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PRANAYAMA- THE VITAL FORCE AND ITS EFFECT ON THE HUMAN THINKING AND REASONING POWER (THE BRAIN)

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Introduction

Pranayama means retention of the breath or prana or vital energy, occurs through the practices of control of the prana. This paper examines various prana nigraha practices which contribute initially to changing the physiological state of the brain and are said to awaken prana in the realm of the chakras, or psychic centres, within the human body. A review of a medical examination of a yogic adept is included, which confirms the practice of pranayama to influence an individual's brain activity. The conclusion is drawn that extensive prana nigrah practices leading into pranayama can significantly influence the physical, pranic, mental and psychic aspects of the human brain.

Pranayama is the control of the upa pranas (sub pranas) which achieves harmonization of the physiological body and leads to awakening of prana in the chakras or psychic body. Once the vital force or prana is entered in to the muladhara chakra and giving the feeling of awakening of the chakra, pranayama begins. The culmination is the merging of apana, prana and samana forces at manipura chakra which, in turn, leads to the activation of udana and vyana pranas. When the five pranas are operating simultaneously, the kundalini spiritual energy or evolutionary potential) is awakened and the process of self-realization begins.

Pranayama is divided into three stages: (i) Puraka (inhalation) (ii) Kumbhaka (Holding or retention of breath) and (iii) Rechaka (Exhalation). Prana itself has two aspects. One is prana shakti, which is the vital force and consists of the five minor pranas. The other is manas or chitta shakti, the mental or conscious force, centred in the brain. Without prana, the body and mind are dead.

Modern science states that there are ten areas of the brain of which we are using only one at our present stage of evolution. To use the other 90% involves the distribution of prana to awaken these areas. The subconscious mind and its relationship to the conscious mind are dealt with in pranayama by the establishment of an interface between the conscious and the subconscious minds in the area of the brain called the reticular activating system (RAS).

The RAS is the trigger for other parts of the brain. Man is able to affect the RAS through the breath only. No other function of the autonomic nervous system can be controlled by conscious human activity. Control of the brain through the RAS by means of conscious breathing is a method by which other functions of the body may be controlled, for example, heart rate, blood pressure, digestion, excretion and absorption. Therefore, control of the subconscious is achieved through conscious activity of prana nigraha and then pranayama.

Four pranayama practices are examined for their effects on the brain or other parts of the human body. These practices are selected on the basis of their importance in the practice of yoga and their stated influence on the physiological and psychic bodies.

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Kapalbhati

Actually, Kapalbhati is one of the types of cleansing process or shath kriyas but because of its nature of involving lungs i consider it as a breathing exercise (Pranayama) Van Lysbeth states that kapalbhati influences the circulation of blood within the brain. Kapalbhati changes the volume of the brain according to the respiratory rhythm and, therefore, increases the irrigation of the brain matter. Normal respiration consists of 12-18 massages per minute, whereas kaplbhati can involve up to 120 massages per minute, which leads to a significant increase in blood volume throughout and thereby improves irrigation of the brain.

The capillaries are opened up and the brain cells related to the pineal and pituitary glands receive significant stimulation. It is logical to conclude that increased brain irrigation with blood is accompanied by elevated pranic levels and ensures even and harmonious distribution of prana throughout the body.

Van Lysbeth supports this conclusion as follows: "Together with the acceleration of the blood circulation in the whole body, this stimulation of the brain and thereby of the central nervous system produces the special 'relation' of the body that invigorates and tonifies each cell".

Kumbhaka

In the practice of kumbhaka, or breath retention, which may be antar (internal) or bahir (external), tolerance to starvation of oxygen and build-up of carbon dioxide is achieved. Kumbhaka, practised over duration of time, will allow the body to retain carbon dioxide and become accustomed to reduced oxygen levels to achieve hypometabolism, that is a slowing down of the metabolic rate. The production rate of carbon dioxide is thereby reduced which causes a subtle effect to take place with conscious control of breathing. This effect influences the brain and body chemistry and reduces the need to breathe when carbon dioxide build-up is experienced.

External kumbhaka also affects the body physiologically by causing the mental process to stop, because of the vacuum created inside the body. This action is very useful in practice of pratyahara, sense withdrawal, and dharana, concentration, as a prerequisite achieve the state of meditation.

