promoting the production of proinflammatory cytokines and chemokines and inhibiting neutrophil apoptosis. Low levels of these  $\beta$ -defensin molecules help to maintain a noninflammatory environment before elicitation of an immune response by neutralizing the effects induced by pathogenic microbial antigens.<sup>[27]</sup> Sudarshan Kriya practices (SKPs) have shown to be effective in significantly decreasing the levels of salivary HBD-2, thus contributing to its anti-inflammatory activity.<sup>[25,26]</sup>

Nuclear factor-kappa B (NF- $\kappa$ B) is a transcription factor that plays an important role in the regulation of cytokine production, DNA transcription, and cell survival. NF- $\kappa$ B is involved in cellular responses to stimuli, such as stress and microbial infection, and is found in almost all types of cells. Similarly, peroxisome proliferator-activated receptor gamma (PPAR- $\gamma$ ) is a transcription factor with potent anti-inflammatory activity that counteracts the effects of NF- $\kappa$ B and contributes to the improvement of immunity. SKPs have shown a significant reduction in inflammation

through selective hormonal regulation, induced by alteration in the HPA axis and autonomic nervous system (ANS). Recent studies have reported that SKP effectively decreased NF- $\kappa$ B expression and increased the expression of PPAR- $\gamma$ , which modulates levels of NF- $\kappa$ B, thereby contributing to reduction of oral and systemic inflammation and improving the host immune response.<sup>[26-29]</sup>

These findings from SKY literature suggest that SKY practice is well capable to augment overall immunity against various microbial, fungal, and viral infections.

### **Sudarshan Kriya Yoga, Oxidative Stress, and Antioxidant Status**

Free radicals cause mitochondrial damage in cells. It is also reported that damage to mitochondria results in increased mitochondrial reactive oxygen species production in platelets, which in turn increases the risk for atherogenesis and coagulopathy. This can be prevented by preserving mitochondrial function in platelets. Regarding immune functions, antioxidants have immunomodulatory function.<sup>[30]</sup>

Recent evidence suggests disseminated intravascular coagulation (DIC) as the hematological complication associated with death in COVID-19 patients.<sup>[31]</sup> A considerable body of recent documented evidence is available which suggests that oxidative stress plays a key role in numerous aspects of DIC and septic shock. Moreover, these can be prevented by unregulated supplementation of antioxidants.<sup>[32]</sup>

Several studies have reported that regular SKY practitioners demonstrate significant down-regulation of oxidative stress indicators, such as blood lactate and plasma malondialdehyde (MDA), furthermore, up-regulation of antioxidant status indicators, such as superoxide dismutase, glutathione, and catalase was also observed. In one of the studies, SKY practice has also demonstrated superior improvements in antioxidant status than Vitamin E supplements.<sup>[33-35]</sup>

A study carried out at AIIMS, New Delhi, on gene expression profiling in SKY practitioners had also demonstrated evidence of beneficial effect of SKY on antioxidant status. The study reported improved antioxidant status both at the RNA level and enzyme activity level in SKY practitioners. This was accompanied by better immune status due to upregulation of antiapoptotic genes and prosurvival genes prolonging the life span of lymphocytes in these individuals. Thus, it was concluded that SKY practice may exert beneficial effects through transcriptional regulation on immunity, aging, cell death, and stress regulation.<sup>[36]</sup>

Hence, it can be hypothesized that SKY can help in ameliorating complications associated with oxidative stress-induced DIC in COVID-19 individuals.

