
International Journal of Yoga 2018, 11, (2) 157-165

Research Review Article

BIOENERGY AND ITS IMPLICATION FOR YOGA THERAPY

C. Rajan Narayanan*, Konstantin Korotkov**, Thaiyar M Srinivasan***

*Narayanan, Chathapuram Rajan, PhD, Life in Yoga Institute, Executive Director Maryland, USA, 1111 University Blvd West #1306, Silver Spring MD 20902 USA narayanan@lifeinyoga.org; +1-301-526-8308

** Korotkov, Konstantin, PhD, Research Institute of Physical Culture and Sport, Ligovski 56, St. Petersburg, Russia, korotkov2000@gmail.com, +7-9219368394

***Srinivasan, Thaiyar M, PhD, SVYASA Yoga University, Bengaluru, India; tmsrini@gmail.com

BIOENERGY AND ITS IMPLICATION FOR YOGA THERAPY

Abstract

Electrophotonic Imaging (EPI) is being researched relative to its application for yoga therapy. Three parameters of interest in EPI measurements are: Communication Energy (C), Integral or Normalized Area (IA) and Entropy (E). It is important to note that C indicates the total energy of communication for the organ system; IA is an indication of total amount of energy that is available for the organ system; while entropy is an indication of amount of coherence of the energy. Coherence and entropy are inversely related; this means less the entropy, more the coherence and vice versa.

Illustrative cases of successful therapy with yoga practices in a wide variety of abnormal conditions are examined and in every case entropy is shown to decrease for the affected organ system, while communication energy stays within stable range.

Relative to the electromagnetic (Rubik) and living matrix (Oschman) models, it is suggested that regulation of energy, its coherence in the biological system and interaction with life processes provide basis for model building and design of health promoting procedures. Further, this approach is examined relative to yoga theory, traditional medicine systems and scientific developments in the field of gene expression and neuroplasticity and a generalized model that we call Unified System of Medicine is proposed. This model has direct implications on methods used to control the environmental factors to get robust results from EPI application for therapeutic purposes.

Implications for furthering research in yoga therapy using EPI, and implications of EPI as a translational technology between traditional medicine systems and modern medicine is discussed.

Keywords: Yoga, Electro Photonic Imaging, EPI, bioenergy, therapy

Abbreviation: EPI – Electro Photonic Imaging; GDV - Gas Discharge Visualization; MYT - Measured Yoga Therapy; PVS - Primo Vascular System; USM - Unified System of Medicine; YS – Yoga Sutras; ECM – Extra Cellular Matrix.

Introduction

About 80 years of research mostly in Russia and Germany to study bioenergy has resulted in a number of devices [1, 2] with Electro Photonic Imaging (EPI) (earlier called Gas Discharge Visualization (GDV)) [3-5] being one of the recent user friendly devices. It has the potential to serve as a translational technology between traditional systems of medicine and modern conventional medicine. Consistent with traditional medicine approaches, it measures communication in the bio-meridians, but unlike the terminology of Chinese or Ayurvedic medicine systems, it produces communication energy numbers in Joules by organ systems that are known to conventional medicine, and according to Korotkov the validated correlation with conventional diagnosis of abnormal conditions is in excess of 80%.

The modern medicine approach viewing the human system as a mechanical system has been a barrier to accept the bioenergy concept. However, the field of yoga therapy, which has yielded remarkable results from a therapeutic perspective [6] whose mechanism is being largely estimated within the paradigm of conventional medicine, is an ideal field to prove the effectiveness of bioenergy and EPI as a measurement tool, and reaffirming the human system as a communicating system in the lines of the electromagnetic (Rubik [7]) and living matrix models (Oschman [8]). Further, incorporating the developments in gene expression and neuroplasticity over the last decade [9-20], we attempt to integrate Rubik and Oschman models into a Unified System of Medicine (USM) model both for integrative understanding of conventional and traditional systems of medicine, and to ensure correct application of EPI. EPI readings are extremely sensitive to thirst, medications, thoughts, environment, etc. and the USM model guides us to understand why this should be so. We propose in the USM model that this is measuring the gene expression in action combined with neural activity and will change at least slightly from moment to moment, and this is validated by gene expression research [9-22]. Until now, variations in the readings within short time intervals have been difficult for conventional medicine to understand given an orientation to view everything as physiological.

Application of EPI to yoga therapy based on USM yields readings of the current state of subtle energy in a person. When any abnormality in one or more organ systems is indicated, based on traditional and researched information on yoga practices, appropriate practices are suggested for immediate application. EPI readings are taken immediately after the practices to see the impact of practice on the organ systems. While the impact may be fleeting and not sustained after a few minutes, the effect of neuroplasticity from regular daily practice is expected to make it permanent after a few weeks of practice. We call this approach Measured Yoga Therapy (MYT) that gives the ability to predict long term impact of a specific yoga protocol on a specific person for a specific condition. Further, this understanding also suggests that for the application of MYT, to enable correct measurement before and after a yoga intervention, factors suggested by the USM model must be controlled through various preparatory instructions to the subject before the measurements, and also by suitable environmental and behavioral management at the time of reading, as explained later.

