

REVIEW ARTICLE

Eastern Integrative Medicine and Ancient Sound Healing Treatments for Stress: Recent Research Advances

Tamara L. Goldsby, PhD; Michael E. Goldsby, PhD

Abstract

Eastern integrative medicine includes centuries-old practices and treatments which have quite recently garnered significant attention in Western society. Numerous traditional medicine techniques such as yoga, sound healing, Qigong, Tai Chi Chuan, and acupuncture have recently been studied in relation to their potential for reduction of human chronic stress, a

widespread societal health problem. These ancient treatments present considerable potential for stress reduction globally. Thus, the present authors recommend that substantial resources be devoted to the study of these practices as potential tools for stress reduction and improvement in public health.

Tamara L. Goldsby, PhD, Department of Family Medicine and Public Health, University of California San Diego; California Institute for Human Science. Michael E. Goldsby, PhD, Department of Family Medicine and Public Health, University of California San Diego; Department of Public Health, University of Louisville, Kentucky.

*Corresponding author: Tamara L. Goldsby, PhD
E-mail address: tgoldsby@health.ucsd.edu*

Chronic stress is at epidemic proportions in much of the world, especially with the current COVID-19 pandemic,¹ and chronic psychosocial stress may even be characterized as a potential public health disaster.² Psychosocial stress has been studied extensively, including its epidemiology and dimensions relating to mental health concerns.³ Stress has particularly been examined in regard to the workplace, as occupational stress has been found to be ubiquitous in the majority of industrialized nations.^{4,5} Chronic stress has been linked to numerous disease states, including cardiovascular disease and diabetes,^{6,7} as well as psychological health problems, including anxiety and depression,^{1,8,9} with specific biomarkers found to be associated with stress.¹⁰

Western medicine techniques often involve pharmacological and surgical interventions, however they do not tend to address the underlying issue of stress that may be affecting the disease state. The Western approach to medicine tends to be a reactive response to symptoms rather than a preventative approach.

Recently the World Health Organization published a relevant guide to stress entitled, *Doing What Matters in Times of Stress: An Illustrated Guide*, a pragmatic and sensible publication with numerous tips and techniques for dealing with everyday stress.¹¹ This guide includes mindfulness techniques, as well as breath-based techniques designed to return the individual to a state of reduced sympathetic nervous system reactivity. There is also a discussion of a disengagement or detachment technique referred to as unhooking,¹² which is a mindfulness-type tool for psychosocial stress situations. Additionally, the guide discusses attention to one's own values with an emphasis on caring and kindness toward self and others. The techniques listed in the WHO guide are consistent with Eastern and meditative philosophies and practices which take a whole self-system approach (in particular, those emphasizing the importance of breath such as yoga, Tai Chi Chuan, and Qigong).

Traditional Eastern medicine approaches perceive the individual in more wholistic terms, and thus, treatments are directed toward the whole self-system rather than merely a dysfunctional aspect of physiology. Similarly, the concepts of vibrational medicine and energy medicine have gained increased attention in recent decades and they also perceive the individual in this wholistic manner.¹²⁻¹⁶ Many of these approaches draw from ancient Eastern philosophies. The way in which the concepts have recently been applied may be characterized as novel and forward-thinking, including applying vibrational medicine to arenas such as regenerative medicine¹² and psychosocial stress.¹⁷ These approaches are sorely needed in current

society as more individuals display numerous symptoms of chronic stress.

Fortunately, the ‘old ways’ of Traditional Eastern medicine are returning to popularity and coming to the forefront. This return to traditional ages-old medicine yields new promise for the reduction—or potentially even elimination—of chronic stress and its damaging results. There are numerous traditional medicine techniques from the East including yoga, Tibetan sound healing, acupuncture, Tai Chi Chuan, and Qigong among others that have recently been recognized around the globe for their potential relaxing and healing properties.

