

Article

Exploring the Benefits of Yoga for Mental and Physical Health during the COVID-19 Pandemic

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Abstract: This article examines the efficacy of the postures, breath control techniques, and meditative states of yoga, specifically Haṭha Yoga, in promoting overall mental and physical health. It then examines whether this form of yoga could be effective in reducing morbidity or serious illness during the COVID-19 pandemic. We assess the potential efficacy of three claims made for Haṭha Yoga. They are the following: (1) breathing exercises associated with yoga may help maintain pulmonary health and protect the upper respiratory tract, the portal of entry for the SARS-CoV-2 virus infection; (2) improved immunity resulting from sustained yoga practice may help prevent COVID-19 contraction; (3) stress reduction of yoga may be effective in maintaining the mental well-being needed to combat the extra stress of living during a pandemic. Related to this claim, we examine testimony to the effect that yoga also gave people meaning and purpose in their lives during the isolating lockdown period. While exploring these beneficent advantages, we further address a serious health-related counterclaim that the community practice of yoga has the potential to create conditions that facilitate disease transmission due to heavy breathing in small, enclosed spaces. This balanced analysis introduces an interesting tension relevant to public health policy, namely that well-intended attempts to minimize indoor interaction for the sake of reducing the spread of infection may impact the effectiveness of yogic therapies and impede the freedom to practice the spiritual discipline of yoga. They may also not reduce the spread of infection enough to warrant their damaging effects on yoga practice. We suggest ways for resolving this tension and conclude with some concrete recommendations for facilitating yoga practice in future pandemics. These include (1) that public health policymakers consider programs that provide access to yoga by ensuring hospital prayer rooms appropriate in size and that, where feasible, yoga studios conduct their lessons outside in open areas; (2) that resources be devoted to providing therapeutic access to virtual yoga as a federal program, despite potential resistance to this idea of government involvement due to concerns that yoga has its origins in heterodox religious practice.

Keywords: yoga; online yoga; health benefits; COVID-19; subtle body; Hatha; Vinyasa; mental health



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1. Introduction

There is power, both spiritual and therapeutic, in the incantation of *Om*. This sacred syllable that is intoned at the start and conclusion of a traditional yoga session represents an astonishing ancient Indian insight about the play between breath and mouth that creates language. *Om* encapsulates the universe, as all possible letters that can be enunciated are bookmarked by the two sounds o and m. “O” is shaped deep in the back of the throat, at the root of our language-producing anatomy when air is forced through vibrating vocal cords. “M” is produced far at the other end of the mouth, as the lips press together and utter the sound that is made by humans as they suckle on the breast of their mother. All other letters are born somewhere between the sounding points of these two utterances. As the air travels from deep in the throat through the mouth and exits the pursed lips, it journeys through the space where all other letters are produced. Every possible utterance

is therefore symbolically held in this sound. In the words of the great sage Śankara, *Om* “contains within itself the entire literature” (Jha 1942, p. 10).

No civilization has put as much attention into the structure of the mouth and throat and the way that air and vibration travel through them as has ancient India. The Vedics recognized the singular importance of breath for life. Indeed, the very word for breath in Sanskrit, *prāṇa*, is the word for life force or soul (Sarbacker 2021, p. 168). A deep and rich catalog of practices emerged for understanding and controlling the breath in India, making its way into techniques that are commonly used today in yoga studios around the world.

During the COVID-19 pandemic, the struggle to breathe became a widespread concern, and many people turned to yoga in order to help them cope with the perils of the disease. A consequence of the pandemic has been that people have felt reticent about seeking medical care for other ailments at healthcare facilities, fearing exposure to the virus and wishing to minimize the spread of the disease (Wadhen and Cartwright 2021, p. 331). This opened an opportunity for people to seek alternative methods of staying healthy without having to go to hospital wards which might have a high incidence of the virus and could facilitate transmission. While the subtle body outlined in many yogic texts, with its *nāḍīs* (channels) and *cakras* (energy discs), might not correspond to anatomical features that are known to the scientific community today, there is good evidence that yogic practices may nevertheless help in the fight against COVID-19, both in their effects on the physical body and on the mental health of those who have contracted it or are in danger of contracting it. Yoga’s postures, breath control techniques, and meditative states have been used for millennia by millions of people around the globe to promote mental, physical, and spiritual well-being. In recent years, significant scientific research has been conducted exploring the potential benefits of these practices (Bower and Irwin 2016; Bushell et al. 2020; Cahn et al. 2017; Falkenberg et al. 2018; Groessl et al. 2015; Kuntsevich et al. 2010; Morgan et al. 2014; Pascoe et al. 2017; Shete et al. 2017).

In this paper, we assess the purported benefits of yoga for COVID-19 related prophylaxis or treatment, exploring three main areas, which we will here raise as questions: (1) is the practice of yoga effective at reducing stress and maintaining the mental well-being needed to combat the extra stress of living during a pandemic? (2) Is there any evidence that yoga boosts the practitioner’s immunity, leading to reduced disease contraction? (3) Do breathing exercises associated with yoga help maintain pulmonary health and protect the upper respiratory tract, the portal of entry for the SARS-CoV-2 virus infection? In sum, we explore the claim that the overall bodily health promoted by yoga helps prevent severe illness in situations where the virus is contracted. Related to this last point, we examine the evidence for the assertion made by practitioners that yoga also gives people meaning and purpose in their lives when confronted with the challenges of an isolating lockdown. Finally, we assess these benefits in light of mitigation efforts such as social distancing, arguably disruptive to the practice of yoga, and to religious engagement generally.¹

2. What Is Yoga?

The term “yoga” has many different meanings. Yoga comes from the Sanskrit root “*yuj*” meaning “to join” and therefore denotes at its core “joining” or “uniting.” However, debates persist about what exactly is joined to what: is it the soul that is united with God, or consciousness united with its true identity, or something else? Over time, “yoga” has come to refer to almost *any* religious practice where an aspirant uses some method to achieve greater knowledge of the spiritual world. Historian of religion Stuart Sarbacker has recently compiled a helpful overview of the different paths that yoga has taken, etymologically and heuristically, in India and beyond over the centuries (Sarbacker 2021). In one of the usages he examines, the word yoga is translated simply as “religious practice,” i.e., as a term ubiquitously referring to practices from all the Indian religions, including Hinduism, Buddhism, and Jainism. This noted, when the term yoga is used in contemporary parlance, especially in the West, it usually refers to a series of postures, breathing techniques, and modes of meditation emerging out of a system known as *Hatha Yoga*, translated as the

“Yoga of Forceful Exertion,” dating back to the twelfth century and associated with Tantric ideas of the body’s relationship to the cosmos (Sarbacker 2021, p. 172).