EPI readings provide energy of communication (C) for each organ system and also total level of available energy called normalized or integral area (IA) and level of entropy (E). Entropy is inversely related to coherence as defined in communication engineering. As observed in our cases, our thesis is that coherence must increase as healing takes place while overall energy of communication (C) improves, which implies that IA must remain in a stable range, i.e. increasing or if decreasing only to the extent of not affecting improvement in C. This we demonstrate in the cases we have dealt with. Focusing on E allows us to recognize the real organ system drivers for any healing process.

Materials and Methods

The key elements for this research are three fold: instrument, application model and process.

The Instrument

The measurement instrument is Korotkov's EPI instrument called Bio-well. Bio-well takes a picture of the ten fingers of the hands when they are placed sequentially in an electromagnetic field. This produces an aura type image. Based on Traditional Chinese Medicine (TCM) system, each segment of the aura is assigned to a different organ system. The light intensity of the aura and its pattern, compared with thousands of cases previously studied by Russian researchers to establish standards, provides a reading of energy of organ systems (in Joules) represented in the ten fingers.

EPI communication energy (C) for organs systems of 5 Joules is considered normal, and range of 4 to 6 is considered normal zone. Less than 4 Joules is considered indication of weakness. More than 6 is considered hyperactivity caused by imbalance which the system is trying to fix. If the fix happens it would come back to normal range in due course. If the fix does not happen it would eventually go into the weak zone. A change of 0.5 Joule or more is considered a significant change attributable to any intervention, provided other factors of the USM model are stable. Since C can change a little based on momentary thoughts, assessments should take into account how the patient feels in addition to the numbers, and should only be used after conventional diagnosis is verified to be reasonable relative to observed C of organ systems.

Further an experienced user of EPI will realize that more important than the ranges mentioned above is the disparity between the highest and lowest organ systems' C, and their deviance from other organ systems' C.

The Application Model

Assessments of the lowest and highest C, are taken in conjunction with conventional diagnosis of the abnormality to attempt correlation with the diagnosed condition. Based on traditional understanding of yoga, researched effective practices, and the Life in Yoga therapy model of parsing each disease in terms of root causes, a suitable yoga intervention is suggested. Immediately after the application of the intervention, EPI readings are taken again and we look to see changes in the affected abnormal C, IA and E values. Reduction in entropy (E), i.e. improvement in coherence, is considered the key indicator of effectiveness of intervention to overcome the abnormality once neuroplasticity sets in.

The Life in Yoga therapy model makes a subjective assessment based on conventional medicine knowledge of any abnormality relative to impact in five zones: musculo-skeletal; bio-chemistry/endocrine; gene expression; immune system; and vitality. The loose correlation of practices to zone of abnormality is as follows: musculo-skeletal to Asana, bio-chemical/endocrine to sound vibrations (related to the Yoga limb of Pratyahaara); gene expression with power of intent or thought (related to Dhaarana); immune system with meditative practices (related to Dhyaana-Samaadhi); and vitality with Pranayama practices. In practice any abnormality is a combination of multiple zones, and it is commonly observed that improved vitality with reduced stress will improve most conditions.

The Process

Subjects with abnormal conditions generally present themselves for appointments after filling an intake data form listing their medical history and lifestyle details including sleep, food, work, family and other discretionary activities. They are also required to sign a consent form with full details as required for ethical disclosure. Preparation requirements before assessment typically relate to food and medicine to ensure that at the time of assessment, EPI does not capture their effect. Upon arrival for appointment, water is offered and about 10 minutes is spent with conversation that will keep the person in a neutral mood. This gives time for mental settling to avoid the impact of any stress or emotional state affecting the EPI readings. The therapists present keep a neutral intent so that the process is not affected.

After the application of therapy, if there is reduction in entropy with stable energy level, the practice is recommended for daily practice. Time is taken to discuss where it would fit within their lifestyle and a log sheet is given for daily tracking of practice. Reduction in entropy is valid only when done just before and

after treatment in one sitting, since environmental factors and dynamic changes within the system over time does not allow for direct comparability if the readings are taken over large time intervals like a day apart.

If EPI readings immediately after a specific yoga practice do not show improvement with reduced entropy, we test other yoga protocols in search of a solution until we find one or give up.

Case Results

The case results below are presented to demonstrate the application of MYT for a variety of abnormalities, and also to verify the importance of increased coherence (reduced entropy) in affected organ systems along with stable energy for successful yoga therapy intervention.

The first two cases using deep breathing as the intervention appear similar. Yet looking deeper and correlating with entropy change, EPI reveals the differences in the two situations with respect to activated organs.

Cases 3 and 4 are respectively cases of Diabetes and Insomnia. However, the importance of entropy (or coherence) is demonstrated in the loss of weight for the case where reduction in entropy for pituitary organ system (metabolic control) was evident, but not in the pituitary communication energy; whereas in the case where the pituitary communication energy had a big increase, there was no weight loss as shown by unchanged entropy value for the pituitary organ system.

The remaining cases demonstrate a wider variety of abnormalities for which EPI and MYT have been applied.

These cases demonstrate the following:

- The importance of traditional yoga application as a customized one-on-one practice based on individual evaluation instead of a set practice for a specific condition;
- That the same practice can impact two different individuals differently;
- Effectiveness of EPI to track the deficiency in initial assessment and impact of any yoga intervention.

