

COURSE CURRICULUM

Yoga Therapy for Cardiovascular Disorders – 15.5 hr CME

Life in Yoga Institute is accredited by the ACCME to provide Continuing Medical Education

July 21-23, 2017

at The Maritime Institute Conference Center, Linthicum Heights, MD

A. COURSE SUMMARY

1. COURSE DESCRIPTION: This course is targeted at healthcare providers involved in the treatment of cardiovascular disease who have an interest in yoga therapy as primary prevention (prevent onset of the diseases), secondary prevention (prevent progression or reverse the disease) and rehabilitation (better management of the disease, less pharmaceutical support and better quality of life). The course will review the scientific research and discuss the healing pathways of yoga therapy and use of asanas, pranayama, mudras, mantras, diet management and lifestyle. About one-third of the time will be spent on actual yoga practice, while the remaining time will be spent in theoretical discussion and patient cases.

The course includes:

- Overview of Yoga, its philosophy, and application to healthcare, particularly Cardiovascular disorders;
- The Psychophysiology and Pathology of Cardiovascular disorders and ways to address them;
- Extent of Research Evidence and clinical applications;
- Simple Chair-based Practices applicable in a clinical setting;
- Case Discussions:
- Patient Behavioral Management and Implementation Considerations

This information is designed for healthcare providers to:

- Become aware of researched yoga therapy tools for cardiovascular disorders;
- Consider their usage in practice;
- Seek to engage further with patient application with a view to change healthcare.

2. COURSE CONTENT - Lecture & Discussion Cover:

<ul style="list-style-type: none"> ➤ Relevance of Yoga Therapy for Cardiovascular Disorders ➤ Philosophy of Yoga ➤ The Science and Underlying Psychophysiology and Pathophysiology of Cardiovascular Disorders and relevant practices – the mechanism of healing ➤ Importance of Breathing Practices for Cardiovascular Disorders 	<ul style="list-style-type: none"> ➤ Importance of Meditative Practices for Cardiovascular Disorders ➤ Ayurveda and Complementary Practices Applicable for Cardiovascular disorders ➤ Case Studies related to Hypertension and Coronary Artery Disease. ➤ Considerations to bring Yoga Therapy in Clinical Practice for Cardiovascular Disorders
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Practice Covers: (a) Gentle Breathing Exercises; (b) Simple Yoga Postures that provide musculo-skeletal alignment; (c) Vibration techniques- sounds; (d) Meditation techniques.

3. FACULTY - Dilip Sarkar MD, FACS, CAP, Chairman of Board, Life in Yoga Institute

C. Rajan Narayanan PhD, Executive Director, Life in Yoga Institute

4. COURSE ATTENDANCE LOGISTICS

LOCATION:

The Conference Center at the Maritime Institute, 692 Maritime Boulevard, Linthicum Heights, MD 21090-1952 – Lodging is available on the property.

Meals: The conference center in Maryland has a dining room that normally serves many different types of food. We are requesting some significant component to be vegetarian without garlic and onion for those who like to observe the normal practice in yoga institutions in India. Those having special meal needs may send an email to Rnarayanan@gmail.com preferably at the time of registration, but at least one week before the event.

Parking is free and available all around the conference center in Maryland.

Air & Train Travel – Conference Center provides free shuttle pick up and drop-off from and to BWI airport or the BWI Amtrak Station.

LODGING COSTS AND RESERVATIONS – All participants, including local participants, may consider staying at the lodging facility since programs run from 6:00 am to 6:30 pm. Lodging can be requested along with the course registration on the form. For any additional questions, contact Dr. Rajan Narayanan at Rnarayanan@gmail.com or 301-328-3845/301-526-8308.

B. DISCLOSURE

All the faculty/speakers, and the planning committee members have declared:

- That they have no financial relationships with any commercial interests in the past 12 months;
- They will not accept financial remuneration directly from any commercial supporter for this program;
- They will uphold academic standards to insure balance, independence, objectivity and scientific rigor in their roles in this program.