## Sudarshan Kriya Yoga and Mental Health during COVID-19 Pandemic

SKY is a unique breathing technique that, in several studies, has shown evidence of efficacy in alleviating mental health problems, such as stress, depression, insomnia, anxiety, and posttraumatic stress disorders (PTSDs).<sup>[13,37-39]</sup>

Many studies have shown the potential of SKY in promoting psychological well-being, increasing life satisfaction, optimism, coping ability, and improved self-esteem post-SKY intervention. Postintervention self-practice and attendance of SKY follow-up sessions were crucial to its sustained efficacy.<sup>[40,41]</sup>

Initiation of appropriate interhemispheric synchronization and generation of dominant global brain rhythm with high-frequency cerebral activation following SKY practice leads to better autonomic and emotional control, with enhanced cognitive functions in people with all age groups.<sup>[42,43]</sup>

Doria *et al.* conducted the first study on SKY as an adjunct therapy for psychiatric disorders on a Caucasian population in Europe and the USA. They included individuals with primary diagnosis of Diagnostic and Statistical Manual of Mental Disorder-IV Mood and/or Anxiety disorders. All participants received SKY for a period of 6-month time. The authors found a significant reduction in the scores of anxiety and depression at baseline, after 2 weeks, after 3 months, and after 6 months of SKY intervention.<sup>[44]</sup>

In another study, reduction in mental stress was quantified using EEG, ECG, and DT synergistically and SKY therapy was used to regulate it. Investigators observed that with increasing mental stress, the alpha-band power decreased in the frontal lobe of the brain, while with decrease in mental stress and increase in stress tolerance after SKY, the frontal brain asymmetry decreased and cognitive performance improved, demonstrating SKY as a good alternative of medication for stress management.<sup>[45]</sup>

The randomized, waitlist-controlled study at the University of Pennsylvania demonstrated good feasibility, efficacy, and well tolerability, in which outpatient SKY program was an adjunctive intervention in major depressive disorder patients with poor response to antidepressant treatment.<sup>[46]</sup>

With the uncertainty of COVID pandemic spread in fellow prisoners and the situation in the outside world, the prisoners may experience tremendous mental stress. In this situation, they may be benefited from regular practice of SKY. Benefits of SKY in prisoners have been already investigated in many studies, where it was reported that Sudarshan Kriya and related practices (SK and P) lead to improvement in global assessment of functioning, anxiety, depressed mood, positive well-being, general health, self-control, vitality, and total positive feeling of general

well-being in prisoners with a nonpsychotic psychiatric disorder.<sup>[47]</sup>

Even though it seems that the peak of the virus has passed already, the worries related to possible future events are still present in our everyday life causing anticipatory anxiety and distress. The possibility of getting infected and the potential consequences keep us in a very uncertain situation resulting in fear. Due to restrictions and newer cases, individuals are not yet able to feel relaxed.

Moreover, the feeling of love and belongingness is a necessity of every human being. Recent comparative study of Yale University on three well-being programs (SKY Campus Happiness, Foundations of Emotional Intelligence, and Mindfulness-Based Stress Reduction) among university students has shown that the SKY campus happiness program resulted in the highest improvement in all six parameters (depression, stress, mental health, positive affect, mindfulness, and social connectedness) as compared to other groups and noninterventional control group.<sup>[48]</sup> Thus, after the long weeks of self-isolation and social deprivation caused by the pandemic, SKY programs can even be beneficial in attaining the feeling of social connectedness and better overall well-being again.

Globally, millions of individuals, including frontline COVID-19 warriors, such as medical professionals, police, and media professionals, have experienced overall positive well-being through Online Breath and Meditation workshop conducted by the AOL Foundation.<sup>[5-7,49-51]</sup> Reports gathered from personal experiences of the participants of these workshops have shown promising results of practicing SKY in fighting COVID-19 pandemic with improved physical, mental, and social well-being.<sup>[52]</sup> Many studies are in progress to assess long-term outcomes of these workshops.