Cases 1 and 2: OVERCOMING PERSISTENT TIREDNESS

Case 1: 49 year-old female, school teacher, mother of two children in their mid and late twenties, wife of a university professor, feeling a sense of deep tiredness requiring a late afternoon nap daily, though she sleeps well at night with adequate sleep. This had been happening over the last two years and she found herself unable to function and have dinner ready without the late afternoon nap. Having known her and her husband for 30 years and meeting after a period of 10 years, she confided that she was really worried about her older child who was 28 years old, had completed his Bachelor's degree with difficulty, was aimless in life and had no discipline. Initially the father had taken a strict disciplinarian attitude towards his son, and later had let go. There was little communication between father and son. However the mother was emotionally attached though she had accepted the situation. EPI readings showed overall weakness – low vitality. Slow deep breathing of 3 rounds of 20 breaths had positive impact. She kept her daily practice and reported a month later that after initiating the practice there was no tiredness or need for the afternoon nap.

Case 2: 54 year-old male, bio-medical researcher, spouse of a physician, often feeling tired. He had temporarily been on hypertension drugs and discontinued. He appeared to have a busy workaholic lifestyle, tried to get 40 minutes of cardiovascular exercise 3 times a week, but not always regular. Slow deep breathing of 3 rounds of 20 breaths each made him feel much better. Two months later, he reported that he had benefitted very much by daily such practice, no longer feeling tired, was sleeping better and had a feeling of wellness.

Key organ systems C (communication energy) before and after the intervention for the two cases are noted below in Table 1 and in Table 2, the comparison of IA and E is shown. They show the distinctive differences between the two cases though they presented similar symptoms.

Table 1. Organ systems communication energy (in Joules) - Change on intervention for Case 1 and 2.

Communication Reading Zone	CASE 1: Beginning Reading Oct 31, 2014	CASE 1: Ending Reading Oct 31, 2014		CASE 2: Beginning Reading July 12, 2016	CASE 2: Ending Reading July 12, 2016
Cardiovascular system	3.66	4.31		3.98	4.09
Heart	3.20	4.22		3.36	3.94
<i>Respiratory System (Also Mammary Glands for women)</i>	<u>3.50</u>	<u>5.65</u>		<u>2.52</u>	<u>4.28</u>
<i>Thorax Zone Respiratory energy</i>	<u>4.34</u>	<u>4.91</u>		<u>2.47</u>	<u>3.66</u>
Endocrine system	2.79	4.44		3.51	3.65
Epiphysis	3.73	4.99		3.44	3.73
Pituitary	2.72	4.45		4.07	3.86
Thyroid	2.56	4.35		3.40	3.08
Pancreas energy	2.78	3.94		3.39	3.57
Adrenals energy	1.82	4.80		3.62	3.77
Spleen energy	2.54	4.41		3.13	3.52
<i>Hypothalamus (stress indicator)</i>	<u>3.36</u>	<u>4.16</u>		<u>3.52</u>	<u>4.05</u>
Nervous System energy	2.96	3.59		3.20	3.73
<i>Immune System energy</i>	<u>2.77</u>	<u>3.53</u>		<u>2.42</u>	<u>3.79</u>

Table 1 above indicates that these two cases of tiredness are very different. While both have improvement in the communication of Respiratory system, Thorax Zone, Hypothalamus (a stress indicator), and Immune system with deep breathing, Case1 is an endocrine communication imbalance arising from worries (mental health), while Case 2 is simply the case of an overworking stressed workaholic.

Table 2 below confirms that the change in the Respiratory system and Immune systems are incidental (with increased IA or total energy) and not the active driver in both cases (since entropy does not reduce). However change in Hypothalamus, indicative of stress reduction, is a common driver for both. Further, in Case 1 the endocrine system is the active driver connected with the nervous system that also has driving impact on the cardiovascular system ensuring a drop in E (increased coherence) in all these systems, while IA increases throughout. However in Case 2, the drop in E in the Thoracic Zone Respiratory activation along with Hypothalamus indicates that the key driver is a lack of good breathing and building of stress from a workaholic way of life.

Table 2. Change in IA and E for Cases 1 and 2 by organ systems

ORGAN SYSTEM	Case 1 - IA			Case 2 - IA			Case 1- E			Case 2 -E		
	Before	After	Change	Before	After	Change	Before	After	Change	Before	After	Change
Cardiovascular System	2.055	2.34	14%	1.525	2.44	60%	2.275	2.065	-9%	1.935	2.17	12%
Heart	3.105	4.14	33%	1.61	2.985	85%	2.89	2.71	-6%	2.15	2.51	17%
Respiratory system. Also Mammary glands for women	3.08	4.905	59%	1.33	3.625	173%	2.345	2.66	13%	1.895	2.545	34%

Thorax Zone												
Respiratory	2.21	2.415	9%	1.09	2.05	88%	2.12	1.935	-9%	2.18	1.92	-12%
Endocrine system	2.48	2.84	15%	1.265	2.22	75%	3.4	2.385	-30%	2.63	2.715	3%
Hypothalamus	2.33	2.71	16%	1.585	2.2	39%	2.595	1.985	-24%	2.135	2.005	-6%
Adrenals	1.69	3.12	85%	1.5	2.28	52%	2.71	2.205	-19%	2.085	2.2	6%
Nervous system	2.15	2.795	30%	1.43	1.95	36%	3.06	2.235	-27%	1.8	1.98	10%
Immune system	1.77	2.105	19%	0.825	1.975	139%	2.02	2.03	0%	2.115	2.245	6%

Cases 3 and 4: DIABETES AND INSOMNIA CASES COMPARED FOR WEIGHT LOSS

In these cases, the data suggests that it is coherence (reduced E) for Pituitary functionality that through metabolism drives weight loss.