The origins of yoga in fact go back to the earliest Indian texts, the *Vedas* (1500–500 BCE), which refer to the idea that an aspirant has the ability to tap into the generative power of the universe through self-discipline (*tapas*) and a state of celibacy (*brahmacarya*) (Sarbacker 2021, p. 56). *Tapas* is a Sanskrit word that means “heat” and is used to denote the energy generated deep within the self through the power of ascetic practices. It is conceived as a spiritual fire that can be stoked through difficult practices that deny the body of pleasure, often equated with the heat of the sacrificial fire. Sacrifice, or *yajña* in Sanskrit, is the prime mode of religious expression in the *Vedas*. All of the rituals demarcated therein ultimately drive towards sacrifice, namely the burning of an offering that is conceived variously as a gift to the gods or even as a rite whose merit impels the universe to produce good outcomes for the agent preparing the sacrifice (Jha 2018, pp. 15–18). Over time, and especially in some of the major *Upaniṣad* (500–400 BCE), which are explorations of the deeper inner-meaning of the earlier parts of the *Vedas*, the idea of reconfiguring the physical sacrifice to be a more spiritual practice emerged. This became known as the *inner sacrifice*, the sacrifice made not by taking an animal and placing it on an altar but rather by offering something of value from deep within the individual in its place (Bentor 2000). The oblation was commonly conceived as being pleasure. The aspirant offers the normal pleasures of life, such as sex, good food, grooming, and status as a sacrifice and lives thereafter as a renunciant, someone who has gone beyond the life of a householder and given up financial luxuries as well as sensual and worldly pleasure in pursuit of higher goals. This, of course, requires self-restraint, and the individual living this ascetic life is known as a *Samnyāsi*, literally “one who has given up everything” (Sarbacker 2021, p. 151).

These *Samnyāsis* took seriously the insight in many of the *Upaniṣad* that we are caught in an endless cycle of physical embodiment known as *samsāra* that is driven by ignorance of the true nature of reality (Sarbacker 2021, p. 235). We are born again and again, transmigrating from one life and one body to another, forever doomed to become sick, age, and die, only to be born again and endure the sufferings of life over and over. Yoga was developed as a salvation story to help us escape from this cycle and achieve a blissful state of disembodied union with the divine through the purification of our perception and cognition. Because ignorance of our true nature was regarded as the source of this recurrent trap, the main aim of yoga was to help us disengage from our normal cognitive state and the sense impressions fed to us by our bodily senses that fool us into believing that the world of matter is one of ultimate importance.

The ontology underlying yoga makes a distinction between two entities, not the mind and body as in Western dualistic philosophies and theologies but rather between the mind–body complex and the soul. What we normally think of as the mind is, in this case, a kind of sixth sense, related to, if more complex than, the other senses, though still part of the changing and active material of the cosmos, often known as *prakṛti*. Underlying this is the second element, the soul. Known variously as *puruṣa*, *ātman*, or *jīva*, it is unchanging, eternal, and not active in the world, forever pure and stainless and characterized by pure consciousness (Sarbacker 2021, p. 242). David White notes that “The term yoga is often used to designate the theory and practice of disengaging the higher cognitive apparatus from the thrall of matter, the body and the senses (including mind). Yoga is a regimen or discipline that trains the cognitive apparatus to perceive clearly, which leads to true cognition, which in turn leads to salvation, release from suffering existence” (White 2012, p. 7).

Yoga, then, is primarily the attempt to suppress the riot of sensory perceptions that cloud consciousness in order to let pure consciousness of the eternal soul (often equated with the Divine) shine through, just as the sun must set in order for the moon to shine through. “The self (*ātman*) is likened to a driver of a chariot made of the mind and body of the person, whose purpose is to bring restraint and control to the vehicle. Through control of the chariot of mind and body the charioteer is able to recognize the source of their manifest consciousness in the unmanifest reality of the person (*puruṣa*), the reality

of brahman" (Sarbacker 2021, p. 65). Breath control, known as *prāṇāyāma*, serves as an essential practical technique for stilling the chaos of thought and turning the self's attention towards the soul. Five kinds of breath are sometimes enumerated (such as in the *Maitrī Upaniṣad* 2.6), and one can ride the breath to reach divine consciousness or *mokṣa* just as the offering of the sacrifice is sublimated by the smoke into heaven (Cowell 1935, p. 247). The *Maitrī Upaniṣad* further discusses the control of the breath by instructing the aspirant to press the *prāṇa* into the central channel (*suṣumnā*) in order to achieve a state known as isolation (*kaivalya*) (Sarbacker 2021, p. 67; Cowell 1935, pp. 269–70). Here, isolation is understood to be a separation of the soul from its conjunction with the material world such that it will not be endlessly reborn and instead will achieve salvation.

In our normal state, the soul is radically intertwined with the material world, and our ignorance of the true nature of our spiritual and material aspects keeps these two spheres intertwined (Sarbacker 2021, p. 103). The intricate process of "teasing out" our soul from its dalliances with the material world involves a six-limbed (*ṣaḍāṅga*) or eight-limbed (*aṣṭāṅga*) system of yoga, including breath control (*prāṇāyāma*), withdrawal of the senses (*pratyāhāra*), meditation (*dhyāna*), concentration (*dhāraṇā*), inquiry (*tarka*), and contemplation (*samādhi*) as described in classical yoga texts such as Patañjali's *Yoga Sūtras* (Sarbacker 2021, p. 67). Another word often used to describe the goal of yogic practice is *amṛtyu*, meaning "deathlessness." The conquest of death entails the absence of disease, and although there are differences of opinion about whether the body itself exists in a purified state in such a case, it does reflect an ancient desire to purge the body of disease and impurities. This claim about a benefit of expiation has played out in modern times as a belief that yoga can also provide medical and health benefits, releasing the body from dangerous toxins and other hazards to which it is otherwise susceptible through exposure to the outside environment.

3. Haṭha Yoga

Haṭha Yoga, the form of yoga most commonly practiced in yoga studios around the world and which has been the subject of most of the scientific studies that we will invoke below, involves a number of developments based on its conception of the body as a complicated system of pneumatic and hydraulic forces. Breath control becomes highly advanced in this form of yoga with increasingly involved practices that include precise degrees of control of the breath, sometimes leading to long periods of both extremely deep breathing and breath stoppage (White 2012, pp. 15–16). These practices are aimed at awakening and then propelling upwards the *kuṇḍalinī*, a serpentine force viewed as lying coiled, dormant at the base of the spine that represents the potential of *śakti* or energy in the body and which, when awakened, travels up through the *suṣumnā* passage in the spine and pierces the energy *cakras* as it flies up to the top of the head, bursting into the cranium and delivering a state of ecstasy and bliss. According to Sarbacker: "This upward movement is homologized with an ascension through the cosmological process itself, from the gross elements to the subtle reality of consciousness, through the concentric circles on the vertical axis of the *suṣumnā nāḍī*" (Sarbacker 2021, p. 163). Here, the human being is conceived of as a microcosm of the universe, with the soul equivalent to the divine power which is the ground of all being, the *nāḍīs* or channels equivalent to the great rivers that feed the world, the spine representing Mount Meru, the lofty center of the universe.

