

Yoga-Integrated Health Neuroscience Paradigm (YOGIHANSAM): Integration of Yoga Philosophy, Health Psychology and Medical Neuroscience as a Paradigm for Holistic Healthcare

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Abstract

Yoga is a philosophical tradition with its origin in the ancient Indian Vedic culture. It is seen as a way of living to overcome suffering in life. Health psychology is an interdisciplinary field of studying the various cognitive, affective, social and environmental aspects of health. Medical neuroscience is a field of medical science dealing with the understanding and application of neurological and brain mechanisms in the promotion of health and prevention and treatment of illnesses. Yoga-Integrated Health Neuroscience Paradigm (YOGIHANSAM) is an attempt at combining these three distinct but inter-linkable fields into a holistic healthcare paradigm. This would give a clearer basis for understanding oneself and therefore one's healthcare holistically thereby empowering one to lead an integrated, healthy and harmonious life. This demonstrates the harmonious synergy between ancient wisdom with modern science.

Key words: *yoga philosophy, health psychology, medical neuroscience, health neuroscience, holistic healthcare*

1. Introduction

Yoga comes from the Vedic cultural and philosophical tradition of India. It deals with suffering and the means of overcoming suffering. This is not very different from the objectives of modern health science. Health is defined in recent times by the World Health Organization (WHO) as a complete state of physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity. Health is part and parcel of human activity and behaviour. Health psychology

aims to understand health through the influences of behavioural, cognitive, emotional, social, geopolitical and environmental factors. Medical neuroscience is an interdisciplinary field studying the brain and nervous system in the context of health and applications in diagnosis and treatment of illnesses. The nervous system with the brain and mind form the apparatuses that process pain and suffering. Therefore when we consider pain and suffering from a medical point of view the mechanisms underlying these phenomena are best understood through the scientific study of the mind, the brain and the nervous system. Thus we see that it makes good sense to approach health on the basis of yoga philosophy, health psychology and medical neuroscience to get a better understanding of suffering and the means to overcome human suffering enabling one to live a harmonious life.

2. Yoga philosophy

Yoga was a tradition limited to the East and particularly ancient India. The practices flourished in the Vedic culture and religious philosophy. Yoga slowly spread to the rest of the world. More and more people who have practiced Yoga have experienced the benefits of Yoga on health and in bringing harmony in their lives. Yoga is derived from the root 'yuj' in Sanskrit which means coming together. As applied to the philosophy and practice of yoga it means the integration of mind, body and soul. It is also used in its spiritual meaning of union of the ordinary self with the divine self (AYUSH 2016).

Patanjali in his Yoga Sutra, the classical text on Yoga, describes yoga as the stopping of the cycle of conditioning of consciousness and achieving

equanimity. The Bhagavad Gita, considered another classical scriptural treatise on traditional yoga defines yoga as equanimity, as efficacy in action and as the means to destroy suffering (Prabhavananda & Isherwood 2008).

The yoga philosophical tradition is considered eternal. Descriptions are seen in the earliest Sanskrit literature, the *Rig Veda* dating back to circa 10000 bce. The Vedas and Upanishads proclaim yoga as originating from Hiranyagarbha, the ancient luminous womb of the universe from which everything has originated. The Yoga Sutra of Patanjali, the classical work on yoga, itself attributes the yoga teaching to *Ishvara*, a special aspect of consciousness or divine *purusha*, “the *guru* in the beginning of time”. The *Mundaka Upanishad* describes *Yoga Vidya* or the knowledge of yoga, as *brahma vidya*, or knowledge of *brahman* or ultimate reality. The lineage of transmission of yoga begins with ancient sages or Rishis starting from Rishi Atharva, eldest son of Brahma, the creator, who passed it on to Rishi Angirasa. Angirasa taught it to Rishi Bharadwaja who in turn taught it to Satyavaha and thus the tradition has been passed on. This tradition is called the *rishi parampara*, or rishi tradition. Different traditions that originated in ancient India adapted and incorporated the yoga tradition into their own which include the Siddha, Natha, Vaishnava, Bouddha, Jaina, etc. The transmission further occurred through scholar-teachers of these traditions who were called Acharyas or great preceptors (AYUSH 2016, Radhakrishnan 2009).

