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Role of *Kapalabhati* and *Tratak* in school going children w.s.r. to Poor Academic Performance

Dr. Mahesh Salimath,[1] Dr. A. S. Prashanth[2]

[1]Ph.D Scholar, [2]Professor & HOD, Dept. of Kayachikitsa, Ayurveda Mahavidyalaya, Hubli, Karnataka, INDIA.

ABSTRACT

A sound soul in a healthy body can achieve the over lasting and unabated happiness and bliss, which is the ultimatum of each and every human being, so no gift surpass the gift of life. Shatkarma's are having multi-systemic benefits on the body. Respiratory system is one among those beneficiary systems. Respiratory system is directly involved in the *Kapalabhati*. Rate and rhythm of respiration, lung volumes and capacities, breath holding time etc., will get significantly and positively influenced with the practice of *Kapalabhati*. *Kapalabhati* is considered as one of the best breathing Exercise, It improves the oxygen circulation throughout the body. As the brain cells receive blood rich in high oxygen content, it enhances the functioning of brain cells improving memory, concentration and efficiency. An intelligence quotient (IQ) is a total score derived from several standardized tests designed to assess human intelligence. IQ is a number meant to measure people cognitive abilities (intelligence) in relation to their age group. Here an attempt is being made to explain the effect of *Kapalbhati* and *Trataka* in school going children. With special reference to IQ Level with probable reasoning.

Key words: *Kapalbhati, Trataka, Respiratory System, Intelligence Quotient, Academic Performance.*

INTRODUCTION

Yoga is a science of life which deals with preservation of health and cure of disease. Good health is best achieved when the regimens told in Yoga are promptly followed. This great science is based on its own fundamental principles. Yoga stresses more upon the normal maintenance of *Dosha, Dhatu, Mala* and Pleasant soul, Mind and Sense organs for health.

Modern busy lifestyle has so much modified peoples that they have forgotten to take the deep breath also, due to stressful life, contaminated air and unhealthy, unhygienic food not only affecting on childrens physical health but also disturbing mental health. So to overcome these problems one can start practicing *Shatkarma* (Yogic Purificatary Processes) as explained in *Yoga Shastra, Kapalbhati* is considered as one of the best breathing exercise. It enhances the intake of oxygen and exhalation of carbondioxide from the body. It also improves the working of lungs and other respiratory organs. Improvement in breathing improves the action of other body parts also as proper oxygen content is necessary for overall body function and helps to control *Pranavata* in *Prakruta Gati*. To understand the proper role of *Kapalabhati* on brain through respiration. *Trataka* or the practice of Concentration is known to yoke the wandering mind. This relieves strain on the mind.

Address for correspondence:
Dr. Mahesh Salimath
Ph.D Scholar, Dept. of Kayachikitsa, Ayurveda Mahavidyalaya, Hubli, Karnataka, INDIA.
E-mail: drmaheshsalimath@gmail.com

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Physiology of Respiration[1]

Breathing is the only autonomic function that can be consciously controlled and it is the key in bringing sympathetic and parasympathetic nervous system into harmony. Air that is inspired through nares will

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pass via. trachea, bronchi, bronchioles and finally end up in the alveoli, where the actual process of gaseous exchange between lungs and blood takes place (external respiration) through respiratory membrane. Again at the level of tissues, exchange of gases takes place between blood and tissues (internal respiration).

Mechanism of Respiration

Respiration occurs in two phases i.e. inspiration and expiration. During inspiration (active process) thoracic cage enlarges and lungs expand. During expiration (passive process), thoracic cage and lungs decrease in size.

Muscles of Respiration

These are skeletal muscles (with a capability to increase in their bulk with regular efficient usage).

Inspiratory Muscles, Expiratory Muscles Primary - Muscles of Diaphragm and External intercostal muscles Primary - Internal intercostal Accessory - Sterno - cleidomastoid, Pectoralis etc., muscles Accessory - Abdominal muscles.

Movements of Thoracic Cage

Movement of four units like thoracic lid, upper costal series, lower costal series and diaphragm causes movement of thoracic cage thereby elevation of ribs and descent of diaphragm.

Movements of lungs

During inspiration because of enlargement of thoracic cage negative pressure is increased in the thoracic cavity. It causes expansion of lungs. During expiration thoracic cage decreases in size thereby negative pressure also comes back to pre-inspiratory position, which compresses the lungs, air is expelled out.

