

# **Integrating Body, Mind, and Spirit: An Essay Reviewing the Physiological, Psychological, and Spiritual Benefits of Meditation**

## **Integrando el Cuerpo, la Mente y el Espíritu: Una Revisión sobre los Beneficios Físicos, Psicológicos y Espirituales de la Meditación**

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### **Abstract**

Meditation is a term applied to a group of contemplative practices that train attention and awareness ostensibly to support psychological and spiritual well-being, usually with a focus on either breathing techniques or a chant/mantra that is repeated silently or aloud. Recently, meditation has been used in Western culture outside of religion and as part of complementary and alternative medicine (CAM) practices to promote calmness and physical relaxation, to cope with illness or disease, to improve psychological functioning and balance, and to improve overall wellness and health. This essay examines and reviews current research related to the physiological, psychological, and spiritual benefits of a meditation practice.

**Keywords:** meditation, relaxation, wellness, health, spiritual

### **Resumen**

La meditación es un término aplicado a un grupo de prácticas contemplativas, que entrenan la atención y conciencia para incrementar psicológica y espiritualmente el bienestar. Generalmente se hace mediante técnicas de respiración o un canto/mantra que se repite en silencio o en voz alta. Recientemente, la meditación se ha utilizado en la cultura occidental al margen de la religión, y como parte de las prácticas de una medicina complementaria y alternativa (CAM) para promover la tranquilidad y la relajación física, así como para hacer frente a la enfermedad y mejorar el funcionamiento psicológico y la salud en general. Este ensayo examina y revisa las investigaciones actuales relacionadas con los beneficios fisiológicos, psicológicos y espirituales de la práctica de la meditación.

**Palabras clave:** meditación, relajación, bienestar, salud, espiritual

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## Introduction

*Meditation* is a term applied to a group of contemplative practices that train attention and awareness ostensibly to support psychological and spiritual well-being, usually with a focus on either breathing techniques or a chant/mantra that is repeated silently or aloud. Of the many different types of meditation, most are based in a spiritual or religious tradition and have been practiced for thousands of years.

Recently, meditation has been used in Western culture outside of religion and as part of complementary and alternative medicine (CAM) practices to promote calmness and physical relaxation, to cope with illness or disease, to improve psychological functioning and balance, and to improve overall wellness and health. Multiple studies have been conducted during the past 30 years that have examined the ways in which emotional, mental, social, spiritual, and behavioral factors can directly affect physical health. These studies also have shown direct, positive, psychological and physical affective changes as a result of the practice of meditation. For example, researchers have reported the following positive results:

- A reduction of medication needed after mindfulness training in the treatment of childhood ADHD (Meppelink, de Bruin, & Bögels, 2016; Gibson, 2017), and the treatment of ADHD in adults (Bachmann, Lam, & Philipsen, 2016);
- Reduction of mental health issues such as anxiety, stress, and depression in adults (Cramer et al., 2016);
- Significant reduction in the examination anxiety of secondary school students (Arjunan & Joseph, 2016);
- Effective contemplative interventions in reducing PTSD symptoms in women with breast cancer (Offidani et al., 2017; Charlson et al., 2014);
- Clinically significant results from multiple studies and meta-analyses on hypertension, reducing both systolic blood pressure (SBP) and diastolic blood pressure (DBP) (Bai et al., 2015; Ooi, Giovino, & Pak 2107; Shi et al., 2017).

## The Incredible Human Brain

The human brain as a physical organ has been shaped by 2.7 million evolutionary years of tool-using hominids and more than 150,000 years as *Homo sapiens*. The brain cortex is divided into two hemispheres connected by the *corpus callosum*. Both hemispheres work closely together, but as humans evolved, the left hemisphere generally came to focus on sequential and linguistic processing and functions like a serial processor. It takes complex moments and lays them out in a sequential order. The left hemisphere organizes information in a logical and methodical pattern and creates individuals' understandings of past, present, and future.

The right hemisphere specializes in holistic and visual-spatial processing. It produces the master collage of sound, vision, taste, smell, and emotion at any specific moment in time. The right hemisphere remembers specific moments with crystal-clear clarity and comprehends how things relate to each other. To the right hemisphere, time is only the present moment. There is no past and no future; there is only the abundant now, as each moment vibrates with multiple sensations. The right hemisphere does not comprehend rules or order, so intuition, creativity, spontaneity, feeling carefree, imaginative, and artistic happen without inhibition or judgment. The right hemisphere sees the big picture; how everything is related, connected, and part of the whole.

Even in the deepest delta brain-wave sleep patterns, the brain is always turned on and humming away with billions of neurons firing every minute. The brain uses about the same amount of energy when the body is asleep or when awake and the brain is processing a complex thought. "The metabolic activity of the brain is remarkably constant over time" (Raichle & Gusnard, 2002).

