The contents of this bibliography do not provide medical advice and should not be so interpreted. Before beginning any exercise program, see your physician for clearance.
Effects of Lack of Sleep (according to the August 2004 issue of the Harvard Heart Letter):

Short-term effects include increases in blood pressure and levels of stress hormones. When the body is sleep-deprived, it has more difficulty processing blood sugar and has reduced levels of leptin, an appetite-suppressing hormone. These changes can increase the risk of weight gain and diabetes. Lack of sleep also increases inflammation in the body, which is thought to be an important factor in the development of heart disease.

“[David Wilson is] a Vietnam vet who wears clunky metal rings on nearly every finger and builds computers for fun, but lately the only place [he] wants to be is on his yoga mat. The 50-year-old is homeless, struggles with post-traumatic stress disorder and has chronic pain in his neck and back. And until recently, a good night’s sleep meant just two hours of solid snooze time. But since enrolling in a stress reduction class at the Middletown Community Health Center, Wilson says he’s finally sleeping through the night. Through yoga and meditation sessions, he is controlling his pain and has learned to focus his breathing.”

—From an article by Laura Walsh, “Low-Income Patients Beating Stress with Yoga, Meditation Class,” Worcester Telegram & Gazette, 3 December 2004

Note: See also the “Dreams” bibliography.


Indicates reduction in anxiety, neuroticism, hostility, and insomnia as effects of the TM program.


On using tratak to assist someone suffering from insomnia due to night terrors linked to earlier sexual abuse.


From the publisher: “The practice of yoga continues day and night. This book aids the seeker in becoming conscious and turning sleep and dreams into the opportunity for real and substantial progress on the path of yoga.”


For Transcendental Meditation practitioners, dramatic changes occurred in the duration of different sleep stages.


**Bhajan, Yogi.** Insomnia; Sleep. In Alice Clagett and Elandra Kirsten Meredith, eds., *Yoga for Health and Healing: From the Teachings of Yogi Bhajan, Ph.D.* Santa Monica, Calif.: Alice B. Clagett, pp. 76; 117-121.


**Candelent, Thomas, and Gillian Candelent.** Teaching Transcendental Meditation in a psychiatric setting. *Hospital and Community Psychiatry,* Mar 1975, 26:156-159.

TM lowered anxiety, decreased insomnia, and lessened over-active or impulsive behavior of psychiatric patients.


Examines the efficacy of relaxation training and a highly credible placebo in the treatment of both severe and moderate sleep-onset insomnia.


Abstract: Increase in CO2 has a sedative effect upon the central nervous system, and the beginning of sleep coincides with modifications in breathing, decrease in ventilation, and in pCO2 increase. In this paper is described a technique of breathing that is useful in producing drowsiness in a very short time. 46 insomniacs were randomly allocated to either a treatment or control condition. In the former, patients were trained in the breathing process. The control group was taught no breathing process. Latencies to sleep for the insomniacs confirmed that the breathing process was useful in producing drowsiness. Theoretical bases are discussed.

Abstract of van den Hout commentary: In 1995 Cholitz tested a breathing technique to treat insomniacs. The results were incomparably much better than typically reported. It is argued that Cholitz’ explanation of his findings is untenable and that independent replications are needed.


EEG characteristics showed that sleep is distinguishable from TM.


Easy yoga for restful sleep. Article available online: http://www.goldentemple.com/Clients/KIIT/GT/Yoga.nsf/AllKriyas.

Editor of *Yoga International*. Answers the question: In which direction should we face when we sleep? *Yoga International*, Feb/Mar 2004, pp. 12-13.


Discusses Sat Bir Singh Khalsa’s pilot study for his NIH-funded research on Yoga and insomnia.


Improved quality of sleeping and dreaming was reported by subjects practicing the TM technique.


A review of Patti Teel’s *The Inside-Out Sleep Game* CD, Buena Vista Records, ages 3-7.

“If nightmares, fear of the dark or just plain restlessness make bedtime a battle, help has arrived. Patti Teel, a special-education and music teacher, has come up with a soothing mix of yoga exercises, guided imagery, storytelling, and sweet, soft music and vocals to ease youngsters to sleep . . .”


