

Indian Institute of Technology Mandi
and
IIT Mandi iHub and HCI Foundation



Present
Workshop on
Indian Knowledge System
and Mental Health
(IKSMH - 2022)

Dr. Varun Dutt, Coordinator

Dr. Arnav Bhavsar, Co-Coordinator

Dr. Laxmidhar Behera, Patron

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Workshop on Indian Knowledge System and Mental Health

In a world driven by cutting-edge artificial intelligence and human-computer interaction, the Indian knowledge system (IKS) education may first seem to be an urban legend. However, recent research reveals the importance and benefits of IKS for the human body, mental health, and wellbeing. In fact, IKS has deep roots that are grounded in Indian history, philosophy, society, arts, languages, science and technology, and life sciences. The aim of this workshop is to provide insights on empirical research related to IKS and mental health. Another objective of this workshop is to discuss and brainstorm on a program curriculum grounded in IKS as well as the different research themes connected to IKS and its benefits for the human body, mental health, and wellbeing. The target audience includes academia, industry, researchers, experts, and practitioners of IKS. The workshop will cover invited talks, poster sessions, panel discussions, and brainstorming sessions focused on issues related to IKS and mental health.

Speakers

Day 1 – March 25, 2022

Theme – Curriculum and Indian Knowledge System

Ms. Nishtha Agarwal, Creative Movement Therapy Association of India

Title – Storytelling in Mental Health: An Ancient Indian Practice

Dr. Kunal P. Mooley, California Institute of Technology

Title – Top-Down Approach for Understanding Consciousness, Mind and Mental Health

Dr. Uma Shankar Prasad Adluri, SIVAS Health and Research Institute Sunshine Hospitals, Hyderabad

Title – Mind in Health and Disease - An (Ayur) Vedic Perspective

Dr. Ayush Goyal, Texas A&M

Title – Analysis of Meditation and Its Effect on Telomeres and As Therapy for Reducing Stress, Slowing Aging, And Improving Mental Health

Theme – Project and Extension activities

Dr. Ashish Pandey, Indian Institute of Technology, Bombay

Title – Examining the State of Wellbeing and Factors Affecting that amongst the Indian Youth: Proposing the Contributions of Indian Knowledge System

Dr. Sachin Sharma, Patanjali Research Foundation, Haridwar

Title – Yoga for the Promotion of Mental Health

Mr. Avinash Punekar, Indian Institute of Technology Mandi iHub & HCI Foundation

Title – Introduction about IIT Mandi iHub and HCI Foundation and its activities

Dr. Shivarama Varambally, I/C Department of Integrative Medicine

Title - Yoga and mental health: A neuroscientific prospect

Dr. Christopher Key Chapple, Loyola Marymount University, Los Angeles

Dr. Lori Rubenstein Fazzio, Loyola Marymount University, Los Angeles

Title - The Yogavāsīṣṭha and Heart Health

Day 2 – March 26, 2022

Theme – Yoga and mental health

Dr. Sunita Mittal, All India Institute of Medical Sciences, Rishikesh

Title - Yoga for the promotion of mental health

Dr. Aarti Jaganathan, National Institute of Mental Health, and Neurosciences

Title - Indian knowledge system for Mental Health: Evidence based Research from NIMHANS

Mr. Pranshul Saini, Breathing Minds, Mandi

Topic – Empowering children to improve their mental health

Dr. W. Selvamurthy, Amity University, Raipur
Title - Yoga and Indian System of Medicine for holistic health

Theme – Art forms and mental health

Ms. Maanasa Bharath, Creative Movement Therapy Association of India
Title – Addressing Mental Health through Indian Dance forms

Dr. Venugopal Damerla, Veterans Affairs Eastern Colorado Health Care System-Denver
Title – The effects of mantra meditation on heart signaling and cognitive parameters of health

Dr. Ganesh Ramakrishnan, Indian Institute of Technology, Bombay
Title – Art forms and mental health

Dr. Nirmalaya Guha, Indian Institute of Technology, Varanasi (Banaras Hindu University)
Title – Cognitive Health: A Pre-requisite for Good Life

Theme – Student Presentations

Mr. Ashish Gupta, Indian Institute of Technology, Kanpur
Title – Indian classical music for mental health and well-being: Raj chikitsa an ancient technology