Cases 3: DIABETIC GOING OFF INSULIN - This is a case of a 66 year-old woman who is a chronic diabetic, becoming slightly arthritic in the knee, who was asked to lose weight to help reduce weight on her knees and for overall improvement. She had been coming regularly for weekly chair-based yoga to a wellness clinic in 2015. No changes were perceptible in 2 months. Upon measuring with EPI, the lowest C was Pancreas. She was asked to do (gentle and slow) forced exhalation (Kapaalabhati) for 15 minutes. The C for Pancreas thereafter showed significant improvement (see Table 3) and the patient reported feeling very good. She continued the practice of 15 minutes of Kapaalabhaati twice a day religiously, lost 16 lbs in 6 weeks, and after 3 months her doctor took her off Lantis (Insulin). She continued with metformin.

Her Pituitary C – indicates metabolic control – had not shown any remarkable change staying in stable C zone (4.72), but she experienced remarkable weight loss. This puzzle is explained by the drop in entropy (E) for Pituitary indicating increased coherence in the metabolic communication.

Case 4: INSOMNIA - A 19-year old female was asked to perform EPI reading by her physician (who is associated with Life in Yoga Institute) because she was seriously overweight at 278 lbs with 5’ 6” height (BMI = 44.9) and in sub-optimal health condition. Her chief complaint was inability to sleep at night – and even when she falls asleep, she never had sound sleep, and barely slept for 2 hours each night.

EPI showed very low C in all organ systems and the lowest was the nervous system at 0.5. Consistent with the protocol we have developed, the exercise for the weakest system – nervous system – was recommended. After less than 2 minutes of practice – 6 restrictive throat breaths for vagal stimulation – she began to feel better and being new to the practice found it difficult to do more. There was much improvement in C for Epiphysis (Pineal gland and melatonin), and Nervous System (Table 3). She continued doing this practice three times a day with around 20 breaths each time, with the last session every night before going to sleep, and thereafter she has had no problem of insomnia and has experienced higher level of wellness.

The readings also showed substantial increase in Pituitary C, but she had no weight loss. The puzzle is resolved by looking at the 33% increased E (reduced coherence) for Pituitary.

Table 3. Change in C, IA and E for Cases 3 and 4 by organ systems

Case	Active Organ	Communication Energy - C		IA - Normalized (Integral) Area		Change	E - Entropy Coefficient		Change
		Before	After	Before	After	%	Before	After	%
Case 3 – Diabetes	Endocrine	4.88	5.07	3.63	3.45	-5%	4.59	4.69	2%
	Epiphysis	5.07	4.98	1.675	1.745	4%	1.585	1.9	20%
	Pituitary	5.2	4.72	1.705	1.465	-14%	2.225	1.81	-19%
	Pancreas	3.03	4.11	1.445	1.415	-2%	3.3	1.91	-42%
	Coccyx	10	9.08	3.305	3.18	-4%	2.285	2.21	-3%

	Nervous System	4.47	5.23	1.83	1.915	5%	2.06	2.81	36%
	Immune System	5.99	5.17	2.215	1.875	-15%	2.595	1.895	-27%
Case 4:									
Insomnia	Endocrine	1.70	1.43	1.32	1.57	19%	2.6	2.305	-11%
	Epiphysis	2.05	3.26	1.205	1.09	-10%	2.15	2.045	-5%
	Pituitary	0.87	1.89	0.465	0.93	100%	1.765	2.355	33%
	Pancreas	2.05	0.44	1.01	0.335	-67%	2.765	1.805	-35%
	Coccyx	4.28	8.54	2.32	2.28	-2%	2.125	1.33	-37%
	Nervous System	0.5	0.73	0.29	0.4	38%	2.04	1.73	-15%
	Immune System	1.38	1.86	1.345	0.57	-58%	2.15	1.535	-29%

Table 3 comparing C (communication energy), IA (total energy) and E (entropy) for the two cases explains more than the weight loss phenomenon.

- Endocrine versus Nervous System Drivers - Case 3 Diabetic is narrowly endocrine related to metabolic elements indicated by Pituitary and Pancreases activation – the drop in E is much larger than drop in IA, while C is in normal zone ensuring increased coherent energy. However, Case 4’s problem of Insomnia is primarily nervous system driven where C and IA increase and E drops ensuring increased coherence. Milder impact in coherence is observed in Epiphysis and some other aspects of the endocrine system.
- Immune System – Both the cases involve the immune system as indicated in the reduced entropy numbers. Though the drop in IA is much larger for Case 4 than the drop in E, the improvement in C indicates the overall coherent energy has improved. In Case 3, even as both drop, the drop in E is much less than drop in IA, while C remains in stable zone.
- Coccyx essentially indicates communication to the knees and legs. Here the communication energy, C and IA need to be understood with clarity along with E. In Case 3 of Diabetes, C drops from 10 to 9.08 (correct direction of moving towards lesser hyper-activation), IA drops by 4% while coherence increases by 3% (drop of E by 3%). This indicates that as pituitary activity induces weight reduction, the heightened communication of Coccyx reduces while coherence increases. In Case 4 of Insomnia, Coccyx communication is impacted by the improved nervous system since its coherence increases by 37% (drop of E by 37%) while IA falls by 2%, but C increases 4.28 to 8.54 – indicating that more coherent communication is available to the legs to relieve the pressure of overweight.