The Tantric tradition that established much of the foundation for Haṭha Yoga did not deny the body entirely but perceived it to be a vessel where the divine resides, one that could be used to experience the divine through the creation of a transubstantiated body that is the result of these practices. In contrast to earlier forms of yoga whose aim was to entirely separate the soul from the body, Haṭha Yoga accepts and uses the body in the quest for higher goals. The *Yoga-Śikā-Upaniṣad* observes that The Absolute (*Brahmatva*) has attained embodiment (*Dehatva*), even as water becomes a bubble. The phases of matter are portrayed metaphorically by water changing from a liquid form to a bubble form, which requires heat or an abundance of light (Feuerstein 2013, p. 382). The key insight of this analysis is that, here, the body is used to achieve the goals rather than being completely

denied or renounced, thus producing the kind of beneficial effects outlined in some of the studies we will present below. The concept of the subtle body (*sūkṣma-śarīra*), an inner body that houses the main lifegiving functions and energies that support the gross material body, is a key player in this drama, for it is through purification and perfection of this subtle body that the beneficial effects are felt in the gross body. The “subtle body” as described as early as at the 6th century BCE in the *Chāndogya Upaniṣad* (Section 8.6) includes a series of channels (*nāḍī*) that bloom out of a central channel, known as the *suṣumṇā nāḍī* (Jha 1942, pp. 441–46). The *sūkṣma-śarīra* is described as having wheels (*cakra*) or lotuses (*padma*) where the vital energy (*prāṇa*) and drops (*bīja*, *bindu*) of vitality move throughout the *nāḍī*. The physiology underlying Haṭha Yoga became fully developed in the medieval period and holds that the *sūkṣma-śarīra* may have knots (*granthi*) that inhibit the flow of vital energy throughout the *nāḍī*. To alleviate *granthi* within the *sūkṣma-śarīra*, *layayoga*, *kunḍalinīyoga*, and *haṭhayoga* began to be practiced in order to affect the free flow of vital force (Sarbacker 2021, p. 162).

The most popular forms of yoga practiced today are Haṭha and Vinyāsa, both of which take the traditional modalities discussed above and mix them with newer developments that were adopted from other sources, such as British calisthenics used in the Indian Army as well as the developing gymnastic and bodybuilding practices of the West (Singleton 2010). The sun salutation is an exemplification of the practice of Vinyāsa, which builds on the Haṭha Yoga practice of “victorious breath control” (*ujjāyī-prāṇāyāma*). Vinyāsa also includes other forms of breath control called the “upward flying” (*uddīyāna*) abdominal and “root” (*mūla*) pelvic lock. It is also referred to as *uddīyāna* “binding” (*bandha*), which means holding on to the breath after a full expiration. Vinyāsa incorporates the use of a focused gaze (*dr̥ṣṭi*) on a point on the body or in space while practicing the more developed form of breath control and performing certain postures (*āsana*) with movements of the body. Vinyāsa moves from one pose to the next in a fluid manner, whereas Haṭha tends to hold one in the locked poses for longer. Bikram Yoga emphasizes the ranges involved in *āsana* such as static *āsana* (seated postures) and dynamic *āsana* (standing postures) but in an extremely hot environment (Sarbacker 2021, p. 196).

The traditional views of the body explain how the thinkers who laid out the yogic system thought it worked, but their claims and insights do not necessarily correspond to modern scientific understandings of the body. While some question how verifiably measurable the benefits of the practices that are grounded in the action of yoga’s postures, breathing techniques, and mental habits are, when the results of specific practices are subject to repeated testing and experimental replication, results can be affirmed as having pragmatic value even if the mechanisms of such effects are poorly understood (Van Fraassen 1980, pp. 2–5). Indeed, there is a body of clinical research supporting these observations. Yoga practices have been shown to reduce stress levels and promote a healthy lifestyle, while boosting the immune and pulmonary systems, particularly the upper respiratory tract, the portal of entry for the SARS-CoV-2 virus infection (Bushell et al. 2020, p. 547). Additionally, the health of the respiratory system is an important line of defense in preventing fatality (Beltramo et al. 2021). Finally, yoga displays few adverse side effects (Bushell et al. 2020; Agarwal and Maroko-Afek 2018; Balkrishna et al. 2021). Clinical studies have suggested that yoga has immunity-inducing, pulmonary protective, stress-reducing, well-being improving, and overall ailment-alleviating results (Naoroibam et al. 2016, p. 57). This all suggests that overall health and well-being help combat COVID-19 and are fostered by yoga. With this background about the spiritual referents and health benefits now established, we may turn our attention to the SARS-CoV-2 viral outbreak, which the World Health Organization declared to be a widespread pandemic in March 2020.

We may recall that when the WHO made this declaration, independent national governments across the globe were urged to create emergency restrictions and regulations for mitigating the alarming spread of the SARS-CoV-2 virus and its virulent impact. The biggest obstacle to this effort was the uncertainty of the mode of transmission and morbidity of COVID-19. As the pandemic progressed in 2020, differential transmission trends in various contexts became visible. Prevalence rates of transmission and the morbidity and

mortality statistics varied substantially across regions, races, ages, and communities of different socioeconomic status. Social determinants of health became a focal concern as strategies in preventing transmission grew in importance. In response to this crisis and uncertainty, one form of preventive care to which many turned was yoga, specifically Haṭha or Vinyāsa Yoga, along with their associated forms of meditation. To this end, we now consider what we have long known and have recently acquired evidence for with regard to yoga's efficacy in minimizing the severity of mental health struggles, boosting immunity function, and combating pulmonary ailments of the virus responsible for COVID-19. (Tillu et al. 2020, p. 2).

4. Yoga and Mental Health

Post Traumatic Stress Disorder (PTSD) has been identified in individuals who have been affected by anxiety-producing circumstances caused by the COVID-19 pandemic. Being assaulted by an invisible enemy that could strike one or one's loved ones down at any moment is a perfect recipe for the kind of trauma that can lead to PTSD. There are many sources of trauma that operate on people infected by the disease, such as the difficulties of hospitalization, including possible intubation, stigmatization by families and friends, and the inability to be physically close to loved ones during infection. A meta-analysis of studies on the effects of COVID-19 noted that quarantine, lockdown, and the threat of severe illness and death during the pandemic have resulted in deleterious effects to the mental health of a significant number of individuals (Yunitri et al. 2022, p. 1). High levels of PTSD were noted in all sectors of society, including those infected with COVID-19, those working in hospitals, and in society at large, with the prevalence ranging around 17% across all the studies that were examined in the meta-study. Even those who did not contract the disease were shown to be at risk for PTSD due to the fear of infection and severe disruptions to social and work life effected by the pandemic. PTSD can cause serious impairment to all areas of mental function, as it impinges on the carrying out of daily routines, as well as many aspects of physical well-being (Cushing and Braun 2018, p. 21). Psychiatric consultations have soared since the pandemic began, and antidepressants have been prescribed at ever-increasing rates (Di Lorenzo et al. 2021; Rabeea et al. 2021).

