

A Wellness, Brain Circuitry & Maharshi Patanjali's Yogsutras

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Abstract: A concept of wellness is primarily dependent on the appropriate functioning of the brain. Appropriate functioning means the neurons in the brain should be firing at expected rate. More firing of the neurons and the synapses indicates the equilibrium of chemicals in the brain. More agitated brain consumes more electrical energy. 'Brain-dead' is a vegetative state and thereafter, nothing is possible. Indian approach depicted by Maharshi Patanjali in his Yogasutras suggests activation of Chakras and reaching to Shashrar for ultimate Bliss, which transforms and leads a person into unceasing Wellness. The upward journey from Mooladhar to Aadnya Chakra, along the way cleanses, purifies and rejuvenates various Nadis (ducts) and adjoining organs, forming part Somatic or Autonomous Nervous System.

Key Word: Kundalini Awakening, Shad Chakras, Brain Circuitry, Yoga Sutras, Neurons, Synapses, Bliss, Wellness, Tachycardia, Bradycardia, Pineal Gland, Hemispheres, Kundalini Awakening, Super Consciousness, Ayurveda, Upanishads, Neuro Linguistic Programming, FIRO-B.

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I. INTRODUCTION AND LITERATURE REVIEW:

The impression world over till almost 18th century was that all sciences, **Social, Physical and Applied are developed in the Western world**, which is not true at all. The Westerners, primarily, were confining their thought processes and all studies to only 'Existentialism and Comfort of Life'. They had never looked beyond the life-span of the human being. It is pertinent to mention here that Ancient India has contributed a lot in all areas of human life and those have scientific basis, which can be verified and validated by all and any modern scientific and technical methods and tools. Ample literature is available in India and in other parts of the world.

1.1 Research Objectives:

The objective of the research is to identify the factors that are responsible for the **Wellness of Human** being; and also, to explore whether brain functioning and corresponding synapses of neurons are responsible for it and to investigate whether the adoption of **Patanjal Yoga Sutras** can help for activation of optimum neurons and thereby, achieves the ultimate bliss.

1.1 Research Methodology and Data Analysis:

The subject of research revolves around three areas of knowledge, namely, Psychology, Philosophy and Religion. It is necessary to mention that in Indian philosophical thinking 'Dharma' does NOT mean Religion. The term 'Dharm' cannot be rightfully substituted by a word 'Religion', because Indian philosophy defines 'Dharma' as a way of life. We shall be referring the Indian Psychology in the form of Patanjali Yoga Sutras. The philosophy in terms of eternity / immortality of Soul and its 'transference of desires', from birth to birth, irrespective of the fact that human body vanishes in space, merges with Brahman, dissolves and gets unified with five elements (components), and becomes homogenous with the five elements, namely, Prithvi (Earth / Soil), Agni (Fire), Jal (Water), Wayu (Air) and Aakash (Space or Ether) and soul continues its existence, uninterruptedly.

1.3.1 In order to delve into the underlying principles of **Brain Circuitry**, functioning in terms of modern neurosciences, and similarly, to probe how the awakening of the **Kundalini (Coiled Serpentine Energy)** can be done by passing through the **Six Chakras**, starting from **Mooladhar** and reaching to its ultimate destination of **Sahasrar, an abode of Adi Shakti bestowing the Ultimate Bliss**.

1.3.2 The modern neuroscience describes the Central Nervous System (CNS) consisting of Brain, Cervix, Spine, Lumbar and Coccyx, which can be correlated with Indian concepts, as described in Ayurveda basically, and other corresponding concepts described in Yogshastras; more particularly in Patanjali's Yoga Sutras. Even the modern medical science believes in "Psycho-Somatic Disorders", which means apparent physical symptoms are preceded by psychological factors, e.g., Back Pain, Hypertension and Diabetics are induced by depression, stress etc.

1.3.3 The Yoga Sutras prescribe the cleansing system of body organs enabling the *focussed meditation*. It emphasizes that unless internal organic cleansing is not done, the body cannot withstand the arduous *Tapasya*, focussed meditation, as it involves utmost physical strain. The healthy body can only undertake the rigorous and ceaseless journey of 'Kundalini Awakening' by properly guided meditation. The oldest medical system of India, Ayurveda had described the 'Panchkarma' process for removal of toxins and purification of internal systems.

1.3.4 The branch of medical science, namely, orthopaedics, talks about 'Science of Postures', which is titled as Ergonomics. The bad posture deteriorates the systemic functioning of the nervous system.

