

COURSE CURRICULLUM

YMS 101 – Intro to Yoga Therapy for Medical Professionals – 15 hr CME

October 9-10, 2010 at Howard University, Washington DC

A. COURSE SUMMARY

1. COURSE DESCRIPTION: Another name for this course could be ‘Yoga as Medicine’. The course is intended for physicians. The intent is to describe the basis of yoga and the research done for therapeutic purposes and for health maintenance. Such knowledge brings a different way of thinking of life and healing process, and potentially prepares a physician for considering entirely different forms of treatment that may be less invasive and less subject to side-effects than conventional medicine, especially in cases when conventional medicine does not have good answers. This approach of healing can be used as a complementary practice for treating diseases.

Yoga for therapeutic purposes has been considered more recently in the Western World, although it has been more common in India for many centuries. Awareness of this has created an environment where the NIH through NCCAM has been funding a number of studies related to yoga regimens.

The approach of Yoga is well-being from physical, emotional, mental, social, and spiritual balance. This is also the intent of medicine as per the definition of the World Health Organization, although in typical practice medicine focuses on Disease Management and Disease Therapy. While the entire focus of yoga is to create such a balance to prevent diseases, yoga can be used to cure or manage diseases as well. These include a wide range of diseases or conditions such as Back Pain, Cancer, Metabolic Disorders, Respiratory Disorders, etc. as indicated by the research done through NIH funds, and also leading Research Institutions in various parts of the world.

2. COURSE CONTENT - Lecture & Discussion Cover:

<ul style="list-style-type: none">➤ Relevance of Yoga Therapy in Medicine➤ History of Yoga➤ Understanding Yoga, Hatha Yoga and Yoga Therapy➤ How Yoga Heals➤ Yoga Therapy Research Overview➤ Importance of Breathing Practices	<ul style="list-style-type: none">➤ Ayurveda and Practices Allied with Yoga<ul style="list-style-type: none">- Role of Spine & Massage Therapy, Reiki Healing➤ Yoga Therapy for Specific Disease Conditions<ul style="list-style-type: none">- Metabolic Syndrome, Cardiovascular Disorders, Respiratory Disorders, Musculoskeletal System Disorders, Neurological Disorders, Psychiatric Disorders
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Practice Covers: (a) Breathing Exercises – Bhastrikaa, Kapaalabhaati, Baahya Kumbhaka, Anuloma-Viloma Praanaayaama; Yoga for digestion, elimination and good sleep; Deep Relaxation with Yoga Nidra

3. FACULTY - Sat Bir Singh Khalsa, Asst Prof of Medicine at Harvard Medical School

Arvind K. N. Nandedkar, Prof of Biochem & Molecular Bio, Howard Univ Coll of Med –COURSE DIRECTOR

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

Dilip Sarkar, Director of Division of Yoga & Medical Sciences, Life in Yoga Institute

4. COURSE ATTENDANCE LOGISTICS

EMERGENCY CALLS DURING THE COURSE: 240-463-4327(Dr. Nandedkar);

LOCATION: Howard University College of Medicine, 520 W Street, Washington.

MEALS: All food is arranged with Sodexo Food Services that caters to Howard University. The food provided is expected to be low fat, vegetarian diet without garlic or onion, with the inclusion of milk products. Lunch will be boxed lunch at 12:30 pm on both days. In the morning hours on both days there should be fruit and bakery items like muffins available. Beverages and water should be available throughout the day.

DRIVING DIRECTIONS

PARKING - Hospital Visitors' Parking Lot at a nominal fee. Participants are encouraged to use public transportation, including the metro system.

PUBLIC TRANSPORTATION – Metro Bus and Train including directions from Union Station and Reagan National Airport

LODGING FOR OUT-OF-TOWN TRAVELERS – A list of accommodations in the vicinity is available upon request by calling (202) 806-5620 or 5621 or 5622

B. DISCLOSURE

All the four faculty indicated in this curriculum 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

(Approximate schedule – may be modified)

Saturday, Oct 9

8:00 am to 8:30 am – Registration/Check-in

8:30 am to 8:45 am – Course Introduction - [NANDEDKAR, COURSE DIRECTOR](#)

8:45 am to 9:30 am – Introduction to Yoga Therapy – [SARKAR](#)

9:30 am to 10:15 am – Philosophy of Yoga - [NARAYANAN](#)

BREAK - 10:15 am to 10:30 am

10:30 am to 11:30 am – Anatomy, Physiology & Use of Yoga as Medicine - [SARKAR](#)

11:30 am to 12 noon – Bio-Physiology of Respiration. - [NANDEDKAR](#)