Mr. Akash Rao, Indian Institute of Technology, Mandi
Title – Evaluating the efficacy of longitudinal, anodal tDCS on working memory and decision-making

Mr. Ranjeet, Indian Institute of Technology, Mandi
Title – Detection of ADHD and Autism Spectrum Disorder utilizing deep learning-based approaches

Mr. Shashank Uttrani, Indian Institute of Technology, Mandi
Title – The impact of the COVID-19 pandemic and socioeconomic factors on global mobility and its effects on mental health

Ms. Aayushi Shah, FLAME University, Lavale, Pune
Title – Does Hatha Yoga Impact Emotion Regulation and Emotional Well-Being in Anxiety and Depression? It Depends!

Day 3 – March 27, 2022

Theme - Meditation, mental health, wellbeing

Dr. Pawan Goyal, Indian Institute of Technology, Kharagpur
Title – Modeling happiness over social media with insights from Indian Knowledge System

Mr. Gunjan Trivedi, Wellness Space
Title – Simple Bhramari Pranayama (humming) - the scientific evidence and relevance as a lifestyle choice

Dr. Munishwar Rai, Maharishi Markandeshwar (Deemed to be University), Mullana

Title – Mind and Breath - A Deep Connection

Dr. Sushil Chandra, Defence Research and Development Organization, Delhi

Title – Psychophysiological effects of meditation practice

Theme - Ayurveda, psychology, and mental health

Dr. Rama Jayasunder, All India Institute of Medical Sciences, Delhi

Title – Mental health and ayurveda

Dr. Braj Bhushan, Indian Institute of Technology, Kanpur

Title – Behavioural Science Approach to Knitting Psychology, Psychiatry & Mental Health

Dr. Marieke Van Vugt, University of Groningen

Title – Tibetan monastic Debate

Dr. Lalan Kumar, Indian Institute of Technology, Delhi

Title – Anatomical Harmonics Based (Sub) Cortical Source Localization with Application to Mental Health

Abstracts

Nishtha Agarwal

Creative Movement Therapy Association of India, Delhi, India

Storytelling in Mental Health: An Ancient Indian Practice

Have you ever been so engrossed in a story that you feel like you have been transported into another world, free of all your worries? Or have you ever been walking a painful journey, and then someone tells you a story and it makes you feel seen in a way no one has before? Different forms of storytelling have echoed across all corners of India through centuries. The ancient tradition of “Katha” has been preserved as a form of imparting knowledge through oral tales being passed from one generation to another, preserving the culture and beliefs of different communities. What is it about stories that can be so transformative that it can connect us to ourselves and others, break barriers and allow us to heal our deepest wounds? This session will explore the powerful age-old Indian tradition of storytelling as a healing practice and its applications as a holistic tool to improve mental health.

Uma Shankar Prasad Adluri

**SIVAS Health and Research Institute Sunshine Hospitals,
Hyderabad, India**

Mind in Health and Disease - An (Ayur)Vedic Perspective

Ayurveda basing itself on the Vedic Systems of Sankhya and Yoga envisages a Universal scheme of life and Mind. Different aspects Of Normal Mind Such as its Location, Formation, Functioning are elaborated. Based on the Concept of the Three Gunas and Pancha Maha Bhootas Various Manasika Prakritis or Constitutions are described. Various Disorders of the Mind are Described under categories of Endogenous and Exogenous. An Alternative model of Complex Disorders like Schizophrenia is thus provided along with their Treatment Approaches. Preventive aspects are emphasized under Satvavajaya. Finally, the Possibility of the Purest Mind along with its superhuman Capabilities along with the Highest State of Bliss and Knowledge it can attain is elucidated so as to create a Society which is Both Healthy and Happy.

Ashish Pandey

Indian Institute of Technology Bombay, India

Examining the State of Wellbeing and Factors Affecting that amongst the Indian Youth: Proposing the Contributions of Indian Knowledge System