In the midst of these social disruptions and traumatic assaults on mental and physical health, the practice of yoga has been shown to be effective at mitigating and even relieving many of the symptoms of PTSD. The practice is indicated in treating as well as preventing the psychiatric disorders such as anxiety, poor sleep, and depression that arise from this condition (Bushell et al. 2020, p. 5). A cross-sectional study from Brazil on the connection between yoga practice and mental well-being during the pandemic conducted in July 2021 examined the habits of practitioners of a variety of yoga modalities, such as Haṭha, Vinyāsa, Integral, Kundalini, Ashtanga, Raja, and Iyengar (Dos Santos et al. 2022, p. 127). The study surveyed 860 people and noted the length of time that a subject had been practicing yoga, the number of times per week that they had been practicing during the pandemic period, and the average length of each session. Next, the study correlated this data with assessments of mental well-being, including presentations of depression, anxiety, and stress. The results revealed a correlation between the level of yoga one had engaged in with assessed levels of depression, anxiety, and stress. The greater the level of yoga that a subject had practiced was, the lower their score related to these levels was (Kahya and Raspin 2017). Meta studies have also revealed that those who have a higher level of yogic discipline have the most improvement in mental well-being (Cushing and Braun 2018). As a result of these reported successes leading up to and now during the pandemic, more mental health care professionals and even primary caregivers are implementing yogic therapies into their existing clinical management of mental health disorders, emphasizing yoga's "relationship to distress, through mindful, non-judgmental acceptance of internal experiences through an enhanced capacity to tolerate distress and self-soothe" (Kahya and Raspin 2017, p. 116).

As a result, yoga's popularity as a psychological therapy is growing. One recent study has shown that yoga incorporating postures, breathing, and meditation administered to women suffering from treatment-resistant PTSD was able to alleviate the trauma in half of the women to levels below what would clinically be classified as PTSD, leading to a significant reduction in the severity of symptoms for those who were still clinically diagnosed (Van Der Kolk et al. 2014). This study suggests that yoga may provide a complementary approach to reducing PTSD by improving physical and emotional awareness and regulation. A second study demonstrated the efficacy of Trauma Center Trauma-Sensitive Yoga (TCTSY), which is a form of yoga that has been modified for use at trauma centers to make it accessible for people who need more gentle interventions due to trauma. In particular, TCTSY avoids requiring the instructor to physically touch and correct the student's postures and aims to give one more power over one's own body. In this study, the thirty-item Clinician Administered PTSD Scale measures dropped significantly in the trial group using yoga therapy, making them in line with the standard Cognitive Processing Therapy interventions commonly used to treat this condition. (Kelly et al. 2021, p. S-45). As the investigators report, yoga "may be an effective treatment for PTSD that yields symptom improvement more quickly, has higher retention than CPT, and has a sustained effect. TCTSY may be an effective alternative to trauma-focused therapy for women veterans with PTSD related to MST." (Kelly et al. 2021).

Telles and colleagues report that yoga was effective at improving mental health and alleviating anxiety in instances of severe trauma and loss, where symptoms of anxiety, sadness, and PTSD abated, attention span improved, and restlessness decreased among the subjects of the trials that were examined (Telles et al. 2012). Heart rates were additionally reduced when elevated, negative emotions were limited, and sleep quality was improved by sustained practice (ibid.). Physical postures were found to improve mood, and meditation was associated with increased rates of remission of depression. In the same study, yoga was also shown to help alleviate anxiety, with longer interventions lasting several months shown to be more effective than shorter interventions lasting only a few weeks. As Macy notes: "Based on the current evidence, clinicians and service providers working with individuals who are experiencing negative outcomes associated with traumatic experiences . . . should consider using yoga as an intervention, but only in addition to other evidence-based and well-established treatments" (Macy et al. 2018, p. 52). (Macy et al. acknowledges that because of the holistic nature of yoga, it is difficult to isolate exactly what component of the practice is eliciting the documented efficacious outcomes and what the mechanisms for this might be. The studies were also statistically problematic by dint of their small sample sizes, poor quality baseline data, inconsistent evaluation and outcome measurements, lack of long-term follow-up to investigate the sustained effects of yoga, and poor documentation of methodological processes). Still, other significant studies are worthy of our attention. A treatment study entitled "Yoga Therapy for the Mind: Eight-Week Course" (YTFTM) addressed depression and anxiety through mindfulness-based interventions and yoga practice in female participants (Kahya and Raspin 2017, p. 123). This was followed years later by a similar study which conducted and evaluated a two-week virtual PTSD treatment of CPT for veterans with PTSD during the COVID-19 pandemic (Held et al. 2021, p. 543). Both studies uncovered multiple benefits in the target groups, including the appropriation of virtual mindfulness techniques, including trauma-sensitive yoga.

The combined take away of all of these studies suggests that those suffering from PTSD might view yoga as a long-term coping tool that could be appropriated in addition to other treatments, even if the mechanisms of yoga's functional contribution are not fully clear. It may be, as Schmalzl intimates, that breathing exercises and postures help combat PTSD by encouraging a lifestyle of self-love and self-health, a view which is reinforced by the rewiring of the subconscious away from negative coping mechanisms (Schmalzl et al. 2015, p. 235). While additional studies are needed in order to clarify these provisional explanations of yoga's efficacy, there is enough already to see the practice of yoga, though

spiritual at its core, could become mainstream therapy for trauma-induced hardship as a result of COVID-19.

5. Yoga and Immunity Function

For some time there has been mounting interest in exploring the potential effects of yoga therapy on human immune systems during exposure to stress. In one prominent study assessing the association between exam-taking among students in medical school and their immune system responses, yoga was introduced as a potential mitigating factor. After screening for acute and chronic illnesses, with a sample size of 60 first-year medical students, cohorts were randomly divided equally between a control group and a test group enrolled in a yoga therapy regimen for 12 weeks during the medical examination period (Gopal et al. 2011, p. 26). The yoga curriculum was enforced for at least 35 min daily in the active study group and consisted of yogic prayer for 2 min, *sukṣma vyāyama* (micro exercises) for 6 min, *sthūla vyāyama* (macro exercises) for 4 min, *āsanas* (postures) for 12 min, *prāṇāyāma* for 4 min, and *dhyāna* (meditation) for 5 min. The results of this study positively correlated yoga activity and immune health. The control group experienced a decrease in the levels of interferon gamma (a cytokine that plays an important role in immune response) as well as a significant increase in the serum cortisol, heart rate, blood pressure, and respiratory rate. The experimental group did not experience a decrease in the core immunity functions and did not experience an increase in the physiological parameters that mark reduced immune response. The results of the study suggest that yoga helps resist the autonomic changes and impairment of cellular immunity seen in stressful situations (Gopal et al. 2011, p. 26).

