

The Principle and Function of Pranayama - A Concurrent Study of How Individuals Can Improve the Ability to Resist COVID-19

Mingwei Zhang (✉ yoga2020@yeah.net)

Research

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Abstract

Background

Since its outbreak in December 2019, COVID-19 has been raging all over the world. After infecting people, the virus will damage patients' lung function and reduce their blood oxygen saturation, causing complications. Ventilators have become one of the focuses in clinical treatment. The machine delivers oxygen into the body to maintain the oxygen content in the blood and the life activities of critically ill patients. However, ventilators have become a huge financial burden to the government and patients' families as they are extremely expensive. Since the working principle of ventilator simulates the normal functioning sequence of human lungs¹, our efforts are made to find a way to take advantage of the human respiratory system itself to improve the function of lung organs without using external mechanical forces, relying on the self-activity of an individual's life to resist viruses.

Methodology:

The principles and functions of the ventilator and pranayama are compared. A quantitative conclusion on the efficiency of effectively improving the air inhalation amount and the lung substance conversion amount is drawn, which is the root source of the deep nutrients needed by the organs (such as heart, liver, gallbladder, spleen and kidney) that have an influence on the entire living body. Based on this theoretical achievement, technical measures for individuals to improve the ability to resist the COVID-19 virus are proposed. What we use is called pranayama, also known as internal breathing. There are no national boundaries for viruses, or for science. However, science and technology have a place of birth. It should be noted that the pranayama technique discussed in this paper originated in Sichuan, China, and belongs to the Yoga knowledge system established by Yoga Master Rama Lila (irrelevant to the Indian theory). It is currently the only one complete Yoga knowledge system in the world. Its value lies in the following aspects: the perfection and maturity of the technical path; the first proposal of technical conditions - state guidance; the first clarification of technical objectives - state of life; and that its academic sequence is mainly interpreted with modern medicine, mathematics, physics, chemistry, physiology and other knowledge to explain Yoga techniques in a profound and clear manner, which is different from any Yoga classic literature on breathing in history. Pranayama mainly includes more than 10 types of breathing techniques such as divergent breathing and backward-shifting breathing.

Results

Oxygen accounts for about 21% of the air taken in by an average adult by volume, and the proportion of oxygen drops to about 17% in the air exhaled, meaning that only 4% of oxygen is effectively converted, and the conversion rate of about 19%². One breath of air inhaled in the internal breathing form can be

complete converted in the lungs, and the amount of useless air “exhaled” is far less than the amount inhaled, and almost negligible, indicating an effective conversion rate of more than 80%.

Conclusion

According to human breathing movement, breathing form, lung working form and principle, pranayama has been developed to promote breathing movement and improve the function of lungs through adjusting human state and breathing form. Its main features are: large amount of air inhalation, complete digestion, high oxygen content in blood, large flow and fast delivery of deep nutrients in the form of "liquid phase body" converted from air and combined with blood oxygen which are distributed into various parts of the body, exerting a high-speed scouring and nourishment impact on the organs. Displayed in the form of heat, such energy can effectively help people resist various viruses.

Potential impact:

At present, this conclusion is given based on the personal experience of yoga practitioners. Lacking experimental empirical research and clinical data analysis on the changes in the scale and speed of substance conversion in human lungs and the scale of bioelectrical activity in the peripheral nervous system, the academic sequence needs to be improved, and the enthusiastic attention and strong support from the academic community are still needed. The Yoga knowledge system established by Yoga Master Rama Lila has not yet been fully published and is waiting for the arrival of the lovers of life.

Introduction

COVID-19 is raging around the world. After infection, this virus will damage the patients' lung function and reduce their blood oxygen saturation, causing complications. Ventilators have become one of the focuses in clinical treatment. The function of a ventilator is to deliver oxygen into the body to ensure the oxygen content in the blood and maintain the life activities of critically ill patients. However, ventilators are expensive, bringing a heavy financial burden to the government and patients' families. In fact, the working mode of a ventilator is designed according to the normal functioning sequence of human lungs. Therefore, for the human respiratory system, is there a method that can improve the function of the lungs without relying on external mechanical force and can enhance the ability to resist viruses by stimulate the self-activeness of each individual?

