

## Effect of pranayama on stress, anxiety level and sleep quality in post-COVID-19 patients: A narrative review

Anshu<sup>1</sup>, Ramesh Kumar<sup>2</sup>, Gaurav Saurabh Sharma<sup>3</sup>,  
Archana Morya<sup>4</sup> & Dipanshi Arya<sup>5</sup>

1. Pulmonary medicine department, Ph.D. Scholar (AIIMS Rishikesh, 249203), 9997285995
2. Pharmacology department, Ph.D. Scholar (AIIMS Rishikesh, 249203), 9027300507
3. Psychiatry department, Ph.D. Scholar (AIIMS Rishikesh, 249203), 7310719861
4. Yogic Science Department, Ph.D. Scholar, University of Patanjali, 8707889100
5. Yogic Science Department, Ph.D. Scholar, University of Patanjali, 8279781033

*Received: 09.07.2022 Revised: 30.08.2022*

### Abstract:

In Wuhan, Hubei Province, a rising number of instances of novel coronavirus pneumonia (NCP) have been detected since December 2019. Cases (formally termed “coronavirus disease” 2019 “COVID-19” by WHO) have been reported in various parts of “China” and internationally as the pandemic spreads. Due to Covid-19, fear and tension in the people increased a lot, or mostly consists of people who live around COVID-19 patients or their family members. People did not have to go to the hospital for the stress and anxiety caused by Covid-19 and for that they do not have to take medicines, we can teach them some pranayama. By which they will remain healthy and will be able to stay away from mental stresses. The authors describe complementary sitting pranayama (breathing) techniques with immune function significance for SARS-CoV-2 infection and Covid-19 treatment and/or prevention in this study. Certain complementary techniques, according to the authors, maybe compensators strategy for treating or eliminating SARS-CoV-2 infection<sup>1,9</sup> and reducing the incidence of COVID-19 infection, as well as its collateral consequences.

**Keywords:** Pranayama; Yoga; Mental disorder; Anxiety; Sleep quality; “Covid-19”.

### Introduction:

The novel coronavirus-2019 (COVID-19) pandemic began in December 2019 in Wuhan, China, and quickly spread to over 200 nations around the world. There are currently about 19.6 million confirmed Covid-19 cases and 727,435 deaths.[1] COVID-19 symptoms include sore throat, dry cough, nasal congestion, arthralgia,

sneezing, myalgia, sneezing, and runny nose, which are all typical in influenza.[2,4] loss of appetite, abdominal pain, vomiting, altered taste sensation, ageusia diarrhea, pleural effusion, bilateral pneumonia, altered liver function, radiological lung consolidation, acute kidney injury, lymphadenopathy,

neurological manifestations, and vascular (venous and arterial) thrombosis have all been reported as uncommon presentations. [2,6] Children, on the other hand, maybe asymptomatic, and the majority of cases are only discovered by lab tests. However, some people may develop “Kawasaki-like” symptoms or “Guillain-Barré syndrome”, and the course of COVID-19 in some young people may be severe.[3,5] The involvement of the lungs and respiratory system in COVID-19 is of primary concern since it can cause low blood oxygen saturation, dyspnoea, and respiratory failure, necessitating mechanical ventilation.[3,4,] obesity, Diabetes mellitus, cancer, ischemic heart disease, post-surgery, and chronic obstructive pulmonary disease are the most common comorbid conditions (COPD).[3,5] Only a few clinical trials

with Yoga and Covid-19 are currently accessible. Several projects are currently underway. [7] This Covid-19 pandemic gave the opportunity to people for work from home. The delivery of online yoga programs was ideal for reaching and supporting post-covid-19 patients to improve their chronic illness care during infectious disease pandemics, relieved mental distress, and helped them stay active at home. Therefore facilitated an online mindfulness yoga program, which was delivered interactively through an online platform for post-covid-19 patients.[8] Breathing exercises have been shown to reduce anxiety and enhance breath holding time. Anulom-vilom pranayama effectively reduces anxiety. Breathing exercises using the diaphragm effectively increase breath holding time.[9]