Movement-based Therapies: Yoga, Tai Chi Chuan, and Qigong

Tai Chi Chuan and Qigong

Movement-based therapies include yoga, Tai Chi Chuan, and Qigong. These wellness practices—in particular Tai Chi Chuan and Qigong—have been characterized as a unique form of exercise utilizing meditative movement and may provide numerous health benefits, both physiological and psychological, in regard to well-being.¹⁸ The health enhancement properties of these therapies are described as the ‘three regulations’: focus on the body (involving movement and posture), focus on the breath, and focus on the mind, or contemplative components.¹⁸

The movement-based therapies of yoga, Tai Chi Chuan, and Qigong have been associated with improved mood regulation. These effects may be partially derived from slowed breathing affecting the sympathetic nervous system, as Yeung and colleagues point out in their discussion of Qigong and Tai Chi.¹⁹ Another theory of the calming effects of these practices includes the movement of the body’s life force energy (known as ‘qi’ or ‘prana’) through the body, making room for healthy life force energy to enter. Physics tells us that there is no difference between energy and matter; thus, this may be applied to the human biofield of the body.^{20,21} Numerous studies have examined these movement-based therapies with positive associations in stress reduction.^{19,22-24}

Yoga

Yoga has been studied extensively, and in particular examined in regard to stress, and diseases that have been associated with stress. One such study focused upon Raja yoga meditation with type 2 diabetes patients and discovered that long-term Raja yoga meditation was associated with significant reductions in blood glucose, total cholesterol, and serum triglycerides.²⁵ In fact, due to yoga’s potential balancing, harmonizing, and stress reduction effects, it shows promise in assisting in the management of diabetes itself, as discussed by Raveendran and colleagues.²⁶ Additionally, yoga may be useful in the management and reduction of hypertension²⁷ and reduction of lower back pain.²⁸

Moreover, practices that decrease stress and increase feelings of well-being may be even more relevant since the

global COVID-19 pandemic, and a ‘yogic lifestyle’ may hold promise in that regard. Those in health care positions are known to experience high levels of stress and burnout; a yogic lifestyle may offer a potential stress treatment option. A recent study found that instituting a 4-week pilot program of a yogic lifestyle (including diet, exercise, and mindfulness) increased participant self-compassion and decreased stress for health care staff.²⁹

There are numerous philosophies regarding yoga-based practices and techniques. One study sought to examine differences in breath-based vs movement-based yoga practices, and found that both groups had reductions in salivary cortisol levels and self-reported stress. Additionally, the breath-based yoga group showed improvement in sustained attention.³⁰ Moreover, a meta-analysis revealed that yoga was associated not only with reduced cortisol levels, but also blood pressure and heart rate variability, as well as fasting blood glucose levels. The analysis determined that yoga may indeed be useful in regulating the sympathetic nervous system.³¹ This is particularly interesting when considering the characterization of the majority of these measures as physiological measures of stress. It may be theorized that yoga’s benefits may be derived partially due to the removal of blockages in the body’s energy centers, or what has been termed ‘chakras,’ which have been linked to the vagus nerve.^{32,33} Whatever the exact mechanism, yoga has become an evidence-based form of traditional medicine, with numerous studies demonstrating promising results.

Furthermore, instituting a ‘yogic lifestyle’ may be just what the doctor ordered, so to speak, with additional well-being outcomes yet to be discovered. In an intriguing paper, a yogic lifestyle has been proposed as a potential tool in targeting cancer stem cells, with the author calling on further research in this arena.³⁴

Traditional Techniques Involving the Meridians and/or Chakra System

Acupuncture

Acupuncture is a complex technique based on Chinese Medicine philosophy regarding the body’s meridians, and could be characterized as linked to the principles of Yin and Yang. Yang is represented by the needlepoints with their sharp, metallic, focused points, while Yin is represented by the human body, which is softer, more complex, and organic.³⁵ The human body’s meridians (a system of bodily energy flow, or qi flow) are regarded as the underlying mechanism of acupuncture. Twelve major meridians exist in the body and are associated with the primary organs: heart, lung, pericardium, spleen, liver, bladder, kidney, stomach, gallbladder, small intestine, large intestine, and ‘Triple Warmer.’ Germane to the present discussion of stress, the Triple Warmer meridian governs the sympathetic nervous system and is associated with the ‘fight or flight’ (stress) response. Thus, this meridian may offer partial explanation for reports of the

stress reduction effects of acupuncture.^{36,37} Additionally, there are 8 'extra' meridians and various minor meridians. Acupuncture points correspond to the various meridian pathways in the body.

