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# EFFECT OF YOGA AND IMPROVEMENT OF RESPIRATORY PRESSURE AND IMMUNITY SYSTEM

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## ABSTRACT

The Vedic tradition in India and the Himalayas more than 2.500 years ago is known as Yoga as an old system of ideas and principle and practise. This approach is founded on experimental experience and self-interest, which acknowledges the multifaceted character of the human being, and refers mainly to the nature and functioning of the mind. The term yoke denotes unification, yoga derives from the term yoke. In Yoga, bodies, breathing and mind are considered as an unification of all human beings in their multi-dimensional qualities. The method and different yoga approaches promote that oneness experience, which leads to increased integration, internal tranquilly and intellectual clarity. It is a health and happiness-culturing system with a deeper feeling of self-confidentiality and awareness.

## INTRODUCTION

Yoga has not only entered western society but also western medicine during the last decade. The more we understand about this old technique, the more the realisation that its advantages go well beyond enhanced muscular tone and flexibility. However, although Hatha Yoga or the physical practise of yoga highlights the proper positional alignment, musculoskeletal strength and endurance, as well as balance, the yoga study and practise include mind-based practises such as conscious breathing techniques, focused concentration, meditation.

Recent study has shown that yoga and caring practises may have a favourable influence on the body in many respects, including the regulation of blood glucose levels and healthy maintenance of the cardiovascular system. The use of yoga may assist raise alertness and pleasant sentiments and lessen negative sensations of aggression, despair and anxiety. It has

been demonstrated also to have major psychological advantages. Some health care professionals react to these favourable results and the increasing need of patients for a natural, low-tech, somewhat cost-effective and typically highly secure alternative approach to wellness by adding yoga into their practise.

Medical yoga is described as the use and possible therapy of medical disorders via yoga practise. In addition to the crucial and beneficial physical parts of yoga for strengthening the body, medical yoga integrates suitable respiratory methods, attention, meditation and study/self-reflection, so as to gain optimum benefit. Medical yoga therapy or "Yoga Chikitsa," along with the spiritual well-being, is a dynamic condition of bodily and mental peace. Yoga enables you to achieve a better health status not only by treating sickness but also by understanding the underlying reasons of the condition. Medical Yoga Therapy is ideally a customised, customised and holistic approach which, as part of its unique plan, takes into consideration not only the mind, body and spirit of the patient but also its family, support networks, working situations and culture. For example, a medical yoga certified physician may use certain breathing methods (pranayamas), soothing postures (asanas), conscientious practises or meditation as well as other lifestyle counselling if you have been diagnosed with anxiety. The possible effects of the drugs are not caused by this kind of treatment, but may assist the patient long after the termination of his contact with the health care practitioner. The qualities of awareness and meditation in yoga are means of exercising the mind to avoid distraction and the interminable streaming of thoughts. These routines assist the patient deal with stress and control possible anxiety triggers. They may also encourage self-reflection which may reveal the source(s) of your worry. Medications against anxiety and/or psychotherapy, when required, may be used in conjunction; medical yoga is extremely complimentary in such instances.

## LITERATURE REVIEW

Morgan N (2014) The mental-body treatments have examined psychological and restauratory advantages, but their influence on the immune system remains less established. The first extensive study of available controlled test data is carried out to assess the effects of mind-body therapy on an immune system, with a focus on inflammatory indicators and immunological responses connected to the anti-virus. MEDLINE, CINAHL, SPORTDiscus and PsycINFO were covered by data sources up to 1 September 2013. In the English language at least four weeks Tai Chi, Qi Gong, Meditation, and Yoga randomised controlled studies have been chosen that reported immunological outcome measures. Inflammatory (n = 18), anti-viral associated immunities (n=7) and enumerative (n = 14) measurements were individually synthesised in the studies. We have meta-analyzed random effects using standardised average difference if suitable. Mind-body treatments decrease inflammatory indicators, and impact immunological responses to the virus, even if there is no evidence that they will have an impact on resting anti-virals. Although partial, these immunomodulatory effects need more methods of rigorous investigations to assess the therapeutic impact of these findings on inflammatory and infectious diseases results.