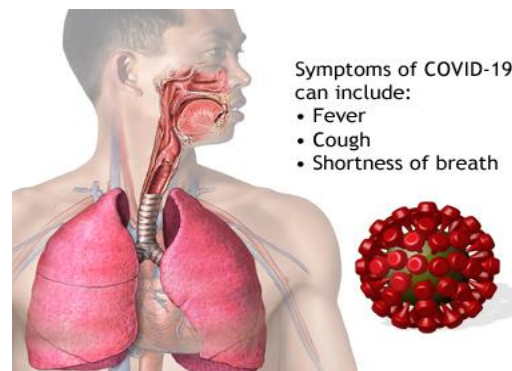


Fig. 1 Physical effect of Covid-19

Due to the Pandemic of Covid-19, stress, anxiety has increased in people a lot, and due to increased uncertainty and fear the sleep quality is also getting worst. In order to reduce all these mental stresses, we will teach people some pranayama so that their increased anxiety, and stress will reduce and they can sleep properly. Yoga can use as an alternative treatment approach to improve their health condition which will indirectly help them to stay at home. They do not need to go to the hospital for this. So, in this review, we will discuss yoga as an alternative treatment for stress, anxiety, and oxygen supplement. Which will prove to be effective in this, that much such research has been done in the past in which

it has been found that yoga helps reduce stress, and anxiety and improves sleep quality.

**Impact on mental health:** when the “World Health Organizations” (WHO) declaration of Covid-19 as a pandemic fear, anxiety, and tension has been seen among the public and workers. During Covid-19 disasters fear, worry, and sleep disturbances are frequent psychological responses. [10] ([Dong and Bouey, 2020](#)) In many nations, including India, the terrifying pandemic prompted unprecedented nationwide lockdowns. Psychological discomfort is caused by the abrupt changes in regular living caused by

the lockdown and protracted isolation. [11] People who live alone during the lockdown become anxious and feel constrained. People who have a family member who has COVID-19 problems may experience anticipatory grieving. Furthermore, a shortage of goods might add to the tension. [9] Internal migrant laborers in India were forced to track thousands of kilometers to reach their various native locations during the period of complete lockdown, due to sudden travel bans, no work, and financial problems. They are at risk for severe, acute, and chronic mental health problems.[12] Pranayama focuses on reducing the negative emotions of anxiety, and depression and improving sleep quality which has seen the most prominent psychological benefits in post Covid-19 patients. According to Kiran Mahendru et.al 2021, in a randomized controlled trial, meditation and breathing exercises had a measurable effect on depression, stress, sleep quality, and feeling exhausted after waking up early morning, Furthermore, the

intervention had a positive influence on the degree of anxiety among patients who were isolated. [13]

**Yoga for mental health:** It is recognised that poor mental health, particularly stress and anxiety, increases the risk of acute respiratory infections.[14] Increasing numbers of COVID-19 cases and deaths may increase tension and worry, while obligatory social distancing measures may cause feelings of isolation and depression. Mind contemplation is another variation between Ayurveda and Yoga. Several mental health measures, including pranayama and meditation, are mentioned. Pranayama is acknowledged for strengthening lung function.[15] Researchers have discovered that meditation reduces inflammatory markers and influences virus-specific immune response markers.[16] Yoga, including meditation, may be an easy and helpful at-home practise for managing COVID-19, both during and after recovery.

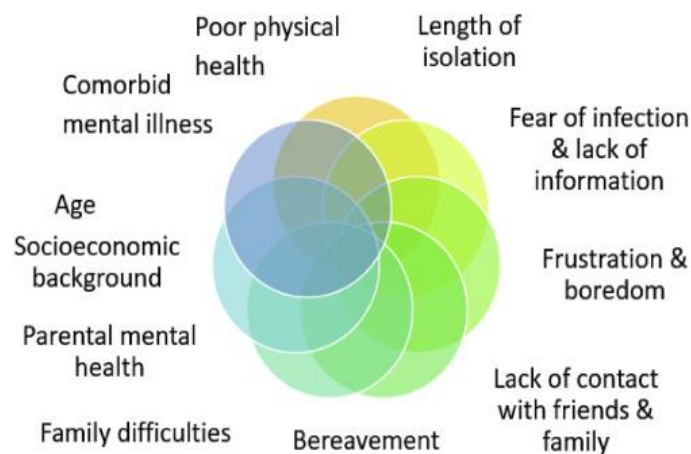


Fig. 2 Effect of Covid-19

**Previous studies:**

Mood disturbances SAS: Zung self-rating Anxiety rate, a self-report assessment tool that measures levels of anxiety in patients who have anxiety-related symptoms [17]