“This book is an account of an historic dialogue between leading Western scientists and the Dalai Lama of Tibet revolving around sleep, dreams, and death—the three key moments of consciousness that internationally acclaimed neuroscientist Francisco Varela calls the ego’s shadow zones. With contributions from acclaimed voices such as philosopher Charles Taylor, psychoanalyst Joyce McDougall, psychologist Jayne Gackenbach, cultural ecologist Joan Halifax, and neuroscientist Jerome Engel, the book is both engrossing and highly readable. Whether the topic is lucid dreaming, near-death experiences, or the very structure of consciousness itself, the participants in this unique exchange continually surprise and delight us with their discoveries of convergences and divergences between their respective traditions.”


Abstract: Sleep latency changes following behavioral interventions for sleep-onset insomnia are only moderate because the majority of insomniacs do not achieve good sleeper status at post-treatment. This study evaluated the efficacy of a multifactor behavior intervention consisting of stimulus control and relaxation-response training (n = 10) compared to stimulus control alone (n = 10) for sleep-onset insomnia. Only the multifactor subjects’ mean posttest sleep latency fell within the good sleeper range. They also exhibited a 77% improvement on mean sleep-onset latency compared to the stimulus control group (63%). Thus a multifactor intervention may be more effective than stimulus control alone for treatment of sleep-onset insomnia.


Indicates that the physiology of TM is fundamentally different from simple relaxation or sleep.


**Journey to the Soul: Ayurvedic Techniques for a Restful Sleep/Guided Meditation for a Restful Sleep CD and booklet.** Contact: journeytothesoul@accesscomm.ca, tel.: 306-569-4139.

Combines “the ancient Indian or Vedic sciences of astrology, yoga and Ayurveda . . . to create a program that will help to reduce stress and enhance the ability to sleep.”


The EEG changes accompanying Zen meditation are described in detail; changes are also compared with that of hypnotic trance and sleep.

**Kelly, Alice Lesch.** Sleep on it: Insomniacs who have grown tired of relying on over-the-counter sleep aids are waking up to the fact that yoga is a healthier alternative for getting a good night’s rest. *Yoga Journal*, Mar/Apr 2002, pp. 96-103.
**Khalsa, Sat Bir S.** Treatment of chronic insomnia with yoga: A preliminary study with sleep–wake diaries. *Applied Psychophysiology and Biofeedback*, Dec 2004, 29(4):269-278. Author email: e-mail: khalsa@hms.harvard.edu.

Abstract: There is good evidence for cognitive and physiological arousal in chronic insomnia. Accordingly, clinical trial studies of insomnia treatments aimed at reducing arousal, including relaxation and meditation, have reported positive results. Yoga is a multi-component practice that is also known to be effective in reducing arousal, although it has not been well evaluated as a treatment for insomnia. In this preliminary study, a simple daily yoga treatment was evaluated in a chronic insomnia population consisting of sleep-onset and/or sleep-maintenance insomnia and primary or secondary insomnia. Participants maintained sleep–wake diaries during a pretreatment 2-week baseline and a subsequent 8-week intervention, in which they practiced the treatment on their own following a single in-person training session with subsequent brief in-person and telephone follow-ups. Sleep efficiency (SE), total sleep time (TST), total wake time (TWT), sleep onset latency (SOL), wake time after sleep onset (WASO), number of awakenings, and sleep quality measures were derived from sleep–wake diary entries and were averaged in 2-week intervals. For 20 participants completing the protocol, statistically significant improvements were observed in SE, TST, TWT, SOL, and WASO at end-treatment as compared with pretreatment values.


Abstract of a report showing that EEG changes during TM were different from those seen in states of wakefulness, drowsiness and sleep, but showed some similarities to other forms of relaxation.