This presentation reports a study of the state of wellbeing of the Indian youth, factors affecting that and a plausible contribution of the Indian knowledge system to improve the current situation. A survey was carried out in 2021 with students of 21 to 24 years of age studying in institutions of higher education at six different locations in India (n=783). The purpose of this study was to gain insights on the levels of well-being on the continuum of languishing to flourishing of the youth across India and to examine its association with the factors like values orientation, academic engagement, family cohesion, engaged living, social engagement. Our survey findings suggest that 55% participants had moderate mental health. 33% participants were flourishing, and 12% participants were languishing. The scale measuring flourishing is categorical i.e., it divides the respondent to one of the categories – flourishing, moderate mental health, and languishing. Hence, we used multinomial logistic regression to test the effect of continuous independent variables on categorical dependent variables mentioned above. It was found that self-direction is a significant differentiator between flourishing and moderate mental health ($\beta = -0.31, p < 0.05$) and languishing, ($\beta = -0.74, p < 0.05$). It predicted moderate mental health more precisely (93.9% correct prediction) as compared to flourishing (17.4% correct prediction). In the second model, we examined the impact of engaged living, social connectedness, and family cohesion on the mental health continuum categories – flourishing, moderate mental health, and languishing. The findings in our study suggest that the relationship between values and well-being can be classified in three groups. In group 1 consisting of self-direction, benevolence, universalism, and stimulation had positive associations with well-being. Group 2 comprising power, achievement and hedonism had a complex association with well-being. Group 3 consisting of Conformity, security and tradition had no significant association with well-being. Results from the European countries indicate that values with a social focus either had a complex association or a negative association with well-being, whereas results from our study in India indicate that values with a social focus (benevolence, universalism) have a positive association with well-being. Findings also showed that engaged living and social connectedness were significant differentiators between flourishing and moderate mental health, whereas engaged living ($\beta = -0.07, p < 0.05$), social connectedness ($\beta = -0.61, p < 0.05$) and family cohesion ($\beta = -0.97, p < 0.05$) were significant differentiators between languishing and flourishing. Indian knowledge systems and practices like Yoga, Sanskaras have demonstrable impact on self-direction, universalism, and social connectedness. Indian perspective also contains heuristics, mental models, methods, and practices to optimize physical, mental, and spiritual needs and values. These insights need to be further elaborated and used for designing the interventions for enhancing mental wellbeing of Indian youth which constitutes 65% of the population.

Sachin Sharma
Patanjali Research Foundation, Haridwar, India

Yoga for the Promotion of Mental Health

Maharishi Patanjali, who is considered the first to systematize the knowledge of yoga, defined yoga as the ability to control the constantly occurring mental fluctuations. There have been attempts to assess the usefulness of yoga practices in improving overall mental health and managing specific mental health issues using the present-day scientific methods. For example, there are three consecutive clinical trials that have demonstrated an increase in brain γ -Aminobutyric acid (GABA)-ergic activity as a result of practicing yoga poses. The finding is of importance considering the inhibitory effects of γ -Aminobutyric acid (GABA) on brain. Yoga breathing techniques are an integral part of a yoga program. Separate studies showed that specific yoga breathing techniques: (i) reduce anxiety irrespective of the respiratory characteristics of the breathing techniques and (ii) shift autonomic balance towards parasympathetic activity. These effects of yoga breathing techniques were supported by a recent study. Using the functional magnetic resonance imaging technique, the study showed that specific breathing technique modulates the brain areas involved in emotional processing (i.e., amygdala, anterior cingulate, anterior insula, and prefrontal cortex). Apart from this, yoga was found to be effective for generalized anxiety disorder in a three arms single blind randomized clinical trial. A systematic review of studies assessing the effectiveness of yoga interventions in reducing depressive symptoms concluded that yoga interventions of different durations reduce depressive symptoms. Similarly, in patients with schizophrenia, yoga has been shown to improve quality of life, cognitive symptoms, and negative symptoms. Also, there are clinical trials of different durations which reported a decrease in post-traumatic stress disorder (PTSD) symptoms (assessed using Clinician-Administered PTSD Scale) in women with chronic, treatment-resistant PTSD. The studies will be discussed in detail.