12 noon to 12:30 pm – Practice Session: Bhastrika & Kapaalabhaati - [SARKAR](#)

LUNCH – 12:30 pm – 1:00 pm – [BOX LUNCH](#)

1:00 pm to 3:00 pm - Research Report on Yoga Therapy - [KHALSA](#)

BREAK - 3:00 pm to 3:15 pm

3:15 pm to 5:00 pm – Ayurveda & Complementary Practices of Yoga Therapy - [SARKAR & NARAYANAN](#)

5 pm to 5:30 pm –Practice: Bandhas, Baahya Kumbhaka, Anuloma Viloma Pranayama, - [SARKAR](#)

INFORMAL DISCUSSION - 5:30 pm to 6:00 pm

Sunday, Oct 10

8 am to 8:30 am – Sign-in

8:30 am to 9:15 am- Yogic Lifestyle Daily Routine (Dinacharya) - [SARKAR](#)

9:15 am to 4:30 pm – Yoga Therapy for Specific Disease Areas - [KHALSA & SARKAR](#)

9:15 am to 10:05 am- SPECIFIC DISEASE AREA 1: Metabolic Syndrome/Endocrinology Disorders

BREAK – 10:05 am to 10:20

10:20 am to 11:10 am- SPECIFIC DISEASE AREA 2: Cardiovascular System Disorders

11:10 am to 12 noon- SPECIFIC DISEASE AREA 3: Respiratory System Disorders

PRACTICE & LUNCH BREAK - 12 noon to 1:00 pm – ([BOX LUNCH](#))

1 pm to 1:50 pm- SPECIFIC DISEASE AREA 4: Musculoskeletal System (Back pain & Arthritis)

1:50 pm to 2:40 pm – SPECIFIC DISEASE AREA 5: Neurological Disorders

BREAK – 2:40 pm to 2:50 pm

2:50 pm to 3:40 pm- SPECIFIC DISEASE AREA 6: Psychiatric Disorders

3:40 pm to 4:30 pm- SPECIFIC DISEASE AREA 7: Other Disorders

12 Noon to 12:30 pm – Practice for Health: good digestion, elimination and night’s sleep - [SARKAR](#)

4:30 pm to 5:00 pm to – Conclusion: Moving forward with Integrative Medicine –[SARKAR](#)

5:00 to 5:30 pm Practice session - Yoga Nidra practice for deep relaxation - [NARAYANAN](#)

5:30 to 5:40 pm – Program Conclusion - [NANDEDKAR](#)

INFORMAL DISCUSSION - 5:40 pm to 6:00 pm

2. PRESENTATION SUMMARIES

Saturday, 8:30 am to 8:45 am

Course Introduction

ARVIND NANDEDKAR, COURSE DIRECTOR

Yoga for therapeutic purposes has been considered more recently in the Western World, although it has been more common in India for many centuries. Awareness of this has created an environment where the NIH through NCCAM has been funding a number of studies related to yoga regimens.

The approach of Yoga is well-being from physical, emotional, mental, social, and spiritual balance. This is also the intent of medicine as per the definition of the World Health Organization, although in typical practice medicine focuses on Disease Management and Disease Therapy. While the entire focus of yoga is to create such a balance to prevent diseases, yoga can be used to cure or manage diseases as well. Another name for this course could be 'Yoga as Medicine'.

The curriculum of this course will address the basis of yoga and the research done for therapeutic purposes and health maintenance. Such perspectives bring a different way of thinking of life and healing process, and potentially prepares a physician for considering entirely different forms of treatment that may be less invasive and less subject to side-effects than conventional medicine, especially in cases when conventional medicine does not have good answers. This approach of healing can be used as a complementary practice for treating diseases.

The course will cover the following:

- Yoga Therapy Overview
- Philosophy of Yoga
- Connection of The Human System with Yoga Practices That Promotes Healing and Health
- Extent of Research on Yoga Therapy
- Practices that are Similar or Allied with Yoga Therapy
- General Practices for Health Management
- Specific Disease Management with Yoga Therapy.

Saturday 8:45 am to 9:30 am –

Introduction to Yoga Therapy

DILIP SARKAR

Yoga has evolved as one of the most reliable, authentic and efficient health care systems available in society today. Most people believe that daily practice of yoga and maintenance of a yogic lifestyle produces better health benefits than regular exercise. These yogic health benefits are useful as therapy

for chronic lifestyle-related diseases like diabetes, hypertension, heart disease, arthritis, chronic lower back pain, asthma, stress, and depression.