Abstract: Background & objective: Sleep in older persons is characterized by decreased ability to stay asleep, resulting in fragmented sleep and reduced daytime alertness. Pharmacological treatment of insomnia in older persons is associated with hazardous side effects. Hence, the present study was designed to compare the effects of Yoga and Ayurveda on the self-rated sleep in a geriatric population. Methods: Of the 120 residents from a home for the aged, 69 were stratified based on age (five-year intervals) and randomly allocated to three groups, i.e., Yoga (physical postures, relaxation techniques, voluntarily regulated breathing and lectures on yoga philosophy), Ayurveda (a herbal preparation), and Wait-list control (no intervention). The groups were evaluated for self-assessment of sleep over a one-week period at baseline, and after three and six months of the respective interventions. Results: The Yoga group showed a significant decrease in the time taken to fall asleep (approximate group average decrease: 10 min, P<0.05), an increase in the total number of hours slept (approximate group average increase: 60 min, P<0.05) and in the feeling of being rested in the morning based on a rating scale (P<0.05) after six months. The other groups showed no significant change. Interpretation & Conclusion: Yoga practice improved different aspects of sleep in a geriatric population.


Abstract: Standard ambulatory night sleep electroencephalograph (EEG) of 11 long-term practitioners of the Transcendental Meditation (TM) program reporting “higher states of consciousness” during sleep (the experimental group) was compared to that of nine short-term practitioners and 11 non-practitioners. EEG tracings during stages 3 and 4 sleep showed the experimental group to have: 1) theta-alpha activity simultaneously with delta activity and 2) decreased chin electro-myograph (EMG) during deep sleep (p = 0.002) compared to short-term practitioners. Spectral analysis fast Fourier transform (FFT) data of the first three cycles showed that: 3) the experimental subjects had significantly greater theta 2 (6-8 Hz)-alpha 1 (8-10 Hz) relative power during stages 3 and 4 than the combined control groups [t(30) = 5.5, p = 0.0000008] with no difference in time in delta; 4) there was a graded difference across groups during stages 3 and 4 in theta 2-alpha 1 power, with experimental having greater power than short-term practitioners, who in turn had greater power than non-practitioners [t(30) = 5.08, p = 0.00002]; and 5) experimental also had increased rapid eye movement (REM) density during REM periods compared to short-term practitioners (p = 0.04). Previous studies have found increased theta-alpha EEG activity during reported periods of “transcendental consciousness” during the TM technique. In the Vedic tradition, as described by Maharishi Mahesh Yogi, transcendental consciousness is the first of a sequence of higher states. The maintenance of transcendental consciousness along with deep sleep is said to be a distinctive criterion of further, stabilized higher states of consciousness. The findings of this study are interpreted as physiological support for this model.


Briefly surveys studies comparing TM and sleep.


Abstract: Sleep and meditation are both physiological conditions in which peripheral sensory input is voluntarily reduced, but sensory perception of internally generated information continues. . . . the two conditions differ in the level of awareness retained.


“If insomnia is keeping you up at night, try a few relaxing poses before bedtime.”


The range of states observed during sleep and meditation did not support the view that meditation produces a single unique state of consciousness.


The states induced by TM were shown to be different from that of sleep.


From the publisher: “Provides tools for developing a personally meaningful method of dream interpretation . . . thoroughly investigates prophetic dreams, dreams about past lives and dreams containing spiritual guidance. Using her own dream experiences, Swami Sivananda Radha provides practical tools to help you uncover the buried treasure of your subconscious mind.”


Abstract: The old Indian literature describes a technique known as Sutra-Neti. That is, passing a catheter or similar material through the nose and out of the mouth as a means of clearing the airway. One of our patients adapted this method, tying the catheter end to end, in order to control his severe snoring and obstructive sleep apnea. This was effective for several months. He subsequently responded well to a uvulopalatopharyngoplasty.


Ranade, Prof. Dr. Subhash, and Dr. Mrs. Sunanda Ranade. Insomnia. In Prof. Dr. Subhash Ranade and Dr. Mrs. Sunanda Ranade, *Ayurveda and Yoga Therapy*. Pune, India: Anmol Prakashan, 1995, pp. 87-88.


Rose, Tracy. No sweeter savasana than sleep. Article available online: http://www.practiceashtanga.com (click on “Archived Articles”).

On insomnia.


