



ABSTRACT BOOK



One-Day International Workshop on Mind-Body Intervention: Emerging Status and Expert Meeting on Benefits and Barriers of Yoga Research

JANUARY 8-10, 2024

Organized By

**CCRYN-Collaborative Centre for Mind Body Intervention through
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Preface

The benefits of Yoga have been extensively researched and have shown positive impacts on physical, mental, emotional, and intellectual well-being. Numerous studies have highlighted improvements in flexibility, strength, and balance, which can help prevent injuries and enhance overall physical health. Integrated Approach Yoga Therapy, as a science of holistic living, has also demonstrated potential in reducing stress, anxiety, and depression, thereby preventing diseases.

However, despite these compelling benefits, barriers such as cultural and societal perceptions, limited understanding of Yoga beyond physical exercise, and the lack of well-trained therapists hinder widespread adoption. The availability of affordable Yoga classes, especially in underserved communities, is also a challenge. Time constraints and competing commitments further impede integration into daily routines. Additionally, the lack of an evidence base acceptable to modern health experts and regulatory mechanisms for adoption pose obstacles.

Efforts to overcome these barriers involve promoting inclusivity, diversifying Yoga offerings, and emphasizing its adaptability to different lifestyles and belief systems. Increasing awareness about the holistic benefits of Yoga and offering accessible, affordable, and culturally sensitive programs are crucial steps. Integrating Yoga into healthcare systems and workplaces can also facilitate its incorporation into daily life, addressing time constraints. Furthermore, including Yoga Therapy in medical curricula and offering specialized courses can produce authentic Yoga Therapists and doctors.

As research continues to uncover its benefits and strategies address barriers, Yoga holds promise in positively impacting diverse populations in regular hospitals for prevention, positive health promotion, and long-term rehabilitation.

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One-Day International Workshop on Mind-Body Intervention: Emerging Status

JANUARY 8, 2024

Yoga as a therapy: Evidence and future insights

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Yoga as a mind-body intervention being used for wellness is increasingly used as an add-on therapy in the management of several NCDs. The first RCT on Yoga on hypertension, published by Dr Chandra Patel in the Lancet in 1975, laid the foundation for vigorous research into the practice of yoga as a therapy. Yoga a wellness and fitness fad started moving from studios and home environments to hospitals in the late 90s. There has been an increasing trend for research publications in Yoga since International Day of Yoga was declared by UN in the year 2014. There has been an increase in publications on Yoga by 143% and meditation by 172% in the last 9 years. Putting together yoga and meditation keywords account for more than 18000 articles on PubMed. The US is the leading contributor, followed by India in terms of publications. Regarding clinical trials as registered on the WHO International clinical trials registry platform, we have India as a leading country in registered clinical trials in yoga. However, in comparison to the number of publications, the number of RCT publications is quite low. Very few articles are published in high-impact factor journals (Above 8.0). Most of the publications and studies have small sample sizes and are hypotheses generated. There is a need for large multicentric studies in Yoga. Though Yoga studies have found their way in some guideline documents in oncology and cardiology, a lot needs to be done to generate level 1 evidence to have Yoga incorporated as an integrative medicine in management of various clinical conditions. This presentation will highlight the journey where we stand today and what needs to be done in the future.

Accreditation/Certification of Yoga Therapy: IAYT's Perspective

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Yoga therapy is an emerging health profession that is gaining greater recognition and participation in the healthcare

system and the healthcare system needs this participation. The process of professionalization of an emerging profession is not linear, and self-regulation is an essential component of progress. Self-regulation includes accreditation of educational programs and certification of individual practitioners who commit to a defined scope of practice, a code of ethical conduct, and ongoing continuing education. The International Association of Yoga Therapists (IAYT) has been the leader and champion of the self-regulation of the practice of Yoga therapy by establishing the three major pillars required for an emerging profession to be recognized and respected as a profession: (1) the accreditation of education, (2) the certification of practitioners, and (3) a membership organization. At its core, self-regulation is about safety. Professional regulations and self-imposed restrictions are intended to create mechanisms that ensure competence and protect the public. Differing interpretations of the meaning of regulatory terms from country to country, region to region, and state-to-state requires collaboration among Yoga therapy organizations on a global scale.

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Development of frameworks for evidence-based practice of traditional medicine in integrative medicine settings

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Integrative medicine aims to enable patients to make optimal choices for health management from multiple systems of medicine. However, there is a need to develop comprehensive frameworks that can allow crosstalk between the disciplines and provide evidence-based solution that are based on principles and usage of traditional medicines. Using *Ayurgenomics* approach, we have provided an operational framework for understanding the molecular basis of *Doshas*, *Prakriti* as well as the translational aspects of *Trisutra*. This has enabled us to (a) build unifying ontologies, (b) discover biomarkers for early actionable interventions

and risk stratification, (c) understand genetic individuality that governs variable drug and environmental response from the *Prakriti* perspective, and (d) elucidate the mechanism of *Dosha* specific interventions and repurposing possibilities. These frameworks can be applied to evidence-based solutions for other practices such as Yoga and meditation. At the Ayurtech Centre of Excellence, we are integrating different engineering sciences to bridging the gap between traditional and modern healthcare with a holistic approach that could not only provide a win-win situation but enable the development of rigorous standards for evidence-based practice of traditional medicine.