Pulmonary Compliance is the expansibility of lungs and thorax.

Pulmonary surfactant is the secretion of type 2 alveolar cells. It is the surface acting material which lines the epithelial lining of alveoli and decreases the surface tension of the alveolar membrane thereby avoid the collapse of alveoli. Prostaglandins are the chemicals secreted by the parenchyma cells of lungs which reduce the bronchiolar smooth muscle tone.

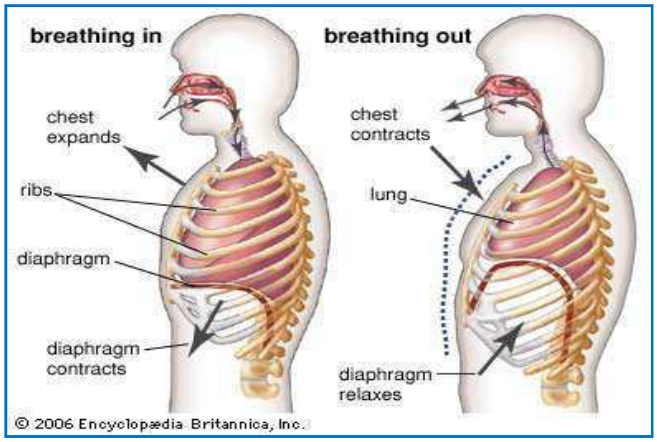
Respiratory Pressures

Intra-pleural and Intra-alveolar pressures allow the respiration phases like inspiration and expiration.

Receptors: Stretch, Baro, Irritant, Chemo, Proprio, Pain, Thermo etc., get stimulated to different stimuli and act accordingly and does different functions. Regulatory mechanisms - Process of respiration is under the control of two mechanisms like Chemical and Nervous mechanism. Chemical mechanism is again of two types like central and peripheral. Nervous mechanism is under the control of Medulla oblongata (Medullary) and Pons (Pontine). Medulla oblongata has two groups of neurons like Dorsal and Ventral. Pons also have 2 group of neurons – Pneumotaxic & Apneustic. Pontine centres can control Medullary centres.

Control of Inspiration and Expiration Period

Medullary Doral Group controls inspiration process in normal quiet breathing (unconscious), Ventral Group can control inspiration and expiration in forceful breathing (conscious). Pneumotaxic centre controls conscious process of breathing and Apneustic centre controls unconscious breathing. Breath holding time Length of time one can voluntarily stop breathing is called breath holding time. Increased Carbon dioxide (Hypercapnea)/ decreased oxygen levels in the blood stimulates Chemoreceptors of the lungs to send the sensory reflex to the brain centres thereby, Medullary dorsal group of neurons will get activated which will further initiates the process of inspiration. So, breath holding time is under the control of stimulation of Chemoreceptors of the lungs to increased carbon dioxide levels.



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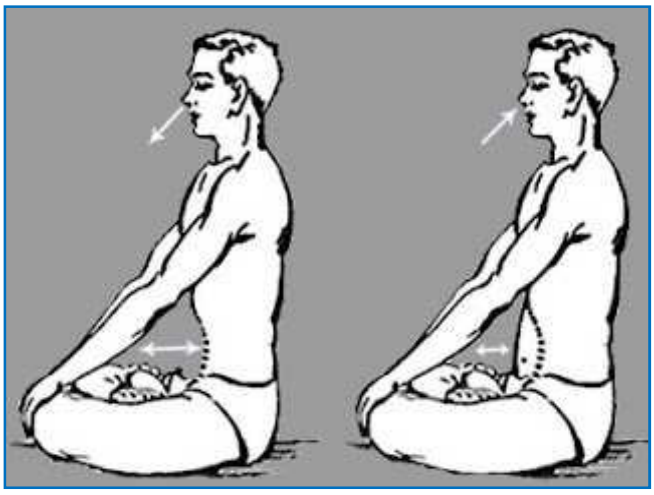
Kapalbhati - Frontal Brain Purification[2]



The last of the 6 *Shatkarma* is *Kapalbhati*. In the "*Gherand Samhita*" it is known as *Bhalabhai*. The words *'Bhala'* and *'Kapal'* mean the 'cranium' or 'forehead'. *'Bhati'* means 'light' or 'splendour', but also 'perception and knowledge'. *Kapalbhati* technique invigorates the entire brain and awakens the dormant centers which are responsible for subtle perception. In English it is referred to as the 'frontal brain purification' technique. It is a similar practice to *Bhastrika Pranayama* except that exhalation is emphasised and inhalation is the result of forcing the air out.