Different paths of yoga are recognized which have gained importance from ancient times as per the predominant orientation of a person practicing or taking up the path of yoga. The prominent paths are: (1) Jnana Yoga (2) Karma Yoga (3) Bhakti Yoga (4) Raja Yoga (5) Hatha Yoga (6) Mantra Yoga (7) Laya Yoga (8) Sanyasa Yoga

The Bhagavad Gita, which is a part of the great epic Mahabharata, is considered as a classical text of yoga, its philosophy and practice. This is incorporated into a grand historical-mythological story perhaps to make it accessible, interesting and understandable to all. Several of the paths delineated above are described in the Bhagavad Gita.

Jnana yoga is the yoga path of knowledge. *Karma Yoga* is the path of deed or action. *Bhakti Yoga* is the emotional path of intense devotion or love of divinity. *Raja Yoga* or the sovereign science, is also described in the Gita, but Swami Vivekananda describes it as the yoga as given in the Patanjali Yoga Sutras. *Hatha Yoga* is the cultural yoga of the

naatha sampradaya or Nath tradition, to which the present day popular practice of asana and pranayama belong. Mantra yoga is the yoga of chanting *slokas* or specific formulaic or hymns in Sanskrit. *Laya Yoga* is the yoga of music and *Sanyasa Yoga* is the yoga of complete renunciation of the material world (AYUSH 2016).

In ancient Indian culture, a person was free to choose the philosophical path that his or her temperament, personality and predisposition was suited to and what one’s mind was inclined towards. The classical yoga texts and other subsequent texts were used as manuals and the paths were taught in the different schools of Vedic culture in the *gurukulas*, abode or lineage of the guru, and the tradition was maintained and transmitted through the *guru-shishya parampara*, a unique teacher-pupil knowledge-skill transmission tradition based on a positive and healthy relationship bond (Radhakrishnan 2009, Ramanujapuram 2018).

Yoga forms one of the six main schools of ancient Vedic Indian philosophy or Darshanas. Yoga Darshana is the philosophy of yoga. The classic ancient Darshana work on yoga is the Patanjali Yoga Sutras, a Sanskrit text authored by Sage Patanjali. The work is dated between circa 500 bce to 100 ce, some even considering it to be circa 3000 bce. It comprises of 196 brief aphorisms divided into four chapters. The work gives a theoretical basis for consciousness, suffering and its causes, principles and practice of overcoming suffering, benefits and need for a personal disciplined practice and means of reaching the ultimate goal of life being full awareness of consciousness culminating in enlightened wisdom and freedom from suffering (Ramanujapuram 2017, 2018).

3. Yoga and health

Yoga in its gross form, comprising of physical culture, breathing exercises and mindful attention practice, has been used as therapy in the management of medical conditions. The common notion is that Yoga is a fitness technique. It is used as an exercise regime to improve flexibility, muscle tone and strength and mental concentration. Earlier focus used to be on the bodily physical or asana component of Yoga. Later the set of breathing techniques called pranayama was also included. Later the mental component of focussed attention practice and mindfulness meditation were also proved to be of immense benefit. The scope of Yoga was extended from a mere work-out regime to therapeutic intervention in chronic non-

communicable disease conditions like cardiac diseases, respiratory diseases, and lifestyle diseases like obesity, diabetes and hypertension besides musculoskeletal and neurological disorders (AYUSH 2016, Field 2011).

Most recently, with advances in neuropsychology and advent of Mind-Body Medicine, the therapeutic application of Yoga has extended into the prevention and management of several medical conditions including cancer and mental disorders. Yoga has now been integrated into the modern medical system as a legitimate therapeutic modality. Departments of Integrative Medicine have been established in many prestigious medical teaching university hospitals in USA and other Western countries which incorporate Evidence-Based Yoga Therapy (Field 2011).

4. Yoga And Neuroscience

Over the last decade we have seen great advancement in medicine especially in the field of neuroscience research. Neuroscience being the interdisciplinary field investigating the nervous system including the brain and the mind have provided unique insights into the working of this very complicated but most important of the human systems. Several human activities and behaviours seen as functions of higher neuropsychological processes hitherto elusive are being unravelled through technological advances in neuroscience. Mind-Body Medicine is the new subfield of neuroscience studying psychophysiological processes of Yoga and other related techniques (Klaus 2015, Sarafino & Smith 2014).