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Importance of the whole person health model for the emerging profession of Yoga therapy

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In the United States, healthcare trends show that chronic disease is increasing; 6 in 10 adults now live with a chronic condition. The 2023 Health Statistics and population health indicators from the Organisation for Economic Co-Operation and Development (OECD) provide insight into how the US healthcare system consistently lags behind other OECD countries (1, 2). Partly in an effort to address these shortcomings, since 2018, a whole person health model has been implemented in 18 flagship integrative medicine clinics in the Veterans Health Administration, a varied system that provides healthcare to people who have completed service in any branch of the U.S. armed forces. In the Whole Health approach to care, “clinical care” (medication) is provided alongside “complementary care” (including Yoga and acupuncture) as part of a comprehensive treatment plan (3). A Whole Health approach enables people to access all appropriate therapies, explore what matters most to their personal health and well-being, and arguably, live healthier lives. A 2020 progress report indicated that more than 30% of eligible veterans used Whole Health services and that these services had a positive effect on reducing opioid use in this group: These individuals reported greater improvements in engagement in healthcare and self-care, as well as improvements in perceived stress and connection to purpose (4). As a result of the health improvements seen in this population, a number of stakeholders are

keenly interested in scaling and spreading Whole Health models to the broader US population.

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The Role of Yoga in Cancer Care

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A growing body of scientific research supports Yoga’s positive influence on the physical and mental well-being of people with cancer, survivors, and their caregivers at every stage of the cancer care continuum—from diagnosis to end of life. As a cost-effective, low-risk mind-body science, integrating Yoga and Yoga therapy into conventional cancer care yields tangible benefits, including reducing many treatment-related side effects, enhancing the overall quality of life, and bolstering psychological resilience. In the United States, the National Comprehensive Cancer Network, Society for Integrative Oncology (SIO), and American Society for Clinical Oncology have published clinical practice guidelines that recommend Yoga during and after cancer treatment to help people manage pain, anxiety, depression, and fatigue, among many other symptoms. These recommendations are based on well-designed phase II and III randomized controlled trials on Yoga, many of which are conducted in India. The International Association of Yoga Therapists is working with SIO to promote high-quality Yoga research to develop best practices for Yoga in cancer care and produce public-facing materials on Yoga’s benefits. This public-facing material includes content for smartphone apps, conferences, educational modules for oncologists and clinicians, and Yoga and integrative oncology textbooks. By combining the wisdom of Eastern and Western approaches, we can advance our shared goal of integrating Yoga into healthcare worldwide. A Yoga lifestyle holds the key to preventive health and the management of chronic lifestyle conditions, complements conventional cancer treatments, and aligns with the growing global emphasis on patient-centered, holistic care paradigms.

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Neurobiology of Sleep and Consciousness

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Sleep provides a means to link variations in brain activity to variations in sleep. However, there is variation in quality and quantity of conscious experience during the sleep-wakeful cycle. A number of intriguing contradictions regarding the connection between consciousness and the brain are brought to light during sleep. For example, it was once believed that the brain shutting down during sleep was the cause of the fading of consciousness. While some cortical regions experience a drop in metabolic rates during slow-wave sleep, the thalamo-cortical neurons may continue to fire at a slower rate that are similar to those during peaceful awake. Furthermore, it was thought that even if our ability to perceive sensory information is reduced while we sleep, it is no longer necessary to sustain conscious awareness. It is also believed that states of consciousness are ever-changing on a continuum of awareness. The two main classifications of awareness are normal waking and altered states of consciousness. An altered state of consciousness differs significantly from a typical waking with respect to awareness, perception, memories, emotions, behavior, and self-control. Meditation induces an altered state of consciousness in which an aspirant effortlessly dwells over a single object while ignoring the unwanted. Recent research advances using functional magnetic resonance imaging (fMRI) and elector-physiological techniques have identified specific brain areas for different types of meditation techniques. Moreover, the Yoga *sutras* describe language's function and the knowledge of words as a prelude to creative ideas, unrestricted thought, and daydreaming. Further many research trials have reported that participants who meditate compared to those who do not exhibit connection variations between the language and default mode networks.

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Clinical Utility of Yoga in Management of Substance Use Disorders: Current Evidence

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Substance Use Disorder (SUD) has been a major public health concern as it affects patient's physical health, mental health, family relations and social life. It also increases the risk of other psychiatric disorders such as depression, suicidality, anxiety and psychosis. Yoga is a popular mind-body medicine that has many beneficial effects on diverse health conditions, including SUD. This review aims to summarize current evidence for Yoga in managing substance use disorders. A systematic literature search was done to identify randomized controlled trials assessing the utility of Yoga in SUDs. Three narrative reviews¹⁻³ involving 17 RCTs (7 RCTs in Tobacco Use Disorder, 4 RCTs in alcohol use disorder, 3 in opioid use disorder, 1 Multiple, 2 Unspecified) explored the clinical utility of Yoga in SUD. All of them observed the beneficial effects of Yoga as an adjunctive treatment for substance use disorders. A recent systematic review⁴ of 8 RCTs (2 – AUD, 2- TUD, 2- OUD, and 2- Undefined Substance) reported that seven out of 8 studies showed significant results and improved outcomes of using Yoga in conjunction with other pharmacological treatment modalities anxiety, pain, and substance use severity being the primary outcomes showing improvement.

Yoga can serve as a useful adjuvant in managing SUDs. It is useful not only in enhancing psychological health and quality of life but also has the potential impact on core symptoms of SUD, such as craving and severity of substance use. This needs further exploration with Multi-centric trials.