Acupuncture has even gained acceptance in the West to the extent that health insurance companies are increasingly covering the cost of these sessions. This may be due to the preponderance of evidence supporting the health benefits, including reduced hypertension³⁸ and chronic inflammation disorders,³⁹ as well as a potential benefit for anxiety.⁴⁰

Deqi is an aspect of acupuncture that is regarded as important and is characterized as bodily sensation and subjective feelings by participants. It is stated to be an integral aspect of the treatment process whereby associated sensations (eg, aching, soreness, tingling, numbness) are induced by the needle placements on the meridian points. The needle placements and associated sensations are said to activate the body's qi, including sending blood to the meridians and collaterals. Thus, deqi is viewed as a prerequisite to the healing process in the acupuncture system.^{41,42}

Potential Physiological Mechanisms of Acupuncture

In addition to the meridian system, there may also be physiological mechanisms that affect the efficacy of acupuncture. The promising results discussed above in regard to stress and anxiety reduction may be partially explained by an increase in serotonin levels during acupuncture treatments.⁴³ One intriguing theory of the underlying mechanism by which acupuncture is effective for stress reduction and analgesia is potential stimulation of the vagus nerve by particular acupuncture points. Vagal nerve stimulation has demonstrated promise in the reduction of anxiety,^{44,45} and potentially may be activated during the needle placements. Studies suggest that the vagus nerve and hypothalamic-pituitary-adrenal (HPA) axis may be activated with acupuncture, including an anti-inflammatory response.⁴⁶⁻⁴⁸ Liu and colleagues (2020) even found a potential reduction of major depressive disorder with the practice of acupuncture.⁴⁹

Other Traditional Techniques Involving the Meridians and/or Chakra System

Agnihotra Yagnya (fire offering) is a South Asian technique performed at sunrise or sunset involving the lighting of ghee and dried cow dung. Rice is offered to the fire in an inverted copper container and the practice involves the chanting of mantras to the fire (Agni) and to the sun (Surya). This ancient practice has been said to improve well-being and balance the body's chakra system through the movement of prana (life force energy).^{50,51} Nilachal and Trivedi examined Yagya fire oblation in a case study of 4 participants that yielded reduced self-reported anxiety, as well as a resultant trend of reduction in the galvanic skin response (GSR), indicating a reduction of stress levels.⁵²

Moxibustion is a practice that involves burning the dried and powdered leaves of the *Artemisia vulgaris* (ai ye) plant, placed on or near the skin along the meridian channels. Shu et al found that moxibustion demonstrated promise in the reduction of fatigue in Chronic Fatigue Syndrome, and in regulating the autonomic nervous system.⁵³ Additionally, a recent study found that moxibustion appeared to assist in reduction of chest discomfort and negative emotions for patients suffering from COVID-19 symptoms.⁵⁴ Moreover, moxibustion, as well as acupuncture and acupressure, appeared to reduce symptoms of anxiety and depression in perinatal women.⁵⁵ Thus, moxibustion shows promise in reduction of negative emotions and should be further studied in regard to reducing symptoms of stress.

Traditional Sound Healing Techniques

Tibetan Singing Bowls

Tibetan, or Himalayan, singing bowl sound healing is another traditional and ancient healing method that has made a comeback in recent years. Tibetan singing bowls were utilized for centuries by monks in Tibet and Nepal for spiritual and healing ceremonies. These metal bowls are bell-like instruments that may be tapped or rubbed with a wooden mallet to produce a vibrational sound and effect. In recent years, the West has also discovered this technique as a promising treatment for stress. In fact, one observational study found that participants experiencing Tibetan singing bowl sound meditation had significant reductions in tension, anxiety, and depressed mood, and even had significant reduction in physical pain scores.⁵⁶ While research in this area is currently in its infancy, it is quite promising. Additionally, heart rate variability was recently utilized to examine the relaxation effects of 7 Tibetan singing bowls, and a strong relaxation effect was discovered when these vibrational instruments were played.⁵⁷

Singing Bowls and Brain Waves

Electroencephalogram (EEG) may be utilized as an effective measurement of various brain wave states, including deeply meditative or even trance-like states such as those associated with delta brain waves. One study used EEG technology to examine characteristics of various bands in the brains of participants after singing bowls were played. While various frequencies are emitted from singing bowls depending on several factors, including the size of the bowl, it was discovered by Ahn and colleagues that different bands (low frequency vs higher frequency) were associated with various energy levels and relaxation states, with the authors recommending further EEG research in this area.⁵⁸ Another EEG study examining singing bowls discovered a distinct change in delta brain waves—the brainwave state associated with deepest relaxation—utilizing singing bowls.⁵⁹ The EEG is a promising device to study physiological changes in the