Marcy C. McCall (2013) Research interest and involvement in yoga in health outcomes are expanding globally but medical assumptions and underlying yoga processes are hardly examined. This literature analysis includes a systematic search for clinical studies, syntheses and reviews that concentrate on the possible underlying mechanisms for the influence yoga has on illness prevention and therapy. The results show that scientific evidence and yoga mechanism hypotheses are most common in hormone management, sympathetic activity in the neurological system and increased health qualities such as greater balance, flexibility,

strength, cardiorespiratory health. The hypothesis of yoga is also investigated for metabolism, circulation, behaviour, stress, inflammation and psychological thinking, while new immunological theories are discussed for conductivity, nervous behaviour and bio-electric magnetism. Methodological constraints and forward research directives are examined within the context of the complicated intervention framework of the Medical Research Council.

Suseela Lanka (2020) Disease of the crown virus 2019 shakes the whole planet with a fresh pneumonia. A new corona virus, SARS-CoV-2, is causing this epidemic, a terrible infection that is suspected to travel from bats to people via pangolins. The virus has spread worldwide to around 213 nations affecting laks and lakhs of individuals. First reports in Wuhan, Hubei region of China. The contaminated surfaces, people to people contact, etc, lead to serious respiratory issues are largely transferred by droplets from coughing, sneezing activities and sneezes. Globally, scientists are working hard to prepare possible medication applicants and vaccinations for this new virus. The virus, which mostly infects the lungs and causes severe respiratory sickness, will help safeguard and save individuals from severe ill effects of SARS CoV-2 infection by enhancing lung capacity by boosting respiratory pressure and pulmonary function. In addition, the most common risk of serious illness for those with weakened immune systems. The finest treatments for pulmonary improvement and for the improving of the immune system are Yoga and Pranayama. The major objective of this essay is to promote public knowledge about the role of yoga, pranayama and the immune system in the control of this new corona virus in order to improve the respiratory function.

I Gede Juanamasta (2017) Yoga is an Indian spiritual treatment. This is termed spiritual treatment because it unites mind, body and body. The 2007 National Health Department survey reported that 19% of American people with mental health treatments such as Tai Chi, Qi Gong, meditation, and Yoga are on mental health therapy. Yoga has numerous advantages, including physical and physical postures, stress reduction, blood pressure reduction, tiredness reduction, asthma reduction and circulation improvement, while enhancing the immune system. Many studies have shown that arthritis, stress, metabolic syndrome, asthma, pain and depression are good things in yoga. The objective of this research was to determine the efficacy of the intervention of yoga for immunological improvement. Based on this, combinations of yong asanas, pranayama and meditations are the most beneficial yoga in the immune system and practise every day for 4 weeks, within the minimum of intensity and length. The 15 literatures showed that yoga increases the immune system. Yoga raised antibody amounts of IgA, SOD, leukocyte, monocytes, CD56 and boosted inflammatory responses such as IL-1β, IL-10, IL-6, CRP, EC-SOD, NF-SB, and IRF, glucocorticoid-receptor, cMP, and sTNF-RII. Yoga raised intake of the antibody of CRS. By optimising the use of the combination of yoga asana, pranayama and meditation Yoga gives beneficial assistance to people with acute or chronic conditions Yoga may thus provide various advantages and may be used easily at all ages. We intend to contribute to yoga research via this systematic review.

Kuniko Yamamoto-Morimoto (2019) In healthy, sedentary middle-aged persons, yoga enhances physical and respiratory functioning. In order to clarify the impact of two alternative combinations of yoga practise on physical and air functions in healthy inactive middle-aged persons, the purpose of the research was to analyse the effects of 8 weeks asana with pranayama instruction in asana. Score changes have been examined for each group using the paired t-test. For all measured variables, pre-post outcomes were compared. The statistically significant $P < 0.05$ was considered. After 8 weeks of yoga instruction all groups demonstrated substantial improvements in physical and total respiratory functioning. But

only in the YAP group was the maximum inspirational pressure and reduced extremity. Yoga for 8 weeks increased overall respiratory and physical function for healthy middle-aged persons. The integration of pranayama additional benefit from better muscular strength and flexibility.