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The Role of Yoga in the Enhancement of Cardiac Autonomic Function

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Lifestyle disorders: Cardiovascular diseases have become a leading cause of death worldwide. Cardiac autonomic dysfunction is considered an important pathology in the cause and maintenance of cardiovascular disease. In addition, cardiac autonomic dysfunction is implicated in several cardiac risk factors, including hypertension, diabetes, depression, and obesity. Therefore, early detection of cardiac autonomic dysfunction and implementation of effective interventions

are crucial for the preventing and treating of cardiovascular diseases.

Yoga: Yoga is a discipline that leads to higher states of consciousness through mind, body, and behavioral practices explained in Yoga texts. Yoga involves practicing **Asana**; adopting a posture with slow movement and regulated breathing and interoception, **Pranayama**; mindful and regulated breathing – helps improve respiratory sinus arrhythmias; **Meditation** involves practicing focusing, followed by defocusing and non-judgmentally observing thoughts and emotions. These practices result in a decrease in hypothalamic-pituitary-adrenal (HPA) axis activity, a decrease in sympathetic activity, and an increase in parasympathetic activity.

Scientific Evidence: Numerous randomized controlled clinical trials have shown that Yoga is associated with improvements in various cardiac autonomic parameters such as baroreflex sensitivity, heart rate variability, galvanic skin resistance, and cardiac response to stress. In addition, Yoga tends to improve cardiac autonomic parameters in many non-communicable diseases, including hypertension, diabetes, heart failure, obesity, depression and anxiety.

Conclusion: Early detection of cardiac autonomic dysfunction is crucial for preventing non-communicable diseases. Yoga is an effective intervention to improve cardiac autonomic function and thus helps prevent and treat various non-communicable diseases.

YOGA – Role in Complex Lifestyle diseases

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Family history is often one of the strongest risk factors for common diseases such as cardiovascular disease, diabetes, cancer, autoimmune disorders, and psychiatric illnesses. A person inherits a complete set of genes from each parent. Family history is thought to be a good predictor of an individual's disease risk and it is believed that our genes determine our destiny. Inherited genetic variation within families clearly contributes both directly and indirectly to the pathogenesis of disease. There is believed to be a direct link between gene mutation and disease. However the genome is highly stable and recent studies have shown that though genes play major role in determining our biology yet they are just a small part of a much bigger picture. Our health and disease is determined by our choices; by our lifestyle, social interactions, what we eat, our thoughts as they modulate the epigenome. Epigenetics is

the study of change in expression of genes which is independent of any change in the nucleotide sequence. This change is determined by the environment and our choices. As compared to the genome the epigenome is highly dynamic. Thus our epigenome influences our health, but we too can influence the epigenome by our choices.

This talk would focus on how our unhealthy lifestyle choices, social habits, dysfunctional eating habits, stress and environmental pollutants have led to marked rise in complex lifestyle diseases by impacting our epigenome and how a simple lifestyle intervention (yoga) can impact our health by impacting the epigenome. Yoga is a profound science and a mind body medicine and technology of well-being. We are working on impact of Yoga on complex lifestyle diseases like Glaucoma, autoimmune arthritis, Infertility, Early pregnancy loss, PCOS, Alzheimers disease and depression. All these diseases have shared underlying mechanisms and modern medicine is unable to target all the factors leading to these diseases. However, Yoga impacts both the mitochondrial and nuclear genome and epigenome and is a polypill which modulates the internal pharmacy by positively impacting the epigenome.

Emerging Technologies for Yoga Practice and Teaching

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Emerging technologies such as artificial intelligence and the Internet of thing now provide opportunities to integrate technology into the practice and teaching of Yoga. For Yoga practice, non-contact technologies such as vide plethysmography (i-PPG) and Doppler radar now enable the measurement of heart rate and heart rate variability without the need for any wires or wearable sensors. In addition, thermal imaging provides a means to remotely monitor breathing from individual nostrils. For Yoga training, camera-based systems now exists that use computer vision and human body models to automatically track the body posture and position. Smart Yoga mats with embedded pressure sensors are now emerging that can be used as accessories to facilitate the practice of Yoga for beginners. More recently, the rapid improvements in Artificial Intelligence along with Large Language models (LLMs) now enable conversational interfaces that can be used to provide customized guided meditation. In this short talk, I will provide some examples of these technologies and discuss possible applications and limitations.

Expert Meeting on Benefits and Barriers of Yoga Research

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Theory and concept of Yoga

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Yoga is more than just physical exercise; it is a comprehensive approach to holistic living. Contrary to the misconception that Yoga is solely focused on the body, it actually encompasses four main streams and addresses the five layers of human beings. The first stream is *Raja* Yoga, which emphasizes willpower. This path was elucidated by *Patanjali* in the *Yoga Sutras*. *Raja* Yoga teaches individuals how to harness their inner strength and cultivate self-discipline. The second stream is *Jnana* Yoga, the path of analysis and intellect. This aspect of Yoga is deeply rooted in the *Upanishads* and encourages individuals to explore a deeper understanding of themselves and the world around them through introspection and contemplation. The third stream is *Bhakti* Yoga, the path to gaining mastery over emotions. *Narada Bhakti Sutras* serve as a guide for this path, which involves cultivating love, devotion, and surrender towards a higher power. *Bhakti* Yoga helps individuals connect with their emotions and channel them in a positive and constructive way. Lastly, *Karma* Yoga focuses on converting every action into a spiritual practice. It emphasizes selfless service and teaches individuals to perform their duties with dedication, without attachment to the outcomes. These diverse streams of Yoga address not only the physical body but also the mental, emotional, and spiritual aspects of human beings. By practicing Yoga in its entirety, individuals can experience a well-rounded approach to holistic living, leading to greater balance and well-being in their lives.