## Role of Sudarshan Kriya Yoga in Management of COVID-19 Pandemic-Associated Posttraumatic Stress Disorder

PTSD is a common anxiety disorder in response to a traumatic event with major impact on psychological status. It could result in serious impairment and distress.<sup>[53]</sup>

Experience of an infectious disease, epidemic or pandemic, like COVID-19, results in a particular type of physical as well as psychological problems. Psychological ailments can be categorized into three groups. The first group experiences the psychological trauma, directly by suffering from the disease symptoms and the associated traumatic treatment. For example, difficulty in breathing, respiratory failure, altered consciousness, death threat, and tracheotomy are major causes of such trauma to the patients with severe COVID-19. The second group witnesses infected patients, who struggle and die from the infectious disease. This has a direct psychological impact on family members of patients, fellow patients, or health-care workers providing care for

the patients. The third group is one which experiences the realistic or false fear of infection, exclusion, social isolation, and stigmatization. This directly affects relatives of the patients, help and care providers, or even the general public. In addition, the psychological impact may further be enhanced during self-quarantine period, when these individuals may lack immediate social support.<sup>[54]</sup>

Intense changes in the ANS are often associated with PTSD, which are characterized by an increase in the sympathetic nervous system (SNS) activity (the “fight, flight, or freeze” response) and insufficiency in the parasympathetic nervous system activity (PNS) (the “rest and digest” system). If the condition is untreated, PTSD symptoms can last for many years following the trauma. Sometimes, it is difficult for people with PTSD to “just get over it” and their condition may actually get poorer, rather than better over time.<sup>[54]</sup>

Several epidemiological studies have reported a rather high prevalence of psychological health problems among disease survivors, victim families, health-care professionals, and the general public after an epidemic of infectious disease, such as flu, HIV/AIDS, MERS, SARS, and Ebola. While most of these psychological problems will reduce after the epidemic, symptoms of PTSD may last for many years and may result in serious disability and distress.<sup>[53,55-57]</sup>

COVID-19 involves numerous characteristics that are specific to mass traumatic events. People today seem to be gradually moving into a hypervigilant stance; they constantly manifest avoidance, which is encouraged (perhaps rightfully so) by the authorities; negative mood and cognitions are abundant, as there is clear fear that the world as we know it is about to change. Finally, at least for those infected or placed in home quarantine, intrusive thoughts related to health, and even death, are probable consequences.<sup>[58]</sup>

When we are faced with mass trauma, such as COVID-19, even a significant minority of traumatized individuals will mean that the mental health burden will be enormous. Facing a pandemic of this magnitude, the mental health response will surely need to go beyond that of trained experts. Thus, trauma professionals need to rapidly improve their ability of disseminating their skills. They are encouraged to invest in partnerships with community leaders and agencies to integrate findings from research with local traditions and practices. We also need to think about ways to scale up and support research in ways that provide nonexperts with the tools to collect their own data. In summary, COVID-19 calls for further efforts to scale up treatments and move away from the idea that only certain people can provide support for those experiencing traumatic stress.<sup>[58]</sup>

Evidence has suggested that yogic practices may decrease sympathetic overactivity and escalate parasympathetic activity, thereby improving the ability to tackle mental

stress. SKY was found to be potentially useful for reducing the severity of symptoms on the Clinician Administered PTSD Scale in Vietnam war veterans with treatment-resistant PTSD.<sup>[37]</sup>

SKY helps to heal the trauma-induced cognitive distortions and deep psychological wounds manifested by feeling of loneliness, abandonment, and banishment by society, by allowing participants to re-establish a sense of compassion, confidence, and tolerance. In a nutshell, SKY provides “corrective emotional experience” to recover from psychological trauma.<sup>[38]</sup>

Several studies have reported efficacy of SKY in relieving PTSD following mass disasters, such as earthquakes (Gujarat, India earthquake 2000), war (Bosnia, Kosovo, Sudan, and Iraq), floods (Iran 2004), the Southeast Asia tsunami (2004),<sup>[39]</sup> Hurricane Katrina,<sup>[59]</sup> and terrorism (New York World Trade Center 9/11),<sup>[9]</sup> and that the use of yogic techniques should be considered as an adjunctive treatment in emergency response planning. The SKY may provide remedy for stress by counterbalancing the sympathetic effect physiologically, while in the absence of stress, it may provide tool for relaxation.<sup>[60]</sup> SKY rapidly ameliorates symptoms of PTSD, including anxiety, depression, nightmares, insomnia, re-experiencing, overt expression to triggers, hyperarousal, emotional numbing, social withdrawal, loss of appetite, and outbursts of anger. SNS hyperactivity or erratic activity and PNS underactivity are associated with symptoms of PTSD. Evidence reports that SKY practice regularizes SNS activity and upsurges PNS tone as shown by HRV.<sup>[59]</sup>