Normal breathing is characterized by active contraction of only the inspiratory muscles, such as the diaphragm and external intercostals. Expiration occurs passively on the cessation of this contraction of the internal intercostals. *Kapalbhati* reverses this process - exhalation is active while inhalation is passive. This induces a reversal in the flow of the nerve impulses to and from the brain bringing about stimulation and awakening of the brain centres.

Effect Of *Kapalbhati*

According to the "*Hatha Yoga Pradipika*", "By the six *Karmas* one is freed from excesses of the *Doshas*. Then *Pranayama* is practised and success is achieved without strain." (2:36) If the body is clogged with old mucus, bile and wind, the energy gained through *Kapalabhati* practice will be utilised for rectifying your disorders. In fact, if you have any mucus blockages it may create such an acute problem that you cannot practise *Pranayama*. First you have to rid yourself of excess mucus and bile and eliminate the toxins from your system. Proper assimilation and excretion have to be established, *Pranayama* is more effective in a healthy body.

The body has three faults - apha (mucus), *Pitta* (acid) and *Vata* (wind). An imbalance in anyone or more of these causes disease. In the same way, the mind has three faults. The first is *Mala* (impurity), the second is *Vikshepa* (distraction), and the third is *Avarna* (ignorance). Impurity is the psychological stuff which manifests when you sit for meditation. There are five types: *Karna* (sensual desire), *Krodha* (anger), *Maha* (infatuation), *Mada* (arrogance or pride), and *Matsarya* (envy).

When visions float across once mind and the mind cannot be made steady because it keeps oscillating, that is *Vikshepa*. When the mind is unable to understand itself, that is ignorance or *Avarna*. Through the practice of the *Kapalbhati* the centres in the physical body which are responsible for arousing these *Doshas* in the mind, are stabilised. The *Kapalbhati* work on the physical body to influence the mind, brain waves and blockages of energy.

Although there is very powerful and effective purifier and harmoniser, pranayama will have to be practised afterwards to maintain the balance they have created. Otherwise impurities will re-accumulate very quickly and the body will soon fall back into its old patterns.

How does *Kapalbhati* help in the awakening of *Ajna Chakra*?[3]

Breath, mind, *Prana* and *Nadis* are all interrelated and interconnected. Through the breath we can alter our mental states. We can change the flow of *Prana*, and we can stimulate and activate the *Nadis*. Therefore *Pranayama* utilises the breath as the main means to control and direct the flow of *Prana* and the awakening of the *Nadis* in the system. At the same time, it helps to provide a balanced frame of mind.

It is not *Kapalbhati*, which awakens *Ajna*, but the reaction which takes place when we are able to perform a *Pranayama* practice correctly, that helps to

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awaken various *Chakras. Kapalbhati* stimulates the nerves. In turn they activate the *Nadis* which then activate the *Pranas*, and the *Pranas* are attracted towards that region where some kind of activity is taking place in the structure of the brain.

What's an IQ? (Intelligence Quotient)[4]

IQ is a number meant to measure people cognitive abilities (intelligence) in relation to their age group. An I.Q between 90 and 110 is considered average; over 120, superior. Roughly 68% of the population has an IQ between 85 and 115. The average range between 70 and 130, and represents about 95% of the population. A score below 70 may indicate problems in understanding the iQ questions or some type of learning disability, and a score above 130 may indicate intellectual giftedness.

1% of the population has an IQ of 136 or higher. However, an individual scoring 100 within one population can score above or below that value within another population, for example, the Japanese are supposed to have the highest average IQ in the world (115), but this 115 can only be an average of 100 within their own population.

What is the highest IQ?

The highest IQ was 228, according to Guinness Book of Records, this score belongs to the 'smartest' person in the world Marilyn vos Savant who scored it when she was 10 year old. This would, according to recent research, correspond to about IQ 185 at adult age. That score is, at least, surpassed by the chess player and champion Bobby Fisher which was 187, and Kim Ung-Yong (S. Korea) with a score over 200.