Technological innovations in Yoga

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The advent of AI, Sensor technology and smart computing has ushered in a new industry of wearables. Signal processing through AI machines form the core of these wearables. Biological signals include electroencephalogram (EEG), electrocardiogram (ECG), electro-oculography (EOG), surface electromyogram (sEMG), galvanic skin response (GSR), and respiration. Others include thermal, ultrasound or spectroscopic imaging and plethysmography for blood flow. Sensor engineering and materials used for sensors have also improved that accurately

capture these signals. Sensors such as optic sensors, pressure sensors, thermal sensors, image sensors are increasingly being used in the wearable devices to monitor vitals. Wearables and accessories include head band, wrist band, smart watch, Yoga mats, electrodes etc which efficiently acquire signals and transmit them to the cloud where AI engines and algorithms process and give out the results. In this presentation we attempt to decipher the gadgets and applications that can be used to monitor vitals such as heart rate, respiratory rate, heart rate variability, skin conductance, skin temperature etc. that can be used for monitoring practice of Yoga. These can be used for correctness of Yoga postures and alignment, breath monitoring, stress monitoring before and after a Yoga practice.

Heart and Brain Regulation by Yoga Global Trends

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In recent years, the intersection of Yoga practice with cardiovascular and neurological health has garnered significant attention worldwide. As Yoga transcends cultural boundaries, its integration into modern healthcare systems has sparked many studies and initiatives to comprehend its physiological impacts.

Historically, scientific exploration of Yoga has started with studies on Yoga masters demonstrating exceptional feats. It is evident from previous literature that Yoga facilitates the process of voluntary control over involuntary functions. The findings of diverse studies across continents highlighted the remarkable consensus on Yoga's potential to modulate cardiac function and neurological processes. Various Yoga techniques, such as *asanas* (physical postures), *pranayama* (breathing exercises), and meditation, have demonstrated the ability to reduce stress, enhance autonomic nervous system balance, and improve cardiovascular health markers.

Moreover, the neuroscientific discoveries have witnessed an upsurge in research exploring the neuroplasticity-related effects of regular Yoga practice. Studies reveal that brain structure, connectivity, and functional activity changes are linked to improved cognitive function, emotional regulation, and stress resilience.

The synthesis of these global trends underscores the promising role of Yoga as a holistic approach to fostering heart health and regulating brain function. This abstract also discusses the challenges and prospects of integrating Yoga

into mainstream healthcare systems globally, addressing cultural adaptations, accessibility, and scientific validation.

As this exploration of the convergence between Yoga, heart regulation, and brain modulation unfolds, it becomes increasingly evident that the widespread adoption of Yoga holds immense potential in promoting overall well-being, serving as a bridge between ancient wisdom and modern science in the pursuit of optimal health.

Meditation: Users perspective

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Meditation refers to the process of conscious visualization; this includes listening to or sensing an object, action or sound, with closed eyes, while remaining conscious in a still state and calm environment and a goal of becoming thoughtless.

As a meditator, meditation appeals to me as a process of regulating the mind. In my experience of meditation, I consider cessation of thoughts as the final frontier of meditation. To me self-realization, union with God, abolishing of *sanskars* and the end of rebirth cycle are only illusory goals. The journey of meditation is more important than the goal. Hence this outcome inspires the meditator.

1. Peace or joy is experienced due to arrest of one's thoughts through meditation. This blissful state becomes permanent with continuous practice.
2. The cessation of thoughts improve the quality of sleep and sleep cycles.
3. This *sadhana* being a form of mental exercise empowers the brain and increases its ability to contemplate and effect one's existence mindfully. To me, a meditative mind resolves the biggest problems seamlessly. Even immune functions become stronger. The continuous practice offers new insights to life
4. One of the major benefits of continuous meditation is overcoming of instincts and attachments
5. The increasing national healthcare budget can be greatly reduced.
6. Meditation is also a remedy to reduce risks of mental illnesses.

Ayurveda and modern medicine in integrative medicine setting: the need for a molecular conversation

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We are witnessing a paradigm shift from reactive to a more proactive, holistic and precision approach in health and disease management. This approach is in *Ayurveda* practice for thousands of years and is practiced in one form or the other in many Indian households. However, the decision to avail *Ayurveda* as an additional medical option is primarily made by the patient with limited understanding and evidence. This is because there is a limited crosstalk between the practitioners of *Ayurveda* and modern medicine. A scenario where the practitioners from the two diverse streams sit across a table, seamlessly converse, exchange notes and cross-refer to co-evolve a health management regime is the need of the hour. The science of *Ayurgenomics* has made the beginnings of a molecular conversation between the streams. This has a potential for providing objectivity and evidence based solutions in integrative medicine settings. Integration of *Ayurgenomics* with engineering sciences could allow interoperability, and provide complementary, synergistic, personalized options. The frameworks that IIT Jodhpur is developing in the Ayurtech space through its Centre of Excellence could enable evidence based policy formulations.