This segment of the course will cover the following:

1. Discussion on the State of Yoga Therapy Today – which will cover the following:

- Role of Government through the National Institutes of Health
- Involvement of tertiary medical centers like the renowned Cleveland Clinic
- Extent of publications and PubMed (US National Library of Medicine) citations
- User and Research Group Organizations
- Perception among the general population.

2. Discussion on the Philosophy of Yoga Therapy – which will cover the following:

- The roots of Yoga
- Yoga's perspective on physiology, psychology and psychiatry
- The notion of health and health management from the yoga perspective
- The eight limbs of yoga

Yoga Therapy is lifestyle management -- the process of empowering individuals to progress towards improved health and well-being through the application of the philosophy and practice of yoga. It is important for physicians to understand this approach which is quite different from the Disease Management approach with bio-chemicals.

The conclusion of this presentation will be that Yoga Therapy can be used in conventional medicine to treat chronic diseases. Because most chronic endogenous diseases present themselves with acute onset, standard evidence-based conventional therapy should be started at that point, along with personal lifestyle modifications through Yoga Therapy. Over time, Yoga Therapy will improve one's underlying condition and chronic dependence on drugs can be slowly withdrawn, resulting in reduced side effects and improved, drug-free and healthy living.

Saturday 9:30 am to 10:15 am

Philosophy of Yoga - Outline

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, the yoga approach 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.

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.
- 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 – The SVYASA model and the Life in Yoga Model

In effect the yoga model views the human body as an electrical circuitry where balance in the electrical energy flow ensures smooth functioning. The energy flow is measurable through EAV instruments that measure electrical impedance at each meridian point used in Chinese Acupuncture System which are also referred in certain Indian texts like the Vasistha Samhita. This measurable area of energy flow is one level deeper than the microbiology and biochemical understanding of the human body. However, even within this circuitry, there are five levels that are suggested by the models of SVYASA (Vivekananda Yoga University in Bangalore, India) and Life in Yoga. [Both models are derived from the understanding of traditional texts: the SVYASA model based on Bhriguvalli, the third book of Taittiriya-Upanishad; and the Life in Yoga model based primarily on the Yoga Sutras of Patanjali and secondarily on Bhriguvalli.] And the higher levels within the circuitry go into the realm of using the power of affirmation (will power) to heal an abnormal condition in the body.

Saturday 10:30 am to 11:30 am

Anatomy, Physiology & Use of Yoga as Medicine

DILIP SARKAR

Yoga Therapy is not evidence-based medicine, but rather, practice-based evidence. A standard template or one-size-fits-all strategy does not work for yoga; it is individualized to each person and requires personalized lifestyle changes. Studies have shown lifestyle changes through yoga can be better than drugs in helping people deal with various ailments. Yoga Therapy is a strong medicine, but it is also a very slow-working medicine. It is very addictive, transformative, and synergistic with other therapies and cleanses the mind and body. The therapeutic effects are achieved through a relaxation response

that activates the body's parasympathetic nervous system that calms the mind and body and also aids in digestion. The relaxation response causing a slower heart rate, decreased blood pressure, slow and steady respiration, improved vital capacity, and longer breath-holding power.

This section will discuss the following:

- Physiological effects of yoga poses or *asanas* – the discussion is at a general level and specific level, and also with respect to short term and long term physiological effects.
- Physiological effects of breathing exercises of yoga called *pranayam*.
- Psycho-neuro-endocrinology effect of yoga practices
- Benefits of yoga at the cellular level
- Genetic predisposition for chronic diseases (like diabetes, hypertension & heart disease) and the effect of yoga therapy

This section deepens the connection of Yoga Therapy to the human physiology making it credible for physicians. Further it provides the framework for integrative use of conventional medicine with yoga therapy to treat chronic diseases. Conventional medicine provides immediate response to control abnormal conditions while yoga therapy provides for lifestyle modifications, that in the long term reduces dependence on drugs (that may have side-effects) while promoting healthy living.

Saturday 11:30 am to 12 noon

Bio-Physiology of Respiration

ARVIND NANDEDKAR

An important element in yoga practice is achieving an overall chemical balance via control over the respiratory functions. Employing a PowerPoint presentation the basic knowledge is reinforced regarding ACID-BASE status and biochemical-physiology of respiration. Specifically this presentation introduces participants to certain Principles of Physiological Chemistry, guide them through the pathway of practical applications to Biochemistry and Physiological Chemistry for a consideration as a plausible tool that can be used for monitoring respiration (and its compensatory mechanisms).