### **Benefits of Sudarshan Kriya Yoga in Individuals with Various Comorbidities**

An observational study among 1590 laboratory-confirmed hospitalized COVID-19 patients from 575 hospitals reported that patients with any comorbidity such as hypertension, diabetes, COPD, and malignancy had poorer clinical outcomes than those without comorbidity. Poorer clinical outcomes were correlated with more comorbidities.<sup>[61]</sup>

This recent evidence suggests that individuals with existing comorbidity are more vulnerable to severe complications associated with COVID-19 infection. SKY practice can help such individuals in many ways to improve immunity, condition of existing comorbidity, as well as mental condition.

Large evidence-based scientific literature is available on the benefits of SKY for patients with a broad range of systemic diseases and conditions, including diabetes, CVDs, asthma, cancer, musculoskeletal pain, multiple sclerosis, chronic pain, and fatigue. Regular SKY practice resulted in significant reductions in triglycerides, lipid peroxidation, serum total cholesterol, plasma MDA, and blood glucose level in type 2 diabetic, CVD, and COPD patients. It also

resulted in a significant decrease in anxiety, insomnia, and depression associated with these systemic problems.<sup>[9,62-65]</sup>

Jern *et al.* reported a significant increase of platelet mobilization and activation during psychological arousal.<sup>[66]</sup> This may be a possible mechanism linking the psychosocial stress with emotional triggering of acute coronary syndromes in patients with advanced coronary disease.<sup>[67]</sup> A significant reduction in stress can be considered as a possible mechanism for stoppage of the alpha-adrenergically mediated platelet release and improvement in lipid profile.<sup>[23]</sup>

Dry cough and dyspnea are the primary and the most common signs in patients with COVID-19. Increasing the lung capacity can significantly help in preventing and treating pulmonary infections and pathologies. The effects of breathing exercises in pulmonary infections are associated with immune and autonomic modulations.<sup>[68]</sup> Improving pulmonary function can prevent pneumonia or decrease its progression from mild to severe, thus it can decrease the morbidity and mortality rates of COVID-19.<sup>[69]</sup> Several studies on SKY have shown a significant improvement in pulmonary functions irrespective of age and gender. This is attributed to the strengthening of respiratory muscles, good lung expansion, and establishment of sympathovagal balance. Thus, SKY can offer many benefits to individuals with COVID-19 infection through various mechanisms, such as enhancing immunity and improving cardiorespiratory physiology.<sup>[64,70-73]</sup>

One of the limitations of this review article is the absence of available literature directly evaluating the role of SKY in COVID-19. However, the data collected from personal experiences of the online SKY workshop participants have shown overall positive outcomes of SKY practice in fighting COVID-19 pandemic.<sup>[5-7,49-51]</sup> Many registered multicenter randomized controlled trials are in progress across many countries to explore the exact impact of SKY on frontline COVID workers and individuals suffering from COVID-19.

## Conclusion

SKY is a well-tolerated and cost-effective holistic tool that can easily be incorporated into different community-care models globally. SKY brings about relaxation and results in increase of total T-cells and their T-helper subsets, the NK cells (Group I innate lymphocytes), and antioxidant defense in the body. These observations have important implications for the COVID-19 pandemic, as they would suggest that (i) SKY may improve the mental health status of individuals; (ii) SKY may be effective in improving the immunity against viral infections; and (iii) in patients with comorbidities, SKY may improve the systemic health parameters, the quality of life, and/or chances of survival. SKY helps to improve an individual's mind-body-spirit connection, so that they can be healthier, happier, and

possibly even live longer. Further studies are needed to assess the therapeutic potential of SKY in the management of various communicable diseases.

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## Conflicts of interest

There are no conflicts of interest.

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