Accuracy of *asanas* for their efficacy and preventing injuries

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Asana, loosely translated as Yogic postures is a crucial part of *Patanjali's Ashtanga* Yoga – i.e eight aspects of Yoga. It is through *asana*, that an individual gets transformed to imbibe moral, and social discipline [*yama* and *niyama*], it is through its practice that one attains the stability and maturity to practice *pranayama* [expansion and extension of the cosmic energy], it is through its practice that one's get the mind and senses to move inwards [*pratyahara* and *dharana*] and then attain the states of *dhyana* and *samadhi* [meditation and infinite bliss]. *Yogacharya* BKS Iyengar defines asana as "perfect firmness of body, steadiness of intelligence, and benevolence of spirit."

For an *asana* to have these myriad effects, it is essential that these have to be done with precision and accuracy. If not, then they may not be effective and may even lead to injuries. Also, it is not that practicing one or two *asanas* gives the desired effect. What one needs to practice is a series of *asanas* – each one facilitating the other. Like in medical therapy, where a patient may be given a combination of drugs, each to be taken at the specific time of the day at the specified dosage for a period of time. Even in Yoga therapy, there are specific groups of *asanas* that have to be performed in a specific sequence to get the desired effect. These sequences of *asanas* vary depending upon the age and health condition of the practitioner.

In medicine, the quality of the medication is important and likewise, in the yoga therapy – the quality of the *asana*

is important. The ability of various individuals to perform *asanas* vary with age, extent of diseased condition and, often they are told to do as much as they can for as long as they can? This causes variability in the outcome of studies. Therefore, *Yogacharya* BKS Iyengar introduced various household items as props/supports to attain perfection.

This study exemplifies, the need and how precision and accuracy can be brought in the practice despite each human body being “different”.

Protocolization of De-addiction Yoga

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Substance use disorder (SUD) involves excessive use of substances (such as tobacco, alcohol, cannabis, opioids) leading to major health, social, and economic consequences. Yoga lifestyle interventions have been found to be useful as adjunct therapies in management of substance use disorders and chronic pain conditions. Our research intended to develop and validate a Yoga program for SUD patients that could reduce withdrawal symptoms such as pain, fatigue, low mood, anxiety and sleep disturbances and cravings associated with drugs. Firstly, we performed a literature review of traditional and contemporary Yoga texts, such as *Patanjali Yoga Sutras*, *Bhagwad Gita*, *Vedas*, *Hatha Yoga Pradipika* and *Light on Yoga*, as well as modern scientific literature in the following search engines: Google Scholar, PubMed, and PsychInfo, using the keywords Yoga, pranayama, *hatha* Yoga, relaxation, meditation, substance use, addiction, impulsivity, craving, sleep quality, and fatigue. Using the information obtained, our team developed a Yoga program and designed a pilot study that used the program.¹ The study took place in the Department of Integrative Medicine at the National Institute of Mental Health and Neurosciences (NIMHANS) in Bangalore, India. For the pilot study, assessments were performed at baseline and post intervention (Yoga 10 sessions and tele-Yoga 4 weeks).¹⁻² Four practices were removed from the program due to content validity ratio (CVR) scores below the cut-off, and one practice was found not to be feasible (*Kapalabhati* in opioid use disorder as it aggravated stomach cramps during withdrawal phase). Two categories of Yoga modules emerged: (1) for the acute symptomatic phase (40 minutes) and (2) for the maintenance phase (one hour). Practices were added or excluded based on the phase. The modules involved components of yogic postures, breathing techniques, meditation, chants and relaxation techniques including lifestyle suggestions based on Yoga philosophical principles.

The module was also subsequently tested for feasibility of its application through the tele-mode and it was observed to

have good inter-therapist reliability. Barriers in clinical utility of Yoga in SUD were also explored and addressed. The developed and validated protocol can be tested in a multi-centric RCTs exploring effect of adjuvant Yoga intervention in SUDs, in future.

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Accreditation/Certification of Yoga Therapy: IAYT's Perspective on Current Challenges

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As the research on the effectiveness and benefits of Yoga grows, barriers related to the accreditation of Yoga education may impede the progress and development of evidence-informed practices in the field. Some of these barriers include lack of standardization in Yoga therapy education, the diversity of Yoga approaches available, limited research funding, variability in therapist qualifications, lack of standardized outcome measures, and challenges with interdisciplinary practice. Addressing these barriers requires collaborative efforts among Yoga professionals, researchers, accreditation bodies, and other relevant stakeholders. Establishing clear educational standards, promoting research funding, and fostering interdisciplinary collaboration are essential steps toward overcoming these challenges and advancing Yoga therapy as a recognized and respected profession.

Advancing Yoga in U.S. Cancer Care: Addressing the Barriers

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Healthcare in the United States is largely being provided by private-sector facilities and funded by a combination of public programs, private insurance, and individual out-of-pocket payments. This system presents challenges for integrating Yoga as a complementary therapy in supportive cancer care.