C. COURSE DETAILS

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1. COURSE AGENDA AND SCHEDULE

Friday (2.0 CME hours)

5:30 pm to 6:00 pm – Registration/Check-in

BUFFET DINNER – 6:00 pm to 6:30 pm ; PARTICIPANT INTRODUCTIONS - 6:00 pm to 6:45 pm

6:45 pm to 6:50 pm – Course Introduction & CME Requirements – [NARAYANAN](#) - [A1](#)

6:55 pm or earlier to 8:55 pm – Overview of Yoga Therapy for Cardiovascular Disorders – [SARKAR -A2](#)

Saturday (9.25 CME hours)

6:00 am to 6:15 am – Sign-in

6:15 am to 8:15 am – Practice Session 1: Therapeutic Yoga Practices for Cardiovascular Disorders
[SARKAR](#) - [B1](#)

BREAKFAST - 8:15 am to 9:00 am

9:00 am to 10:30 am — Philosophy of Yoga and Yoga Therapy Models [NARAYANAN](#) - [B2](#)
BREAK – 10:30 to 10:45 am

10:45 am to 12:15 pm – The Psychophysiology of and Pathophysiology of Cardiovascular Disorders: A Review of Yogic Anatomy and Physiology and the Underlying Science and Research – [SARKAR-B3](#)

LUNCH & BREAK – 12:15 pm – 1:30 pm

1:30 pm to 2:30 pm – Overview of Treatment of Cardiovascular Disorders: Clinical Research Evidence for Behavioral and Mind-Body Therapies Including Yoga – [SARKAR](#) - [B4](#)

BREAK – 2:30 to 2:45 pm

2:45 pm to 3:45 pm – Complementary Practices and Ayurvedic Philosophy – [SARKAR](#) - [B5](#)

BREAK – 3:45 to 4:00 pm

4:00 pm to 5:15 pm – Case Studies 1 - Hypertension - [SARKAR](#) - [B6](#)

BREAK – 4:30 to 4:45 pm

5:30 pm to 6:30 pm – Practice Session 2 – Deep Relaxation & Meditative Practices – [NARAYANAN](#) -[B7](#)

Sunday (4.5 CME hours)

6:00 am to 6:15 am – Sign-in

6:15 am to 8:15 am – Practice Session 3: Comprehensive Gentle Practices with Meditation – a Complete Practice Suitable for All – [NARAYANAN](#) - [C1](#)

BREAKFAST - 8:15 am to 9:15 am (additional time to facilitate lodging check-out)

9:15 to 10:30 am - Case Studies 2 – Coronary Artery Disease – [SARKAR](#)

BREAK – 10:30 to 10:45 pm

10:45 to 12:00 noon - Preparing to Bring Yoga Therapy for Cardiovascular Disorders in Your Clinical Practice – [NARAYANAN](#) and [SARKAR](#) (Half hour presentation on Patient Behavior Management by Narayanan following by discussion led by Sarkar on implementation)

12 noon to 12:30 pm – Program Conclusion Formalities for Certification Participant Feedback – [SARKAR & NARAYANAN](#)

CLOSING WITH LUNCH – 12:30 pm – 1:30 pm

2. PRESENTATION SUMMARY INFORMATION & REFERENCES

A. OVERVIEW OF YOGA AND ITS APPLICATION FOR CARDIOVASCULAR DISORDERS

The Content for the following course segments covered by Dr. Sarkar are summarized in the description that follows that is the content of his paper

- Overview of Yoga Therapy for Cardiovascular Disorders – Friday - 6:55 to 8:55 pm
- Practice Session 1: Therapeutic Yoga Practices for Cardiovascular Disorder – Saturday 6:15 to 8:15 am
- The Psychophysiology of and Pathophysiology of Cardiovascular Disorders: A Review of Yogic Anatomy and Physiology and the Underlying Science and Research – Saturday 10:45 am to 12:15 pm
- Complementary Practices and Ayurvedic Philosophy – Saturday 2:45 pm to 3:45 pm

YOGA THERAPY AND AYURVEDA FOR CARDIOVASCULAR DISEASE Dilip Sarkar, MD, FACS, CAP

Based on research publications in indexed international journals from prestigious medical centers around the world, it has shown that yoga therapy helps in the treatment of cardiovascular disease as primary prevention (prevent onset of the diseases), secondary prevention (prevent progression or reverse the disease) and rehabilitation (better management of the disease, less pharmaceutical support and better quality of life). (1). Yoga controls stress, anger, fostering psychological equanimity, increasing feeling of compassion for others, increase the sense of gratitude, stay calm in the middle of crisis. Yoga as exercise increases heart rate to aerobic range to lower the risk of heart attack, pranayama alone shown to increase cardiovascular conditioning. Yoga helps to lose weight by conscious attention of how one eats and is a good antidote to depression. Regular practice of yoga increases vagal tone, modulate autonomic nervous system with rapid shift from sympathetic to parasympathetic activation and control over autonomic nervous function. It also increases baroreceptor sensitivity and heart rate variability, improves cardio-respiratory fitness and quality of life. Heart disease (coronary artery disease) or commonly known as blockage of the heart arteries, is a part of metabolic syndrome, the other components of the syndrome are truncal obesity, diabetes, hypertension and high cholesterol (dyslipidemia). The cause of this metabolic syndrome is stress, which is fear of unknown. Stress activates our emotional brain, the limbic system of the brain and it's nuclei amygdala which responds to fear and hippocampus which stores memories. Limbic system is also activated through brain hyperarousal by insomnia and sleep apnea. Limbic system sends signal to hypothalamus, composed of the supraoptic and paraventricular nuclei, the site of our homeostasis, through neurotransmitters. Hypothalamus subsequently sends signal to autonomic nervous system and pituitary gland. Pituitary gland through it's adrenal cortical axis releases hormones, causing altered hormonal homeostasis, which