A second, more recent study evaluated the effects of yoga on stress, sleep, diurnal cortisol, and malignant cell count on patients with metastatic breast cancer. The screening criteria ensured that the population of women selected for the study had to have at least a high school education and be diagnosed with stage IV breast cancer within 6–24 months. It consisted of a sample size of 91 women randomized into the experimental group with an integrated yoga-based stress reduction program ($n = 45$) and a control group with education and supportive therapy sessions ($n = 46$). The yoga intervention spanned a three month period that consisted of a set of *āsanas* (postures practiced with awareness), breathing exercises such as *prāṇāyāma* (voluntarily regulated nostril breathing), meditation, and yogic relaxation techniques with visuals, and the yoga intervention focused on attention diversion, awareness, and relaxation as the prominent principles to alleviate stressful experiences. The sessions included ten minutes of lectures and discussions on philosophical concepts of yoga and the importance of these in managing stressful experiences on a daily basis. The sessions were then followed by twenty minutes of warm-up by practicing easy yoga postures, breathing exercises, and yogic relaxation. The final 30 min of the sessions consisted of guided meditation based on awareness by focusing on sounds and chants from Vedic texts as well as touch and sound sensation exercises intended to produce both stimulating and calming therapeutic experiences during the sessions (Rao et al. 2017, p. 253). Participants attended the sessions of the yoga intervention at least two times per week for twelve weeks. The results showed a significant decrease in symptom distress, sleep deprivation, and waking cortisol levels. The primary stress hormone cortisol also significantly decreased compared to the control group (Rao et al. 2017, p. 253).

A third study examining some of the more stress-reducing effects of yoga therapy correlated the function of the endocrine, immune, and nervous systems to stress levels, specifically in environments where human beings experience hormone-level, cytokine-level, and neurotransmitter-level fluctuations as a result of acute stress, lowering immunity (Venkatesh et al. 2020, p. 9). The authors discovered that salivary human β -defensin 2 (HBD-2) levels increased after subjects engaged in stretching for 90 min in the context of yogic practice, a finding heralded as a breakthrough discovery because HBD-2 is an antimicrobial peptide that is expressed in epithelial cells of the oral cavity and respiratory

tracts, an effect found to be decisive in lowering hormone stress levels measured in all three systems mentioned above (Venkatesh et al. 2020).

Finally, a fourth study of 19 randomized control trials consisted of a meta-analysis and systematic review (sample size of 1300). The study attempted to draw conclusions on the effectiveness of yoga therapy on people diagnosed with HIV. The study looked primarily at the serum CD4 counts, which is a test measuring the presence of white blood cells known as T-cells that are some of the main tools the body uses to fight off bacteria and viruses (Jiang et al. 2021). It found that yoga therapy was functional in significantly elevating CD4 counts (i.e., lymphocyte counts that, dependent on specific serum levels, indicative the effects of HIV have weakened) as well as in reducing stress, depression, and anxiety, while also improving the quality of life for those battling with HIV. These successful results from yoga therapy are apparent immediately post-intervention and long-term follow-up post-intervention (ibid., pp. 505–19). These same debilitating symptoms, stress, depression, and anxiety, are, as we have discussed, at issue when one is suffering from COVID-19.

6. Yoga and Pulmonary Health

Because of the long tradition in Indian yoga of deep breathing techniques, a number of recent studies have assessed the potential benefits of yoga on patients who present with chronic obstructive pulmonary disease (COPD). Patients who suffer from COPD often experience airflow blockage and breathing-related problems predominantly due to inflammation, which can be caused by numerous factors. A question of central concern with regard to yoga's focus on deep abdominal breathing has to do with the attention to the heightened awareness in every breath as potentially benefitting patient breathing and health (Dhansoia et al. 2022).

In order to assess the potential effects of yoga therapy on breathing fully, a meta-analysis was conducted in 2019 which gathered data from 11 randomized controlled trials with a total of 586 patients. The methods of the various studies analyzed yoga interventions grouped by either yoga breathing-only or by complex yoga interventions with yoga breathing added to physical postures, meditation, and/or lifestyle advice. The results of this study concluded that yoga therapy that focused on breathing exercises had beneficial effects on patients with COPD and resulted in better lung function through the measure of their forced vital capacity (FVC), forced expiratory volume (FEV), and Peak Expiratory Flow Rate (PEFR). The results of the study concluded that yoga breathing techniques can be an effective adjunct intervention for patients with COPD, as well as a beneficial preventive measure (Cramer et al. 2019, pp. 1847–62).

Acute Respiratory Distress Syndrome and Pneumonia are frequent complications of COVID-19 and surgery in elderly populations (Chiumello et al. 2022). An analysis of "upper-body yoga" in elderly patients with acute hip fracture assessed the feasibility and efficacy of yoga therapy for a population for up to four weeks post-surgery (Guo et al. 2019, pp. 1–8). The study placed forty patients in a control group that undertook abdominal breathing training, while 39 patients were placed in the yoga group and provided a regimen of yoga-related upper-body therapy. The study showed that one patient in the control group developed pneumonia post-operation whereas none of the patients in the yoga therapy group developed pneumonia post-operation (a statistically insignificant finding), and the study also found that elderly patients who participated in more than four weeks of low-intensity "upper-body yoga" training suggested higher FVC, PCF, and daily living activity than those in the control group. The findings of this study not only help show how yoga therapy can help with respiratory function but also how it protects the respiratory system from developing pneumonia. Additionally, it lays the ground for the safety and efficacy of upper-body yoga in the acute phase of hip fracture surgery and subsequent rehabilitation as a viable therapeutic intervention (ibid.).

The above studies suggest that yoga could be an effective intervention in ameliorating several key challenges that elderly patients face when infected with COVID-19. It may assist in strengthening the immune system, which can provide prophylactic protection

against contracting the disease in the first place. It likely strengthens the pulmonary system, the primary system affected by COVID-19, leading to stronger, deeper breathing, which in turn has a number of ancillary benefits. Finally, yoga may lower the rate at which fragile patients contract pneumonia, reducing stress while promoting overall mental health with much lower rates of PTSD.

