



## PHYSIOLOGICAL CHANGES IN MEDITATION

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### ABSTRACT

Physiological indications during meditation have been felt necessary to be explored and understood because of their psychosomatic nature. Their comprehension will act as a bridge between the ancient spiritual knowledge and the analytical studies enabled by state of art techno-medical diagnostic tools. These are expected to be useful for good personality development.

**KEYWORDS:** Meditation, breathlessness, deep relaxed breathing, heart pulsation rate, psychosomatic, medulla oblongata, Yogic energy channels, nadi, autonomic nervous system.

### INTRODUCTION

Any novice meditation practitioner for mental peace or spirituality naturally will be anxious to know about the experiences involved, intermediate stages of progress, hindrances and their removal, goal etc. Sometimes he would like to interact with his fellow pupils to share his travelogue of spiritual journey and experiences. Persons might hesitate to share these topics due to (a) limited knowledge (b) treating it to be a mysterious domain (c) to avoid the creation of arrogance of the aspirant. Traditionally earlier such things used to be confined only in the monasteries situated in isolated remote areas to avoid any misuse.

Well known yogi Paramhans Yoganand has shared his vivid and miraculous experiences during his spiritual upbringing under his mentor Swami Yuktेशwargiri (1). Such great personalities along with Swami Vivekanand have done great efforts by introducing to the Western world, about several thousand years old Indian philosophy, Sanatan Dharm and ancient scriptures like Bhagwad Geeta, Patanjali's Yog Sutra, Upnishads etc. They have succeeded in their efforts, in addition to upholding due regards to Christianity.

In the modern era of scientific and technological temperament, people like to explore the matter based on facts and tend to accept the phenomena only after being verified by evidences. Numerous efforts also have been made to demonstrate the effect of Yogic activities on psychosomatic plane, corroborated by physiological diagnostic tools.

### Meditation:

Different schools of meditation (Dhyan) advise various modes e.g. to concentrate on breathing, Om, a specific syllable or mantra, special sound or music, recitation of the name of favourite lord etc. Actually all such variants aim to train the mind to concentrate at a particular selected subject, known as 'Dharna' in Yogic literature. Normally an aspirant is initiated to concentrate at a place between eye brows, the spot known as a seat of 'Aagya' chakra (1, 2, 3). The mind remains always restless and constantly difficult to stabilise. Being aware of the selected subject

and maintaining persistent concentration there is the most vital step. In case the mind wanders, it is advised to bring it back gently to the point of concentration. Existence of a close association between the breathing pattern and thoughts in the mind already has been mentioned in ancient Hindu scripture by Patanjali (2).

According to classical Yogic philosophy (2) the nervous system is affected by breathing through left and right nostrils, shifting alternately for duration of about one and half hour. The energy channels known as 'Ida nadi' (Chandra) and 'Pingla nadi' (Surya) are considered to be associated with left and right nostril respectively. When inhaling and exhaling is done through both nostrils, (at the time of Samadhi / Meditation), a third channel (state of equilibrium) called as 'Sushumna nadi' is supposed to be activated (2). Moreover it also has been propounded to achieve state of thoughtlessness leading to ultimate state of 'Samadhi'.

### Physiological changes and Yogic analogy:

In the state of anxiety, anger, fear or fight, an increase of the rate of respiration and heart beats along with profound perspiration is observed. On seeing a pleasant, serene and natural awfully beautiful place the respiration and heart pulsation rate are found decreased. Such phenomenon has been attributed to alpha frequency domain (9-14 cycles per second) of brain waves, automatically leading to deep and slow breathing. Mental concentration and its stability reduce the respiration rate and vice versa also holds true. It indicates a close relationship between emotional state and apparent physiological changes. Perhaps such indications might be utilised to innovate a lie detector.

Meditation being a sort of psychosomatic activity in nature is independent of any faith, religion, place or tradition. Many persons like to put it in the category of spiritual practices because mean while the mind contemplates beyond and above the sensual pleasures of five senses e.g. sight, sound, hearing, taste and smell. It creates disruption in the communication of signals from the neurons from eyes, ears, nose, tongue and skin, as all these faculties are inwardly focussed.

As per modern medical anatomy medulla oblongata or ‘medulla plexus’ making up the lower part of the brain stem near pineal and pituitary glands, is supposed to be situated close to ‘Aagya chakra’. It is a cone shaped neural mass responsible for autonomic involuntary functions, ranging from vomiting to sneezing. Human body’s functions like breathing, blood pressure and digestion are controlled by brain through autonomic nervous system (ANS); further divided in to two branches: (1) Sympathetic nervous system (SNS) showing fight / flight syndrome in case of emergency. (2) Parasympathetic nervous system (PNS) showing rest and digest or calming response. During meditation and deep concentration by following any one of earlier mentioned ways, the resultant creation

of deep relaxed breaths turn off the stressful sympathetic nervous system (SNS) and automatically turn on the parasympathetic system (PNS), helping to calm down. Consequently the heart rate drops, blood pressure falls, breathing slows and deepens, and pupils’ shrink and muscles relax. This promotes good digestion, supports the immune system and enabling to feel good all over, also known as a state of deep relaxation. During slow and deep breathing, reduction of heart pulse rate can also be verified even by a fingertip worn digital pulse oximeter. The qualitative natures of stressful SNS and calm PNS indicate possibility of a befitting analogy between Yogic terms for energy channels e.g. ‘agile and hot Surya nadi’ and ‘calm and cold Chandra nadi’ respectively. These are represented in the following table:

<b>STRESS (SYMPATHETIC SYSTEM ) ( ‘Surya Nadi’ Active)</b>	<b>CALM (PARASYMPATHETIC SYSTEM ) ( ‘Chandra Nadi’ Active)</b>
1. Pupils expand	1. Pupils shrink
2. Fast and shallow breaths	2. Slow deep breaths
3. Heart pumps faster	3. Heart rate slows
4. Gut inactive	4. Gut active

A person capable of mere wilfully controlling inhaling-exhaling pattern cannot be declared a ‘Sidha’. The physical body, mind and intellect are the outer layers enveloping the inner Self. When the mind transcends beyond indescribable sensual feelings, heavenly bliss engulfs the being. Spiritual progress cannot be judged by externally apparent changes, rather by self-experienced feeling of blissfulness, being a testimony of all pervading supreme super consciousness guiding to provide the proper solution for human problems.

**REFERENCES**

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