1.3.5 The Yogasanas are required to be learnt from well '*Learned Guru / Mentor*', to get the optimum benefits from it. Improper practises of Yogasanas can adversely affect the body and mind both.

1.3.6 The calming of the brain denotes consuming less energy, though having stored vast reservoir of it. The meditative stage called as, "Thuriya Awastha" [*Inclusive of Nijānanda - Nirānanda - Parānanda — Brahmānanda - Mahānanda - Chidānanda Jagadānanda – Madukya & Chandogya Upanishad*], consumes minimal energy, in which lowest possible activities in the brain take place.

नान्तःप्रजम् न बहिष्प्रजम् नोभयतः प्रजम् न प्रजाधनं न प्रदन्यम् नाप्रजम् ।

अदृष्टमव्यवहार्यमग्राह्यमलक्षणं अचिन्त्यमव्यपदेश्यमेकात्मप्रत्ययसारं

प्रपच्योपशमं शांतं शिवमद्वैतं चतुर्थं मन्यते स आत्मा स विज्ञेयः ॥ मांडूक्य उपनिषदः श्लोक-७ ॥

It is not that which is conscious of the internal subjective world, nor that which is conscious of the external world, nor that which is not conscious of both, nor that which is a mass of consciousness, nor that which is simple consciousness, nor is it unconsciousness. It is unseen by any sense-organ, beyond empirical dealings, incomprehensible by the mind, inferable, unthinkable, and indescribable, essentially by the Self alone, negation of all phenomena, the peaceful, the auspicious and the non-dual. This is what is considered as the Fourth (Turiya) stage. This is the Atman and this is to be realised.

1.3.7 It presupposes that may be the journey of Kundalini from its primary abode, Mooladhar to Anahat Chakra, is more agitated and creating turmoil, but beyond the last but one. i.e. Aadnya Chakra, it calms down, emanating the messages all over the body of getting slow and be non-agitated.

1.3.8 On the other hand, Sigmund Freud, an Austrian psychologist, who is recognised as the Father of Modern Psychology / Psychiatry followed and challenged by his own disciple and mentee Carl Gustav Jung, who was his contemporary. Freud's whole emphasis was on 'id', 'Sex-Libido'. Suppression of that libido is the real cause of all adverse conditions and ill effects. This is the primary idea of Freud and it appears very primitive, though it started the conceptualisation of modern psychology.

1.3.9 Other contributors of Transactional Analysis (TA) are Dr Thomas Harris and Dr Eric Bern, who *focussed more on overtly behavioural manifestation*. They tried to decode the outwardly expressions, as originating from *three different levels of mental states*, which they say, alter from time to time, due to various reasons, either internal, external or both together at times. Moreover, those states have nothing to do with the age or gender of an originator or responder of the transaction.

1.3.10 Carl Jung had an inclination towards spiritual and religious aspects and that is why he reportedly studied the Eastern Philosophy, Spirituality and especially, Patanjali's Yoga Sutras, for which he was criticised by others.

1.3.11 The modern-age Neuroscience, Clinical Psychology, Abnormal Psychology and Psychiatry, not heard of deploying Eastern, especially, Indian way to deal with challenging psychosis, depression etc.; by utilisation of spiritual approaches, systems and practices, scattered over hundreds of ancient Sanskrit scriptures.

1.3.12 However, in studies of brain functioning, electrical waves in brain are recorded in and through Electroencephalograms (EEG), in which the 'Hz', is used as a unit of measurement, for the measuring and evaluating the brain functioning, for diagnosis and treatment of neurological disorders, like Autism, Epilepsy and Obsessive-Compulsive Disorders (OCD) etc. The brain waves, as per modern neuroscience are classified as Gamma (More than 30 Hz), Beta (13–30 Hz), Alpha (8–12 Hz), Theta (4–8 Hz) and Delta (Less than 4 Hz). These are associated with thinking, integrated thoughts, relaxed, non-agitated, intuitiveness, creative, recall, fantasy, imagery, dreamlike, switching thoughts, oneness etc. More the engagement / occupancy or instigation of mind, more will be the operations / activation of neurons. Neurotransmitter is a Chemical substance that enables neurotransmission. It is a signalling molecule secreted by a neuron or a glial cell to affect another cell across a synapse. The cell receiving the signal, or target cell, may be another neuron, but could be a gland or muscle cell. Like any other activity in the human body, functioning of the brain needs some fuel or energy to activate the neurons and neurotransmitters in the human brain.