Kumbhaka stops vital body rhythms and affects the brain waves. Control of the brain waves is the key to controlling all brain rhythms. While the effects of bahir kumbhaka are many, in broad terms, the body and mind learn to stay calm under stress.

Nadi shodhana

Kumbhaka is used in the practice of nadi shodhana or anulom vilom or alternate nostril breathing. Nadi shodhana is the 'perfect balancing practice' which stimulates equally the left and right sides of the brain and body. Ida and pingala, the major nadis, or pranic channels, are balanced which, in turn, modifies the

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human thinking process to balance introversion and extroversion. The ancient yogis have recorded that once ida and pingala are balanced and purified, the central nadi, sushumna, begins to flow, leading to increased awareness and the state of meditation.

Nadi shodhana imposes a rhythm on the brain and the nadis, over the irregular state that normally exists. Modern living has removed the regular rhythms of nature from the human body and nadi shodhana assists in bringing the body, prana and mental activity into balance. Research has shown that nadi shodhana affects the brainwaves by superimposing a regular sine wave over the normal irregular brain activity, imposing discipline on the irregularities of the mental process and, eventually, the autonomous body rhythms.

Kumbhaka in nadi shodhana places a momentary block on the body rhythms, changing the usual carbon dioxide/oxygen relationship, thereby affecting the whole system. Antar kumbhaka emphasizes the oxygen content and bahir kumbhaka emphasizes the carbon dioxide phase.

Ujjayi

Ujjayi, or the psychic breath, produced by a slight contraction of the throat, has a subtle effect on brain activity via four processes:

(i) Ujjayi increases the pressure of air in the lungs and expands the effective use of the lungs. This ensures transfer of oxygen to each cell within the lungs, rather than a significantly smaller percentage used during normal respiration.

(ii) Increased oxygen transfer in the lungs enhances blood flow throughout the body, while the body is in a relaxed state. The effect is similar so that achieved when the body is physically active, with the advantage of the whole body being in a relaxed state (16).

(iii) Conscious awareness is transferred into the unconscious mind which affect the nervous system governing respiration. A smooth rhythm is exerted on the nervous system that has a profound effect at the psychic level of the mind.

(iv) The contraction of the throat caused by ujjayi affects the carotid sinuses which regulate blood pressure in the arteries. Ujjayi exerts a slight pressure on the carotid sinuses which, over time, lowers the blood pressure, which leads to reduced tension and slows the thought processes of the mind (17).

Examination of a yogic adept

The effect of the practices of prana nigraha outlined above has been substantiated in part through work carried out at the 5th annual convention of the International Association in Religion and Parapsychology in 1977. The research revealed that Ramanand Yogi, who had practised Pranayama for many years, had the ability to control the heart muscle itself and was, therefore, able to control his heart function. During

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Pranayama, Ramanand Yogi was able to reduce his pulse rate from 100 per minute to 65-80 per minute, although such changes would be dangerous for persons who had not practised pranayama (18). It was also concluded at the conference through biological tests that Ramanand Yogi was able to control his basal metabolic rate through Pranayama.

The effects of pranayama on the brain as detailed by Swami Niranjanananda, and the results of clinical trials carried out by the International Association for Research for Religion and Parapsychology, substantiate the profound effects of pranayama on the physical and mental human body.

Conclusion

While extensive pranayama leads to significant control over the brain, prana nigraha practices carried out by the writer have affected subtle changes in ability to control both the breath and energy within the body. It is more difficult to detect any major effects on body physiology, but there has been a definite change in the state of one-pointedness and calmness of the mind over the past years as result of the practices of Pranayama.

The ancient yogic texts speak of the ability of pranayama to control the mind. The Hatha Yoga Pradipika by Yogi Swatmarama states that pranic constraint can control the mind: "When prana moves, chitta (the mental force) moves; when prana is without movement, chitta is without movement. By this (steadiness of prana), the yogi attains steadiness of mind and this restrains the vayu (air)".

In conclusion, current writings by recognized yogis and research into the effects of the practices of pranayama support the ancient yogic view that pranayama exerts profound effects on the human brain. The limited experience of the writer also supports the view that the practices of pranayama can have subtle effects on the brain, human well-being and influence the individual's level of spirituality.