The cases above illustrate the effectiveness of EPI in parsing the communication impact of yoga intervention in organ systems. They point to coherence as the indicator of changes in the quality of energy, but both quality (indicated by E) and quantity (indicated by IA) constitutes coherent energy, but excessive energy outside stable range is a different matter.

The following three cases presented briefly illustrate application in a wider variety of conditions

Case X: OVERCOMING PLANTAR FASCIITIS- A 42-year old female, who as a practicing veterinarian mostly standing on her feet all day, was diagnosed with plantar fasciitis. She felt slight sensation most of the time, but it was really bad at night preventing her from a good night’s sleep. The C for the Nervous System was the weakest. Accordingly she was asked to do the vagal stimulation practice of yoga that we have observed to stimulate the peripheral nervous system. At the time of her assessment, she had very mild sensations and at

the end of 15 minutes of practice the sensations fully disappeared. The nervous system C moved up from 3.07 to 3.75 while E drops by 7% (Table X). Also the coccyx, pelvis minor zone C reduced from 8.00 to 7.25 with E dropping by 9%, and that area of the spine as noted earlier represents the nervous connection to the legs. Within a week, she found she had fully overcome the sensations.

Table X

Active Organ	Communication Energy(C)		Normalized (Integral) Area(IA)		Change	Entropy Coefficient(E)		Change
	Before	After	Before	After	%	Before	After	%
Coccyx	8	7.25	2.035	1.6	-21%	2.175	1.975	-9%
Nervous System	3.07	3.75	1.295	1.68	30%	1.945	1.805	-7%

Case Y: ADDRESSING IDIOPATHIC PERSISTENT HEADACHE - A 44 year-old male, developing persistent headache that usually increases through the day, with MRI and other tests showing no identifiable diagnosis, on pain-killers, presented after suffering for 6 months. His daily pattern was such that the pain while being slight all the time, would increase after 11 am and become unbearable in the afternoon, when he would need his pain-killing medications. At the time of his initial assessment, it was a weekend when he was off from work and his pain level was at 2 out of 10, 10 being the maximum pain he has experienced on weekday afternoons and 0 being without pain. EPI assessment indicated sub-optimal C in the nervous system and the spine (musculoskeletal energy). He was recommended gentle spinal alignment (through yoga practice), after which his pain level came down to 0 and the nervous and spine communication became normal with fall in entropy (Table Y). After one week, he never had the pain again.

Table Y.

Active Organ	Communication Energy(C)		Normalized (Integral) Area(IA)		Change	Entropy Coefficient(E)		Change
	Before	After	Before	After	%	Before	After	%
Musculoskeletal spine	3.86	4.91	1.975	2.115	7%	2.525	2.3	-9%
Nervous system	3.11	4.46	1.11	1.72	55%	2.18	1.92	-12%

Case Z: ARRESTING VITILIGO - A 50-year old male, suffering from vitiligo for 40 years with Ayurvedic medications used to contain it, also diagnosed with hypothyroidism 9 months ago and taking 25 mcg of Levothyroxine, was presented to us. His reason for yoga therapy consultation was that in the last three months his Vitiligo, especially on the face had begun increasing.

EPI readings indicated his liver had the lowest C. Accordingly we prescribed yoga exercises that have an effect on massaging the abdominal area. His liver C increased from 1.5 to 3.93 Joules with 34% fall in entropy in the pre-post readings presented in Table Z. Months later he reported that the increased activation of the vitiligo had fully subsided after he began this practice and had stayed so ever since.

Table Z.

Active Organ	Communication Energy(C)		Normalized (Integral) Area(IA)		Change	Entropy Coefficient(E)		Change
	Before	After	Before	After	%	Before	After	%
Liver	1.5	3.93	0.965	2.15	123%	3.255	2.14	-34%

The cases above demonstrate the points noted in the beginning of this section: traditional yoga therapy is customized, one-on-one, with differing impact of same exercise on different people, and EPI is an effective technology to track this, but has to be applied with careful understanding of the outcome of measurements.

Discussion

The variety of cases presented above should provide credible basis to understand the body as an energy communicating system that goes beyond conventional medicine view. Further in every case, a sustained healing outcome is observed without ingesting any type of medication. In most of these cases, the subjects chose to try yoga therapy only because there was no reasonable alternative from conventional medicine. All of these observations should make us seek a better answer for the human system model.

Yoga philosophy, associated lifestyle practices, approach of Ayurveda (which has a basis in yoga) and observations from physical and life sciences including the reviews of Rubik and Oschman provide insights.

The Yoga Sutras (YS) of Patanjali [23] view all of creation as cosmically connected planned dynamics, thus making all of existence a distributed computing system connected wirelessly. Thus there is a cosmic plan for each entity – the notion of individual duty or one’s Dharma – which if violated has consequences. This is expressed in the idea of Yama in YS, whose five elements interpreted in an integral fashion suggests one should live true to one’s conscience without any internal conflicts. In the field of Ayurveda, one is said to live in good health when one is true to one’s own Prakriti. When one deviates, called Vikriti in Ayurveda, one is said to gravitate towards ill-health. The goal of Ayurveda to restore health is to move a person back to one’s Prakriti.