1.3.13 Consequentially, the demand of this energy put more pressure on a body system. On the background of energy demand of the brain, it is pertinent to understand the capacity of the human brain first. This variance depends upon the intrinsic properties of neurons. The range is from <1 Hz to 200 Hz. (1 Hz is one cycle per second, i.e. 1 Spike per Second to 200 Spikes per Second). So, in our brain, if 86 billion neurons fire every one second then, the firing range could be <1 Hz ~ 200 Hz. [NeuWrite West].

1.3.14 The aim or target should be lesser energy demand by the brain and that it will be possible only if, we can maintain our mind at peace, not agitated for a longer time. Indian spirituality talks of four States of Human Mind, namely, Kshipta (Restless), Mudha (Infatuated), Vikshipta (Distracted), Ekagra (One Pointed) and Niruddha (Well Controlled). Maharshi Patanjali's teachings deals with the mind control, with an objective to attain the *perpetual peace and harmony*. The modern psychology accepts the concepts of 'Normal and Abnormal Behaviour' of the mind, based on its state at a particular point of time, which is called as 'States of Consciousness'.

1.3.15 (a) **Kshipta (Restless)**: It is primarily the restless state of human mind, which is in the dull and lethargic state. (b) **Mudha (Infatuated)**: It is under the influence of delusion and is categorised 'abnormal psychology' by modern psychology. This state denotes the inability of mind in taking the right decision. (c) **Vikshipta (Distracted)**: The distracted state of the mind is capable of concentration sometime, but not at other time. (d) **Ekagra (One Pointed)**: Becoming 'Ekagra' is the process of mind-control. (e) **Niruddha (Well Controlled)**: This state is of 'well controlled mind'. The 'Niruddhi' is Wellness of Human Mind.

1.4.1 The EEG talks of stages, rather levels of brain functioning, namely, Waking, Sleeping, Dreaming; whereas, Indian spiritual literature says that there are five stages or conditions, which are Waking, Sleeping, Dreaming, Dreamless and Beyond.

1.4.2 Medical science says that slow pulse rate and heart rate is a good indicator of sound health. However, it does not mean to have Bradycardia (falling the pulse rate < 60 beats per minute), in case of an adult. In sportsman or some other persons, this may be normal sometime. There is definitely a relation between the Heart and Brain, as brain is ultimate controller of the whole body, supported by the heart for its fuel supply in the form of blood circulation. It can be safely said that both are mutually complimentary to each other and interdependent too. In case of stoppage of heart, called as a 'cardiac arrest'; later on as a consequence of such cardiac arrest, lungs become unable to provide blood supply to the brain (containing oxygen) and thereby brain becomes dead. Also, by a trauma, when brain sustains an injury which causes internal damage due to brain haemorrhage, it is a typical of stroke. It is caused by an artery in the brain bursting and causing localized bleeding in the surrounding tissues. This bleeding kills brain cells. This bleeding can happen because of an accident, brain tumour, stroke, or high blood pressure. The bleeding in the brain can reduce oxygen delivery to the brain, create extra pressure in the brain and kill brain cells.

1.4.3 The passage of awakening (*not agitating*) the Six Chakras (Wheels), as a route to travel to Shasrar (Abode of Adi Shakti) bestowing the bliss, is arduous but in process gets every junction (Chakra) calmed and stabilised on the way. And this is very well possible, as mentioned in Shrimad Bhagwad Geeta in Chapter-6: Dhyanyog. First Arjuna tells his friend and Mentor Lord Shrikrishna in Verse-34,

“चंचलं हि मनः कृष्ण प्रमाथि बलवद्दृढम् |
तस्याहं निग्रहं मन्ये वायोरिव सुदुष्करम् || अध्याय-६, श्लोक-३४ ||

Hey Lord Krishna! Mind is unsteady, flickering, obstinate and very powerful. Therefore, it is more difficult than controlling the wind. On knowing this inability and helplessness of Arjuna, Lord Shrikrishna told his friend and mentee Arjuna in Verse-35 in the same chapter,

असंशयं महाबाहो मनो दुर्निग्रहं चलम् |
अभ्यासेन तु कौंतेयवैराग्येण च गृह्यते ||

Hey Kaunteya (Son of Kunti having strong arms, i.e. powerful) I agree with you that undoubtedly, it is very difficult, but I tell you with appropriate study and detachment, mind can be controlled and calmed down. This is very nicely illustrated in Kahtopnishad in 1.3.3-4 in following words:

आत्मानं रथिनं विद्धी, शरीरं रथमेव च | बुद्धिं तु सारथिं विद्धी, मनः प्रग्रहमेव च |
इंद्रियाणी हयानाहुर्विषयां, स्तेषु गोचरन् | आत्मेन्द्रियमनोयुक्तं, भोक्तेत्याहुर्मनीषिणः ||

Soul is sitting in a chariot like man's physical body, which is driven by charioteer, Buddhi (Intelligence). Mind is strings to hold control and drive the chariot. Human organs are horses carrying the body chariot. Man experiences and enjoys the life in the company of Mind together with his organs. Intelligence is superior to monitor and control the mind, which can restrict its unlimited desires and wants. The intelligence, help and facilitates mind to reduce its restlessness and agitation, because that state increases demands for more energy creating pressure on all body systems. Therefore, we have to adopt the methods, systems and processes of calming down our inner world.

1.5.1 The process of awakening ensures the calming effect, thereby reducing the overall requirement of energy of the whole body, remaining at minimal level. This reduction in the 'Body-Energy-Demand'; of course, reduces the overall stress of all body organs, Central Nervous System, as well as Peripheral Nervous System [*compromising Somatic Nervous System and Automatic Nervous System*]. Each system contains Afferent and Efferent Components. The **Afferent** arm consists of sensory (or afferent) neurons running from receptors for stimuli to the CNS. **Afferent nerves** detect the external environment via receptors for external stimuli, such as sight, hearing, pressure, temperature etc. **Afferent-nerves** exist in both the somatic and automatic nervous system, as both can use sensory signals to alter their activity. **The Efferent** arm consists of motor (or efferent) neurons running from the CNS to the efferent organ. **Efferent organs** can either be muscles or glands. Afferent neurons carry information from sensory receptors of the skin and other organs to the Central Nervous System (CNS), i.e. brain & spinal cord; whereas, efferent neurons carry motor information away from the central nervous system to the muscles and glands of the body.

1.6.1 Findings and Interpretation

1.6.2 The wellness depends on minimal body stress and strain, including the balance in all body fluids and equilibrium in all body system. *The level of stress and strain depends much upon the psychological state of human being. The psychological state of mind is greatly affected by the upbringing of a person, the environment he lives / lived and constant external environment, he is exposed to.* At the same time, his own efforts to monitor quench and control the unlimited desires and expectations from others, in terms of 'Getting Attention' or too much 'Need of Inclusiveness'. It dealt in detail and can be defined as 'Wanted Inclusion & Expressed Inclusion', as referred in "**Fundamental Interpersonal Relationship Oriented Behaviour (FIRO-B) of Will Schutz**". A biological need is a requirement to establish and maintain a satisfactory relation between the organism and its physical environment. An interpersonal need is a requirement to establish a satisfactory relation between the individual and his human environment. A biological need is not satisfied by providing unlimited gratifications, endlessly.

1.6.3 In a society, everybody interacts with somebody, at every stage of life, whether he wants and wish for it or not, from childhood to adulthood and beyond, irrespective of gender, age, religion or geographical location. Dyadic Relationship cannot be avoided in a society and therefore, **how much one wish to give and wish to receive decides the healthiness of that relationship**; and that relationship could be between spouse, siblings, teacher and student, boss and subordinate or between colleagues. The behavioural transaction in dyadic relationship depends upon the mind-set of both, one who is 'stimuli' and another who gives the 'response' to that stimulus. The more the 'Cross Transactions', the more the need of individuals responding or engaging in the 'Dysfunctional Transaction'; and when, such transactions takes place, they create anxiety and stress, giving rise to faster pulse and faster heartbeat, demanding more energy, overproduction of adrenaline with peculiar symptoms of rapid heartbeat, high blood pressure, anxiety, excessive sweating and palpitations. This can even lead to 'Tachycardia' (heart rate > 100 beats per minute), which can lead to '**Heart Rhythm Disorders (Arrhythmias)**'.

1.7.1 The appropriate deployment of Words / Terms / Phrases / Visible-Communication-Signs, with the intention of creating necessary changes in the '**Thoughts-Emotions-Feelings**', by adopting Neuro-Linguistic Programming (NLP) Techniques, can bring in desired results, *in terms of altering the mental state and immediately, magically altering the physical conditions of the body.* This can enable to calm physiological irregularity like described above.

1.8.1 The non-verbal or we can say **Non-Audible-Verbal Pronouncement (NAVP)** in the primary place of Central Nervous System (CNS), i.e. the brain *can certainly manipulate the chemical reactions in brain circuitry*, which can create and emanate appropriate messages, through firing of the neurons and sending signals to both Somatic Nervous System (SNS) and Automatic Nervous System (ANS) concurrently.