with autonomic nervous system dysfunction causes metabolic syndrome. This physiological pathway is defined as *Psycho-Neuro-Endocrinology*. So the root cause of cardiovascular disease is an imbalance or hyperarousal or chattering of “*manomayakosha*” or the mind. Yoga therapy for cardiovascular disease is primarily targeted to control the mind through deep internal awareness. (12) This is achieved through relaxation of the physical body, effortless yogic breathing (slower rate of breathing with exhalation longer than inhalation) and calming down the mind with prolonged *shavasana* (corpse pose), *pranayama*, deep meditation and *mantra* chanting. At the physical level metabolic syndrome is controlled by first reducing the truncal obesity through *mandukasana* (frog pose) and slow *kapalbhati pranayama* (forehead shining breathing). (2).

According to the researchers from the All India Institute of Medical Science (AIIMS), New Delhi, India, one year yoga lifestyle intervention retards progression and increases regression of coronary atherosclerosis in patients with severe coronary artery disease. (3)

Yoga therapy research done by Madanmohan at Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER) at Puducherry, India, shows that *shavasana* and *pranayama* is beneficial in patients having premature ventricular complex and atrial fibrillation. Slow breathing of 6 breaths/minute can reduce heart rate and blood pressure within 5 minutes of starting the practice. (4)

Dean Ornish first reported treating ischemic heart disease (coronary artery disease) with stress management and yogic lifestyle intervention, which he subsequently termed as “emotional open heart surgery”. Through positron emission tomogram to see the improvement in myocardial perfusion and angiographically showing opening of the blocked coronary artery by yogic life style intervention, Dean Ornish subsequently establish his “spectrum” program for medical management of heart disease primarily through yogic life style modifications. (5)

Herbert Benson of Harvard University coins the term relaxation response, the physiological effect of meditation as the yogic treatment of cardiovascular disease. Relaxation of peripheral blood vessels with reduction of peripheral resistance and after load of the heart and increase in preload of the heart with better venous return by yogic breathing (effortless slow breathing, exhalation longer than inhalation), increases ejection fraction of the heart. (6). Swami Ramdev of *Patanjali Yogpeeth* recommends gentle relaxation of the physical body (*sithilikaran* asanas) in stages through *sukshma vyayama* (light exercise), *brahma mudra* (relaxation of neck muscles), chest opening poses (*paschimnamaskar*, prayer pose in the back), balancing poses (standing on one foot with eyes closed, *vrkasana* or tree pose, *natarajasana* or dancer pose), hip opening poses (*baddhakonasana* or closed angle pose), *viparit karani mudra*, *shavasana* (corpse pose) and *yog nidra*. Light exercise starts with relaxation of the

smaller joints, first opening and closing the hands with *adhi mudra*, extension of wrist joints, *skanda chalanasana* (move shoulder in a circular motion front and back, hands on shoulder and move elbow circular way, front and back, hold wrist with other hand, straight behind head, pull down on each side). For the lower extremity start with *pada mushtikasana* (separating and bending the toes with gentle breathing), followed by *pada chalanasana* (foot rotation), then place foot over other straight leg, hug the knee and push it to the floor, finally *badhakonasana* (feet together, knee on side) with *titliasana* (butterfly). After relaxation of the physical body and be able to sit in *sthiram* (stillness), *sukham* (comfortable) *asanam* (seated posture), pranayama practice is done with *dhyana mudras* (hand gesture). A sequence of very slow pranayama without any effort is recommended for cardiovascular health, it starts with correcting erratic breathing, practice diaphragmatic breathing, prolong exhalation to activate parasympathetic nervous system. Next very gentle *bastrika pranayama* (bellows breath), followed by *anulom vilom* (alternate nostril breath) for 5 to 10 minutes to balance both half of the brain and to control hypertension, *bhramari* (humming bee breath) to treat insomnia, *sitali and sitkari* (cooling breath) to control high pitta, gentle *ujjayi* (victorious breath) to control sleep apnea and finally *om* pranayama to enter into deep meditation. A typical prescription of yoga therapy for cardiovascular disease will have a daily one hour practice, 25 minutes of *asanas*, 25 minutes of *pranayama* and 10 minutes of meditation. (7)