It is well known that in living cells most of the chemical reactions occur in an aqueous environment. These ordered and regulated chemical reactions follow certain fundamental physicochemical principles and laws which help in maintaining the harmony with the surrounding environment. The following will be addressed in this presentation segment:

1. Relationship between ionization and unionized status of a molecule.
2. Concept of $[H^+]$ concentration to calculate pH and relationship with exchange of gases.
3. Concepts of association and dissociation constants (k_a , k_b) in relation to the concepts of cations, anions and zwitterions to illustrate the molecular forms present under physiological condition.
4. Principles of buffers to assess the normal physiology of respiration.

5. Workings of bicarbonate and carbon dioxide buffer system.
6. Relationship between hemoglobin and isohydric carriage of carbon dioxide (chloride shift)
7. Application of physiological principles to acid-base status.
8. Differentiation of the compensatory correction processes of the disturbed acid-base status.

Saturday 12 noon to 12:30 pm

Practice Session: Introduction to easy but powerful breathing practices – Bhastrika and Kapaalabhaati
Pranayama and its Physiological Impact on the body and mind–**SARKAR**

Saturday 1:00 pm to 3 pm

Research Report on Yoga Therapy

KHALSA

Yoga is a practical discipline incorporating a wide variety of practices whose goal is the development of a state of mental and physical health well-being, inner harmony and ultimately “a union of the human individual with the universal and transcendent Existence” (1). These practices are believed to have originated in early civilization on the Indian subcontinent and have been practiced historically in India and throughout East Asia. Yoga techniques include the practice of meditation, regulation of respiration with a variety of breathing exercises, and the practice of a number of physical exercises and postures, in which the focus is more on isometric exercise and stretching than on aerobic fitness.

A general feature of these practices is their capability of inducing a coordinated psychophysiological response, which is the antithesis of the stress response. This “relaxation response” consists of a generalized reduction in both cognitive and somatic arousal as observed in the modified activity of the hypothalamic pituitary axis and the autonomic nervous system (2). Bagchi and Wenger (3), in their early classic yoga research study wrote “...physiologically Yogic meditation represents deep relaxation of the autonomic nervous system without drowsiness or sleep and a type of cerebral activity without highly accelerated electrophysiological manifestation but probably with more or less insensibility to some outside stimuli for a short or long time.” A large number of subsequent research studies examining the effects of these techniques both in isolation and in combination have further confirmed these early results (4-9). Both short term and long-term practice of yoga techniques are associated with reductions of basal cortisol and catecholamine secretion, a decrease in sympathetic activity with a corresponding increase in parasympathetic activity, reductions in metabolic rate and oxygen consumption and salutary effects on cognitive activity and cerebral neurophysiology.

Not surprisingly, the capability to effect psychophysiological functioning has lead to the implementation of these techniques as a therapeutic intervention in a number of disorders which have psychosomatic components. Historically, this limited application of yoga techniques for specific disorders is relatively recent relative to the ancient Vedic origins of yoga (10). Gharote (1987) has stated that “the therapeutic

aspect of yoga does not feature in any of the traditional systems of self-help, except in the yoga sutras of Patanjali where we come across the word vyadhi meaning 'disease' in the list of disturbing factors of mind that are obstacles to liberation. ... although yoga therapy was not a developed branch of yogic discipline as such, we do get a glimpse of the therapeutic effects of the practices in some of the hatha yoga literature such as the Hatha Yoga Pradipika. However, advice is given here within the context of practice; that is, how to deal with the complaints that arise from faulty practice" (11). In fact, since the primary goal of yoga practice is spiritual development, beneficial medical consequences of yoga practice can more precisely be described as positive "side effects" (12).

This presentation is intended to give physicians an overview on the extent of research in yoga and yoga therapy within the context of traditional yoga philosophy, and is divided into the following areas:

- Research on the prevalence of yoga and yoga therapy
- The history of research on yoga and yoga therapy – beginning with the first systematic medical application of yoga started in India in 1918 at the Yoga Institute in Mumbai thru the emergence of a new breed of clinicians called yoga therapists and a society called the International Association of Yoga Therapists (IAYT) based in the United States. (13-19;24-27)
- Extent of publications – countries, types of journals, types of analysis, sample sizes and chronology
- A review of current and ongoing research on yoga and yoga therapy
- Examples of yoga therapy research studies
- Future directions in yoga therapy research

The application of yoga in a limited and strictly therapeutic manner has drawn some criticism from proponents of yoga (14), given that yoga techniques are in fact part of an ancient and sacred spiritual tradition historically applied as a holistic lifestyle discipline (20). This concern has been further aggravated by the rapidly growing popularity of yoga in the west and its subsequent commercialization and application as a trendy body slimming and fitness tool (21). However, among world traditions, classical Yoga is a useful starting point for inquiry into the relationship of medical and religious health because it connects the cultivation of physical and psychological health with spiritual well-being and exemplifies the idea of religious liberation as healing" (22). Anand (1991) has stated this more simply: "The ultimate aim of medical sciences is the attainment of optimum physical and mental health for the individual. The ultimate aim of yogic practices is also the same, viz. physical and mental well-being." (23)