The answer is yes – there is pranayama. There are no national boundaries for viruses, or for science. However, science and technology have a place of birth. It should be noted that the pranayama technique discussed in this paper originated in Sichuan, China, and belongs to the Yoga knowledge system established by Yoga Master Rama Lila (irrelevant to the Indian theory). It is currently the only one complete Yoga knowledge system in the world. Its value lies in the following aspects: the perfection and maturity of the technical path; the first proposal of technical conditions - state guidance; the first

clarification of technical objectives - state of life; and that its academic sequence is mainly interpreted with modern medicine, mathematics, physics, chemistry, physiology and other knowledge to explain Yoga techniques in a profound and clear manner, which is different from any Yoga classic literature on breathing in history. Pranayama mainly includes more than 10 types of breathing techniques such as divergent breathing and backward-shifting breathing.

1.0 Principle Of Pranayama

Yoga is a Sanskrit word, meaning union and connection. It is an ancient discipline that has been operating and spreading on the earth for thousands of years. Yoga is a huge knowledge system of life matters in universe, following the basic theorems, laws, and axioms of mathematics, physics, chemistry, physiology, medicine and other disciplines. It is not a religion! It is not a religion! As the most basic subject in the academic system of Yoga, pranayama plays a supporting role in Yoga practicing.

1.1 Breathing movement

Breathing is a type of movement that maintains the existence of a life. The absorption of air established by an individual's life in a normal state is called "breathing movement".

It is composed of two parts, "absorption" and "discharge". Absorption is to inhale air into the body to meet the needs of an individual life for energy conversion in the life cycle. Discharge is to exclude another substance (the main component is CO₂) produced by the interaction between air and the individual life in the body outside.

In general, we simply refer to the absorption movement as "inhale" and the discharge movement as "exhale".

The breathing movement mentioned herein refers to the basic behavior of an ordinary individual to maintain his/her life under the normal state.

1.2 Breathing form

Usually, we think that all of us start breathing as soon as they are born. In fact, we breathe even when we are in our mothers' womb, but in a different form. Therefore, we can draw a conclusion on the form of breathing movement, which should be simply divided into two forms: that in the fetal stage and that after birth.

The conclusion of Yoga life science on life state is that "the breathing form in the internal state is called internal breathing, and that in the external state is called external breathing." Generally speaking, as an individual life, a person adopts internal breathing in the fetal stage. Even an infant, toddler, and adolescent may still rely on internal breathing. When a person gradually enters the stages of youth, middle-age, prime and old-age, with the deterioration of life state, external breathing will be the main form

all the way. It should be noted that internal breathing and external breathing are forms of breathing in different states of life and are not necessarily equivalent to physiological meanings of the words.

1.3 Conclusion on breathing forms in the context of pranayama

In the external breathing, after "inhaling" a breath, the breathing movement will immediately change to "exhale". That is to say, the air inhaled is exhaled at once, like "smoking by mouth". If quantitatively analyzed and compared, the pulmonary ventilation in inhalation is approximately equal to that in exhalation. Some studies found that oxygen accounts for about 21% of the air taken in by an average adult by volume, and the proportion of oxygen drops to about 17% in the air exhaled, meaning that the effective conversion rate is about 19%. One breath of air inhaled in the internal breathing form can be completely converted in the lungs, and the amount of useless air "exhaled" is far less than the amount inhaled, and almost negligible, indicating an effective conversion rate of more than 80%. The converted air (mainly composed of oxygen) generates a new "deep substance", which is no longer what we usually consider as "air". It exists in the form of "liquid phase body" and combines blood and oxygen, directly reaching and nourishing the internal organs such as heart, liver, gallbladder, spleen and kidney. In the internal breathing movement, as the "liquid phase liquid" moves, people will have an obvious fluid feeling in the skin and deep tissues, which is caused by the changes of bioelectric activity. Internal breathing and external breathing are the result of breathing ability quantification, directly affecting the working efficiency of lungs. In pranayama practicing, the evaluation indexes and method of traditional physiology on pulmonary ventilation function are a revolutionary subversion. The improvement of its academic sequence, especially experimental empirical research, still needs the earnest attention and strong support of the academic community.