Shivarama Varambally

**The National Institute of Mental Health and Neurosciences,
Bengaluru, India**

Yoga and mental health: A neuroscientific prospect

Yoga has been a lifestyle practice for millennia in India, originally designed to facilitate spiritual progress of an individual. Several lines of evidence now indicate that yoga practices have salutary effects on both physical and mental health, and that yoga-based interventions have efficacy in several physical as well as mental disorders. Recent evidence from NIMHANS and other centers worldwide has demonstrated that yoga is efficacious as a therapy in Depression and has shown significant promise as an adjunctive treatment in Schizophrenia, the most severe mental disorder. Yoga has been added as a complementary therapy for Schizophrenia in the NICE guidelines (UK) based on studies from NIMHANS. There is also preliminary evidence for yoga as a therapy in cognitive disorders of the elderly, attention deficit hyperactivity disorder in children, and obsessive-compulsive disorder. Recent studies at the NIMHANS Integrated Centre for Yoga have also thrown light on some of the brain mechanisms underlying these effects, such as reduction in stress markers like Cortisol levels, improvement in markers of neuroplasticity such as Brain Derived Neurotrophic Factor, and modulation of neurohormones like Oxytocin and activity of the Mirror Neuron System. There is also small but direct evidence that yoga practices such as OM chanting led to measurable changes in brain areas important for emotional control. The talk will focus on current evidence for the effects of Yoga on psychiatric disorders, the possible neurobiological mechanisms underlying the effects of Yoga in the human brain, and the exciting research possibilities in this area.

Sunita Mittal

All India Institute of Medical Sciences, Rishikesh, India

Yoga for the promotion of mental health

Origin of study idea

When I, myself started doing Yogic breathing on regular basis (6 months consistently) and when I got my follow up Intra Ocular Pressure (IOP) checked up, it had lower normal values as compared to the earlier recordings on several occasions.

Objective

To corroborate that 'Yogic Breathing Exercises' can regulate Intra Ocular Pressure

Background & Hypothesis

Yogic breathing exercises (YBE) cause vagal activation and vagus nerve represents main component of parasympathetic nervous system. Stronger parasympathetic drive inhibits over-activity of amygdala, that might result in reduced fear, anxiety, stress response and bring body well-being.

IOP is set to a normal level by inflow and outflow dynamics of aqueous humor (AH) dependent on 2 main structures those are 'Ciliary body' and 'Trabecular meshwork -Schlemm's canal'. Both have a great deal of regulation through the innervations of autonomic nervous system. Sustained elevation of IOP, usually results in Glaucoma. The only alterable parameter in glaucoma is intraocular pressure lowering, that is usually done by topical drugs/performing surgery. Keeping the impact of autonomic dysregulation on IOP homeostasis, we hypothesized that the change in IOP between patients only on medications and patients on medications along with Yogic breathing exercises would be more in the latter group due to the induced parasympathetic dominance.

Method:

A randomized, controlled trial was performed by comparing IOP in 90 Primary Open Angle Glaucoma patients of both gender where 45 (Group A) were given only the medication for glaucoma and other 45 (Group B) were given medication plus Yogic Breathing Exercises (YBE): Diaphragmatic breathing followed by Pranayama. YBE were undertaken daily for 30 min for 6 months. The intraocular pressure was measured at the start and successively after 1, 3, and 6 months.

Results: The 'yogic breathing exercise with medication' (Group B) had significantly lowered intraocular pressure in comparison to the 'only-medication' (Group A).

Conclusions: In clinical practice regular yogic breathing practices in 'glaucoma suspect' & 'ocular hypertensive' patients can bring down IOP due to improved parasympathetic tone and reduced sympathetic tone. Also, in POAG patients, yogic breathing exercises can reduce intraocular pressure and can therefore be recommended as an adjuvant therapy.

Aarti Jaganathan

**National Institute of Mental Health and Neurosciences, Bengaluru,
India**

Indian knowledge system for Mental Health: Evidence based Research from NIMHANS

A number of western models of social case work and psychotherapy have emerged in the past decades for treating persons with mental health issues. However, mental health professionals have observed that western psychotherapy was not only 'alien' to the culture, but also to the socio-cultural milieu of the country (India). Indian philosophy on the other hand, for example the Atharva Veda presents theory of mental illness (which occurs due to an imbalance in the person's mind and or body or the connection between the mind and body), the interconnection between the mind (Gunas) and the body (Doshas), and states that the curative factor is creating a holistic balance within the individual. Our recent research has focused on culling out counselling techniques from the Ramayana to develop an indigenous socio-cultural intervention for clients with Common Mental Disorders [1]. Yoga (considered by some as a physical and mental form of psychotherapy) through 'successive stimulation - relaxation helps break the loop of uncontrolled speed of thoughts (stress)', 'gains control over the mind' and harmonizes the disturbances at each of the five levels of human existence (Pancha Kosa) to tackle psychosomatic problems. Research from our team has focused on yoga as an add-on treatment for patients with schizophrenia, depression and caregivers [1-5]. The effect of specific yoga practices such as 'trataka' on cognitive functions in the elderly has also been researched [6]. Research on barriers to yoga therapy for schizophrenia [7], lead to the development of a community project (ICMR) on yoga (using digital technology) for out-patient caregivers living in the Indian rural/semi-urban communities. Based on (1) whether yoga can be effectively used as an independent or add-on treatment to pharmacology, (2) compliance to yoga, (3) establishment of community yoga groups – where the patient can get supervised and continued training, yoga can be propagated as an effective solution to problem of accessing, affording and availing quality mental health care services and treatment in the Indian community.