**Table-1**

			Mean difference for before-after comparison	Mean difference (CI) for between-group comparison	
Liu et al., 2020	Pre	Post	p value	Post test	p value
Intervention n=36	56.3±8.1	47.4±6.3	p < 0.05		
Control n=36	55.8±7.4	54.9±7.3	Not significant	-4.66 (-10.71 to -4.29)	p < 0.05

SDS:Self Rating Depression Rate, a short-self related scale that assess the psychological and somatic symptoms of depression [17]

**Table -2**

			Mean difference for before-after comparison	Mean difference (CI) for between-group comparison	
Liu et al., 2020	Pre	Post	p value	Post test	p value
Intervention n=36	56.4±7.9	54.5±5.9	Not significant		
Control n=36	55.9±7.3	55.8±7.1	Not significant	-0.84 (-4.37 to 1.77)	Not significant

**Discussion:** In this article, we'll look at the benefits of “Yoga and Pranayama” as an alternative therapy. “The United Nations” declared “June 21st as International Yoga Day” in 2014. “Yoga” is a Sanskrit word that means "to connect" or "to the unit," and it represents the integration of “body

and consciousness”. It is a multi-faceted discipline that incorporates three types of training: Asana, Pranayama, and Dhyana (dissociation from distracting thoughts). Yoga is a beneficial tool, according to the World Health Organization (WHO), since it enhances physical activity, improves

mental well-being, and reduces non-communicable diseases. Pranayama is the fourth of the eight limbs of Ashtanga Yoga, as described in verse 2.29 of Patanjali's Yoga Sutras. Pranayama means "breath control." With pranayama, one may manage the cycles of pranic energy and obtain good physical and mental health. In Yoga Sutras, Patanjali describes pranayama as a technique of achieving higher states of awareness, and he mentions breath-holding as an effective approach for achieving Samadhi.[18] During the pandemic people faced many kinds of difficulties e.g. work-at-home or job losses, loneliness, insecurity feeling, people were trapped far from their houses. Medical and paramedical health providers are also at a substantial risk of developing mental distress, strain, anxiety, and post-traumatic stress, which need remedial therapy to control the situation. Yogic techniques reduce anxiety, anger, and frustration by activating the satisfying dopamine receptors in the medial frontal cortex and other regions of the brain, resulting in a feeling of calm and satisfaction. patients who practice yoga

had lower respiration rate, Anxiety, heart rate, blood pressure, and cardiac output as a result of this suppression. [19] after recovering from Covid-19 there were many of people from post Covid-19. With the help of yoga and pranayama get fast recovery from post covid symptoms because when we do pranayama our pineal and pituitary gland are active and release stress relief hormone. Pranayama help increase our breathing capacity and get maintain good oxygen level in the blood and all organ work properly and help to recover from post Covid-19 symptoms, this way pranayama helps to recover the patient with post Covid-19 symptoms.

**Conclusion:** Using Pranayama as a therapeutic aid during the COVID-19 epidemic may help people retain better physical and mental health. Care providers are critical in supporting individuals to practice regularly yoga during this difficult period. Pranayama (breathing exercises) was shown to improve stress, anxiety, and sleep quality in COVID-19 patients.

**Conflict of interest:** - There is no conflict of interest.

**Acknowledgment:** - We are grateful to the anonymous referees for their helpful suggestions.

**Funding:-** Author's received no financial support for this research and publication of this review paper

**Ethical approval:** - No need for ethical approval because this is a review article.

**Informed consent:** - Not Applicable.

**Trial registration:** - Not Applicable.

## References:

1. *World Health Organization.* Coronavirus disease (COVID-19). Available at: [https://covid19.who.int/?gclid=EA1aIQobChMikofTPTP6QIViMEWBR2dIAiYEAAYASAAEgLyc\\_D\\_BwE](https://covid19.who.int/?gclid=EA1aIQobChMikofTPTP6QIViMEWBR2dIAiYEAAYASAAEgLyc_D_BwE) .
2. Tian S, Hu W, Niu L, Liu H, Xu H, Xiao SY. Pulmonary pathology of early-phase 2019 novel coronavirus (COVID-19) pneumonia in two patients with lungcancer. *J Thorac Oncol.* 2020;15:700–704.