B.K.S. Iyengar achieves relaxation of the physical body through staying in the asana poses in stages. First stage *arambha* (beginning, contraction of muscles), staying in this pose for some time starts second stage *sthiti* (stillness, muscle starts to relax loses fasciculation) and finally staying in a pose for a long time starts final stage *visharjan* (relaxation of skeletal muscles). Staying in an asana for a long time, brain gets a signal with repeated practice – develops neuroplasticity and ultimately relaxation of smooth muscles and vasodilatation of the coronary arteries.

Swami Vivekananda Yoga Anusandhana Samsthana (S-VYASA), a premier yoga therapy research center from Bengaluru, India with 250 beds inpatient hospital (*arogyadhama*) recommends a total life style change with a change of one's attitude and appetite for yoga therapy for cardiovascular disease. Starting from adaptation of do's and don'ts (*niyama* and *yama* of *patanjali ashtanga yoga*), learning *karma yoga* from *Bhagavat Gita*, *bhakti yoga* from *Narada Bhakti Sutra* and *jnana yoga* from *Upanishads*. Living a life in perfect harmony and bliss, staying calm in the middle of crisis. For hypertension and heart disease their recommendations are deep relaxation technique (DRT), quick relaxation technique (QRT) and instant relaxation techniques (IRT) through *sithilikaran* (deep relaxation of the body) *asanas* followed by breathing exercises to correct erratic breathing, *anulom vilom*, *bhramari*, *chandrabedhi*, *sitali-sitkari* and mild *ujjayi* pranayama. (8)

Timothy McCall in his book “Yoga as Medicine” recommends a program, yoga therapy for heart disease, designed by Nischala Devi for Dean Ornish’s Lifestyle Heart Trial. Nischala uses deep relaxation poses with a mantra relax, move and heal. It begins with relaxation of the neck and shoulder muscles, knee chest post followed by *shavasana*. Slowly doing *bhujangasana*, *salabhasana*, *paschimottanasana*, *salamba sarvangasana*, *matsyasana*, *ardha matsyendrasana*, *yoga mudra* alternating with *shavasana*. Asana practice followed by pranayama, *dheerga svasam* (three part breathing) and *nadi shuddhi pranayama* (alternate nostril breathing), and finally meditation. (9)

Increasing baroreceptor sensitivity protects heart from sudden rise in blood pressure and heart rate, also helps lowering high blood pressure in resistant hypertension. Luciano Bernardi showed that slow breathing improves arterial baroreceptor sensitivity and decreases blood pressure in essential hypertension. (10). Inversion poses like headstand initially increases intracranial, ocular and carotid artery pressure through stimulation of the baroreceptors of aorta and carotid arteries causing flushing of the face and inability to breath effortlessly. Over time and with regular practice the baroreceptor sensitivity increases with lowering of the intracranial, ocular and carotid pressure with normalization of breathing and reduction of the flushing of the face, body stays in inverted pose comfortably and safely. When baroreceptor sensitivity increases, the complete inversions like handstand and headstand done slowly becomes beneficial for cardiovascular disease.

In our own practice, yoga therapy for cardiovascular disorder, starts with gentle relaxation of the physical body (*sithilikaran asana*) by sitting on a chair or crossed legged position on the ground (*sukhasana*, *siddhasana* or *padmasana*) keeping spine erect, adopting *dhyana* (meditation) *mudra* of hand, closing eyes (controlling senses, *pratyahara*), with effortless yogic breathing (exhalation longer than inhalation), finally chanting the sound *om/aum* as a vibration during long exhalation. We then practice a set of pranayama, described by Swami Ramdev followed by empty bowl meditation (*kevala kumbhak*). Erect spine relaxes large back muscles, *dhyana mudra* and *pratyahara* controls mind. Exhalation activates parasympathetic nervous system and inhalation activates sympathetic nervous system. With exhalation longer than inhalation, there is profound stimulation of parasympathetic activity with relaxation of peripheral vessels with lowering of peripheral resistance and lowering of blood pressure, heart and respiratory rate causing “calm & digest” response for the body. Sound of *om/aum* produces vibration, which is close to the vibration of the brain, two frequencies interact causes “harmonic resonance” and calms down the brain. With this deep relaxation smooth muscles around the coronary arteries relaxes causing vasodilatation of the coronary arteries. When the coronary artery is in spasm, the endothelium becomes unhealthy, starts attracting cholesterol and calcium from blood

causing plaque formation. Relaxation of the coronary arteries keeps endothelium healthy and prevents any deposit of plaque materials on it.