**Sausys, Antonio.** Yoga for Insomnia workshop. Email: antonio@satyoga.com.

From Antonio Sausys: “Even though insomnia is a problem in itself, the consequences of sleep deprivation are what make this sleep pattern alteration a cause of concern. Amongst them: immune system depression, increased irritability, slowed down reaction time (increasing the likelihood of car crashes and other accidents), acceleration of the aging process and if carried to its ultimate consequences, death.

“This workshop offers a set of physical and breathing techniques intended to reduce tension levels and retrieve . . . awareness from the challenging matters that help raise them and induce sleep.

“In this 3 Hour Workshop, [participants] will receive: Theoretical information regarding insomnia, its causes and consequences; instruction regarding the practice and the necessary adjustments according to . . . ability and needs; a handout outlining the practice; a few other helpful tips.”


Provides a definition of meditation and then cites literature comparing meditation with such self-regulation strategies as biofeedback, hypnosis, and progressive relaxation. Includes a discussion of insomnia.


**Singhi, Sunita.** Slip into sleep. *Yoga International*, Feb/Mar 2002, pp. 36-38.


Contents: Songs of dream, Dream, Study of dream-state, Dream philosophy, Philosophy of dream, Who is it that dreams?, Lord creates dream objects, Prophetic dreams, Spiritual enlightenment through dreams, Waking as a dream, The unreality of imagination, Why Jagrat is a dream? Waking experience has relative reality, Waking experience is as false as dream experience, Jagrat is as unreal as dream, Remove the colouring of the mind, Upanishads and dreams, dream, The story of a dream Subhoda, Raja Janaka’s dream, Goudapadacharya on dreams, Sri Nimbarkacharya on dreams, Dream of Chuang Tze, Dream hints, Dream-symbols and their meanings


Provides a yogic technique for working with exhaustion.

Statistics.

According to the latest annual survey conducted by the National Sleep Foundation in 2002, 74% of Americans have trouble sleeping at least a couple of nights a month. That figure is up 5% from the previous year.

According to the Better Sleep Council in 2005, 62% of adults in the U.S. experienced a sleep problem a few nights per week or more during the past year.


The EEGs during TM were not different from those recorded during wakefulness and drowsiness, but clearly different from those recorded during sleep onset and sleep.


Researchers at The University of Texas M. D. Anderson Cancer Center found Tibetan Yoga’s combination of movement and meditation led to a significant sleep improvement for cancer patients. Reported in the April 15 online issue of the journal *Cancer*, lymphoma patients who practiced Tibetan Yoga for seven weeks went to sleep faster, slept longer, had better overall sleep quality, and used less sleep medication than the control group. There were, however, no differences between the groups in other quality-of-life measures, including anxiety, depression, and fatigue. The study’s lead author, Lorenzo Cohen, Ph.D., an associate professor in the Departments of Behavioral Science and Palliative Care & Rehabilitation Medicine, and director of the Integrative Medicine Program at M. D. Anderson Cancer Center, says the reason for the latter is likely the study’s short duration, as these techniques usually need to be practiced for at least six months before benefits are seen.

Cohen states, “The objective of using Yoga in patients who have been, or are being, treated for cancer is not necessarily to increase length of life, but to improve the quality of life. In cancer patients, fatigue is not necessarily directly related to the quality of sleep but given such a small study, the fact that sleep was improved suggests that the health effects of Yoga should be further explored.”

Two Tibetan practices in particular, “Tsa lung” and “Trul khor,” incorporate controlled breathing and visualization, mindfulness techniques, and postures. Because the movements of Tibetan Yoga are gentle and simple and incorporate the latter elements, Cohen believes this form of Yoga may be particularly useful for patients undergoing and recovering from chemotherapy.

Cohen and his colleagues are continuing to study Tibetan Yoga’s effects in cancer patients. One in-progress study in breast cancer patients is examining the effects on stress hormone levels and immune function.


Abstract: To determine whether a period of meditation could influence melatonin levels, two groups of meditators were tested in a repeated measures design for changes in plasma melatonin levels at midnight. Experienced meditators practicing either TM-Sidhi or another internationally well known form of yoga showed significantly higher plasma melatonin levels in the period immediately following meditation compared with the same period at the same time on a control night. It is concluded that meditation, at least in the two forms studied here, can affect plasma melatonin levels. It remains to be determined whether this is achieved through decreased hepatic metabolism of the hormone or via a direct effect on pineal physiology. Either way, facilitation of higher physiological melatonin levels at appropriate times of day might be one avenue through which the claimed health promoting effects of meditation occur.