Evolution has hard-wired the human brain to be reactive, built to avoid danger rather than to approach rewards. In the hominid and then human hunter-gatherer bands of the past million years, violence has been a leading cause of death for men (Bowles, 2006). Humans were anxious because there was a lot to fear. The amygdala alarms trigger the hypothalamus, which in turn triggers the pituitary to tell the adrenal glands to release epinephrine, cortisol, adrenalin, and other stress hormones to rev up the individual to fight or flee. In contemporary society, the human brain tricks people into three mistakes: overestimating threats,

underestimating opportunities, and underestimating resources (for dealing with threats and fulfilling opportunities).

The modern, Western world generally no longer requires constant vigilance or scanning for danger, but this hypervigilance reduces quality of life. Humans are overly sensitive to negative information; the brain regularly detects negative information faster than positive, particularly in facial expressions. Fearful faces are perceived much more rapidly than happy or neutral faces, possibly fast-tracked by the amygdala (Yang, Zale, & Blake, 2007). “Your brain is like Velcro for negative experiences and Teflon for positive ones—even though most of your experiences are probably neutral or positive” (Hanson, 2009, p. 41). Similarly, negative events are generally more impactful than positive events. All of this negative interpretation can feed into a psychological downward spiral: “Negative experiences create vicious cycles by making you pessimistic, over-reactive, and inclined to go negative yourself” (Hanson, 2009, p. 42).

### **The Integration of Mind and Brain**

What happens in the brain changes the mind; what happens in the mind can change the brain; the two processes must be viewed as a single, integrated system. The mind is broadly defined as the information in the brain, most of which is outside of immediate awareness and includes the signals that regulate the autonomic (involuntary) nervous system, the stress response, learned knowledge, personality characteristics, hopes, dreams, and the comprehension of language.

Neurons also make lasting circuits, as when an activity is consciously practiced, and strengthen connections as a result of mental activity and focus. Descriptively phrased as “neurons that fire together, wire together,” this process is commonly referred to as Hebb’s Law (Hebb, 1949). This means that active synapses—the connections between neurons get more sensitive, plus new synapses grow, producing thicker neural layers. “Cab drivers who have to memorize the spaghetti snarl of London streets have a thicker hippocampus—a part of the brain that helps make visual-spatial memories—at the end of their training” (Maguire et al., 2000).

The term *neuroplasticity* is used to describe changes in the brain that occur in response to experience. The various mechanisms of

neuroplasticity include the growth of new connections between synapses and the creation of new neurons/synapses. “When the framework of neuroplasticity is applied to meditation, we suggest that the mental training of meditation is fundamentally no different than other forms of skill acquisition that can induce plastic changes in the brain” (Davidson & Lutz, 2008, p. 176).

### **Meditation Methods**

As the brain changes, so does the mind. For example, conscious effort in breathing and mindfulness can result in millions of neurons firing together in the relatively slow rhythms of alpha waves, which are experienced as a growing sense of calm and peacefulness. Regulation of attention is the common theme across many meditation methods, which can generally be categorized into two types—mindfulness and concentrative—depending on the direction of the attitudinal focus. Many meditation techniques lie somewhere in the middle of these two extremes. Examples are practices such as Zen, Vipassana, and mindfulness meditation developed by John Kabat-Zinn.

### **Mindfulness-based Stress Reduction (MBSR)**

An MBSR controlled trial was conducted to investigate the utilization of second-generation mindfulness-based intervention (SG-MBI) on treating workaholism, which was defined as overwork associated with stress and incivility, anxiety, depression, and reduced life and job satisfaction. “Workaholism can also lead to burnout, work-family conflict, and impaired productivity” (Van Gordon, et al., 2017, p. 1). The 8-week controlled trial included both male and female adults (n=73) who were allocated to either meditation awareness training (MAT) (37) or a waiting-list control group (36). Measures used were the Bergen Work Addiction Scale (Andreassen, Griffiths, Hetland & Pallesen, 2012); the Abridged Job in General Scale (Russel et al., 2004); the Role-based Performance Scale (Welbourne, Johnson, & Erez, 1998); and the Depression, Anxiety, and Stress Scale (DASS) (Lovibond & Lovibond, 1996).

Participants attended eight weekly sessions and practiced meditation for an average of 40 min per day. Assessments were conducted at pre-, post- and 3-month follow-up phases. Five MAT and nine control-group participants dropped out

prior to the assessment phase but were not statistically significant. “MAT participants demonstrated significant and sustained improvements over control-group participants in workaholism symptomatology, job satisfaction, work engagement, work duration, and psychological distress. Further, compared to the control group, MAT participants demonstrated a significant reduction in hours spent working but without a decline in job performance” (Van Gordon et al., 2017, pg 1).

Another mindfulness study explored meditation as a strategy to improve the psychological and emotional well being of lawyers, who have reported high rates of stress, anxiety, depression and substance abuse (Minda, Cho, Nielsen, & Zhang, 2017). A group of female lawyers participated (n=46) who were recruited from a National Association of Women Lawyers via a virtual meeting in the fall of 2016. The eight-week mindfulness program was based on *The Anxious Lawyer* (Cho & Gifford, 2016). Resources included a meditation guide, guided audio meditations available online, and self report assessments conducted pre- and post- program. Measurements used included the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), the Positive and Negative Affect Schedule (Watson, Clark & Tellegen, 1988), and the DASS (Lovibond & Lovibond, 1995). “The results indicated that the program significantly reduced self-described depression, anxiety, stress and negative mood. The program also increased positive mood, psychological resilience, and effectiveness at work” (Minda et al., 2017).