From an Ayurvedic perspective, cardiovascular disease is basically a lifestyle disorder. Both Vasant Lad of The Ayurvedic Institute, Albuquerque, New Mexico and Maharishi Ayurveda of Fairfield, Iowa, recommends life style modification based on Ayurvedic daily routine (*dinacharya*) for cardiovascular disease. Ayurveda considers cardiovascular disease of the *manomayakosha* (mind sheath) due to increase in *pitta dosha* (psycho-physical body type). *Ama* (toxins from undigested food and emotions) builds up in the wall of blood vessels as plaque, due to improper digestion of food and emotions. This *ama* on the arterial wall, blocks *nadis* or channels (*marg bandha*), hence *prana* (life force) cannot flow properly causing heart dis-ease. According to Ayurveda free flow of *prana* through *nadis* causes *pranic* healing and restores health. The inability to metabolize emotions produces just as much toxic residue (*ama*) as undigested food. When the food or emotions are completely digested, the end product is called *ojas* or “vigor” pure and subtle substance which fights against aging, decay and disease. Improper digestion producing low *ojas* in the heart causes progression of the coronary artery disease. The digestive power is restored by igniting the *jathar agni* or the digestive fire by the practice of very slow *kapalbhati* pranayama. Ayurveda also considers improper use of five senses and *pragya aparadh* (failure of wisdom), root cause of cardiovascular disease. These are corrected by the practice of self realization, spiritual liberation, surrender and letting go. Practicing *dinacharya* as treatment of cardiovascular disease one wakes up between 4 to 6 am (*brahma muhurta*, time of brahma), drink a glass of water at room temperature sitting in a squatting position (*malasana*), followed by proper elimination in the morning. Morning practice of *laghu sankha prakshalan* (five asana for proper elimination) helps in elimination. Morning rituals consists of brushing teeth, tongue scrapping, wash eyes and face, and do *jal neti* (wash nose with water) with *neti* pot. *Jal neti* clear up the head and neck region, keeps the nasal passage clean for pranayama. Prolong practice of *jal neti* reduces irritation of the nasal mucosa with ultimate reduction of overall irritation. At this state one stays calm and *jal neti* becomes therapeutic for hypertension whose underlying cause is arousal response due to irritation. Next take shower, practice an hour of yoga (*asana*, *pranayama* and meditation) and take late breakfast towards *pitta* time. Lunch should be the main meal of the day in *pitta* time (10:00 am to 2:00 pm), fruit should not be eaten with other food, just alone as snack in afternoon. Dinner should be half the size of lunch, at least three hours before going to bed, sleep by 10:00 pm, drink a glass of water or milk before going to bed, Studies have shown proper management of coronary artery disease with the practice of *dinacharya*. (11). Yoga therapy and Ayurveda can play a significant role in prevention as well as management and rehabilitation of cardiovascular disease, especially essential hypertension and coronary artery disease. *Yoga Chikitsa*

(therapy) is *Dharma*, which is doing the right thing for the right person at the right place and at the right time, in the right manner.

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Additional Cardiovascular Yoga Therapy Overview References

- ***Yoga and Cardiovascular Management*** by Swami Satyananda Saraswati (Paperback - Dec 1, 2001)
- Jayasinghe, SR; **Yoga in Cardiac Health (A Review)**; *European Journal of Cardiovascular Prevention and Rehabilitation* 2004, 11:369-375
- Cohen, D; Townsend, RR; **Yoga and Hypertension**; *The Journal of Clinical Hypertension*, Vol.9, No.10, October 2007

Additional General References:

- “Yoga Therapy and Integrative Medicine: Where Ancient Science Meets Modern Medicine” – March 16, 2015 by Larry Payne Ph.D. (Author), Terra Gold M.A.LAc. (Author), Eden Goldman D.C.
- “Principles and Practice of Yoga in Healthcare” by Sat Bir Khalsa, Lorenzo Cohen, Timothy McCall and Shirley Telles, Handspring Publication 2016
- ‘Yoga as Medicine’ by Timothy McCall, M.D.
- “Meditation as Medicine” by Dharma Singh Khalsa, M.D.
- “Yog in Synergy with Medical Science” by Acharya Balakrishnan

B. ROOTS OF YOGA, ITS PHILOSOPHY AND APPLICATION TO HEALTHCARE

Saturday 9:00 am to 10:30 am — Philosophy of Yoga and Yoga Therapy Models [NARAYANAN](#)

Philosophy of Yoga and Yoga Therapy Models

[RAJAN NARAYANAN](#)