7. Assessment of Community Yoga

Do the benefits of yoga outweigh the perceived risks of practicing it in an indoor group setting during the pandemic? The relationship between the yoga teacher and the student, known as the *guru-śiṣya* relationship, is often cited in the ancient texts (including the *Upaniṣad*, which literally means “sitting down near” one’s teacher who imparts their knowledge) as fundamental to the success of the endeavor. Some traditions developing out of the Tantric modalities that underlie Haṭha Yoga even assert that the transmission of yoga principles and practices cannot be effective without the establishment of this sacred relationship (Feuerstein 2013, pp. 11–13). The frequent claim that the teachings of yoga must be practiced and taught in person follows from these ancient teachings. The challenge in the current pandemic crisis (but in similar situations that are not difficult to imagine) is that the communal practice of yoga can create conditions that facilitate viral transmission due to heavy breathing in small, enclosed spaces. This introduces a tension in public health policy, namely that yoga may help combat symptoms of and boost immunity to COVID-19, but attempts to minimize indoor interaction during the pandemic impede the ability to practice yoga. Additionally, as a practice that has deep roots in, and is inextricably connected to, the Hindu religious tradition, restrictions on the practice of yoga might in some cases be viewed as a challenge to freedom of religion.

One study found that satisfaction amongst practitioners joining a yoga class online was lower than amongst those who attended in person in the four main outcome categories of mental health benefits, feeling physically satisfied, feeling focused, and feeling energized (Brinsley et al. 2021, Table 2). Another study suggested that there is more risk of injury to the student when practicing online because the teacher is not present to correct the postures (Sharma et al. 2022, p. 1). A further study has demonstrated that there is no respiratory inhibition when wearing a mask and performing various forms of physical exercise including yoga. Researchers found that the participants in the study had no difference in the time to exhaustion when exercising with or without a face mask (Shaw et al. 2020). Yoga practice can also accommodate an acceptable degree of social distancing, because the space needed between mats in order to provide the room for the practitioner to properly stretch and move their limbs has to be at least two arm lengths, or perhaps six feet. It may be, then, that the effects of practicing yoga in person, using masks in a well ventilated and socially distanced area, may outweigh the threat of iatrogenic disease while producing the mental and physical benefits that can keep practitioners healthier during this difficult epidemic.

There are other factors to consider as well when determining whether yoga should be practiced in person versus online during the pandemic. To fight off a pandemic, we need stronger, more resilient, and more productive communities, which can be achieved through community connectedness, which itself in turn is a byproduct of communal yoga therapy at studios, health centers/clubs, and rehabilitation centers (McGrath et al. 2017, p. 101). We have to remember that there are many situations in which the importance of being together in a physical place outweighs the risks of contagion, such as at hospitals. The health care workers have to come into contact with the patients in order to treat them, so the question then becomes whether a yoga instructor can be thought of in these terms as well. As a therapy that is recognized as having health benefits both by the National Center for Complementary and Integrative Health and the American College of Physicians (<https://www.nccih.nih.gov/health/yoga-what-you-need-to-know>) (accessed on 4 February 2023), it is clear that yoga instructors are important adjunct healthcare workers and should be treated as such.

Those who already live and work in congregate settings could readily find communal yoga to be a helpful tool for maintaining health. The most integral part of a resilient community during a pandemic is its healthcare workforce. Healthcare workers (HCWs) are already at a higher risk of suicide before a pandemic and at an even higher risk of suicide during a pandemic. [Bismark et al. \(2022\)](#) address how the pandemic magnified their pre-existing mental illness as well as issues in their personal lives such as domestic violence and financial struggles. During the pandemic, HCWs faced an increase in work obligations while facing depletion of the necessary medical resources. HCWs recommended that having a stronger sense of belonging would have been more beneficial to mitigate suicidal thoughts ([Bismark et al. 2022](#), p. 113). Communal yoga can help provide HCWs' need for belonging and connectedness in order to quell thoughts of suicide or self-harm.

Communal yoga would not only be beneficial to HCWs but to their patients as well. In addition to maintaining HCW durability in the workplace, patients could benefit from direct access to yoga practice which has been shown to improve strength, balance, flexibility, and attention control as well as providing a greater sense of belonging, community connection, and the ability to move forward with their lives ([Donnelly et al. 2020](#), p. 2482). Fall prevention programs that use yoga therapy have been studied for those who have Parkinson's Disease. In fact, one study, despite its small sample size, was able to find that the experimental group that received yoga therapy had a significant reduction in fall risk compared to their control group. Both groups experienced improvements in motor function, postural stability, functional gait, and freezing gait ([Van Puymbroeck et al. 2018](#), p. 1). A study analyzing the WDEQ pregnancy-related anxiety questionnaire assessment also found yoga to be effective in reducing anxiety as a form of prenatal care ([Newham et al. 2014](#), p. 631).

Prisons provide yet another forced congregate setting which might take advantage of in-person yoga practice. A review of the relevant literature related to yoga in prisons found that yoga helped alleviate aggression and violent behavior through its stress-reducing effects ([Muirhead and Fortune 2016](#), p. 57). A systematic review on yoga for substance abusers found significant cessation of substance use by using yoga therapy alone or when using yoga therapy in conjunction with other pharmacological treatment modalities such as opioid substitution therapy ([Walia et al. 2021](#), p. 964).

The above considerations lead us to surmise that for individuals who find themselves during a pandemic type situation in unavoidable congregate environments (such as various sorts of healthcare facilities, nursing facilities, and prisons), communal yoga practiced with masks and social distancing can be commended for disability rehabilitation, substance abuse rehabilitation, aggression alleviation, suicide prevention, fall prevention, prenatal care, and postnatal care and may be successful in maintaining or improving mental health and physical wellness. Public health policymakers might also consider programs that provide safe access to yoga by ensuring hospital prayer or meditation rooms appropriate in size and ventilation for yoga to be practiced with as little risk as possible.

8. Public Health Policy Implications of Yoga Practice

The evidence brought forward in this paper suggests that yoga practice can help to prevent or mitigate symptoms of COVID-19 and improve overall mental and physical health—with the caveat that additional research, maintaining rigorous experimental design standards with larger sample sizes as well as extended longitudinal and meta studies, needs to be undertaken. We have also just suggested above that in-person communal yoga practice has greater benefits and fewer adverse effects than yoga practiced alone at home, and, therefore, if people are already living in a congregate setting, then practicing communal yoga is likely to be beneficial even during a pandemic. However, if the research is more than suggestive that yoga interventions are efficacious, what public health policies might we consider appropriate to actively support therapies to enhance patient care and population well-being more broadly? Are there circumstances in which those who are not

already in a congregate setting ought to practice yoga in person? How might this compare to other spiritual practices?