A published comprehensive bibliometric analysis in 2004 has identified the current full extent of the yoga therapy studies published in research journals (34). A total of 181 publications in 81 different journals published in 15 different countries were identified. An analysis of the type of studies reported revealed that 48.1% of the publications were on uncontrolled studies, 39.8% were on randomized controlled trials, and 12.2% were on studies incorporating a control group that did not use randomized

subject assignment. The chronological distribution of publication date indicates gradual continuing increase in publications. The 3 types of disorders most evaluated in yoga studies have been psychiatric conditions, cardiovascular disorders, and respiratory disorders. Of the all studies, the discrete disorders receiving the most attention were asthma, hypertension, diabetes, depression or dysthymia, heart disease and anxiety. There are a number of cautions that should be noted in interpreting this literature including no single standardized yoga practice format, a very wide range of the types of yoga interventions and mode of application used, and a highly varied quality of research.

[References with number indicated in parenthesis are noted in the reference section in the same order.]

Saturday 3:15 pm to 5:00 pm –

Ayurveda & Complementary Practices of Yoga Therapy

SARKAR & NARAYANAN

This section will cover Ayurveda and other practices that may be viewed as within the purview of yoga therapy. Exposure to this gives physicians a paradigm that is deeper than the microbiology and bio-chemistry approach to understand health.

Ayurveda is an ancient Indian system of medicine that has its basis in the philosophical system of Yoga and related philosophical systems. However it has many characteristics of modern medicine – tools and concepts of surgery, the concept of bio-chemical imbalance, the understanding of the different functional systems (digestion, circulation, respiration, etc.). Given its basis in philosophies like yoga, it offers unusual and deeper insight into diseases that is common with other complementary practices. Hence Ayurveda will be the first point of discussion before other complementary therapies.

Ayurveda presentation will cover:

- History and Texts of Ayurveda
- Principles of Ayurveda – the concept of balance
- The Three Natures: Vaata, Pitta and Kapha
- The Eight Areas of Detection for Diagnosis:
- Detailed discussion of tongue and pulse
- Therapy in Ayurveda – diet, lifestyle, herbs and massage
- Discussion of Ayurvedic Panchakarma

The other complementary therapies fall under the category of Energy Medicine. When the human system is viewed as an electrical circuitry healing is viewed as balancing the energy flow. Ayurveda follows this same view. However it also derives techniques used by conventional medicine as relating to surgery and biochemistry to heal. Other therapies focus strictly on energy balancing. Hence for a conventionally trained physician Ayurveda provides the energy concept that is necessary to deal with other therapeutic approaches. Other such therapies will include discussion of the following:

- Mudras (typically finger positions) and Bandhas (energy locks) that serve as neuro-physical connectors to create energy balance.
- Acupressure and Marma Therapy where stimulating points release endorphins and neurotransmitters to treat various organs and correct imbalances in energy flow. Acupressure largely relies on stimulation points on the hands and feet. Marma therapy is more generic and covers other parts of the body too. Acupuncture is an allied area that is related, but will not be discussed.
- Shat Kriyas or The Six Cleansing Practices that come from the Hatha Yoga tradition will be discussed.
- The Role of the Spine and Pain in Specific Points will be discussed in the context of Reiki, Spinal Massage as developed by Life in Yoga (with general reference to Chiropractors) and the integral use of pressure/contact and power of mind of the healer. This subject will be covered by Dr. Narayanan.

This presentation will conclude with a general overview of Stress and Stress Management through lifestyle management and drawing parallels of rituals and lifestyle approaches from different traditions that seek to provide this relief. This presentation will be the key link that transforms a physician's thinking from the conventional approach of disease management and the conception of human physiology to a different level that makes one ready to deal with more details of yoga therapy for specific diseases.