These barriers are related to: (1) inconsistent quality of Yoga research for making clinical practice guidelines ; (2) absence of Yoga evidence-based best practices in oncology; (3) low public awareness in terms of the benefits of Yoga during and after cancer treatment; (4) cultural and attitudinal influences intersecting with beliefs about Yoga; (5) limited patient access to safe, affordable Yoga therapy; (6) inadequate payment and reimbursement models for Yoga therapists and teachers; and (7) absence of nationally recognized, medically vetted training programs for Yoga professionals working with vulnerable medical populations, including people with cancer and those with metabolic syndrome and comorbid conditions. Researchers, institutions, and healthcare providers must collaborate to address these challenges and advocate for a paradigm change in public health. Studies must examine the cost-benefit ratio of Yoga therapies to optimize their use in oncology care. Therapy payment models must be developed to improve access to Yoga and Yoga therapy care for those with cancer. Recognizing and addressing these barriers is crucial to unlock Yoga's full potential as a complementary intervention for people with cancer and those who have survived the disease in the United States. A strong East-West collaboration is the way forward.

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Barrier to Implementation of Whole Person Health Models

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Despite strong stakeholder commitment and encouraging data showing improved outcomes and lower costs within the whole health program in the Veterans Health Administration (VHA), significant barriers to this type of healthcare reform exist in the United States. These barriers are present in both the closed, integrated system of the VHA and in the disparate systems that serve the broader population. One significant challenge to realize the promise of whole-health models is the lack of state- and national-level policies that support and reward health-promoting investment through grants, tax breaks, and incentives that would share costs among

government entities, communities, and private organizations. To advance community and population health, there is a need of incentive based, personal-centred, integrative, and holistic payment approaches. Such strategies would require a shift toward comprehensive, holistic, upstream-focused, equitable, and accountable care, as well as an intentionally created framework for a prevention-focused healthcare model. Serious gaps in health literacy constitute an additional multi-level barrier that includes a lack of related programming in educational organizations. Unlike many healthcare interventions, Yoga therapy does not require significant administrative infrastructure, expensive equipment, or an abundance of staff to deliver. Professional yoga therapy can be seamlessly offered in settings such as community centres, clinic and medical centre waiting rooms, corporate environments, schools, and hospitals with minimal overhead costs.

The Efficacy of Yoga Intervention for Attention-Deficit/Hyperactivity Disorder (ADHD) in Children and Adolescents

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In the US, approximately 4.1% of adults and 2.9% of children use prescription stimulants, and nearly 50% of children (under 18) have experimented with psychostimulants. Over the past decade, the rapid rise in use of stimulant drugs such as amphetamines (Adderall), and methylphenidate (Ritalin), have caused concern about psychostimulant addiction, particularly in children. As an alternative to psychostimulants, it has been known that Yoga can be used as an effective treatment modality for individuals struggling with ADHD. We present an initial study (n = 42) to understand the efficacy of Yoga as an intervention to address attention, executive functioning, and symptoms of ADHD. The participants of this study were randomly selected across the United States between the ages of 8 to 12. An eight-week Yoga intervention was implemented, and data was collected using the Wisconsin Card Sorting Task and the Vanderbilt questionnaire before and after the intervention. To identify differences among participants who take medication for ADHD versus the participants who do not take medication for ADHD, an independent sample t-test was conducted. There was a statistically significant difference in non-perseverance errors from the group of participants that took medication for ADHD (M = 9.00, SD = 6.56), to the group of participants that did not take medication for ADHD (M = 0.78, SD = 5.38), p = 0.022. There was no statistically significant difference in total errors or perseverance errors. Additionally, there was no statistically significant difference in performance for the Wisconsin Card Sorting Task between participants without ADHD who did not participate in the

intervention and participants with ADHD who participated in the intervention. Finally, there was no statistically significant difference in outcomes among participants who had symptoms of ADHD and participants who did not have symptoms of ADHD. These results indicate that Yoga has a positive impact on executive functioning, attention, and overall symptoms of ADHD. This also indicates that Yoga should be considered as an alternative first-line treatment modality for individuals with ADHD.

Need for Good Yoga Practice (GYP)

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With re-emergence of the integrative health paradigm, the modern healthcare ecosystem is bound to go through a highly competitive phase chiefly driven by rapidly growing patient education and digitalisation. Much like Good Clinical Practices (GCP) and Good Lab Practices (GLP), rigorous research in the field of yoga and its potential for integration into modern health system can benefit by implementation of Good Yoga Practice (GYP) in all labs and institutions. The proposed quality assurance (QA) regiments entail a system of documents that handle research data generation activities using standardized Data Recording Sheets (DRS), Standard Operating Procedures (SOP), Master Schedule (MS) of research activities, periodic calibration of research and testing equipments, making Yoga research data auditable, back traceable, retrievable and archivable. Policy changes that bind the funding agencies to release funds only to GYP investigators, Journals, and educational frameworks can be implemented. We will ensure seamless integration of Yoga research in the modern medical system.

Yoga asanas in Sports

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Yogasana is a crucial perspective of Yoga, it has gained popularity in the realm of sports and athletic training. This abstract delves into the historical roots of Yoga starting from *Vedic* period till modern era, exploring the relation of mind-body and its integration with modern science. The focus is on inculcating *Yogasana* into sports and examining its effects on physical attributes, mental potency, and overall performance of an athlete. Some scientific researches have been done on Yoga and sports and found the positive impact Yoga on athlete's health and performance. Yoga Practices helps improving flexibility, addressing muscle imbalances, strengthening movement patterns, enhances quick reflexes, increases agility, improving endurance, aiding recovery by increasing

oxygen flow to muscles and joints and reduces inflammation. Moreover, inclusion of Pranayama and meditation practices also helps to increase the cognitive power and reduces stress in athletes. Although, more scientific studies on Yoga are required to understand more about its anatomical, physiological and biochemical effects in different sports. Hence, specific Yoga protocols should be developed and implemented seamlessly for the specific sports and tailor made training programs should be held for practical applications of Yoga. Incorporating Yoga into athlete's routines would prevent sports injuries and psychological diseases and promote overall wellbeing. Moreover, many upcoming studies on Yoga and sports would further provide deeper knowledge about *Yogasana* in sports science.