Unlike the microbiology and bio-chemistry approach to understand the health of the human body in the conventional medical system, the Yoga approach is to understand the nature of creation, the role of the human being and the body, and the cause of ill-health for the human body in the Cosmic sense. This develops a deeper insight of the human body and allows for treating at a level deeper than the biochemical or microbiology level to address abnormalities. Thus in the yoga approach, in a theoretical sense, it is not about statistical correlations and probabilistic assessments, but rather deterministic at the highest level of creation. However in practical application even the yoga approach has to be applied probabilistically for therapy, since the tools necessary for determinism are not fully available. However, the yoga model of determinism provides deep insight for medical practitioners coming from conventional medicine to get a glimpse of answers to many unanswered questions they may have from years of patient observation. Further, it becomes the framework for developing insight into how yoga therapy works and consider new frontiers for research. The use of Electro-Photonic Imaging developed by the Russian health system may be helpful to make yoga therapy measurable and instantly predictive.

Accordingly, this segment will discuss:

- Yoga philosophy of Creation and Role of Human Being based on the Yoga Sutras of Patanjali
- The Goal of Yoga & the Role of the Individual Body – Direct Experience and Understanding of the Cosmic System and Developing Infinite Knowledge and understanding ones role in creation
- Yoga’s understanding of ill-health and disease condition - concluding that each person needs to be in tune with themselves (following their Dharma) for peace and good health. Failure of this results in stress in the body-mind-spirit system that manifests as different diseases and such stress is explained in the yoga therapy approach as the factor to address in cardiovascular disorders.
- Related texts of yoga that speak on Circuitry of the Human System - The Naadi (energy channel) and Chakra System (energy distribution nodes); Concepts of Balancing and Cleansing/Energizing, and how it works at each level.
- The Five levels of Circuitry or Aura including Yoga Therapy models: Ayurveda-Yoga model, Relaxation Response Model and the Life in Yoga Model

- Discovery of the primovascular system by Korean researchers, Bio-electrical conductivity at meridian points and Electro-Photonic Imaging and its application in measuring Yoga Therapy

In this presentation, Hatha Yoga is clarified as a set of practices more focused on the physical body, as opposed to Yoga which is a system. Thus the development of Mantra Yoga, or Bhakti Yoga (Yoga of Devotion), etc. are explained within the system but are not the core focus of Hatha Yoga exercises.

References:

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2. *Yogayajnavalkya Samhita – The Yoga Treatise of Yajnavalkya* by TKV Desikachar, published by Krishnamacharya Yoga Mandiram
3. *Vasistha Samhita* by Editors & Commentators of the Philosophico-Literary Research Department, Kaivalyadhama SMYM Samiti
4. *Hatha Pradipika of Svatmarama* edited by Swami Digambaraji and Pandit Raghunatha Shastri Kokaje, Kaivalyadhama SMYM Samiti
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13. **EAV Discussions** http://www.veradyne.com/avatar_eavdiscussions.html
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23. **Yoga’s Approach to Universal Balance** – paper presented by C. R. Narayanan at the ICCS Conference called “Nourishing the Balance of the Universe” in March 2012,
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C. CLINICAL RESEARCH EVIDENCE AND SPECIFIC PRACTICES APPLICABLE TO CLINICAL PRACTICE

The content for the following presentations is covered by the description below and the references indicated.

- Overview of Treatment of Cardiovascular Disorders: Clinical Research Evidence for Behavioral and Mind-Body Therapies Including Yoga – Saturday 1:30 pm to 2:30 pm
- Practice Session 2 – Deep Relaxation & Meditative Practices – Saturday 5:30 pm to 6:30 pm
- Practice Session 3: Comprehensive Gentle Practices with Meditation – a Complete Practice Suitable for All – Sunday 6:15 am to 8:15 am

The volume of research available points to light physical exercises, slow breathing exercises and meditative exercises as being most efficacious for improvement in cardiovascular disorders. While the research evidence is available on a wide variety of cardiovascular diseases, hypertension and coronary artery disease research are the areas with maximum research with validated evidence from controlled studies with sample sizes that are significant.

Practice sessions are designed to cover the types of practices that will be most effective for cardiovascular conditions.

The most relevant practices that show greatest applicability for clinical practice are:

- Slow breathing of 6 breaths per minute
- Alternate Nostril Breathing done slowly with exhalation longer than inhalation
- Light alignment exercises

Other effective techniques are Bhramari (humming), Savitri and Pranava Pranayam

The references are divided into studies of breathing exercises with or without light physical exercises and meditation practices divided into mantra-based transcendental meditation and mindfulness meditation.