This is further expressed in the Niyama concept in YS. Summarized, it can be understood as being in sync with one’s biorhythm with regular habits, mentally contented and seeking to further understand the cosmic existence – essentially the pursuit of yoga to become self-realized. In the context of Yama and Niyama, it is easy to see why in traditional living of Indian society Hatha Yoga Asanas were not the focus, but rather regular, duty-focused living, with rituals that seek to promote meditation and spiritual understanding.

Sushruta Samhita, the surgery text book of Ayurveda, notes 107 Marma points [24] where incision should be avoided, since they are very sensitive and can have severe consequences. Joshi [24] claims a method of healing by careful sensitization of specific Marma points for specific conditions. The field of Reflexology [25-26] has a similar approach. This suggests an internal communication system, called Naadis in Yoga, which appears similar to the concept of bio-meridians of the Chinese Acupuncture system, and the more recent discovery of anatomical channels called Primo-vascular system (PVS) [27-28]. In Yoga and Ayurveda, Naadis are considered the regulatory system of the body.

Reinhard Voll, using electrical conductance as a measure, developed the concept of universal standard of health of 50% conductance for organ systems measured in the acupuncture points of fingers and toes. [2]

Non-contact healing is verified [29], and is in the same category of blessings, prayers and various religious rituals. The power of intent (placebo and nocebo effect [30-33]) is also validated by research. This is expressed as Dhaarana in YS – the power of intent fruitions through a process called Samyama in Yoga when intent is integrated into Dhyaana and then cosmic connectivity is established in Samaadhi. This yogic understanding also explains why placebo effects and healing intents of others works for some and not for others – when intent cannot transcend into cosmic connectivity or put differently, coherence is not adequate. In other words, the suggestion here is again that coherence is what enables this communication. Thus, yoga can be thought of as building coherence within the body and the cosmic system that allows for the intelligence in the body and the cosmos to complete the healing.

Sleep and its impact on the immune system is known [34-37], and sleep has special reference in YS. Integrating the research on sleep with the philosophy of YS, we can suggest that as cosmically connected

beings participating in a single cosmic dynamic flow, in deep sleep or in deep meditation of Samaadhi we get our daily downloads of anti-virus and program updates to keep our program in sync with the cosmic objective and thus keep our immune system in good health allowing for resilience in a changing environment. YS also clarifies that the Samaadhi state leads to intuitive understanding (Prajnya) from the cosmic connection. This idea of intuitive revelation is also evoking creative insight that is well documented as happening in meditation. [39]

The research findings on the fleeting spiritual experiences from psychedelic drugs [38] that transforms attitudes towards life is also validated by YS (4:1).

There is recognition from the research of the last two decades that gene expression changes in response to epigenetic factors, and on a moment by moment basis our body lives as an integration of gene expression and the program of the neural-brain system. [9-20] Yoga and similar practices are known to impact gene expression. [12-15]

Thus our thesis of Unified System of Medicine [USM] is as follows:

The body's regulatory system lies in the bio-meridians, called Naadis in Yoga and possibly the recently discovered PVS, which takes input through four sources and the output comes through Extra Cellular Matrix [ECM] as gene transcription, which working with the neural system maintains health of the being at each moment. The four sources of input are: (a) ECM – the interaction between the cellular spaces which is the sum total of everything consumed or injected into the body, (b) direct contact into the Naadis such as through acupuncture or marma points, (c) power of the mind (intent), such as “placebo-effect” or “nocebo-effect”, and (d) wireless communication as in deep sleep, non-contact healing, etc. Thus the human system is anchored in a communication system within and outside the body that enables it to adapt as necessary to be in good health and perform its cosmic purpose. Any therapeutic mechanism must therefore aid in increasing energy coherence and improve the communication system.

Corollary 1: Considering various sources of input into the Naadis, efforts should be made to neutralize the effects of temporary reactions from the subject and the environment, to permit reasonably accurate EPI readings. [These factors are normally not taken into account in conventional medicine.]

Corollary 2: EPI measurements in terms of Joules of energy for organ systems establish an objective way to connect conventional medicine to philosophy and approaches of traditional systems making it a translational technology.

Corollary 3: The output of the Naadi system that results in gene expression is carried through ECM. Thus any intervention through ECM that stabilizes the system is reflected back as output into ECM as optimality in the system. Therefore, for chronic conditions that are dependent on regular drugs, such as diabetes, working through ECM alone may only manage the disease, instead of curing. Thus the role of EPI as a translational technology to actively assess and help in implementing non-ECM based stimulation into the Naadi system to reverse disease conditions is very important.

Corollary 4: The role of ECM as the conduit for changed gene expression also provides the understanding for withdrawal syndrome from various addictive drugs. Cases of steroids and anti-depression drugs requiring slow withdrawal can be thus understood.

Conclusion

The logical next step in research is to correlate gene expression and neural activity with EPI based on the USM model. This should enable true integration of non-conventional therapies in medicine, while allowing for immediate measurement of effectiveness of drugs – both desired effect and side effects.

Acknowledgments

Sharath Girimaji, Professor of Engineering Physics and Head of Ocean Engineering Department, Texas A&M University, for providing initial guidance on coherence.

Dr. Marsha Billes, family medicine physician, who tracked the physiological outcome of the Diabetic cases noted.