Pranshul Saini

Breathing Minds, Mandi, India

Empowering children to improve their mental health

In this digital era, with an overflow of information and distractions, it is becoming increasingly important to be able to retain attention for an adequate amount of time. With the advent of technology for education, it is crucial for children who use such technology to not get addicted to these tools. Preventing such addiction requires paying attention to their own thoughts and emotions to not become compulsive in behavior. Mindfulness-based meditation practices, derived primarily from Buddhism, cultivate various attentional skills, which include the ability to focus and sustain attention. In the simplest mindful breathing practice of watching our breath, sustained attention is required to maintain focus on the breath while meta-awareness and cognitive control is needed to detect mind wandering and return attention to the breath. The practice of returning attention to breath, over time, helps in cultivating focus. With plenty of research evidence on the success of meditation interventions in schools, we are exploring how meditation along with other Indian knowledge systems can complement modern brain, mind, and education science to carve out an inclusive education curriculum and pedagogy.

W. Selvamurthy

Amity University, Raipur, India

Yoga and Indian System of Medicine for holistic health

India is termed as the “LIGHTHOUSE OF YOGIC PRACTICE” gifted to us by Adiyogi – the first Yogi. Yoga has been propagated ages ago by Saptrishis or “seven sages,” and has scientifically been tracked back to over 5000 years. Our ancient art of healing not only focuses on preventive measures but also on Ayurveda, Naturopathy, Unani, Siddha, and Homoeopathy which together with Yoga is termed as AYUSH. Yoga is practiced in India since times immemorial as a holistic science of life that deals with physical, mental, emotional, and spiritual health. The importance of practicing and celebrating Yoga has been highlighted by Hon’ble Prime Minister Narendra Modi in his address during 69th session of the UN General Assembly which eventually lead to declaration of June 21 every year as the International Day of Yoga by the United Nations General Assembly. Experiments were conducted by our team at DIPAS, DRDO on soldiers to evaluate the prophylactic, promotive and curative potentials of Yoga. The salient finding of research demonstrated that yoga is a conservation process bringing all the physiological functions to the lower side of the normal range. It also builds the parasympathetic system thereby optimizing physiological arousal to stress and restoring autonomic equilibrium back to normal after combating stress. There was an improvement in physical efficiency at the submaximal level of work, enhancement in thermo-regulatory efficiency, improvement in body flexibility as well as increased cognitive ability including concentration, memory, learning efficiency, and psychomotor performance. In yet another test, one-hour Yoga program consisting of Asanas, Pranayamas, and Meditation has profound beneficial effects on the autonomic equilibrium between the sympathetic and parasympathetic nervous systems which modulates and optimizes sympathetic activity in stressful situations and quickly restores the equilibrium. According to the research conducted, the oxygen demands during yogic exercises were much less compared to other forms of conventional physical exercises. It was also observed that there is an increase in the alpha index of EEG after 6 months of regular yogic practice thereby helping in keeping the mind cool in adverse conditions or situations. A lifestyle intervention paradigm consisting of low-fat high-fiber vegetarian diet, aerobic exercise of walking, and stress management through Rajyoga meditation has also been developed for regression of atherosclerotic plaques. The study also demonstrated regression of coronary artery disease through Lifestyle intervention in which Rajyoga Meditation played a significant role. The need of the hour is to integrate the modern healthcare system with the traditional knowledge for realizing the National vision for “HEALTH FOR ALL.”