IQ Formula

Mental age ÷ Physical age × 100 = IQ. No matter what the child's chronological age, if the mental age is the same as the chronological age, then the IQ will equal 100. Modern intelligence tests, including the current Stanford-Binet test, no longer compute scores using the IQ formula.[2]

Trataka - Yogic Gazing Meditation

Trataka[5] is a meditation technique which involves focusing the eyes (and, in turn, the mind) through intent but relaxed gazing. Initially, this practice is done with open eyes on an external object. It then progresses to internal practice (with eyes closed), and to gazing the void. Sometimes it's spelled tratak or tratika.

In all forms of *Trataka*, a person can integrate breath awareness or the repetition of a mantra if it is helpful, although it's not commonly taught this way.

There has been very little scientific research in this practice. So what we know in terms of its benefits is mostly all anecdotal evidence from practitioners that have devoted years to its practice. In this context, *Trataka* is attributed to have the following benefits:

- Improves concentration, memory, and willpower
- Improves visualization skills
- Improves cognitive function
- Cures eye diseases
- Makes the eyes stronger, clearer, and brighter
- Helps with insomnia
- Clears accumulated mental/emotional complexes
- Brings suppressed thoughts to the surface
- Increases nervous stability
- Calms the anxious mind
- Balances the activity in the two hemispheres of the brain
- Improves vision in the dark (if practiced on a candle flame)
- Soothing effect on the cranial nerves (Dr. Giridar Yogeshwar)
- Enhances self-confidence and patience

Effect of *Kapalabhati* and *Trataka* on Enhancing IQ

The intelligence[6] of once born with is not birthmark for their entire life. If a person make up his mind to increase his IQ, there are multiple ways to do so. All that is required of his sincerity and perseverance.

The idea of enhanced intelligence spawns from the desire to change, learn, and achieve. Clinical tests have shown that consistent yoga practice in children

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can raise IQ and increase memory. Studies have found that yoga besides improving fitness, health, co-ordination, reaction time and memory, also positively influences IQ. How does yoga help? Are you aware of the fact that low levels of oxygen can deteriorate person brain function? brain, and all vital organs, needs rich supplies of oxygen. Yogic breathing techniques (*Pranayama*), especially deep breathing techniques like *Kapalbhati* and mind concentrating techniques *Trataka*, increase the supply of oxygen to the brain. This helps ameliorate once concentration and memory. Practicing *Trataka* teaches us the art of focusing using tried and tested body-awareness techniques. When we are more focused, our efficiency levels increase and we have more energy for the task in hand.

Children who practice Transcendental Meditation demonstrate the ability to solve problems, acquire and recall information better-probably because they're less distracted by their thoughts. This shows that regular practice of *Kapalabhati* and *Trataka* will increases brain functioning by enhancing the IQ. Research speaks. A Comparative study of three different Yoga modules on Logical Memory in school children conducted by Vivekananda Yoga Research Foundation, Bangalore, India reports that uni-nostril breathing and *Kapalabhati* (deep breathing) and *Trataka* (Mind concentrating techniques) increases spatial memory score without lateralized effects. Hence, the present study assessed the effect of integrated approach of *Yoga* module (IAYM) on the performance in logical memory test of School children. This study was on school children undergoing a residential yoga for 10 days observed the efficacy of IAY on logical memory. The assessment was done by Wechsler memory scale for logical memory, which showed a significant improvement in all three groups following their respective interventions. In both male childrens and female childrens there was no significant difference between the groups.

Kapalbhati and *Trataka* that helps improve once memory power, fight forgetfulness and increase IQ.

The brain functions of attention, cognition, processing of sensory information and visual perception are honed with *Kapalabhati* (deep breathing) and *Trataka* (mind concentrating practices.) Yogic practices *Hatha Yoga*, which is a medley of *Asanas, Pranayama*, meditation and Om chanting increase blood feed to the brain. This helps in soothing mind and enhances concentration.

Memory power is given a boost, while also improving the ability to maintain focus and concentration.

Kapalbhati

In *Kapalbhati* the mind is focused on the breath as it flows in and out of the body. Oxygen and *Prana* (energy) levels in mind and body also elevate due to the regulation of breath. There are some yogic techniques that exclusively stimulate the brain and nervous system to improve memory and concentration.

Trataka

Regular practice of *Trataka*. Efficiency and effectiveness of work in children's is known to improve. Daily practice of *Trataka* reduces the wavering attitude of mind with peace and mental calm settling into child academic. More over it trains the mind to become clear, focused and directional towards their future life.

So with this new enlightenment, embrace Yoga not only for a healthy mind and body but also an improved IQ!

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