Saturday 5 pm to 5:30 pm –

Practice: Intro to Bandhas and Baahya Kumbhaka and Anuloma Viloma Pranayama, - **SARKAR**

Sunday 8:30 am to 9:15 am-

Yogic Lifestyle Daily Routine (Dinacharya) 45 min -

DR. SARKAR

Ayurvedic and complementary systems of therapies suggest more complex pathways to healing and health. A key element of this understanding is that the body-mind complex has everything to heal itself, and any external intervention is only to help the self-healing process – in cases where the system has become highly weakened, the intervention is a requirement to save the life, and in cases where the system is not so weakened, it accelerates the healing process. Ayurveda and Yoga in particular, having this understanding suggest certain daily routines that can have a prophylactic effect on the human system while promoting active healing. The Daily Routine in yogic lifestyle has the following components:

- Circadian rhythm and its effect on the body

- Practices that promote being in sync with the circadian rhythm especially exercise and food habits
- Yogic practices for promoting bowel movement
- Tongue cleansing, cleansing of the nasal passages and the dynamics of teeth cleansing
- Differences between younger, middle age and older populations

While the entire course is designed to bring back the intent of medical practice for health management instead of its disease management focus that has resulted from the economic forces that govern the industry, this particular segment is the bridge from concepts presented in the first day to practices. Physicians who have general family practice with patients coming on a regular basis for health check-up should pay particular attention to the ideas noted in this segment and should seek to bring some of these ideas into the lives of their patients, first beginning with themselves and their own families.

Sunday 9:15 am to 4:30 pm –

Yoga Therapy for Specific Disease Areas

KHALSA & SARKAR

To reinforce the theory and application of yoga therapy, six areas of disease management are discussed in detail.

For each area, in about 15 minutes, Dr. Khalsa will present the following:

- Rationale and mechanisms of yoga's benefit
- An overview of published research

Dr. Sarkar will follow and present the yoga regimen for each area of disease management and will explain the physiological effect of each exercise.

9:15 am to 10:05 am- Diabetes and Obesity as examples of Metabolic Syndrome/Endocrinology Disorders –

10:20 am to 11:10 am- Cardiovascular System Disorders

11:10 am to 12 noon- Respiratory System Disorders

1 pm to 1:50 pm- Musculoskeletal System Disorders (Back pain & Arthritis) -

1:50 pm to 2:40 pm – Neurological Disorders -

2:50 pm to 3:40 pm- - Psychiatric Disorders

3:40 pm to 4:30 pm- Other Disorders (Women’s Health, Irritable Bowel Syndrome, etc.)

Sunday 4:30 to 5:00 pm –

Conclusion: Moving forward in Integrative Medicine

– **SARKAR**

This presentation is a summary of all material covered with thoughts on how physicians can use the learning in their practice. Since this is only the first exposure to yoga therapy, for those interested opportunities for progressive learning will be indicated including the opportunity to spend two weeks in India at a yoga health center observing yoga therapy in action with daily recording of medical metrics to note the healing process.

An important point of this presentation is that participants should not mistake a single yoga exercise like a bio-chemical pill that is therapeutic for a particular disease, but rather there could be a whole range of exercises that deliver the same impact. It is really a regimen and lifestyle that delivers the complete result. Therefore it is not uncommon for different schools of yoga to prescribe different regimens for the same disease condition. The realm of impact must be understood within the framework of the 5 by 3 by 1 approach of Life in Yoga and the specific part of the body that may be affected.

Additionally, it is worth noting that yoga is a primarily a health maintenance system and only secondarily a therapeutic system. Therefore good health is sustained by lifelong practice.

Sunday 12 Noon to 12:30 pm –

Practice session - Practice for Good Health: Strong Digestion, Elimination and Good Night's sleep

– **SARKAR**

Sunday 5:00 to 5:30 pm

Practice session - Yoga Nidra practice and the use of affirmation techniques after relaxation

– **NARAYANAN**

Sunday 5:30 to 5:40 pm –

Program Conclusion

NANDEDKAR

Program Director's message of the following:

- Evaluation and Assessment of Course
- Post Course Practice Impact Assessment after 90 days

3. REFERENCES

A. GENERAL TEXTS & REFERENCES

1. 'Yoga as Medicine' by Timothy McCall, M.D.
2. "Meditation as Medicine" by Dharma Singh Khalsa, M.D.
3. "Yog in Synergy with Medical Science" by Acharya Balakrishnan

Journal References:

Nagaratna, R & HR Nagendra; **Yoga for Bronchial Asthma: a controlled study**; *British Medical Journal (Clin Res Ed)*, October 19 1985, 291(6502):1077-9.

Garfinkel, MS; Singhal,A; Katz, WA; Allen, Resheter,R; Schumacher, HR; **Yoga Based Intervention for Carpal Tunnel Syndrome** *Journal of American Medical Association*, November 1998.

Sherman, KJ & Cherkin, DC; **Comparing Yoga, Exercise and a Self-Care Book for Chronic Low Back Pain: A Randomized Controlled Trial**; *Annals of Internal Medicine*, Dec 2005, Vol 143, Issue 12.