3. Khalifa M, Zakaria F, Ragab Y, Saad A, Bamaga A, Emad Y, et al. Guillain-Barré syndrome associated with severe acute respiratory syndrome coronavirus 2 detection and coronavirus disease 2019 in a child. *J Pediatric Infect Dis Soc.* 2020;9:510–513.
4. Lei S, Jiang F, Su W, Chen C, Chen J, Mei W, et al. Clinical characteristics and outcomes of patients undergoing surgeries during the incubation period of COVID-19 infection. *EClinicalMedicine.* 2020;21:100331–100331.
5. Guo YR, Cao QD, Hong ZS, Tan YY, Chen SD, Jin HJ, et al. The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak- an update on the status. *Mil Med Res.* 2020;7:11–11.
6. Lodigiani C, Iapichino G, Carenzo L, Cecconi M, Ferrazzi P, Sebastian T, et al. Venous and arterial thromboembolic complications in COVID-19 patients admitted to an academic hospital in Milan, Italy. *Thromb Res.* 2020;191:9–14
7. Lai KS, Watt C, Ionson E, Baruss I, Forchuk C, Sukhera J, Burhan AM, Vasudev A. Breath Regulation and yogic Exercise An online Therapy for calm and Happiness (BREATH) for frontline hospital and long-term care home staff managing the COVID-19 pandemic: A structured summary of a study protocol for a feasibility study for a randomised controlled trial. *Trials.* 2020 Dec;21(1):1-3.
8. Kwok JY, Lee JJ, Choi EP, Chau PH, Auyeung M. Stay mindfully active during the coronavirus pandemic: a feasibility study of mHealth-delivered mindfulness yoga program for people with Parkinson's disease. *BMC Complementary Medicine and Therapies.* 2022 Dec;22(1):1-2.
9. Shukla M, Chauhan D, Raj R. Breathing exercises and pranayamas to decrease perceived exertion during breath-holding while locked-down due to COVID-19 online randomized study. *Complementary therapies in clinical practice.* 2020 Nov 1;41:101248.
10. Dong L., Bouey J., Early Release - Public Mental Health Crisis during COVID-19 Pandemic, China - Volume 26, Number 7—July 2020 - Emerging Infectious Diseases journal—CDC 26. [Cited 2020 Mar 28]
11. Y. Tanoue, S. Nomura, D. Yoneoka, T. Kawashima, A. Eguchi, S. Shi, N. Harada, H. Miyata, Mental health of family, friends, and co-workers of COVID-19 patients in Japan, *Psychiatr. Res.* 291 (2020) 113067.
12. Choudhari R. COVID-19 pandemic: mental health challenges of internal migrant workers of India. *Asian journal of psychiatry.* 2020 Dec 1;54:102254.
13. Mahendru K, Pandit A, Singh V, Choudhary N, Mohan A, Bhatnagar S. Effect of Meditation and Breathing Exercises on the Well-being of Patients with SARS-CoV-2 Infection under Institutional Isolation: A Randomized Control Trial. *Indian journal of palliative care.* 2021 Oct;27(4):490.
14. Maxwell L, Barrett B, Chase J, Brown R, Ewers T. Self-reported mental health predicts acute respiratory infection. *WMJ: official publication of the State Medical Society of Wisconsin.* 2015 Jun;114(3):100.
15. Abel AN, Lloyd LK, Williams JS. The effects of regular yoga practice on pulmonary function in healthy individuals: a literature review. *The Journal of Alternative and Complementary Medicine.* 2013 Mar 1;19(3):185-90.
16. Morgan N, Irwin MR, Chung M, Wang C. The effects of mind-body therapies on the immune system: meta-analysis. *PLoS One* 2014;9:e100903.
17. Fugazzaro S, Contri A, Esseroukh O, Kaleci S, Croci S, Massari M, Facciolo NC, Besutti G, Iori M, Salvarani C, Costi S. Rehabilitation Interventions for Post-Acute COVID-19 Syndrome: A Systematic Review. *International journal of environmental research and public health.* 2022 Jan;19(9):5185.
18. <https://www.google.com/search?q=introduction+of+pranayama+in+patanjali+yog+sutra&oq=introduction+of+pranayama+in+patanjali+yog+sutra&aqs=chrome..69i57j33i10i160l3.54451j0j15&sourceid=chrome&ie=UTF-8>
19. Vajpeyee M, Tiwari S, Jain K, Modi P, Bhandari P, Monga G, Yadav LB, Bhardwaj H, Shroti AK, Singh S, Vajpeyee A. Yoga and music intervention to reduce depression, anxiety, and stress during COVID-19 outbreak on healthcare workers. *International Journal of Social Psychiatry.* 2021 Apr 5:00207640211006742.