Maanasa Bharath

Creative Movement Therapy Association of India, Bengaluru, India

Addressing Mental Health through Indian Dance forms

Dance has been an integral part of Indian heritage since ancient times. Natya Shastra, authored by Bharata Muni, incorporated the verses from the 'Rigveda', the music and the rhythms from the 'Samaveda', the expressions and acting from the 'Yajurveda' and 'Rasa' or an ability to create a mood from the 'Atharvaveda'. This encyclopedic treatise described in detail, human anatomy, symbols of the hand, different postures of the body and facial expressions, and how they influenced the mover and audience by creating a mood or Rasa. Indian classical dance form derives from this treatise and over time, what began as a science that could render a healthy body and mind, evolved as a form of entertainment. This session will highlight the therapeutic benefits of Indian classical dance forms and how it influences the body, mind and soul of the mover and the audience. Using the principles and the knowledge of our Indian roots, how dance/movement therapy can be applied for improved holistic health in the Indian context.

Venugopal Damerla

Veterans Affairs Eastern Colorado Health Care System, Denver, USA

The effects of mantra meditation on heart signaling and cognitive parameters of health

The presentation will explore findings of various research studies on the effects of audible mantra repetition practice on self-regulatory capacity. Chronic incurable diseases directly linked to poor capacity of self-regulation leading to unhealthy lifestyle. The aim of this presentation is to explore mechanisms underpinning Mantra Meditation and how it is tied in with the factor of consciousness-based approach to health.

Nirmalaya Guha

**Indian Institute of Technology Varanasi, India
(Banaras Hindu University)**

Cognitive Health: A Pre-requisite for Good Life

In the classical Indian tradition, the idea of wellbeing is holistic. Also, it is construed as an absence. The health sciences, epistemology, Yoga etc. discuss the fourfold scheme consisting of (1) the must-avoid (that which one wants to get rid of or heya), (2) the causes of the must-avoid (heya-hetu), (3) the destruction (hāna) and (4) the means to destruction (hānopāya). The must-avoid is contextual. For the Yoga philosophy and health science it is suffering (duḥkha) and disease (roga) respectively. For the logician (Naiyāyika), it is a defect of reasoning. The removal (hāna) of the must-avoid is wellbeing. I shall focus on 'cognitive wellbeing', i.e., the (understanding and) removal of the logical defect. This is a pre-requisite for a good life. The idea is this: the reasoning mind makes mistakes which one must detect and finally get rid of; only then will one understand the reality as it is, and that understanding will lead one to the Highest Good. I shall discuss this process from the logician's perspective.

Pawan Goyal

Indian Institute of Technology Kharagpur, India

Modeling happiness over social media with insights from Indian Knowledge System

Modeling and analysis of affective and inner states through behavioral and social media data has been gaining prominence. In this talk, we will describe our ongoing work, where we frame a model of happiness states of people composed of three states: G (lasting happiness), P (flickering) and I (frustration), respectively. These states actually have their foundations in the Indian Knowledge System. We collect data from Twitter and Goodreads and categorize users in one of these categories. In this talk, we will discuss the findings from this study, and discuss the possible future directions in which the Indian Knowledge System can be used to improve mental well-being.

Gunjan Trivedi

Wellness Space, Ahmedabad, India

Simple Bhramari Pranayama (humming) - the scientific evidence and relevance as a lifestyle choice

Modern lifestyle choices include several modifiable elements that impact the autonomic nervous system, endocrine, and circulatory systems. Imbalances in these systems are linked to the quality of life and risk for disease. There is an opportunity to identify lifestyle interventions that can help in improving physical and emotional health. In this context, the talk highlights the challenge (the need to reduce heart rate and increase heart rate variability: HRV) that slow breathing, Bhramari and chanting can address effectively. The ancient yogic practice of Bhramari Pranayama is a simplified form of repetitive chanting. The talk covers the mind-body benefits of both Bhramari and Chanting and compares them with the insights from HRV biofeedback research to present a case for Bhramari as a lifestyle intervention. In addition, insights from the author's several experimental studies will cover (a) comparison of slow breathing with Bhramari (humming) through the measurements of heart rate variability (HRV), (b) study to identify the optimum length of breath to maximize the HRV during the practice (c) comparison of HRV parameters between Bhramari, emotional stress, physical activity and sleep and finally, (d) evidence of how to incorporate the findings into yogic self-hypnosis protocol to enhance the emotional wellbeing parameters (anxiety, sleep quality, wellbeing and depression). Finally, the presentation will cover future possibilities highlighting the impact on emotional wellbeing, cognitive function and sleep quality.