References

1. Muehsam D., Chevalier G., Barsotti T., Gurfein B.T. *An Overview of Biofield Devices*. Global Adv Health Med. 2015(4):42-51. DOI: 10.7453/gahmj.2015.022.suppl
2. Voll, R. *Twenty years of electroacupuncture diagnosis in Germany. A progress report*. Am J Acupunct 3.1 (1975): 7-17. https://www.researchgate.net/publication/279543710_Twenty_Years_of_Electroacupuncture_Diagnosis_in_Germany_A_Progress_Report
3. Korotkov, KG. *The Energy of Health*. ISBN-13: 978-1539187288, 2017.
4. Korotkov, KG. *Human Energy Field: study with GDV bioelectrography*. Backbone, 2002.
5. Korotkov KG, Matravers P, Orlov DV, Williams BO. *Application of Electrophoton Capture (EPC) Analysis Based on Gas Discharge Visualization (GDV) Technique in Medicine: A Systematic Review*. *The Journal of Alternative and Complementary Medicine*. January 2010, 16(1): 13-25. doi:10.1089/acm.2008.0285. PMID: 19954330 DOI: 10.1089/acm.2008.0285
6. Book: Sat Bir Khalsa, Lorenzo Cohen, Timothy McCall, Shirley Telles, *The Principles and Practice of Yoga in Health Care*. Handspring Publishing, 2016.
7. Rubik, Beverly. *The Biofield Hypothesis: It Biophysical basis and Role in Medicine*. *The Journal of Alternative and Complementary Medicine*, Vol 8, No. 6, 2002
8. Book: James Oschman: *Energy Medicine – The Scientific Basis*. Published by Churchill Livingstone in 2000.
9. Jaenisch R, Bird A. *Epigenetic regulation of gene expression: how the genome integrates intrinsic and environmental signals*. *Nature Genetics* 33, 245 - 254 (2003) doi:10.1038/ng1089. <http://www.nature.com/ng/journal/v33/n3s/full/ng1089.html>
10. Zhang Y1, Reinberg D. *Transcription regulation by histone methylation: interplay between different covalent modifications of the core histone tails*. *Genes Dev*. 2001 Sep 15;15(18):2343-60. PMID: 11562345 DOI: 10.1101/gad.927301
11. Website: University of Leicester, Virtual Genetics Education Centre. *Gene expression and regulation*. <http://www2.le.ac.uk/departments/genetics/vgec/schoolscolleges/topics/geneexpression-regulation> Last accessed Feb 26, 2017
12. Bhasin MK, Dusek JA, Chang BH, et al. *Relaxation response induces temporal transcriptome changes in energy metabolism, insulin secretion and inflammatory pathways*. *PLoS One*. 2013 May 1;8(5):e62817. doi: 10.1371/journal.pone.0062817. PMID: 23650531
13. Qu S, Olafsrud SM, Meza-Zepeda LA, Saatcioglu F. *Rapid gene expression changes in peripheral blood lymphocytes upon practice of a comprehensive yoga program*. *PLoS One*. 2013 Apr 17;8(4):e61910. doi: 10.1371/journal.pone.0061910. PMID: 23613970
14. Kaliman P, Alvarez-López MJ, Cosín-Tomás M, et al. *Rapid changes in histone deacetylases and inflammatory gene expression in expert meditators*. *Psychoneuroendocrinology*. 2014 Feb;40:96-107. doi: 10.1016/j.psyneuen.2013.11.004. Epub 2013 Nov 15.
15. Black DS, Cole SW, Irwin MR, et al. *Yogic meditation reverses NF-κB and IRF-related transcriptome dynamics in leukocytes of family dementia caregivers in a randomized controlled*