1.4 Pranayama and its goals

The breathing control of pranayama is essentially to realize the change of the form of breathing movement from external to internal. The basic goal is to change the external breathing in adult stage - gradually back to the internal breathing in the adolescent stage - then to the internal breathing in the infant and toddler stage - and finally to the internal breathing in the fetal stage. Throughout the entire transformation process is the improvement of life state, that is to say, the goal of the entire process is to serve the purpose of such improvement.

1.5 Pranayama and working form and principle of lungs

It must be clarified here that the pranayama discussed in this paper is not the same as the so-called Qigong originating in China. Therefore, it is necessary to explain the working form and principle of lungs.

Lungs are a very large system that convert substances and work continuously. Many people simply think that the air in the earth's atmosphere is inhaled through the nasal cavity, the bronchus, and then the trachea to the lungs. After the lungs convert the air, the useless air is discharged. The process is called getting rid of the stale and taking in the fresh. Qigong practitioners believe that "qi" can flow in the

meridians of the body. However, the basic principle is not like this. In fact, the lungs are equivalent to a substance transfer station, which does not simply transfer substances, but performs two functions: transportation and processing. At first, air is taken in. Through the pulmonary ventilation, the fresh air that enters the alveoli exchanges gas with the blood, and is processed into a new "deep substance". Then through the combination of blood and oxygen, this new "deep substance" is transported to the major organs of the body in the form of "liquid phase body" to complete tissue ventilation with the major organs, that is, liquid phase exchange. Through this deep tissue exchange, the waste produced after the processing and operation - useless CO_2 , is discharged in a natural way through the original entrance channel by using the principle of partial pressure difference. This is how it works. Its form of substance and operating path are fundamentally different from the "qi" and "meridian" in Qigong.

2.0 Technical Specifications Of Pranayama

Pranayama is extremely professional technique. Its basic theory follows the basic knowledge of physiology and medicine. The core principle and function is to increase the operating function of the lungs by inhaling a large amount of air to speed up the absorption and conversion of oxygen by the lungs, which is the "liquid phase" nutrient that is converted and processed in the lungs, mainly composed of saturated blood oxygen. The increase in the amount of this nutrient and the speed of production will promote the healthy operation of all living organs of the human body.

2.1 Manipulating breathing movement

Pranayama is a breathing control method and an effective means to improve the state of life. The main function of breathing control is to regulate, adjust, control and guide the breathing movement to the correct form. By improving the efficiency of alveolar ventilation, the use efficiency of energy fluid (air, referred to as energy fluid in Yoga) can be improved, so that the energy fluid will exhibit obvious effects in its interaction with the physical body.

2.2 Calm breathing

Calm breathing is a state condition for pranayama, also called the preparation stage.

The power of pulmonary ventilation comes from the rhythmic **movement** of the rib cage. When the thoracic muscles expand, the pressure in the thoracic muscle cavity becomes smaller to introduce air; and when the thoracic muscles contract, the pressure in it becomes larger, and the useless air is discharged. Therefore, the key to keeping calm is to minimize the pressure in the thoracic muscle cavity. If we call the atmospheric pressure in the air p_{ex} and the pressure in the thoracic muscle cavity p_{in} , then we need a p_{in} much smaller than p_{ex} . The smaller the better. According to the principle of siphon, as long as one's inner self is controlled to a calm state, the breathing problem is solved. When a person is not calm but restless and excited, the pressure in the thoracic muscle cavity is very large, that is, P_{in} is greater than P_{ex} . The air intake from outside is extremely low, and the conversion amount is even much less. If a person is not calm but restless for a long time, his/her life will be in a rather terrible state.

Therefore, pranayama requires practitioners to maintain their inner state. The order of the inner state from low to high is quietness, calmness, tranquility, silence, stillness, and quietus. Without the inner state, pranayama practicing will not be successful.

2.3 Divergent breathing method

In pranayama, the most basic and most representative technique is divergent breathing. It has fundamentally negated these two movement forms ("inhale" and "exhale"). This is only an introductory description.

Preparation: enter a calm state, because the whole process is guided by the state; in other words, the success relies basically on the condition of the state.

Step 1: guiding. The air in the earth's atmosphere is no longer inhaled by the nose, but is guided into the body in a calm state. The air enters the respiratory tract while there is no change in the appearance of the respiratory organs.