An analysis of the EEG and EKG patterns during TM, waking, and sleep states for five meditators showing unique neuron-physiological functioning.


“He’s a Vietnam vet who wears clunky metal rings on nearly every finger and builds computers for fun, but lately the only place David Wilson wants to be is on his yoga mat.

“The 50-year-old is homeless, struggles with post-traumatic stress disorder and has chronic pain in his neck and back. And until recently, a good night’s sleep meant just two hours of solid snooze time.

“But since enrolling in a stress reduction class at the Middletown Community Health Center, Wilson says he’s finally sleeping through the night. Through yoga and meditation sessions, he is controlling his pain and has learned to focus his breathing . . .”


A literature review covering the psycho-physiological correlates of meditation . . . and the use of meditation as a therapy in psychiatric units in cases of drug addiction, insomnia, and hypertension.


“Both meditation and Progressive Relaxation give pronounced improvements measured by the time necessary to fall asleep for insomnia patients compared to untreated control group.”


“These restorative exercises . . . help . . . improve sleep.”
**Yoga Biomedical Trust Survey.** Statistics on insomnia and Yoga. Number of cases: 542; percent claiming benefit: 82%. See http://urt.org/recovery.html.

__________. Insomnia classes. URL: http://freespace.virgin.net/yogabio.med/ (click on “Yoga Therapy & How to Try It,” then click on “Index-Alphabetical,” then click on “Insomnia”).


“Yoga can help older people have a sound sleep, a new study has found.

“The study was conducted among 69 older people, over 60 years of age, residing in a home for the aged in Bangalore.

“The results of the study suggest that the practice of yoga, which includes physical activity, relaxation and inputs on emotional stability, improved sleep and increased the feeling of being refreshed upon waking among the aged,” scientists at the Swami Vivekananda Yoga Research Foundation, Bangalore, said.

“The old people were divided into three groups—yoga, ayurveda and no intervention.

“The assessment was done after three and six months of interventions.

“In the yoga group, the time taken to fall asleep was reduced significantly at three and six months and the duration of sleep each night increased significantly at six months. Other groups showed no significant change,” N K Manjunath and Shirley Telles reported in the *Indian Journal of Medical Research*.

“Older adults spend more time in bed relative to time spent asleep. This is due to the longer time taken to fall asleep, a longer period of wakefulness during the night and time spent lying awake before rising in the morning,” they said.

“It is well-recognized that the function of sleep in everyday life is crucial to an individual’s sense of well-being, with a strong relationship between the quality of sleep and psychological symptoms,” they said.”


Six of the eight subjects spent considerable portions of their meditation periods in unambiguous physiological sleep.

**Of Related Interest**

**Ancoli-Israel, Sonia.** “Sleep is not tangible” or what the Hebrew tradition has to say about sleep. *Psychosomatic Medicine*, 2001, 63:778-787. Author email: sancolisisrael@ucsd.edu.
Abstract: Much of what is known about sleep disorders has been uncovered in the last forty years. As scientists, we consider these discoveries to be landmarks. Yet there is a tremendous amount of information written about sleep in the Bible and its commentaries. Sleep, and even sleep disorders, are referred to in many instances and can be directly interpreted by what we know today. Our forefathers and foremothers generally viewed sleep as both pleasant and necessary and were aware that sleep was not one continuous stage. They referred to the function of sleep as being restorative. They deplored sleep deprivation, believing that it impaired life. They felt that excessive sleepiness was harmful. They understood that insomnia could be caused by stress and anxiety and by excessive alcohol, and that physical activity (exercise) and drinking milk could improve sleep. They suggested cures for insomnia, including some of the ideas included in today’s sleep hygiene rules. They understood that there was a rhythm or timing to sleep. They even understood that it is easier to delay the circadian rhythm that to advance it. Although naps are not recommended, they sometimes took naps in the afternoon, but suggested just how long that nap should last—about one-half hour. And they knew that with age, although sleep is advanced, healthy elderly do not have difficulty sleeping. Although we think we have discovered many new features about sleep disorders, much of what we know today was suggested thousands of years ago and documented in the Bible and the Talmud.