Williams, K; Abildso, C; Steinberg, L; Doyle, E; Epstein, B; Smith, D; Hobbs, G; Gross, R; Kelley, G; Cooper,L; **Evaluation of the Effectiveness and Efficacy of Iyengar Yoga Therapy on Chronic Low Back Pain**; *Spine*. 34(19):2066-2076, September 1, 2009.

Alexander, GK; Taylor, AG; Innes, KE; Kulbok, P; Selfe, TK; **Contextualizing the Effects of Yoga Therapy on Diabetes Management - A Review of the Social Determinants of Physical Activity**; *NIH Public Access Author Manuscript*, Fam Community Health; available in PMC 2009 August 4
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Herrick, CM; Ainsworth, AD; **Yoga as a Self-Care Strategy**; *Nursing Forum*, Vol.35, No.2, Apr-Jun 2000.

Ott, MJ; **Yoga as a Clinical Intervention: Pain Control and Stress Reduction May be Just a Breath Away**; *Advance for Nurse Practitioners*, January 2002

Garfinkel, M; Schumacher, HR; **Yoga; Complementary and Alternative Therapies for Rheumatic Diseases II**, *Rheumatic Disease Clinics of North America*, Vol.26, No.1, Feb 2000

Journal References - Review Publications:

Khalsa SB. **Yoga as a therapeutic intervention: a bibliometric analysis of published research studies**. *Indian J Physiol Pharmacol*. 2004 Jul;48(3):269-85. Review

Ospina MB, Bond TK, Karkhaneh M, Tjosvold L, Vandermeer B, Liang Y, Bialy L, Hooton N, Buscemi N, Dryden DM, Klassen TP. **Meditation Practices for Health: State of the Research. Evidence Report/Technology Assessment No. 155. (Prepared by the University of Alberta Evidence-based Practice Center under Contract No. 290-02-0023.) AHRQ Publication No.07-E010. Rockville, MD: Agency for**

Healthcare Research and Quality. June 2007.

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Ospina MB, Bond K, Karkhaneh M, Buscemi N, Dryden DM, Barnes V, Carlson LE, Dusek JA, Shannahoff-Khalsa D. **Clinical trials of meditation practices in health care: characteristics and quality**. *J Altern Complement Med*. 2008 Dec;14(10):1199-213.

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4. FACULTY PROFILE

Sat Bir Singh Khalsa, Ph.D., Assistant Professor of Medicine at Harvard Medical School

Arvind K. N. Nandedkar, Ph.D., DABCC – Professor of Biochemistry & Molecular Biology, Howard University, College of Medicine – COURSE DIRECTOR

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

Dilip Sarkar, M.D., FACS, D Ayur – Director of Division of Yoga & Medical Sciences, Life in Yoga Institute

Detailed Faculty Profiles

Sat Bir Singh Khalsa, Ph.D., Assistant Professor of Medicine at Harvard Medical School

Dr. Khalsa received his doctorate in human physiology and neuroscience at the University of Toronto and has conducted research in neuroscience, biological rhythms, sleep and sleep disorders for over 30 years. For the past 9 years he has been fully engaged in basic and clinical research on the effectiveness of yoga and meditation practices in improving physical and psychological health. He has also been personally involved in the practice of a yoga lifestyle for over 35 years and is a certified Kundalini Yoga instructor. He is currently the Director of Research for the Kundalini Research Institute, Research Director of the Kripalu Center for Yoga and Health and an Assistant Professor of Medicine at Harvard Medical School in the Department of Medicine at Brigham and Women's Hospital in Boston.

He has conducted clinical research trials evaluating a yoga treatment for insomnia funded by the National Center for Complementary and Alternative Medicine of the National Institutes of Health. This research was targeted at examining not only the efficacy of yoga for the treatment of chronic insomnia, but also the neuroendocrine and neuropsychological mechanisms underlying the effectiveness of yoga practices in this population. He has also been involved in yoga research for addiction, back pain, and depression and has conducted studies on music performance anxiety at the Tanglewood Institute, the Boston University Tanglewood Institute and the Boston Conservatory of Music.

He is actively involved in 2 major research projects. One of these is a research trial supported by the U.S. Army Medical Research and Materiel Command evaluating the effectiveness of yoga in treating post-traumatic stress disorder in military veterans (in association with researchers at the Trauma Center of Boston University). The other project is an evaluation of a yoga program within the academic curriculum of public schools to determine the benefits to students in mental health characteristics such as perceived stress, resilience, emotion regulation and anxiety.