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Bridging Cultures and Collaborations for Global Wellness through Integrative Health

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Although science and sensibility have evolved over time, society has struggled to keep pace with evolving problems at micro, mezzo, and macro levels and find sustainable approaches to deal with mental health problems and some of the most daunting issues and concerns of modern times, such as violence, substance use, and rising suicide rates. It is the exigency of the time to find ways to bridge the gaps in the culture and collaboration for global wellness. The intersection of growing evidence in integrative health and mental health care has shown a significant increase in the recognition and a promising hope to deal with the societal issues tied to mental health. The literature is replete with recognition of mindfulness and the effectiveness of mind-body alternative therapeutic interventions; however, it needs a sustainable framework for mental health growth and positive well-being.

There is a growing interest in using integrative health practices to enhance mental health care, which aligns with the recognition of social factors that affect mental well-being. This trend coincides with the U.S. government's acceptance of alternative health methods and India's emergence as a leader in behavioral medicine. This presentation promotes a collaborative model that integrates yoga and mindfulness into a comprehensive mental health and well-being approach. This model utilizes the expertise of U.S. clinical social workers in addressing mental health, substance use, and healthcare

needs and integrates with emerging evidence in integrative health models. It prioritizes assessment and intervention strategies to meet people's behavioral health needs and healthcare workers' self-care demands that must be integrated with their professional development needs. Healthcare worker's well-being is also linked to the people's health and wellness. Thus, the overarching goal of the presentation is to show pathways to synthesize integrative health approaches with behavioral health models in healthcare environments. This approach will help to close the divide between creative approaches and the mental health needs of the people.

Yoga Communication

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India represents as a country that is most actively working in the field of integrative medicine. The amalgamation of *AYUSH*-Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy form the base to address specific diseases as an additional facet to the current strategies¹. A positive framework is an utmost requirement to harness the contribution of these approaches.

In spite of its immense benefits towards the holistic well-being, its equally imperative to recognize the limitations. The limitations widely include the non-acceptance of alternative medicine due to lack of scientific proof of concept. In order to reflect upon progress and revive the traditional, complementary and integrative healthcare, the focus is on the awareness through communicating the pros and cons of various therapies. The most accepted way for such a communication is publishing in peer-reviewed journals to impart a scientific validation to such methods.

It's not only the success stories that are published but also the individual-based problems that might associate by complying to alternative strategies. Also, the studies that pin point the underlying molecular mechanisms of adjuvant therapies imparts indispensable knowledge in today's world. Through publication in journal of repute, there is wider dissemination of basic facts to an audience on global level, 'WHO Traditional Medicine Strategy: 2014–2023' is entering its final phase², the laborious scientific methods to unlock the potential of integrative medicine strategies amongst the associated challenges must be put forward in the form scientific publications.

This would not only realize the global health coverage but also promote formulation of policies that include various branches of integrative medicine. As an outcome leading to the holistic well-being of our people and therefore the planet.

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Educational Research Framework

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Yoga is a mind-body discipline that has its roots in India and is becoming more and more liked worldwide every year. The core of the Yoga lies in ways to successfully manage oneself in order to achieve comprehensive health and well-being. Outside of its cultural context, Yoga is utilized solely for physical fitness or, at most, as a method of body-mind relaxation. Yoga therapy has been developed as a tool for the clinical treatment of numerous health disorders over the past twenty years, aiding to a fastest growth of research demonstrating the restorative advantages of Yoga.

Currently, a plethora of material exists regarding traditional wisdom, and in the past thirty years, research on Yoga practiced in schools has surged dramatically. Recent study trends indicate that Yoga may be used as an applied science in a variety of sectors, including education, sports, and physical education, health and family welfare, psychology, and health care, as well as a tool for improving human performance. In this regard, India has long overstated its long and illustrious history in the fields of research and education. It also seems that the current educational system is inadequate for the whole development of the body, mind, and soul.

In addition, Yoga plays a vital role as a preventive and supplementary practices in schools and higher education institutions. Regular Yoga practice appears to be associated with improved academic performance in the school and HEI – based learning environments for children, adolescents, and adults.

However, there have been a number of published research studies on Yoga and its use in the classroom, but none of them were able to offer a thorough understanding of the published research potency of different endpoints with the coupling of Yoga intervention till date. Hence, there is a need to develop a framework for incorporating Yoga research in diverse educational set up in India.

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Need of Yoga for Medical Professionals

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Background: Medical Professionals often experience physical and mental stress and related health issues. Long working hours, dealing with difficult patients, stress-related medico-legal aspects, medical emergencies, vulnerability for infections and related anxiety, emotional draining in consultation, etc. are common sources of stress that leads to variety of physical and mental health disorders. Fatigue, burnout, back pain, knee pain, neck pain, and sleep problems are the most common health issues among doctors.