“Americans are sleep-deprived workaholics, with only about a third sleeping the recommended eight hours a night, and about 40 percent say they have trouble staying awake on the job, according to a poll released Tuesday.”


Abstract: OBJECTIVE: Because of the role of psychological factors in insomnia, the shortcomings of hypnotic medications, and patients’ greater acceptance of non-pharmacological treatments for insomnia, the authors conducted a meta-analysis to examine the efficacy and durability of psychological treatments for the clinical management of chronic insomnia. METHOD: A total of 59 treatment outcome studies, involving 2,102 patients, were selected for review on the basis of the following criteria: 1) the primary target problem was sleep-onset, maintenance, or mixed insomnia, 2) the treatment was non-pharmacological, 3) the study used a group design, and 4) the outcome measures included sleep-onset latency, time awake after sleep onset, number of nighttime awakenings, or total sleep time. RESULTS: Psychological interventions, averaging 5.0 hours of therapy time, produced reliable changes in two of the four sleep measures examined. The average effect sizes (i.e., z scores) were 0.88 for sleep latency and 0.65 for time awake after sleep onset. These results indicate that patients with insomnia were better off after treatment than 81% and 74% of untreated control subjects in terms of sleep induction and sleep maintenance, respectively. Stimulus control and sleep restriction were the
most effective single therapy procedures, whereas sleep hygiene education was not effective when used alone. Clinical improvements seen at treatment completion were well maintained at follow-ups averaging 6 months in duration. CONCLUSIONS: The findings indicate that non-pharmacological interventions produce reliable and durable changes in the sleep patterns of patients with chronic insomnia.


Abstract: OBJECTIVE: Although stress is often presumed to cause sleep disturbances, little research has documented the role of stressful life events in primary insomnia. The present study examined the relationship of stress and coping skills, and the potential mediating role of pre-sleep arousal, to sleep patterns in good sleepers and insomnia sufferers. METHODS: The sample was composed of 67 participants (38 women, 29 men; mean age, 39.6 years), 40 individuals with insomnia and 27 good sleepers. Subjects completed prospective, daily measures of stressful events, pre-sleep arousal, and sleep for 21 consecutive days. In addition, they completed several retrospective and global measures of depression, anxiety, stressful life events, and coping skills. RESULTS: The results showed that poor and good sleepers reported equivalent numbers of minor stressful life events. However, insomniacs rated both the impact of daily minor stressors and the intensity of major negative life events higher than did good sleepers. In addition, insomniacs perceived their lives as more stressful, relied more on emotion-oriented coping strategies, and reported greater pre-sleep arousal than good sleepers. Prospective daily data showed significant relationships between daytime stress and nighttime sleep, but pre-sleep arousal and coping skills played an important mediating role. CONCLUSIONS: The findings suggest that the appraisal of stressors and the perceived lack of control over stressful events, rather than the number of stressful events per se, enhance the vulnerability to insomnia. Arousal and coping skills play an important mediating role between stress and sleep. The main implication of these results is that insomnia treatments should incorporate clinical methods designed to teach effective stress appraisal and coping skills.


Abstract: Insomnia is a debilitating and widespread complaint. Concern over the iatrogenic effects of pharmacological therapies has led to the development of several psychological treatments for insomnia. To clarify the effects of these treatments, 66 outcome studies representing 139 treatment groups were included in a meta-analysis. The results indicated that psychological treatments produce considerable enhancement of both sleep patterns and the subjective experience of sleep. In terms of enhancing sleep onset, active treatments were all superior to placebo therapies but did not differ greatly in efficacy. Greater therapeutic gains were available for participants who were clinically referred and who were not regular users of sedative hypnotics. Future research directions are suggested.