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D. ORIENTATION TOWARDS CLINICAL PRACTICE

The content here addresses:

- Case Studies 1 - Hypertension – Saturday 4:00 pm to 5:15 pm
- Case Studies 2 – Coronary Artery Disease – Sunday 9:15 to 10:30 am
- Preparing to Bring Yoga Therapy for Cardiovascular Disorders in Your Clinical Practice – Sunday 10:45 to 12:00 noon

The intent of these segments are the following:

- Case studies in hypertension and coronary artery disease that promote deeper understanding of application dynamics
- Discussion of Patient Behavior Management is critical to success of yoga therapy since it involved ensuring that the patient actually does the exercises long term. Incentive methods developed from the many years of clinical practice of Life in Yoga principals are shared to ensure success with patients.
- Implementation of yoga therapy in practice requires careful consideration. These include environmental considerations and key characteristics of yoga that are different from a physiotherapy referral,

Since yoga therapy is relatively new in clinical practice and clinical practice is different from research evidence of efficacy, there are no specific references. Both the faculty being active yoga therapy practitioners for many years, they will provide the content from experience. The key points related to implementation and success with yoga therapy will be the following:

- Physician Commitment – In the absence of health insurance coverage for yoga therapy, the economic incentive for physicians is lacking. Strategies to work around it that delivers patient benefit is discussed.
- Patient Commitment - Unlike popping a pill, yoga therapy requires daily practice until neuroplasticity is built. A strong patient incentive in the form of financial reward has been found to be very effective to ensure commitment.
- Lifestyle Integration – Even a committed person finds it useful to discuss lifestyle routine to build practice slots within the daily routine that the person will remember to observe.
- Follow-up can be used effectively to motivate and ensure correct practice that will ensure results.

3. FACULTY PROFILE

Dilip Sarkar, M.D., FACS, CAP – Chairman of Board, Life in Yoga Institute

C. Rajan Narayanan, Ph.D., Executive Director, Life in Yoga Foundation and Institute

Detailed Faculty Profiles

Dilip Sarkar, M.D., FACS, CAP – Chairman of Board, Life in Yoga Institute

Dr. Dilip Sarkar is an expert in Yoga Therapy who combines his 45-year experience in Conventional Medicine with his knowledge of Integrative Medicine, Ayurveda and Yoga Therapy. Dr. Sarkar completed his Surgery internship and residency at St. Joseph Mercy Hospital in Michigan. Thereafter he underwent a fellowship in Cardiovascular Surgery at the Arizona Heart Institute in Phoenix.

He was formerly an Assoc. Prof. of Surgery at Eastern Virginia Medical School in Norfolk, Virginia, and Chairman of the Department of Surgery and Chief of Staff at Portsmouth General Hospital. He is a Fellow of the American College of

Surgeons, American Association of Integrative Medicine (AAIM) and other esteemed societies. In 2010, in Life in Yoga Institute in collaboration with Howard University College of Medicine, he was a key member of the initiating team that started the first category one ACCME approved CME course in USA on Yoga Therapy for Medical Professionals. Dr. Sarkar has served the Commonwealth of Virginia as an advisor to the Governor's office. He serves on the American Heart Association Board, Hampton Roads, Virginia Chapter, as member, past chairman and president. He actively promotes the performing arts and cultural enrichment activities throughout Virginia.

Dr. Sarkar developed a profound interest in Ayurvedic medicine. His Ayurvedic training includes the Emerson Theological Institute Dhanvantari Ayurvedic Center. He is retired from medical practice to devote time to the study of ancient approaches to healing and wellness, both in the Tidewater area of Virginia and in India. Now a Certified Ayurvedic Practitioner, Dr. Sarkar continues to teach classes in Yoga Therapy, Ayurvedic wellness, and Integrative Medicine. He is a registered yoga teacher, and actively teaches Yoga Therapy at several venues locally in Virginia, nationally and internationally.

Through news, radio, and television, Dr. Sarkar has educated countless individuals on subjects related to heart disease, medical research, and Yoga Therapy. Over the years, his talks have spanned from research in vascular surgery to stress management to yoga therapy to Patanjali's Yoga Sutras.

He serves on several healthcare boards and is a Life Member of NAMA (National Ayurvedic Medical Association), a President of IAYT (International Association of Yoga Therapists), and Fellow of AAIM (American Association of Integrative Medicine). He is a Certified Ayurvedic Practitioner, and teaches classes in Yoga Therapy, Ayurvedic wellness, and Integrative Medicine.

Currently, he is the Chairman, School of Integrative Medicine, Taksha University, Hampton, Virginia, and the Chair of the Board of the Life in Yoga Institute.