Yoga and its health benefits: Yoga is a form of Complementary and Alternative Medicine. It helps to relax the mind and body and promotes physical and mental rejuvenation. Yoga reduces stress and its associated health issues. Yoga helps to alleviate pain in neck pain and back pain. It also helps to reduce anxiety, depression, and physical and mental fatigue. Yoga helps to reduce burnout. Several randomized controlled trials among mental health professionals, and nurses, showed improvement in perceived stress, work-related stress, anxiety, and depression. Very few studies are among Indian medical professionals.

Scope: Implementation of Yoga at hospital set up for medical professionals. Providing necessary facilities to practice minimum of three days a week, Benefits of Yoga at physical, mental molecular level, and patient-doctor relationship.

Barriers: Though the benefits of Yoga are evident among medical professionals, its implementation and research among medical professionals are yet to go long way. There are several barriers in implementation and research such as 1) busy schedule of medical professionals, 2) large number of patients to attend, 3) several documentation works. These barriers need to be overcome by making regular Yoga sessions available for medical professionals at workplace.

Meditation as a tool for transfer of idea to patent to product: a case study from Panjab University

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The major barrier in our research endeavours is to reach out to our fullest potential at the mental level. This dimension is verily ignored while considering the overall scenario of research and innovation and its effective implementation and translation. Herein, it takes to a different perspective that how

an unregulated, unstable and chaotic mind without developing the capacity of focus can turn intuitive and contemplative. This is extremely important when patenting the idea is all about going against the normal behaviour or breaking the algorithm.

But, having given an open mind to our ancient Indian philosophical system of education and its good practices it is possible to reap its benefits even now, phenomenally. Incidentally, we find a revelation in one of the *sloka* of *Charak Samhita* about the engrossed science and philosophy of Nanomedicine to throw a flashlight on the reality of our Medico-Pharma Wisdom so prevalent in those Times. Ironically we missed it all these past years after years.

The case study is a sharing of journey, the experience of professional excellence wherein the outcome of research turns out to be the real fruit of the work, i.e., the real time clinically proven patented novel pharmaceutical products. It reveals the inside story that how when a thought can take a “trajectory of transfers” to travel all through to see the end light. The entire success story centres on that how a prepared mind, using the appropriate simple mind-training techniques, can bring the difference, at the bottom of the things. It demands a deeper level of thinking that the “tool of meditation” be explored seriously with an elaborated and expanded insight. This age-old Yoga Meditation practices, the methodology of ancient India can play a critical role and prove to be a Game Changer in any field including Research and Innovation Entrepreneurship. Henceforth, suggested to the decision makers at the policy levels (e.g. National Policy) to become an integral part in preparing powerful army of young researchers, the pool of young talent, on the lines of Sports Academy, to aim higher and beyond...

Role of Yoga in Integrative Oncology

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Cancer is a profoundly stressful disease posing both physical and psychological threats to the patient. Patients diagnosed with cancer experiences a cascade of stressors, including the diagnosis itself, ongoing intrusive medical procedures and severe side effects of treatment, and a variety of personal, psychological, and physical losses. Such psychological distress and treatment is known to affect various dimensions of quality of life such as physical, emotional, social, functional and spiritual wellbeing and leads to disturbed sleep, altered immunity, hypothalamic-pituitary-adrenal (HPA) axis dysregulation etc leading to delayed healing and relapses. Yoga is among the stress reduction mind-body approaches that have been practiced widely in both Indian and Western populations. Various components and types of Yoga practices have shown beneficial effects in reducing distressful symptoms and improving

sleep, mood, and quality of life in cancer patients. Though, Yoga has shown beneficial effects, we need to overcome many barriers such as type of Yoga intervention, supervised Yoga practices versus unsupervised Yoga practices, adherence to Yoga intervention, efficiency of Yoga therapist etc. in incorporating Yoga into cancer care. Integrating Yoga along with conventional management of cancer helps in better coping and also may reduce the relapse and recurrence.

Qualitative research in Yoga: Impact of Yoga on Quality of life of Patients with Chronic irreversible Diseases

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Chronic irreversible diseases have a profound impact on the quality of life (QoL) of individuals affected by them. These conditions typically persist over an extended period, often for the rest of the person's life, and they are not easily cured or reversed. They often take a toll on Physical Functioning, Emotional Well-Being and Social life.

Qualitative research in the context of Yoga involves the exploration and understanding of the subjective experiences, perspectives, and meanings associated with Yoga practices. Unlike quantitative research, which focuses on numerical data and statistical analysis, qualitative research aims to provide a deeper understanding of the complexities and nuances

of human experiences. There are multiple approaches of Qualitative analysis such as; In-depth one-on-one interviews or focused group discussions with yoga practitioners, and phenomenological interviews exploring the essence of the lived experiences of individuals practicing Yoga.

The challenges in Qualitative research methods: Yoga interventions are often implemented in dynamic and evolving contexts. Researchers must adapt to changes during the study and consider how external factors may influence outcomes. Qualitative data collection is a meticulous procedure, where the researcher has to be patient to gather information through in depth interviews from each patient. Qualitative data analysis is also a complex and time-consuming process. In mixed-methods research, combining both qualitative and quantitative approaches, integrating these data types can be challenging. Qualitative research relies on the interpretation of data, which can be influenced by the researcher's subjectivity and biases.

Despite the challenges Qualitative research in Yoga can contribute to a more holistic understanding of the diverse ways in which individuals engage with and benefit from Yoga. It can provide valuable insights that complement quantitative data, allowing researchers to explore the subjective dimensions of Yoga practice, shedding light on its psychological, emotional, and spiritual aspects.

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