Keywords: Bhramari, Humming, Heart Rate Variability, Wellbeing, Anxiety, Depression, Insomnia

Munishwar Rai

**Maharishi Markandeshwar (Deemed to be University), Mullana,
India**

Mind and Breath - A Deep Connection

In recent time due to this pandemic the importance of mental and physical health for the immunity of our body. Hence breath & meditation is receiving immense attention, to tackle daily stress and encourage healthy lifestyles.

Gurudev Sri Sri Ravi Shankar said: ***“The breath has an effect on your brain and your mind.”***

We can a lot to learn if we watch our breath and see what is happening. I would like to share about some breathing techniques with you. One of them is about our two nostrils. Did you know the first thing that we did when we came to this planet was, we took a deep breath in and then we started crying, right? And the last thing that we will do in this life is breathe out and then make others cry. At the time of our birth, we cried and made everybody laugh. At the time of our death, we take the last breath out and make everyone cry. If we don't do that, we have not lived a good life! All our life, we pay very little attention to the breath, in fact, no attention. There are four main sources of energy: Food, Sleep, Breath, A happy or calm mind. If you observe carefully, there is a rhythm in nature; seasons are rhythms in nature. Similarly, there is a rhythm in our body. There is also a rhythm in the emotions, thought patterns. The rhythm of the breath changes with different emotions; it is different when there is fear, anger. According to the level of stress in us, there is a rhythm that changes in the system.

Rama Jayasunder

All India Institute of Medical Sciences, Delhi, India

Mental health and ayurveda

The world is going through an unprecedented and extraordinary health scenario. Unprecedented because ill health has become a fact of life and many diseases are vying with each other to take the top slot as a serious health hazard. Extraordinary because despite acquiring nuanced details about human biology, sophisticated technologies to study the most subtle structures in the body and technical skills to manipulate body structures in many astonishing ways, diseases are on the increase. In addition to communicable and noncommunicable diseases, mental health issues have also become a leading cause of disability worldwide. The world is in fact facing a long-simmering crisis with mental health. At the same time, there is also a growing realization that conventional Western medicine alone cannot handle the mushrooming of diseases and other health issues, underscoring the need for alternative medical systems. An increasingly 'chemicals-weary' and health-conscious population is also turning its attention to other systems of medicine. All these inevitably brings into focus ayurveda, one of the longest unbroken healthcare systems in the world. Can ayurveda with its hoary past and a different approach to health and disease play a role in the contemporary health scenario? Now is the perfect time to look back, ask these questions and move forward. This presentation will articulate Ayurveda's role in mental health issues.

Braj Bhushan

Indian Institute of Technology Kanpur, India

Behavioral Science Approach to Knitting Psychology, Psychiatry & Mental Health

Taking a historical account of how mental health was conceptualized in ancient India and tracing the trajectory of nature and scope within modern day psychology and psychiatry, this talk will enumerate some significant insights. It will also delve into select behavioral science approach to scientifically study some key constructs associated with mental health.

Lalan Kumar

Indian Institute of Technology Delhi, India

Anatomical Harmonics Based (Sub) Cortical Source Localization with Application to Mental Health

EEG recording from the scalp is used to estimate the locations of sources of electrical activity in brain. A model of the source and a model of the head is considered for this purpose. An inverse solution is utilized thereafter. Human head is in general, approximated by spherical head model. Hence, spherical harmonics (SH) basis functions have been natural choice for EEG source reconstruction and localization. However, sensors placed over scalp to acquire EEG signal, assume shape between sphere and hemisphere. Hence, head harmonics basis functions will more appropriately represent the data sampled over the head. In this talk, the forward data model will be presented in head harmonics domain. Sub-space based Multiple Signal Classification (MUSIC) method will be utilized for (Sub) Cortical Source Localization. Various simulation and real data experiments will be presented for the location estimation of (sub)cortical activity. Application includes mental disorder, motion trajectory, and epileptic focus estimation. Integration of Indian knowledge system in the source localization-based approach will be detailed as future scope.