1.8.2 The Meditation prescribed in 'Yoga Sutras' is intended to change the *orientation of a man from outwardly orientation to inwardly orientation*, by making a person more of '**Giver**' than '**Receiver**'. Receiving comes out of expectations; whereas, Giving originates from for others and sharing with others; which is highlighted by Mr Deepak Chopra in his best-seller book 'The Seven Spiritual Laws of Success'.

1.8.3 The concept of Indian Spirituality believes in sacrificing for others, for important cause, societal or national. The 'strong-will' makes a man think accordingly. Altruistic approach with immense gratitude is, in

fact, a key or a Mantra. The attitude of gratitude is really and undoubtedly initiates processes in '**Right and Left Hemispheres**' complimentary to each other and also help for maintaining the balance between both the hemispheres.

1.9.1 The Pineal Gland, located between two hemispheres, is also affected positively by adopting above mentioned processes. It is responsible for creating 'MELATONIN', a hormone created by a brain that plays a central role in the regulation of 24-hour cycle of biological activities, associated with natural periods of light and darkness.

1.10.1 The Reconstitution, Restructuring and Re-shaping the requirements of physical body, can be definitely regulated by adopting various means recommended in **Samadhipad in Patanjali Yogasutras**.

1.10.2 The meditation has pre-requisite of cleansing of the physical body, by undergoing various Panch Karma (Five Activities) processes, as enunciated in Ayurveda by Maharshi Sushruta. The Panch Karma helps to purge out the different types of toxins from the body-ducts. This is necessary, more essentially, for those who want to go ahead and walk on advanced path of meditation, leading to '*Super Consciousness*.'

1.10.3 The state of 'Super Consciousness' is described in Vibhutipad Sukta-21 of Patanjali Yogasutras,

‘कायरूपसंयमात्तद्गाह्यशक्तिस्तम्भेचक्षुःप्रकाशासंयोगेऽन्तर्धानम् || ३.२१ ||

A person can become invisible, inaudible and can travel anywhere, but that is not the ultimate aim of Meditation-Travelling through-Shad Chakras-Awakening of Kundalini. *Those things are secondary to obtaining the ultimate bliss at Sahasrar Chakra.*

1.10.4. The state of Super Consciousness enhances the capabilities, capacities and competencies of a man and then, he can do so many things, which normally, look impossible and unrealistic. The 'State of Superconsciousness' cannot be and should not be equated with 'Emancipation'.

1.10.5 The Indian Philosophy of Vedant stipulates **Four Paths for Spiritual Emancipation**. They are Dnyan Marg (Path of Knowing), Bhakti Marg (Path of Devotion), Yog Marg (Path of Union) and Karm Marg (Path of Action).

1.10.6 The 'Spiritual Emancipation' is the ultimate goal of life but for that, first 'Wellness' has to be attained, practised, continued and maintained. We can say that 'Wellbeing' can be called as 'Stepping Stone' or First Step on the Ladder of Spiritual Emancipation.

1.11.0 Recommendations:

1.11.1 The inner connection between Psychology, Psychiatry, Abnormal Psychology, Clinical Psychology on one hand and Upanishads, Yoga Sutras and Ayurveda on other hand have to be investigated, analysed and synchronized.

1.11.2 The relationship between the Psychology, Neurology, Ayurveda and Yoga Sutras is established with proper understanding, defining and articulating.

1.11.3 A Model for conducting the empirical study is suggested, along with the phases / stages, milestones and deliverables.

1.11.4 A Concise Specific Note to be prepared defining and creating appropriate terminology for the study of this specific research.

1.11.5 The other corresponding searches' possible interconnections are laid down.

1.11.6 An Initiative towards the holistic approach is established by '*Creating, Defining and Designing the Medical Protocols / Standard Operating Procedures*' to augment existing protocols for dealing with the stress induced maladies.

1.11.7 May be some unique machine or device be thought of, for **Monitoring, Measurement, Adjustments, Rectification and Restoration of Desired Parameters**, like '**Bio-Feedback**'.

1.11.8 Other branches of knowledge, like Mechanical, Electrical, Electronics, Instrumentation be requested to join to collaborate with appropriate infrastructure and expertise in Neurosciences.

1.11.9 A suggestion to some good hospital having Neurologist, be given to undertake this type of study, by the approval of Ethical Committee duly approved by the appropriate national authority.

1.11.10 A Task force or Core Committee is established to oversee and monitor the progress for such advanced studies.

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