During the very earliest days of the COVID-19 pandemic, and frequently later during acute surges of viral transmission, many religious communities shut down their places of worship and eliminated face-to-face worship and community events. In the United States, state governments generally argued for such mandatory closures on the basis of the Supreme Court decision in *Department of Human Resources Oregon vs. Alfred Smith* (1989) that if a law was enacted that encroached on religious liberty but did so for the public good and did not single out any particular religion for unequal treatment, then such policies could be construed as permissible under the US Constitution (Levison and Segall 2020, p. 1). In the earliest days of the virus before vaccines and therapeutic treatments were widely available, as well as in subsequent months where large gatherings were established as transmissible events, many early cases of mass contagion were traced to religious gatherings (Linke and Jankowski 2022, p. 1641). As businesses were gradually allowed to open at reduced capacity, some states such as California still required religious institutions to remain shuttered. Legal challenges mounted and the Supreme Court ruled that the religious institutions were being treated unfairly because other buildings were allowed to reopen at limited capacity (Breslow and Totenberg 2021, p. 1). Many yoga studios closed of their own volition during the height of the pandemic and others were forced to shut down due to government regulations. Many yoga studios were forced due to economic reasons to close for good, and YogaWorks, one of the largest chains of studios, filed for Chapter 11 bankruptcy citing the effects of the pandemic (Club Industry 2020).

Curtailing the spread of COVID-19 was, and remains, a public good. However, as effective barriers to transmission have increased, as vaccination and infection have become more widespread and effective in their protection against serious reinfection, and as the benefits of prohibiting all gatherings has been offset by various costs and burdens society incurs for practicing such a restrictive policy, there have been significant shifts in public policy.

This raises the interesting ethical question of whether—with the goal of combatting COVID-19 and advancing health in more general terms—it is better to allow communal religious practices or forbid them. It is important to note in this regard that many patients have positive outlooks toward physician involvement in spiritual issues, with 77% in one study saying that physicians should consider patients' spiritual needs and 37% wanting their physicians to discuss religious beliefs with them more frequently (King and Bushwick 1994). Many religious and spiritual practices besides yoga have been shown to be linked to increased mental and physical health (Linke and Jankowski 2022, p. 1641). It has been known for some time that regular churchgoers, for example, tend to have longer life expectancy and better overall health than appropriate control groups (Mullen 1990). What might account for this? Other than reducing stress, it is likely that participation in religious services itself is not the proximate causal event that brings about the improved health noted in studies. Rather, those who attend are likely in other settings to make healthier lifestyle choices, have less substance abuse, more secure friendships and family relationships, and follow doctors' instructions more carefully. This has led some to believe that going to a place of worship such as a church or synagogue even during the pandemic (and with some of the risks that it entails) may have tangible psycho-social or health benefits.

In spite of the fact that public health analysis with respect to social distancing, viral spread, and relevant mitigation has equated studio-based yoga practice with church attendance, there may be important differences between the two that justify how we support or restrict these practices in the time of a pandemic. In the case of yoga, it is the actual practice—not just attendance—that leads to the positive health outcomes. Though studies have shown that areas with lower attendance of religious services had lower transmission (Linke and Jankowski 2022, p. 1641), there may nevertheless be some benefits to one's health from attending yoga classes, if the various benefits that we have outlined so far in this article turn out to be sufficiently effective. A central question then becomes

whether the same effects can be obtained from doing yoga virtually with online instructors and whether the balance of safety with promoting health dictates that yoga should be practiced individually rather than communally in groups to avoid iatrogenic effects from yoga practice.

As the pandemic proceeded through its natural cycle over several years, many yoga practitioners continued to practice apart from their regular studio experience, setting their mats up at home and often participating in online yoga instruction. Such practice expanded significantly during the pandemic. Yoga equipment sales grew 154% during the course of the pandemic as many people sought to maintain this important part of their lives at home ([Business Wire 2020](#), p. 1). Adriene Mishler is an example of a successful online yoga instructor. She uploaded yoga videos onto her YouTube channel Yoga with Adriene, and, within the first three months of the pandemic, video views went from 500,000 to 1.5 million views each day ([Okamoto 2021](#), p. 1). However, as yoga instructor Amy Suplina notes, “The intimacy and reverence that occur in a studio are essential. The reason we teach yoga is that alchemy of having bodies together breathing and moving in a room, and seeing people, and connecting and sharing that experience” ([Okamoto 2021](#), p. 1). We also noted above that the benefits of yoga when practiced at home through online instruction are not as robust as those that accrue when doing yoga in person energized ([Brinsley et al. 2021](#), Table 2). To retain the noted benefits of group in-person practice during the pandemic, some private yoga studios held outdoor or rooftop yoga with proper social distancing in order to accommodate the needs of the community. (Similar sorts of arrangements were appropriated by various religious communities as well).

Amy Suplina’s notion of the importance of practicing yoga in-person can be further evaluated in light of the fact that most people in America, regardless of the various preventive measures that were put into place, ended up contracting COVID-19 anyway. The government’s strict mandated isolation requirements may not have reduced the overall number of people who contracted the disease but did become obstacles to preventive care involving religious practices such as yoga therapy. While, of course, practices such as wearing masks and keeping some distance from others are highly effective at preventing the immediate spread of COVID-19 and other similarly contagious respiratory diseases, the practical aspects of life are such that no one can be expected to actually stay away from others or wear a mask properly at all times in public. Even with all of the restrictions that have been in place, most people in America seem to have contracted the virus at some point during the pandemic. The Center for Disease Control reports that the total number of reported cases as of March 2023 was 103,672,529 ([CDC Covid Data Tracker 2023](#)). However, an earlier CDC study suggests that the majority of cases have gone unreported, finding in September 2021 that only about 1 in 4 cases since the start of the pandemic had been reported ([Estimated COVID-19 Burden 2023](#)). If these low reporting estimates are anything close to the actual reporting frequencies, this would suggest that almost everyone in America, knowingly or unknowingly, contracted COVID-19 at some point during the pandemic. The CDC also announced in April 2022 that at least 60% of the population had had COVID-19 at some point ([Neel 2022](#)), and at the time of this writing, almost a year later, the disease is still very much on the march, so the numbers must be considerably higher than that currently. Finally, we also see that there do not appear to be significant differences in the total number of cases between states with strict and lenient prevention policies. For example, California has particularly tough restrictions that include mandatory masking at healthcare facilities, homeless shelters, and jails, whereas Texas actually prohibits schools and local governments from instituting masking requirements at all ([Markowitz 2023](#)). Yet, at the time of this writing, California had a total case rate of 306,189 per million residents, whereas Texas had a total number of cases standing at 290,688 per million ([United States Worldometer 2023](#)). This suggests that while the masking and other provisions may delay the contraction of COVID-19 and flatten the curve that represents the case rate on a graph, they do not eliminate it. If masking is held to be important for attenuating the number of cases at any one time in order not to overwhelm the healthcare system, then one might also

add that yoga could help in this endeavor as well. Ventilator shortages and shortages in other healthcare resources have been an ongoing problem during the pandemic, and, as such, the benefits of yoga therapy that we have laid out could help keep some people out of the hospitals, even if they did not mitigate the actual spread of the disease.