## Objectives

1. To analyze the impact of yoga on respiratory pressure

2. To evaluate the effect of yoga in enhancing immunity

## Respiratory system and Yoga

Yoga is a former Indian activity, and the health and fitness are very important. Yoga and pranayama are thought to have a strong and deep influence on the respiratory system than any other human organ. Many research demonstrated clearly the good effect of yoga on lung function improvement. Several research demonstrated improved vital capacities with yoga instruction, especially PEFR (Peak Expirational Flow Rate). Yoga is considered to be better and effective among the many fitness regimes.

Even for a short period of time, doing yoga may make remarkable lung function changes. Madanmohan et al. have researched the impact of slow and quick pranayama on breathing muscles. Several elements, including the expansion of the chest, the muscular strength of respiration, pulmonary dimensions, the alveolar surface, and respiratory resistance. Pranayama is one of the limbs of Asthanga yoga that incorporates many types of breathing models which have substantial impacts on lung function, compared to any other aspect of the human system. The patterns of respiration include nasal breathing, Kapalabhati, Mukha bhasthrika pranayama, bhrahmari pranayama, etc. Pranayama has well demonstrated the favourable benefits on the lung function. In hypothyroid individuals after yoga and pranayama exercise significant improvements in pulmonary indices were seen. In all age groups, yoga promotes physical strength, breathing pressure and health overall. Reddy et al. also documented effects in school children of yoga training to improve the handgrip, respiratory pressure and lung function and proposed yoga at all colleges to enhance student overall health and performance. The 12 week Yoga Program improves pulmonary function in elderly women. Bezerra et al. stated.

Includes yoga, which increases breathing pressure and lung function: 49: I Vrikshasana, a pose of a tree; (ii) a pose of a hand to a foot; (iii) a posage of a triangle, of a triangle of a tree; (iv) a pose of a whEEL; (vi) Natarajasana, lord of a dance; (vi) a pose of a spine; (vii) a pose of cobra; (viii) a pose in the spine of Bhujangasan; (viii) a pose of a kat, a kat-pose; (ix) a pose of the kat-pose.

## Material and Methods

Research comprised of 60 first year participants who had neither chronic or acute physical illness at the hostel/campus. At our medical institution, MBBS courses are offered exclusively for women. So, all the pupils picked were young women between 17 and 20 years of age. These students were supposedly offered yoga and the control group (30 each). All students were tested twice, first at the inscription level and then at the examination level again, three months later (exam stress). During the 12 weeks the 30 students in the yoga group had integrated yoga practise 35 minutes every day in the presence of a professional

yoga teacher. The control group kept on their normal daily routine and did not use yogic practises.

Physiological parameters such as the heart rate and air rate were analysed with the use of Biopac Version 3.0 physiology laboratory following proper calibration. For measuring blood pressure, sphygmomanometer was utilised. The pressure rate caused by multiplying and dividing the heart rate by hundreds by systolic blood pressure was calculated. The consumption index of myocardial oxygen is sensitive. SPSS for statistical analysis was utilised for Windows 10.0 application; (SPSS Inc., Chicago, IL, USA). Data is represented as a medium ± standard medium error. Intra group and inter-group comparisons were made using t-test pairs between the physiological measures and biochemical measures (serum cortisol). The Wilcoxon Signed Rank test for non-parametric data such as IL-4 and IFN-β levels has been used to perform inter-group comparisons, while Mann Whitney U test was employed to compare intergroup data.