Abstract: Background: primary and secondary insomnia, especially among older adults, is frequently encountered by family physicians. Pharmacological interventions, although effective in some circumstances, can be detrimental in others. Non-pharmacological management of insomnia may allow the patients to self-administer the treatment. Objectives: review of published literature of assessment tools and treatments for primary and secondary insomnia. Results: two frequently used self-reporting methods for obtaining sleep data are sleep diaries and Pittsburg Sleep Quality Index. A large amount of research supports the use of non-pharmacological treatments such as stimulus control, sleep restriction, sleep hygiene education, cognitive therapy, multi-component therapy and paradoxical intention. Conclusion: assessing the nature of insomnia by using an effective assessment tool and providing patients with a non-pharmacological treatment should be the first intervention for insomnia. It is shown that non-pharmacological treatments for primary and secondary insomnia are feasible and effective alternatives to the use of benzodiazepines, and that family physicians should consider these when managing older patients with insomnia.


Abstract: The prevalence of insomnia associated with emotional stress increases markedly in middle-age. Both the top and end hormones of the hypothalamic-pituitary-adrenal axis, i.e. CRH and glucocorticoids, stimulate arousal/wakefulness and inhibit slow wave (deep) sleep in experimental animals and man. The objective of this study was to test the hypothesis that middle-age is characterized by increased sensitivity to the sleep-disturbing effects of the hypothalamic-pituitary-adrenal axis . . . We conclude that middle-aged men show increased vulnerability of sleep to stress hormones, possibly resulting in impairments in the quality of sleep during periods of stress. We suggest that changes in sleep physiology associated with middle-age play a significant role in the marked increase of prevalence of insomnia in middle-age. [The authors
recommend Yoga for stress reduction.]

**IAYT Members Specializing in Yoga Therapy for Sleep Disorders**

**Caroline Schairer, R.N., M.S.N., C.M.H.**  
Milford, MI  
chsmith@botsford.org

**Ongoing Research**

**Sat Bir Singh Khalsa, Ph.D.**  
Division of Sleep Medicine, BWH  
Harvard Medical School  
221 Longwood Avenue  
Boston, MA 02115  
617-732-7994  
khalsa@hms.harvard.edu  
URL: http://www.clinicaltrials.gov/show/NCT00033865

Dr. Khalsa began an NIH-funded (NCCAM) research study evaluating the effectiveness of a Kundalini-Yoga treatment for insomnia at Brigham and Women’s Hospital, Harvard Medical School, in Spring 2001. For information on Dr. Singh’s pilot study, see the article above by Alanna Fincke.

Further details: Insomnia is a sleep disorder characterized by a chronic difficulty in initiating and maintaining sleep which has a relatively high prevalence and a significant socioeconomic cost. There is good evidence that cognitive and/or physiological arousal, associated with sustained sympathetic activation, is one of the underlying causes of insomnia. Relaxation treatments such as progressive relaxation and meditation which address the cognitive and somatic arousal associated with insomnia have been found to be effective. Yoga is a comprehensive discipline which includes physical exercises, postures, breathing techniques, and meditation, for the purpose of improving health and well being. Research studies have documented the effectiveness of yoga in reducing sympathetic activation and cognitive and somatic arousal and in the treatment of specific medical disorders. Although it has been used and recommended for the treatment of insomnia, its effectiveness has not been evaluated in a randomized, controlled study. The aim of this proposal is to evaluate the effectiveness of yoga, relaxation exercises or sleep hygiene in the treatment of chronic psycho-physiological insomnia. A subjective measure of sleep onset latency will be derived from daily sleep diaries, and an objective measure will be drawn from polysomnographic recordings. Sleep onset latency will be evaluated before and after a two month treatment period in a total of 48 young men and women who have been carefully screened for psychiatric and medical disorders. Subjects will be assigned to a yoga, relaxation exercise, or sleep hygiene treatment group. We anticipate that yoga practice will prove to be an effective treatment for insomnia which will yield significant improvements in sleep onset latency. We also anticipate that these improvements will be maintained at long-term follow up evaluation.

**Gabriel Jaraba**  
Institute for Transpersonal Psychology  
Barcelona, Spain  
gjaraba.k@tvcatalunya.com
Yoga therapy applied to insomnia and sleep disease (with Dr. Eduard Estivill, Institute Dexeus, the main private hospital in Barcelona).