Step 2: intake. The air fluid entering the respiratory tract is taken into the thoracic muscle cavity. The body is in a very calm state, and the process is not noticeable at all.

Step 3: holding breath. Suspend the state performed in Step 2, i.e., state suspension.

Step 4: adjustment. Adjust the inhaled air in the thoracic muscle cavity and prepare for treatment.

Step 5: divergence. The inhaled air is divergently treated, meaning that there is no "inhalation" or "exhalation" movement. The useless air is naturally discharged along the respiratory tract, and the divergent path is not deliberately controlled. Diverging is not just a spit-out, but a slow release of the energy fluid. The conversion effect of the lungs on the fluid should be noted. When using divergent breathing, you may either stand or sit. But you need to straighten your spine and neck, keep the body stable, and look straight ahead. Perform abdominal lift during the intake, and control the length of time from holding breath to divergence. Do not hold your breath excessively; otherwise it will cause harm to your health. The control of diverging path is a new topic at a higher level. If the diverging treatment is successful, there will be a clear fluid feeling like numbness in the anterior chest cavity and the back of the shoulder and neck close to the spine.

The five steps of pranayama are coherent and straight, and cannot be isolated. They are developed to describe the process and enable learners to master in an early stage.

It is particularly emphasized herein that the breathing control in pranayama does not involve such concepts as mind, meditation, consciousness, etc. The subject of manipulation is "oneself", and the specific substance controlled in the specific technical steps and by the technical means is air. Even if practitioners' skin feels fluid like numbness, it is a display of substance movement on the body and an

objective change in bioelectric activity rather than the nihilistic thoughts, meditation, and consciousness in your mind, thoughts, and intentions.

3.0 Comparative Conclusions On Pranayama

The basic principle of **pranayama** discussed in this paper is as follows: in the rhythmic **movement** of the thoracic muscles, the calm state is used to maintain the pressure inside the thoracic muscle cavity (p_{in}) far lower than the pressure outside the thoracic muscle cavity (p_{ex}). With the support of the siphon effect, through a series of technical measures such as guiding, intake, holding breath, adjustment, divergence, etc., the alveolar ventilation efficiency is improved thereby increasing the use efficiency of the energy fluid (air). Its main features are: large amount of air inhalation, complete digestion, large flow and high flow rate of "liquid phase body" deep nutrient converted from air and combined with blood oxygen, and strong scouring effect on all parts of the body. In this form of breathing, Yoga practitioners completely abandon the normal breathing method (external breathing) of ordinary people. The entire breathing movement process is completed under the internal guidance. The **energy fluid** (air) in Yoga, under the manipulation and guidance of the practitioners, enters the body **at an excessive rate in overdose**. Then through the modulation of the control technique, a large amount of deep nutrient is distributed into various parts of the body in the form of "liquid phase body", exerting a high-speed scouring and nourishment impact on the organs. It is displayed in the form of heat, bringing a burning and special feeling to all parts of the body. In fact, this special feeling is reflected on the human skin, and it is the true sensing of the biological electrical activity of the peripheral nervous system changing from weak to strong. This change in bioelectric activity is the empirical conclusion of individual life. The verification of such change also requires the collaboration and cooperation of laboratories. We hope to gain the support of the scientific community in this regard.

Comparison of adult normal breathing, ventilator breathing and pranayama

	Normal breathing	Ventilator breathing	Pranayama
Breathing form	External breathing	Machine-assisted breathing	Internal breathing
Inhalation principle	Inhale- intrathoracic negative pressure - passive expansion of lungs with negative pressure in alveoli and airway -pressure difference between airway opening and alveoli -complete inhalation.	External machine driving - positive pressure difference between airway opening and alveoli - complete inhalation.	By maintaining a quiet inner state, the pressure inside the thoracic muscle cavity is reduced to the maximum extent, so that the pressure inside the thoracic muscle cavity (p-in) is lower than the atmospheric pressure (p-ex). According to the principle of siphon, air flows in automatically.
Exhalation principle	Inhale - elastic retraction of chest and lung - produce an opposite pressure difference - complete exhalation.	Exhale - after removing the external machine-driven pressure - elastic retraction of chest and lung - passive positive pressure difference between airway opening and alveoli - complete exhalation.	After the conversion is completed, the useless air is automatically discharged through the respiratory tract.
Breathing rate	16-20 times/min	8-20 times/min	2-4 times/min
Inhalation-to-exhalation ratio	Inhalation takes 1.0 to 1.5 seconds, and the inhalation-to-exhalation ratio is 1:1.5 to 1:2	Inhalation generally takes 0.8 to 1.2 seconds, and the inhalation-to-exhalation ratio is 1: 2 to 1: 1.5	The inhalation-to-exhalation ratio of successful pranayama is 1:0.5-0.1
Oxygen conversion rate	About 19%	About less than 19%	More than 20%, even more than 80%