The extremely high total number of COVID-19 cases as we enter three years of pandemic thus adds yet another layer of complexity onto the question of whether yoga should be practiced in person in such a situation. If people are highly likely to eventually contract the disease no matter what they do, then are the potential benefits of practicing yoga in the traditional and most effective manner, namely in person with an experienced teacher acting as a guide, worth the risk?

If the benefits to immunity function, as well as pulmonary and mental health are indeed as robust as the studies that we have highlighted here indicate, and any given individual is likely at some point to contract the disease, then it may be that the risk of contracting the disease during any given session of communal yoga practice is outweighed by the health benefits acquired by the practice of yoga. There are a few scenarios that could play out in this situation: (a) an individual could practice yoga with a mask in a communal setting and never contract COVID-19; (b) an individual could practice yoga communally and contract COVID-19 from others at the yoga studio; (c) an individual could practice yoga communally and contract COVID-19 from other places; (d) an individual could cease practicing yoga or practice it less effectively on their own and contract COVID-19; (e) an individual could cease practicing yoga and never contract COVID-19. Out of these possibilities, only (b) involves iatrogenic disease that emerged out of the communal yoga practice itself. However, even here, if the individual did not practice yoga, based on the above mentioned case rates, it is still likely that they would have contracted the disease elsewhere eventually, but, in this case, they would not have the increased resistance that emerges from yoga practice. Moreover, the full benefits of doing communal yoga would accrue to all of the individuals in cases a, b, and c. Partial benefits might accrue in case d and none in case e (although they would not be needed).

The cost–benefit analysis of doing communal yoga is therefore extremely complex and not as straightforward as simply avoiding yoga studios. Ultimately, it may be impossible to assess the risk properly because of too many unknowable factors, but these scenarios represent an attempt to take as many factors as are now known into consideration, and it is worth noting that of the five possible scenarios, in only one case (b), does it appear that communal yoga could cause more harm than good. However, even here, there is nothing to rule out the possibility that this individual would have later found themselves contracting COVID-19 elsewhere, even if had they somehow known they would have contracted the disease at the yoga studio and ceased attending.

9. Public Health Policy Proposal

For those who are working remotely from home and are not already gathered in public places such as hospitals and prisons, the question of whether the benefits of communal yoga outweigh the dangers of being near others during a pandemic such as COVID-19 is, as shown in the previous discussion, very complicated. There are good reasons for these people to practice yoga in person because the benefits to any future contraction of the disease may outweigh the possibility that they will contract the disease at the yoga studio. However, while satisfaction with yoga was higher when practiced in person based on the study by [Brinsley et al. \(2021\)](#), it may be the case that to avoid iatrogenic effects, yoga practiced in isolation through video instruction can be recommended for those who are immunocompromised, elderly, or for other reasons must take the utmost caution with regard to exposure to the disease.

We would also recommend that, where feasible, yoga studios conduct their lessons outside in open areas. This is, of course, the easiest way to mitigate the spread of the disease while still experiencing the benefits of communal yoga practice with a live teacher. We also suggest resources be devoted to providing therapeutic access to virtual yoga as a federal

program for those who are uncomfortable going to yoga studios in person, but we recognize that there may be some resistance to government involvement due to the concern that yoga has its origins in religious practice. However, the United States National Institute of Health (NIH) and the National Center for Complementary and Integrative Health (NCCIH 2022) have established stress-related initiatives and are considering ways in which yoga may be able to help with breathing-related diseases and future infectious threats just as the Ministry of AYUSH of the Government of India urged their people to protect their health by immune boosting techniques through yoga (Debnath and Bardhan 2020, p. 1). Despite its religious roots, yoga is nevertheless regarded as an allowable recipient of public funds and has received endorsement from the NCCIH (Black et al. 2018, p. 1).

10. Conclusions

Yoga has been practiced in different forms throughout India for millennia and is spreading globally. In both its historic and contemporary settings, it has been viewed as a path from the confines of the body to ultimate salvation. Some strands of the tradition—such as Hatha and Vinyasa Yoga—use the body itself to achieve higher states of consciousness as well as to achieve esoteric powers through the practice of various techniques of breath and body control. Clinical research has suggested that some of these techniques have health benefits with statistically significant outcomes that boost immunity and pulmonary strength as well as improve mental well-being. The practice of yoga has been recognized by the NCCIH as a legitimate form of alternative or complementary medicine. Significant research is continuing into the health benefits of yoga. As such, there are possibilities to acquire funding to provide more access and information for the practice of yoga as seen by the sponsorship for Yoga Warriors (501(c)(3)) through the 2019 Mission Act (Reddy et al. 2019, p. 1592).

In future pandemics and similar cultural challenges, we recommend that national governments sponsor yoga practices through the implementation of communication and practices similar to that advanced by India's Ministry of AYUSH during the COVID-19 pandemic (Debnath and Bardhan 2020, p. 1). The United States government should designate outdoor spaces that are amenable to social distancing and promote such areas for outdoor and appropriately distanced physical activity. The peak of the recent COVID-19 pandemic produced the promising prevalence of rooftop yoga for aspiring newcomers as well as avid practitioners. For those who are immunocompromised and are unable to risk human interaction during a pandemic, there should be government assistance for free online yoga classes through the NIH-NCCIH or appropriate websites. The NIH-NCCIH should also promote their currently free published *eBook on Yoga Health* from their website during times of severe outbreak to encourage people to practice preventative self-care. Future editions of this publication should describe how yoga can help combat any new upcoming pandemic. For those who believe yoga to be a practice grounded in faith, and not just a secular endeavor, the government should ensure prayer rooms at healthcare and community centers and have social distancing in order to allow for this practice to take place.

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Note

- ¹ A word about methodology. In researching, we conducted a literature review using articles published from 2012 to 2021 utilizing the search engines PubMed and Google Scholar in order to find articles on Hatha Yoga and PTSD, Hatha Yoga and Anxiety, Hatha Yoga and Depression, Hatha Yoga and Immunity, Hatha Yoga and COPD, Hatha Yoga and Pneumonia, and Hatha Yoga and COVID-19. Articles were then filtered by sample size and clarity of methodology, with longitudinal studies and meta-analyses prioritized because of their higher level of statistical significance. If a study resulted in a finding that was not uncovered by other

researchers, then the new findings were addressed. If a given study had a distinct method for administering experimental Hatha yoga, its intercalated yoga techniques were addressed. Finally, the contribution of the longitudinal meta-analyses studies to this research was determined by the duration of their time period as well as their unique findings.

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