Table. Human Brain Waves

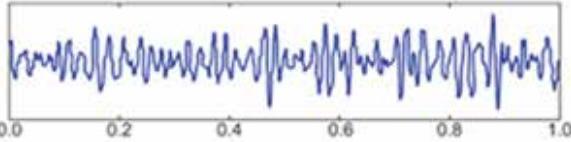
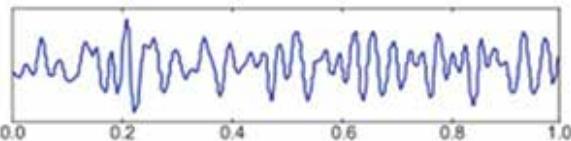
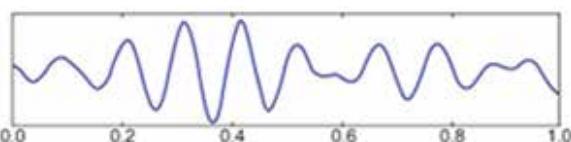
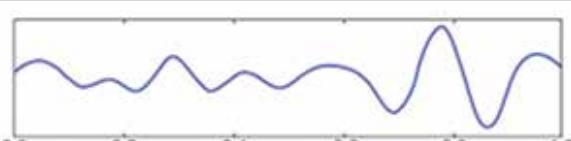
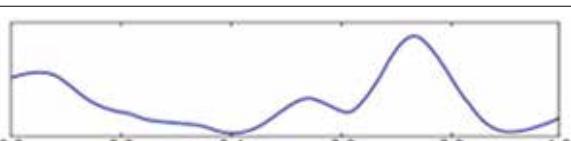
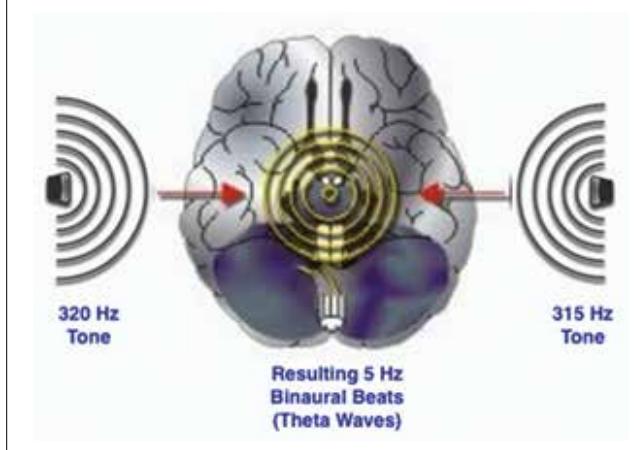
Band	Frequency (Hz)	Activity	Wave Form
Gamma	More than 30	Fastest brain wave; processing of information from different brain areas	
Beta	12 – 30	Alert consciousness; active thinking, concentration; focused or anxious	
Alpha	8 – 12	Relaxed, lucid, calm and peaceful	
Theta	4 – 8	Light sleep, meditation, or deep relaxation	
Delta	Less than 4	Deep dreamless sleep or deep state of meditation	

Figure. Binaural Beats Illustration



brain due to singing bowl vibrations and its potential relaxation effect.

Singing Bowls: Theories of Underlying Mechanisms

The exact mechanism and reasons for the promising effects of singing bowl sound healings are currently unknown. However, hypotheses regarding these effects have included the following.

1. Human brain waves: Brain waves may be significantly altered during sound healing. Thus, brain waves may change from a normal or even agitated state (such as beta waves), to an exceptionally relaxed brain wave state (such as theta or even delta waves), while listening to relaxing music or singing bowls (see Table).⁶⁰⁻⁶²
2. Binaural beats: When a tone with a particular hertz level is played in one of the participant's ears and a tone with a slightly different hertz level is played in the other ear, the brain entrains (or syncs) to the difference in hertz between the two tones. For example, if a 320 Hz tone is played in the left ear and a 315 Hz tone is played in the right ear, the brain entrains to 5 Hz (the difference between the two). This binaural beat phenomena may alter the subject's brain waves and may be measured via EEG. However, results have been mixed regarding the effects of binaural beats on brain waves, especially in regard to small-scale pilot studies (see Figure).⁶³⁻⁶⁶
3. The body's biofield: It has been hypothesized that the human body has an energy field surrounding it.^{12,67} If this is the case, the vibrations of the

instruments may be interacting with this biofield. In fact, Miles and True proposed that both Reiki healing and sound healing may have an effect of vibrational attuning of the body and its biofield.⁶⁸

Other Traditional Sound Healing Techniques: Didgeridoo and Gong

The field of sound healing has recently recognized several other ancient forms of vibrational healing, including the didgeridoo and gong.