Higher brain functions have been studied using advanced neurophysiological and imaging technology. Advanced computer augmented Electroencephalography (EEG), Positron Emission Tomography (PET), Single Photon Emission Computed Tomography (SPECT), functional Magnetic Resonance Imaging (fMRI), and neurofeedback devices are some of the advanced instruments now being routinely used to study subjects engaging in various Yoga-based and Yoga-derived practices: asana (postures), pranayama (breath work), dharana (focused attention), dhyana (meditation) (Klaus 2015, Sarafino & Smith 2014).

5. Health Neuroscience

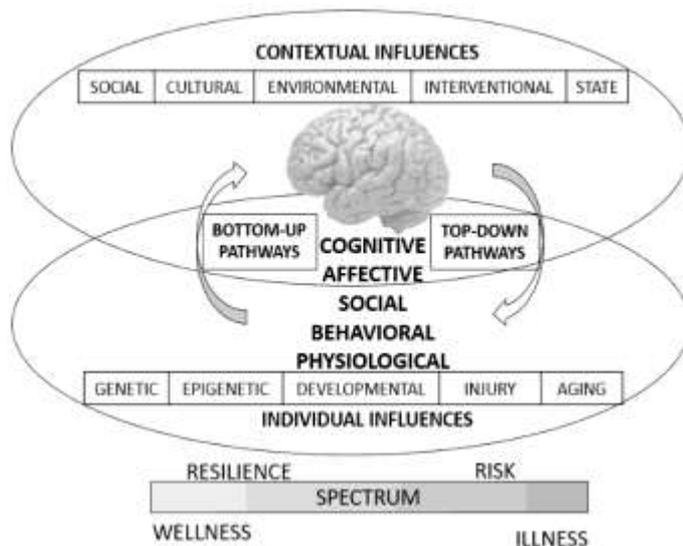


Figure 1: Health Neuroscience Model (Modified after Erickson et al 2014; Illustrated by the author)

Health neuroscience is an emerging field of life science which is an interface between health psychology and neuroscience. It takes a lifespan view of health. It is concerned primarily with development of knowledge and understanding of how the brain is influenced by physical health and how in turn the brain and mental function influence health. The influence is seen to occur across a continuous spectrum from wellness, optimum health and wellbeing at one end to clinical illness and disease at the other end. Multiple factors affect progress towards a positive outcome of health through the pathway of resilience or towards a negative outcome of illness through risk factors (Erickson et al 2014).

Top down and bottom up processes act on the brain influencing the brain function and how it modulates and gets modulated in the context of health outcome. Top down influences that produce a downstream effect on the brain acting as a mediator are: (1) Social influence through family and social networks (2) Cultural influence through values, group identities and shared practices (3) Environmental influence through geographical place, dwelling, neighbourhood, workplace etc. (4) Interventional influence through lifestyle, diet, activity, efforts to change, psychological states, etc. (5) State influence through health policy, laws affecting distribution of health resources, public health programs, campaigns, etc. Bottom up processes that produce an upstream effect on the brain influencing it directly or interactively are: (1) Genetic (2) Epigenetic (3) Developmental (4) Injury (5) Aging. Health psychology studies the

processes that link the brain in both directions in a dynamic way to states of health throughout life (Erickson et al 2014).

Broad areas of study in relation to health determinants include cognitive psychology, social psychology, affective psychology, stress psychology, behavioural psychology, physiological psychology and gene expression psychology. The contextual and individual influences impact the brain as mediator and target through top down and bottom up influences respectively. Thus, health neuroscience is the field of study that can be conceptualized as involving measurements of brain function and structure as variables of outcome that are dependent on bottom-up pathways and as independent variables that determine health processes through top-down mechanisms (Figure 1) (Erickson et al 2014).

6. Yoga-Integrated Health Neuroscience Paradigm (Yogihansam)

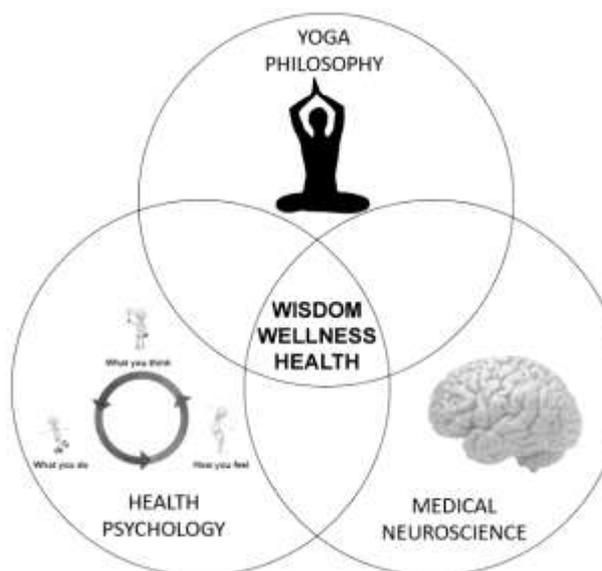


Figure 2: Yoga-Integrated Health Neuroscience Paradigm [YOGIHANSAM] (Illustrated by the author)