- trial. *Psychoneuroendocrinology*. 2013 Mar;38(3):348-55. doi: 10.1016/j.psyneuen.2012.06.011. Epub 2012 Jul 15.
16. Li QZ, Li P, Garcia GE, et.al. *Genomic profiling of neutrophil transcripts in Asian Qigong practitioners: a pilot study in gene regulation by mind-body interaction*. *J Altern Complement Med*. 2005 Feb;11(1):29-39.
 17. Rossi EL. *Psychosocial genomics: gene expression, neurogenesis, and human experience in mind-body medicine*. *Adv Mind Body Med*. 2002 Winter;18(2):22-30. Review. PMID: 12629875
 18. Alberini CM, Kandel ER. *The regulation of transcription in memory consolidation*. *Cold Spring Harb Perspect Biol*. 2014 Dec 4;7(1):a021741. doi: 10.1101/cshperspect.a021741. Review. PMID: 25475090 <https://www.ncbi.nlm.nih.gov/pubmed/?term=PMID%3A+25475090>
 19. Puckett RE, Lubin FD. *Epigenetic mechanisms in experience-driven memory formation and behavior*. *Epigenomics*. 2011 Oct;3(5):649-64. doi: 10.2217/epi.11.86. Review. PMID: 22126252 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3235677/>
 20. McClung CA, Nestler EJ. *Neuroplasticity mediated by altered gene expression*. *Neuropsychopharmacology*. 2008 Jan;33(1):3-17. Review. PMID: 17728700
 21. *Website: Society of Neuroscience. Neuroanatomy: Parts of the Nervous System*. Creation Date: 1 April 2012 | Review Date: 1 April 2012 Brain Facts – BrainFacts.org <http://www.brainfacts.org/brain-basics/neuroanatomy/articles/2012/parts-of-the-nervous-system/> Last accessed Feb 26, 2017
 22. *Website: Gene E Robinson, Director of the Carl R. Woese Institute for Genomic Biology, University of Illinois at Urbana-Champaign. Brains work via their genes just as much as their neurons*. Oct 14, 2015 <http://theconversation.com/brains-work-via-their-genes-just-as-much-as-their-neurons-47522> Last accessed Feb 26, 2017
 23. *Website: Narayanan CR. Yoga Sutras* http://lifeinyoga.org/App_Downloads/YogaSutras.PDF Last accessed August 11, 2017
 24. Joshi, SK. *Marma Science and Principles of Marma Therapy*. 2010 Vani Publications, Delhi, India, ISBN 81-89221-64-7
 25. Embong NH, Soh YC, Ming LC, Wong TW. *Revisiting reflexology: Concept, evidence, current practice, and practitioner training*. *J Tradit Complement Med*. 2015 Oct; 5(4): 197–206. Published online 2015 Sep 28. doi: 10.1016/j.jtcme.2015.08.008 PMID: PMC4624523 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4624523/>
 26. *Website: Brent A. Bauer, M.D. What is reflexology? Can it relieve stress?* <http://www.mayoclinic.org/healthy-lifestyle/consumer-health/expert-answers/what-is-reflexology/faq-20058139> Last accessed August 11, 2017
 27. Chikly B, Roberts P, Quaghebeur J. *Primo Vascular System: A Unique Biological System Shifting a Medical Paradigm*. *J Am Osteopath Assoc*. 2016 Jan;116(1):12-21. doi: 10.7556/jaoa.2016.002. Erratum in: *J Am Osteopath Assoc*. 2016 Apr;116(4):201. PMID: 26745560
 28. Kang KA. *Chronological Review on Scientific Findings of Bonghan System and Primo Vascular System*. *AdvExp Med Biol*. 2016;923:301-9. doi: 10.1007/978-3-319-38810-6_40. PMID: 27526157
 29. Roe CA, Sonnex C, Roxburgh EC. *Two meta-analyses of noncontact healing studies*. *Explore (NY)*. 2015 Jan-Feb;11(1):11-23. doi: 10.1016/j.explore.2014.10.001. PMID: 25457442
 30. Lucassen P, Olesen F. *Context as a drug: some consequences of placebo research for primary care*. *Scand J Prim Health Care*. 2016 Dec;34(4):428-433. PMID: 27978780
 31. Gupta U, Verma M. *Placebo in clinical trials*. *Perspect Clin Res*. 2013 Jan;4(1):49-52. doi: 10.4103/2229-3485.106383. PMID: 23533982 PMID: PMC3601706 DOI: 10.4103/2229-3485.106383.

32. Petersen GL, Finnerup NB, Colloca L, et al. *The magnitude of nocebo effects in pain: a meta-analysis*. Pain. 2014;155:1426–1434. doi: 10.1016/j.pain.2014.04.016. Epub 2014 Apr 26. PMID: 24780622
33. Hauser W, Hansen E, Enck P. *Nocebo phenomena in medicine: their relevance in everyday clinical practice*. DtschArztebl Int. 2012;109:459–465. doi: 10.3238/arztebl.2012.0459. Epub 2012 Jun 29. PMID: PMC5217288
34. Irwin MR. *Why sleep is important for health: a psychoneuroimmunology perspective*. Annu Rev Psychol. 2015 Jan 3;66:143-72. doi: 10.1146/annurev-psych-010213-115205. Review. PMID: 25061767 Free PMC Article
35. Archer SN, Oster H. *How sleep and wakefulness influence circadian rhythmicity: effects of insufficient and mistimed sleep on the animal and human transcriptome*. J Sleep Res. 2015 Oct;24(5):476-93. doi: 10.1111/jsr.12307. Review. PMID: 26059855 Free Article
36. Kurien PA, Chong SY, Ptáček LJ, Fu YH. *Sick and tired: how molecular regulators of human sleep schedules and duration impact immune function*. Curr Opin Neurobiol. 2013 Oct;23(5):873-9. doi: 10.1016/j.conb.2013.04.014. Review. PMID: 23702243 Free PMC Article
37. Parish JM. *Genetic and immunologic aspects of sleep and sleep disorders*. Chest. 2013 May;143(5):1489-99. doi: 10.1378/chest.12-1219. Review. Erratum in: Chest. 2013 Aug;144(2):721. PMID: 23648914 Free PMC Article
38. Griffiths RR, Johnson MW, Richards WA, et al. *Psilocybin occasioned mystical-type experiences: immediate and persisting dose-related effects*. Psychopharmacology (Berl). 2011 Dec;218(4):649-65. doi: 10.1007/s00213-011-2358-5. PMID: 21674151
39. Ding X, Tang YY, Cao C, et al. *Short-term meditation modulates brain activity of insight evoked with solution cue*. Soc Cogn Affect Neurosci. 2015 Jan;10(1):43-9. doi: 10.1093/scan/nsu032. Epub 2014 Feb 13

Contact Information

C. Rajan Narayanan, Life in Yoga Institute
1111 University Blvd West, #1306 Silver Spring, MD 20902
narayanan@lifeinyoga.org; 301-526-8308 (mobile)