Dr. Khalsa has established relationships with fellow yoga researchers both in the U.S. as well as in Europe and in India. In India he routinely attends and presents at international yoga research conferences and in the U.S. he is actively working with the International Association of Yoga Therapists to promote research on yoga therapy. For the past 5 years he has also been teaching an elective course at Harvard Medical School in Mind Body Medicine, which provides medical students with direct exposure to yoga classes.

Arvind K. N. Nandedkar, Ph.D., DABCC –Professor of Biochemistry and Molecular Biology, Howard University, College of Medicine, joined the faculty in 1968. Currently, he also serves as the Safety Officer for the College of Medicine Complex. He has served as the Director of the Metabolic Screening-Biochemical Genetics Laboratory, in the Department of Pediatrics and Child Health, and the Acting Director of Clinical Chemistry Laboratory, Howard University Hospital.

Dr. Nandedkar is a Diplomate, American Board of Clinical Chemistry (1979) and has been Certified Professional Chemist of the American Institute of Chemists. He is a Fellow of the College of the Forensic Examiners (1995) and is Board Certified in Forensic Medicine (1996). Dr. Nandedkar has earned several accreditations, certifications and licensures by examination and examination credits. As a Laboratory Director he was licensed in New York City, State of Maryland and currently holds the “Interstate Clinical Laboratory” CLIA license in the District of Columbia. Dr. Nandedkar earned his Master of Science degree (1961) from Nagpur University, Nagpur, India and his Ph.D. degree in Medical Biochemistry (1966) from The V.P. Chest Institute, Delhi University, India. He completed his post-doctoral fellowships at the Georgetown University (1966-68). He has served as a Visiting Professor at the Cornell Medical Center’s New York Hospital (1975-1977, 1979-80), Mt. Sinai Medical Center and Hospital, New York(1979-80), and the USAMRIID (U.S. Army) at Ft. Derrick (1982, 1983). He has received Atomic Energy Commission Fellowship, NIH Fellowship and the National Library of Medicine Fellowship, as well as Visiting Scientist Awards from the U.S. Army Medical Program/Battle Engineering and the Minority Student Science Careers Support Program, the American Society of Microbiology. In November 1984, College of Medicine awarded The Kaiser Permanente Award for Excellence in Teaching and in March 2000 he was recognized as the “Outstanding Teacher of the Year”, College of Dentistry. Dr. Nandedkar is a member of the Association of Clinical Scientists and American Association for Clinical Chemistry as well as a Fellow of the American Institute of Chemists; a Fellow of The American College of Forensic Examiners, a Fellow of Society of Toxicology. He has conducted several safety related and OSHA workshops for the benefit of private organizations, professional associations and educational institutions. He has over 72 full papers, abstracts, and presentations at national and professional meetings. Dr. Nandedkar has received external and internal grants and contracts to support his research interest in biochemistry and molecular biology, biochemical genetics and pediatrics and child health.

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

Dr. Narayanan is a founder and inspiration behind Life in Yoga Foundation, a non-profit formed and active in the Washington metro area. 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. He has actively researched different aspects of yoga and has developed many 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.

He began teaching Raaja Yoga in Washington area temples since 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 is a marketing consultant and has served as an adjunct faculty in the business school of Georgetown University and other local Universities. He has Ph.D. in Economics from the State University of New York at Stony Brook.

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Dilip Sarkar, M.D., FACS, D Ayur – Director of Division of Yoga & Medical Sciences, Life in Yoga Institute

Dr. Sarkar is one of foremost experts in Yoga Therapy who combines his 40-year experience in Conventional Medicine with his extensive knowledge of Integrative Medicine, including Ayurveda and Yoga Therapy.

After 25 years of practice as a Vascular Surgeon, Dr. Sarkar retired from practice after suffering a heart attack and undergoing by-pass surgery in 2001. Since then, he developed a profound interest in Ayurvedic medicine and Yoga Therapy, devoting considerable time to the study of these ancient treatments and wellness philosophies in Virginia and in India.

Dr. Sarkar has held positions that included teaching as a primary focus of his medical career. He was an Associate Professor 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 serves on several local and national healthcare boards as: Founding Member, National Ayurvedic Medical Association (NAMA) and Member of its Research and Standards Committee; Member, International Association of Yoga Therapists (IAYT); and, Fellow, American Association of Integrative Medicine (AAIM). He is a certified Ayurvedic Practitioner, and continues to practice and teach classes in Yoga Therapy, Mind/Body Connection, Ayurvedic wellness, Integrative Nutrition, and Integrative Medicine.

Currently, he is the Executive Director, School of Integrative Medicine, Taksha University, Hampton, Virginia, and the Director of the Division of Yoga and Medical Sciences at the Life in Yoga Institute.