**Table 1 Parameters with examination stress**

| | Baseline (±SEM) | Examination stress (±SEM) | *P*-value (baseline vs exam stress) |
|---|---|---|---|
| Heart rate (beats/Min) | | | |
| Control group (n=30) | 80.93±1.23 | 85.6±1.21 | *P*<0.001 |
| Yoga group (n=30) | 82.67±1.63 | 80.80±1.16* | *P*=0.105 |
| Systolic blood pressure (mm Hg) | | | |
| Control group (n=30) | 119.33±1.42 | 122.93±0.90 | *P*=0.012 |
| Yoga group (n=30) | 119.73±1.41 | 120.20±1.06 | *P*=0.774 |
| Diastolic blood pressure (mm Hg) | | | |
| Control group (n=30) | 77.2±1.05 | 78.2±0.76 | *P*=0.326 |
| Yoga group (n=30) | 76.47±1.17 | 75.47±0.92 | *P*=0.477 |
| Mean rate pressure product | | | |
| Control group (n=30) | 96.45±1.64 | 105.15±1.49 | *P*<0.001 |
| Yoga group (n=30) | 99.09±2.46 | 97.22±1.82* | *P*=0.689 |
| Respiratory rate (cycles/Min) | | | |
| Control group (n=30) | 16.03±0.52 | 16.77±0.44 | *P*=0.019 |
| Yoga group (n=30) | 17.33±0.60 | 16.67±0.43 | *P*=0.132 |

The heart rate and the average pressure product were significantly higher, while the systolic blood pressure and the average pressure product were significantly increased in the control group. In the Yoga Group, however, the baseline levels have not been significantly different. In either group under test stress there was no major difference in diastolic blood pressure.

The efficacy of CNS yogy exercises relies on the natural character of the element of yogic teaching, which is essential to the immune system modulation of the PNE network. The

primary aspects of the teaching of yogic exercises are thus the monitoring and filtering of information content related to numerous elements of consciousness such as the identification of stress, stimuli and rejection of the process of post detection which leads to relaxation of the muscle. This means that the related stress is decreased. But it might also be a successful model than West's present psychotherapy model which works to reveal negative ideas and emotions in a cognitive field, such as the beneficial function psycho-social factors may play in improving immune responses. However, in comparison with the predicted yoga benefits in the field-independent condition, the psychotherapy model looks restricted.

**Yoga and Immunity**

Yogic exercises have the final impact of attaining joy and relaxing. Perhaps this is indicated by behavioural results such as happiness, pleasant sentiments, etc. The endorphine secretion and the parasympathic activities of ANS on neuro-muscular activities are related to such a comparable psychological state. These endorphins preserve both body and energy resources, which seem to have comparable effects on the conservation of resources via yoga activities. This initial action shows the CNS may have a role in the secretion of endorphine by yogic activities. The second course of action is the separation of endorphines by Gordienko theory that antibodies are produced by CNS. This idea is verified because of the presence of endorphin in the lymphocystics and also because beta-endorphin internalizations in thymic cells. Therefore, in modifying immunity and relaxation the dual impact of yogical activities on the neurological system seems probable. We thus recommend that the role of yoga in Gordienko's reflex theory be further investigated to understand the immunity and relaxation functions of the PNE network.

By applying the alpha coefficient of Cronbach to a sample of study participants and not of the original sample, the researcher proves that:

**Table 2: Reliability coefficient by using Cronbach's alpha**

| Alpha coefficient | The dimension |
|---|---|
| 0.87** | Self confidence |
| **0.86**** | Emotional control |
| 0.87** | Psychological resilience |
| **0.89**** | Challenge |
| **0.85**** | Optimism |
| 0.89** | The total score |

The alpha factor for the dimensions varied from (0.85:0.89) to the alpha factor for the total dimension of the scale (0.89), statistically significant factor at the level of (0.01) ** that shows the scale stability.