Christopher Key Chapple and Lori Rubenstein Fazzio

Loyola Marymount University, Los Angeles, USA

The *Yogavāsiṣṭha* and Heart Health

Yoga Therapy relies upon a theory and practice of the body and mind grounded in three main principles: the elemental components of earth, water, fire, air, and space; the emotional, affective constitution, comprised of habits and impressions which manifest in thought and action; and the breath, which energizes, mixes, and moves the elemental and subtle components. This paper will present primary literature that outlines this dynamic as well as give a summary overview of Haṭha Yoga texts that prescribe specific breathing and movement exercise for maladies. The earliest literature that outlines the above worldview can be found in the 1008 hymns of the *Ṛg Veda* (ca. 1500-900 B.C.E.) the principal Upaniṣads (ca. 800 to 200 B.C.E.) and the epic Mahābhārata (ca. 600 B.C.E.). Key ideas from these texts, augmented with insights from Buddhism and Jainism and the *Bhagavad Gītā*, become codified in two primary sources, the *Yoga Sūtra* (ca. 300 C.E.) and the *Sāṃkhya Kārikā* (ca. 400 C.E.). In the years following, additional details regarding energetic flows can be found in the *Markaṇḍeya* and other Purānas, starting in the 8th century, followed with texts such as the *Yogaśāstra* (11th century) and the *Dattāreyayogaśāstra* (13th century) that contain themes and practices recognizable as Haṭha Yoga. By the 18th century, many texts, including the *Haṭha Yoga Pradīpikā*, the *Gheraṇḍa Saṃhitā*, and the *Haṭhatatvakaumudī* are widely available. This chapter will include some direct quotations, summaries, and a list of suggested books for future reading. Many of these ideas form the substratum for the system of health known as Ayurveda, which literally means knowledge of life, explained fully in the *Caraka Saṃhitā* (ca. 2⁰⁰ C.E.). It involves the use of medicine and surgery as well as attentiveness to a healthy lifestyle.

Aayushi Shah and Garima Rajan

FLAME University, Lavale, Pune, India

Does Hatha Yoga Impact Emotion Regulation and Emotional Well-Being in Anxiety and Depression? It Depends!

With an increase in awareness about mental health disorders, different ways to cope are emerging. The current study aimed to document the psychological benefits (if any) of *hatha yoga* on emotion regulation and emotional well-being in individuals with depression and anxiety disorders. 83 participants (31 Males and 52 Females, $M_{age}= 20.79$ years; $SD= 1.29$), 19 in Clinical Experimental ($M_{age}= 21.10$, $SD= 1.69$) (yoga practitioners with anxiety and depression), 21 in Clinical Control ($M_{age}= 20.90$, $SD= 1.26$) (non-yoga practitioners with anxiety and depression), 19 in Non-Clinical Experimental ($M_{age}= 20.78$, $SD= 0.97$) (healthy yoga practitioners) and 24 in Non-Clinical Control ($M_{age}= 20.45$, $SD= 1.17$) (healthy non-practitioners of yoga) were recruited in the present study. Participants were assessed on the three questionnaires namely, Emotion Regulation Questionnaire (ERQ), Difficulties in Emotion Regulation – Short Form (DERS-16), and Positive and Negative Affect Schedule (PANAS), for emotion regulation strategies and emotional well-being. The one-way ANOVA analysis on the four groups for DERS-16 scores showed no overall significant differences [$F(3,79) = 0.993$, $p=0.400$]. Further, participants did not show significant differences on the ERQ variables of Cognitive Reappraisal [$F(3,79) = 1.588$, $p=0.199$] and Expressive Suppression [$F(3,79) = 0.925$, $p=0.433$]. On the PANAS scale, Positive Affect [$F(3,79) = 0.714$, $p=0.546$] and Negative Affect [$F(3,79) = 0.392$, $p=0.759$], the difference in scores was once again statistically insignificant. The current results could be because practicing yoga and meditation only as a fitness regime do not suffice to bring about affective changes in emotional well-being and emotion regulation, as *Hatha yoga* focuses only on physical *asanas* and lacks an overall applied-theoretical approach as outlined and practiced in *Ashtanga Yoga*. It is important to include meditation, spiritual aspects along with established Indian philosophies that complements the yoga practice to have an impact on psychological functions since individuals are trained to engage more with their emotions, hence leading to improvements in affective states and emotion regulation. Conclusively, an inclusive approach of yoga, meditation and positive practices are important to bring about affective changes in emotional well-being and emotion regulation of participants.