The nervous system with the brain and mind form the apparatuses that process pain and suffering. Therefore when we consider pain and suffering from a medical point of view the mechanisms underlying these phenomena are best understood

through the scientific study of the mind, the brain and the nervous system (Ramanujapuram 2017, 2018).

Modern medical neuroscience has progressed greatly especially with the advent of specialized computer based technologies to study the complexities of the brain and the nervous system. Modern advances in functional neuroimaging in neuropsychology have helped in the better objective observation and understanding of behaviour and mental phenomena. These scientific advances have greatly contributed towards developing physical and psychological therapeutic methods of reducing suffering due to various causes (Eisenberger & Cole 2012).

In the last two decades there are particular advances in the area of neuroscience called neuroplasticity research. Neuroplasticity is the ability of the brain and nervous system to mould, modify and adapt to external and internal stimuli. It is the ability of the neural tissues to form new connections, develop new circuits and form new nerve cells throughout life. This is a paradigm shift from the old thinking that the nervous system was rigid and once it suffered any damage, then this would lead to permanent deficits and disabilities. But now with neuroplasticity research we have become aware of this great regenerating and reorganization potential of the nervous system which has the potential for developing therapeutic interventions in several neurological and neuropsychiatric disorders (Kabat-Zinn 2013, Ramanujapuram 2017, 2018).

Most recently, consciousness research is gaining great interest among the neuroscience and psychology community. The fact that consciousness can be studied has been made possible through advances in functional neuroimaging and psychoneurology of neuroplasticity. The phenomenon of neuroplasticity can also explain the therapeutic and other positive effects of the practice of Yoga and its philosophy as applied to positive psychology and healthy living. Hence it is all the more pertinent to use the concepts of psychology and neuroscience to offer fresh and new interpretations to the phenomenology described in the Yoga Sutras as applied to health psychology and interpreted with medical neuroscience (Figure 2)

7. Mind-body medicine

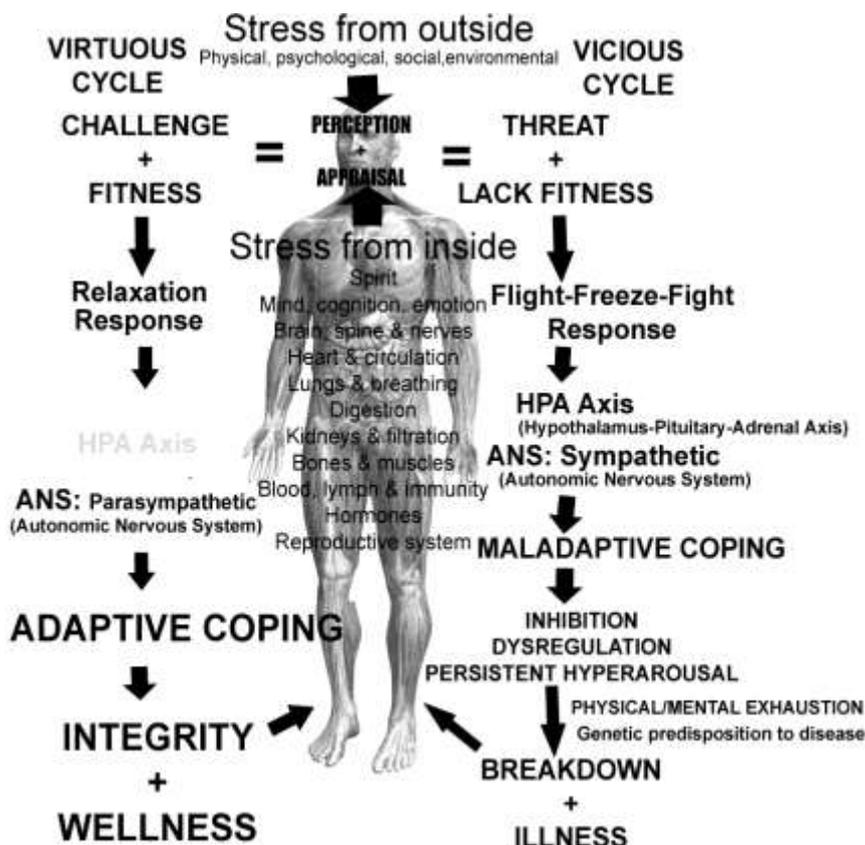


Figure 3: Mind-Body Medicine: Stress Response and Relaxation Response in Health (Illustrated by the author; partly based on Kabat-Zinn 2013)