**Table 3: ANOVA table for immune parameters**

| Source of variation | Degrees of freedom | Sum of squares | Mean square | F | p |
|---|---|---|---|---|---|
| **Response variable : CD4** | | | | | |
| **Time** | 1 | 1251 | 1251 | 0.0085 | 0.9266 |
| **Group** | 1 | 5859 | 5859 | 0.0398 | 0.8421 |
| **Time x Group** | 1 | 31110 | 31110 | 0.2116 | 0.6463 |
| **Residuals** | 136 | 19997014 | 147037 | | |
| **Response variable : CD4/CD8 ratio** | | | | | |
| **Time** | 1 | 0.0249 | 0.024939 | 0.2040 | 0.6523 |
| **Group** | 1 | 0.0214 | 0.021436 | 0.1753 | 0.6761 |
| **Time x Group** | 1 | 0.0055 | 0.005524 | 0.0452 | 0.8320 |
| **Residuals** | 132 | 16.1406 | 0.122277 | | |

The average PedsQL score for HRQOL in the yoga groups was 1 806.3 ± 320.1 and 1 709.0 ± 365.4. (Table 3). The two groups (p=0.308) did not have any significant difference. Average score of 1,144,9 ± 235,9 in yoga groups, and 1,095,9 ± 240,6 in the control group showing the level of psycho-social functioning. The differences between the two groups were not significant (p=0.457). Similarly, in the yoga group and 613.1 ± 142.2, 309.6 ± 111.6, 74 408.6 ± 107.4 and 381.5 ± 61.2 correspondingly the mean subscale scales for physical function, emotional function, social operation and the running of the schools were 661.3 ± 128.7, 357.2 ± 105.8, and 4080.1 ± 75.8 and 379.6 ± 87.7. The ratings between the yoga group and the control group were no significantly different, each with p>0.05.

The immune system status was evaluated as described. This section gives an overview of the outcomes. The average cell counts of CD4 rose considerably from 571.1±238.0counts/alcohol before yoga, to 717.4±241.7 counts/alcohol after yoga (p=0.039) (Table 5.16). The mean CD4/CD8 ratio was similarly raised, but the change was not significant (p=0.091), from 0.814 ± 0.272 in pre- and after-assessments to 1.016 ± 0.250. The average 91 copies/mL before yoga fell considerably to 55487, 5±56996,3 copies/mL after yoga (p=0.041) (average 91 copies/mL).

**Table 4: Immune parameters before and after intervention**

| Parameter | Pre (Mean±SD) | Post (Mean±SD) | Diff. (Post– Pre) | p |
|---|---|---|---|---|
| CD4 count (counts/µL) | 571.1±238.0 | 717.4±241.7 | 146.3⇧ (25.57%) | 0.039* |
| CD4/CD8 ratio | 0.814 ± 0.272 | 1.016 ± 0.250 | 0.202⇧ (24.82%) | 0.091 |
| Viral load (copies/mL) | 55487.5±56996.4 | 5755.4±6539.3 | -49732⇩ (-89.63%) | 0.041* |
| **Legend:** ⇧=Increased compared to pre (favorable) ⇩=Decreased compared to pre (favorable) *=Significant with p<0.05 | | | | |

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## Conclusion

In order to provide this holistic approach, primary care doctors may play an important role and assist to enhance patient care by presenting choices for these other systems of medicine, leading patients appropriately to specialists in the area of ayurveda and yoga while maintaining their regular drug treatment and not rejecting the use of ayurvedic medicines and yogic activities. This article gives excellent and enough proof of the effectiveness of Ayurvedic and yogic immune-reinforcement procedures, adding an additional leap in the development of acceptability for the use by the mainstream contemporary doctors of Indian systems of medicine, treatment and healing. The present COVID-19 situation must be addressed by India, as defined by the WHO. Physicians must thus research remedies and refurbish their health care system, from enhancing family-based resources to providing the finest evidence-based traditional Indian ways. Yoga gradually produces the effect. At the beginning, the advantages of yoga are seen as better flexibility and posture, lower stress and promote a feeling of tranquilly. The longer or more often yoga lasting and intensity is achieved, gradually improves the immune system and gives the body various advantages. Based on the data, we may infer that Yoga asanas, pranayama, and meditation are the most beneficial yoga practises of the immune system. Minimum intensity and length needed for 4 weeks at least once daily.

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