The didgeridoo, an ancient instrument originally utilized by aboriginal peoples of Australia, has been gaining in popularity in many countries due to its powerful vibration that shows promise in reducing stress. In fact, one study by Lee et al found reductions in blood pressure and salivary amylase (as a stress biomarker) associated with didgeridoo playing,⁶⁹ and another study found improvements in self-reported anxiety as well as higher levels of relaxation and enjoyment posttreatment.⁷⁰

The gong is a potentially powerful vibrational instrument that has captivated many globally.⁷¹ In fact, the Chinese traditional Five Elements philosophy was applied quite recently to music by Hao et al to examine the physiological effects of the gong, as well as other instruments on rats. It was discovered that when the gong was played for rats, this powerful instrument increased levels of the excitatory and motivational neurotransmitter glutamic acid and decreased the inhibitory neurotransmitter gamma aminobutyric acid (GABA).⁷² While we may extrapolate from this study on rats, further study is necessary to investigate the physiological effects of this potentially powerful vibrational instrument upon humans.

The present paper distinguishes vibrational musical instruments from merely music therapy. As has been discussed, there may be additional effects that have yet to be proven but appear to show substantial promise, including traditional Chinese Medicine Five-Tone Therapy.⁷³

Ayurveda and Siddha Medicine

The ancient mind-body wellness practices of Ayurveda and Siddha Medicine have stood the test of time, and display promise in assisting with well-being and dealing with psychosocial stress. The ancient East Indian practice of Ayurveda is said to be at least 3000 years old and is based in the belief of the balance between body, mind, and spirit. It has shown promise in regard to various psychosocial and emotional stress challenges, including depressed mood,^{74,75} as well as potentially assisting with recent psychosocial stress due to the global COVID-19 pandemic.⁷⁶

Siddha medicine is considered one of India's oldest forms of medicine and is based in ancient medicinal and spiritual practices with benefits as yet to be discovered in the West.⁷⁷ In fact, in *The Lancet Psychiatry*, a systematic review proposes that practitioners of traditional and

complementary approaches such as these from India and China forge collaborations with Western medicine practitioners to assist patients with health care and psychological well-being.⁷⁸

Criticisms of Alternative Medicine

While alternative and integrative medicine techniques—especially Eastern techniques such as yoga, Tai Chi Chuan, Qigong, and singing bowl sound healing—have been steadily gaining in popularity and usage in recent decades, the debate over these types of techniques has not entirely subsided. In the 1990s, such criticisms as the potential high cost of alternative treatments was addressed by MacLennan and colleagues.⁷⁹ However, the authors did not address the potential reduction in cost to patients due to longer-term health improvements, including reduction in prescription medications and other potential cost-effectiveness benefits associated with alternative medicine.⁸⁰

Additionally, the question of possible side effects and safety concerns of alternative treatment has been raised,^{81,82} as well as more recent challenges in changing and differing terminology, such as the varying use of the terms alternative, complementary, integrative, etc.⁸³ Undoubtedly the above criticisms will continue to be debated as research in alternative treatments progresses over time.

Traditional Eastern Medicine and Future Stress Research

There are numerous healing techniques under the umbrella of Eastern Integrative Medicine and other traditional perspectives; however, the present paper is not meant to be a comprehensive report. Rather, we have touched on selected treatments that have recently been studied and that we characterize as offering significant potential in reduction of chronic stress. The present authors propose that the traditional medicine techniques discussed be studied extensively in order to assist chronically-stressed individuals and societies in reducing their physical and mental health challenges that may be stress related.

Conflict of Interest Statement

The authors do not have any conflicts of interest to disclose.

Author Contributions

TLG conceived of the idea for the manuscript and wrote the manuscript; MEG provided critical revision of the manuscript. Both TLG and MEG provided final approval of the manuscript to be published and agree to be accountable for all aspects of the manuscript.

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