The stress response is a common factor in the origination, maintenance and progress of several physical and mental disease conditions. The Autonomic Nervous System dysfunction is the main disturbance in the imbalance of the homeostasis of the organism. This can be countered by enhancing the tone and function of the Autonomic Nervous System. Mind-Body techniques including yoga have been shown to restore the balance in the homeostasis by activation of the Parasympathetic System through the action on the Vagus Nerve connections. Yoga practices as described in Patanjali Yoga Sutras like asana (physical culture), pranayama (breathing exercises), dharana (focussed attention training) and dhyana (meditation), are all Mind-Body Medicine (MBM) techniques that have been scientifically demonstrated to facilitate homeostasis (Figure 3) (Kabat-Zinn 2013, Ramanujapuram 2017, 2018).

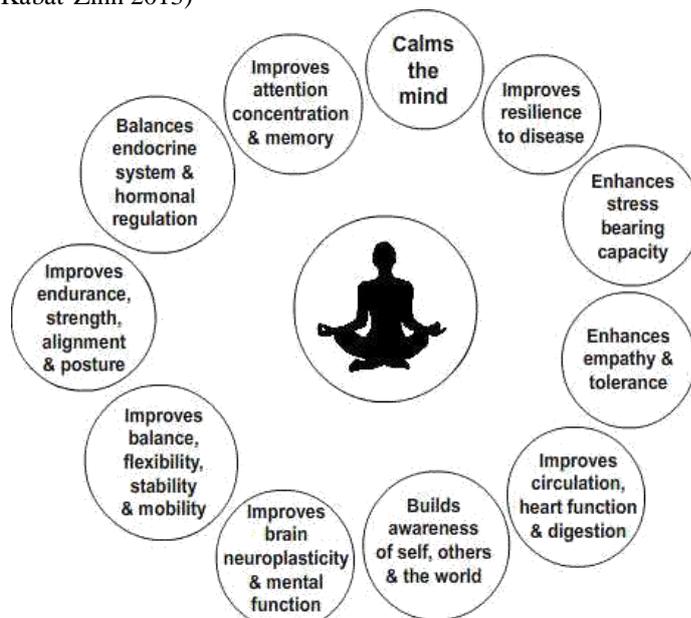


Figure 4: Evidence-Based Psychophysiological Effects of Yoga (Illustrated by the author)

Yoga is considered a mind-body practice and hence an important tool in Mind-Body Medicine (MBM). Many diseases are now considered to have their pathogenesis in the alteration in the mind-brain-immunity-hormone systems. This field of study in the medical sciences is called psycho-neuro-endocrino-immunology. Neuropsychological stress and its effect on the hormonal system in turn affecting the immune system producing chronic Inflammation, is considered as the final common pathway in many chronic, not only physical but also mental illnesses. MBM interventions and practices have been proven to reverse this pathology, restore health and promote mind-body wellness and harmony (Figure 4) (Kabat-Zinn 2013).

8. Conclusion

Yoga as a mind-body therapeutic technique has a big role in the promotion of health, prevention of disease and treatment of physical and mental disorders. Yoga as a philosophical basis of understanding life is useful in the context of its application in health psychology. Medical neuroscience further gives the evidence base and biological basis of a healthy lifestyle practice. Given this association with real, experienced and observable positive changes and benefits on health and wellbeing through yoga informed health neuroscience, it is an important task to have an integrative model of health combining the principles and applied aspects of yoga philosophy, health psychology and medical neuroscience towards better health and a greater understanding of ourselves. Yoga-Integrated Health Neuroscience Paradigm (YOGIHANSAM) becomes a harmonious amalgamation of tradition, interpretation and science. This will certainly become conducive to promoting holistic healthcare, integrated wellbeing, harmonious wellness and wise living.

Declaration

I declare that this is my original work and I am the sole author. I have not received any support financial or otherwise from any source. There is no potential conflict of interest with respect to the research or authorship of this work.

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