4.0 Conclusion

The "air" we usually say is defined as an **energy fluid** in Yoga. It is a **substance group** that people need to maintain living. There are many sub-components in this group. Due to the large amount and high flow

rate of **energy fluid** inhaled by Yoga practitioners, their internal organs are fully nourished and a **strong movement effect** is produced. As a result, the self-life substance has entered the well-established conversion, which leads to a series of secondary conversions. Excellent secondary conversions bring nourishment to the human heart, liver, gallbladder, spleen, kidney and other internal organs with abundant **positive indicators**.

In the response to COVID-19, the medical community seems to have overlooked a very important subject. Both clinical and research physicians have not paid adequate attention to the "people" - the internal state of a person, that is, the role of the human body function, internal operation and operation rules in the substance conversion. It seems that another very important relational sequence is neglected in the research, which is the sequence of substance operation at the micro level. For example, the research on the virus itself is getting increasingly deeper at the micro level, but it goes farther away from the macro environment where the micro substances exist, so that the integrity is lost - the micro substances do not provide a restriction on the range of the macro sequence, so that the operation goes out of control, and the virus has been constantly produced and mutated. What is the restriction in the sequence scope at the macro level? It is that except grabbing survival resources from the earth, people have not recognized self-life, nor the relationship between self-life and the universe, nor the universe itself. In the understanding of COVID-19, the virus operates on a micro sequence, while people are a macro sequence of the virus, and the universe is the macro sequence of people and the virus. However, the micro and macro concepts have real meaning only in the path of the monistic law - this is the cognitive sequence to find the root of the virus. There should be no mechanical separation between the macro and micro concepts. It is necessary to find out the invisible bond from the visible relationship. For an individual life, pranayama improves the initiative of work and the comprehensive quality in a macro picture, and the macro-to-micro leading effect.

Therefore, it comes to the conclusion that if the breathing problem is solved, the working efficiency of the substance conversion system of the lungs will be increased. Consequently, the "quality and quantity" of the deep nutrient needed by the organs of the entire living body, including heart, liver, gallbladder, spleen, and kidneys, will be enhanced. The principle of the internal breathing method is that through the inhalation of a large amount of oxygen, marvelous physiological functions can be produced. The medical conclusion is self-evident! Pranayama is an active way for individuals to enhance the defensive ability of their lungs. Therefore, pranayama is of great help to the improvement of individuals' health level and ability to resist viruses, including auxiliary assistance for the rehabilitation of patients with diabetes, heart disease, hypertension, cerebral hemorrhage, etc. In particular, it shows a positive effect in the treatment of mild COVID-19 patients and the enhancement of virus resistance of discharged patients, because the root cause of these diseases is the working efficiency of the lungs determined by breathing. Why pranayama is recommended only for mild COVID-19 patients and discharged patients? Because severe COVID-19 patients have lost their ability to control breathing. To be healthy, the lungs need to be healthy first, and the major organs nourished by the new substance produced in the lungs should be healthy. Let's learn internal breathing to resist the interference of viruses!

Declarations

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Authors' contributions

I designed research, performed research, analyzed data, and wrote the paper. I agree to publish this manuscript.

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Authors' information

I am a disciple of Yoga Master Rama Lila, and have been practicing yoga for years. The data used is collected from medicine or physiology textbooks. Yoga is a huge knowledge system of life matters in universe. Our research is entirely at our own expense, seeking no competition with other systems or personal interests. Any remuneration received for this manuscript will be donated voluntarily to Chinese charities in the United States. ☐

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