C. Rajan Narayanan, Ph.D., Executive Director, Trustee of Life in Yoga Foundation and Director of Life in Yoga Institute

Dr. Narayanan is a founder and inspiration behind Life in Yoga Foundation and Institutes, non-profits formed in Maryland and active in the Washington metro area suburbs. He also serves as the Secretary and a Board member of the Council for Yoga Accreditation International, an international body with membership consisting of the leading yoga institutions of the world, that serves to establish accreditation standards for yoga teaching institutions. He has developed the 5 by 3 by 1 approach of the Life in Yoga Foundation based on the principles of Asthaaga Yoga and the teachings of the Yoga Sutras of Patanjali. Based on these principles he has developed Gentle Yoga as a powerful practice accessible to all and Dance Yoga that would appeal more to younger and more energetic people. He has actively researched different aspects of yoga and has developed many more techniques over the last many years. He has also done a complete translation and commentary on the Yoga Sutras of Patanjali and the Bhagavad Gita. Over the last few years he has been working on techniques of instant measurability of yoga practices. He began with measurements with Electro-Acupuncture tools (used to measure meridian flows of Chinese Medicine) in 2010. Over 2011-12 he completed a research project to measure vitality through electrical conductance in collaboration with SVYASA University in India. In 2012, he also worked with the Pulmonology practice of Dr. U. Nanavaty to begin case studies on COPD that are continuing into 2013. He completed a pilot study on Obstructive Sleep Apnea in collaboration with Dr. Harminder Kaur of Clarksburg Medical Center in 2013-14. End of 2014, he developed measurability with Electro-Photonic Imaging, which has now become part of Life in Yoga's practice method called Measured Yoga Therapy.

He began teaching Raaja Yoga in Washington area temples in January 1998, after Swami Bua of New York City completed a two week course in Hatha Yoga and Praanayaama. He has been a practitioner of Raaja Yoga

since 1981 when he learned TM from Maharishi Mahesh Yogi's Institute. Thereafter between 1993 and 1995 he completed coursework on Hatha Yoga, Praanaayaama, and other Raaja Yoga practices at the Satchidananda Ashram in Yogaville, Virginia. While including a regimen of Hatha Yoga practices since then in his Raja Yoga routine, he has also been a student of Vedas and other Hindu scriptures. After a two week rigorous course in Sri Siva Vishnu Temple that was led by Swami Bua in 1998, starting initially as a weekly continuation of the Yoga practices, he started teaching new participants as well. Periodically various Yoga teachers and exponents from India and other parts of the US have visited these sessions.

In 1998 he became a Reiki Master and subsequently learned Kriya Yoga techniques of the Lahiri Mahashay lineage. In his exposition, he views all these techniques as part of the Asthanga Yoga Sutras of Patanjali or the Six Steps propounded by Gorakhnath, which he has refined in modern day terms in the Five Fold Functional Exercises (Physical, Breath, Vibration, Thought and Observation) taught by the Life in Yoga Foundation. Therefore the focus is on spiritual upliftment, although the physical and mental benefits are desirable by-products. Understanding of exercise physiology and the single-point focus stressed by Patanjali evolved into the 5 by 3 by 1 approach, where the 5 refers to the functional exercises, the 3 refers to formats and the 1 to the one-pointed focus.

From 2002 he has practiced and taught the Rainbow Bridge technique for cleansing of Karmas and Vaasanas. Mudras and their effect have been recently introduced. The Atma Vyakta Mudra and the Atma Poorna Mudra are part of the innovative discoveries. He has also developed a technique that removes Sanchita Karma that he has called Tryambakam Kriya. A less strong version called Tryambakam Karma Cleansing and a variation called 5-2-3 Karma Cleansing that is taught by the Life in Yoga Foundation is also his development. Besides these techniques, he has also developed the concept of CRE or Cyclical Rhythmic Exercising with the five types of energies, and has integrated them into an innovative development called Dance Yoga. Finding inspiration from the first chapter of the Chandogya Upanishad, he has also developed a more powerful technique of meditation called the Chandogya Upanishad Meditation.

He has also viewed religious practices from various religions to understand their yoga effect. To develop a deeper understanding of these practices he has also studied all the major religions of the world.

Outside the field of Yoga, Dr. Narayanan has worked as a marketing consultant and has served as an adjunct faculty in the business school of Georgetown University and other local Universities. Prior to that, in New York he has worked for American Express and BBDO Worldwide in roles of marketing analysis and strategic marketing. He was a full time faculty at the State University of New York at Cortland from 1985-87. He has Ph.D. in Economics from the State University of New York at Stony Brook.