### **Transcendental Meditation**

In contrast to mindfulness, concentrative methods focus on specific mental or sensory activity, such as a repeated sound, chant, mantra, a visualization, or on specific body sensations, such as breath. Examples include forms of yogic meditation, the Buddhist Samatha meditation (which focuses on breath), and transcendental meditation (TM), which centers on the repetition of a mantra. “The mantra is thought to eventually occupy awareness during meditative practice without concentrative effort, thereby possibly distinguishing the technique from other concentrative practices” (Cahn & Polich, 2006, p. 180). Rosenthal (2011) defined TM, as it was taught by Maharishi Mahesh Yogi, as,

A simple, natural, effortless mental technique which is practiced sitting comfortable with the eyes closed for fifteen to twenty minutes twice a day. It does not involve religion or a belief of any kind; it does not require a philosophy or change of lifestyle; nor does it involve “mindfulness” or any other form of meditation based on “focus” “concentration” or “control” of the mind. (p. 253)

Russell (1977) described the process of TM as “turning the attention through 180°; away from the outer world of sensory experience towards the subtler inner levels of the mind” (p. 43). TM is different from most other mindfulness meditation techniques in the use of a mantra, or chant, that is, a particular sound with no intrinsic meaning. A TM instructor assigns a student a mantra during TM training (all TM mantras come from ancient Vedic texts) but it is used only silently during meditation.

Post-traumatic stress disorder (PTSD) is a soul wound. In the civil war, PTSD was called *soldier’s heart*. A soul wound is described by Tick (2011) as follows:

A soul wound means that all the functions ever attributed to the soul are distorted, damaged, lost and confused by the horrible wounding of war. The way we think, the way we feel, the way we act, the way we love, the way we participate in employment, whether or not we can participate in society, our moral sensibility, and our aesthetics are all profoundly distorted and disturbed by the experience of war. PTSD is a cry of the soul trapped in the underworld. It is a frozen war-consciousness that makes the whole world look like a war zone. The self shrinks, barely staying alive and struggling to tolerate daily life, while the world looks like it is exploding around us. If we need to use the acronym PTSD, let’s call it post-terror soul distress. (p. 23)

PTSD trauma is compounded by “the harsh personal judgment and self-rebuke of the sufferer (which) exacerbates the condition. Dysfunctional moods lead to negative self-talk, which increases symptoms, which initiates the cycle anew” (Paulson & Krippner, 2007, p. 3).

TM was explored with veterans diagnosed with PTSD to determine if a regular TM practice decreased the need for psychotropic medications and increased psychological wellbeing (Barnes, Monto, Williams, & Rigg, 2016). Participants were military service members (n=74) who practiced TM (37) and a control group who did not practice TM (37). Psychological symptom severity was determined from self-report surveys commonly used at that facility; the Basis and Symptom Identification Scale, the Outcome Questionnaire, and the PCL-S (a 17-item self-report for PTSD). Measurement data was reviewed at baseline and 1,2,3, and 6 months from the start of TM training. For the control group the start of care was measured by the first appointment with a clinic psychiatrist. "At one month, 83.7% of the TM group stabilized, decreased, or ceased medications; compared with 59.4% of controls that showed stabilizations, decreases, or cessations. A similar pattern was observed after 2, 3 and 6 months; there was a 20.5% difference between groups in severity of psychological symptoms after 6 months" (p. 56).

Another systematic review and meta-analysis reviewed 10 trials on meditation interventions for PTSD with 643 participants (Hilton, et al., 2016). The programs used mindfulness-based stress reduction, yoga, and/or the mantra repetition of TM. All improved PTSD and depression symptoms compared with control groups, "but the findings are based on low and moderate quality of evidence" (p. 1). Positive effects included quality of life and anxiety but were not statistically significant. As most research efforts of this topic conclude, "more high-quality studies are needed on meditation as adjunctive treatment with PTSD-diagnosed participant samples large enough to detect statistical differences in outcomes" (p. 1).

### **Physiological Effects of Meditation**

Meditation appears to affect the autonomic (involuntary) nervous system, which regulates organs and muscles and controls automatic functions such as heartbeat, respiration, perspiration, and digestion. This system has two components: (1) the sympathetic nervous system, named the *fight-or-flight system* by physiologist Walter Cannon, which activates the body for action during stress or danger (Krippner & Combs, 2008). Heart rate and breathing increase while blood vessels narrow to restrict blood flow. Blood is

moved from surface tissues into the central nervous system, and adrenaline is released into the blood stream; and (2) the parasympathetic nervous system, which slows breathing and heart rate, increases digestion, and dilates blood vessels to improve blood flow. The continued activation of the sympathetic nervous system is a direct contributor to physical and psychological stress. Meditation appears to reduce activity in the sympathetic nervous system and increase activity in the parasympathetic nervous system (National Institutes of Health, n.d.). In a phrase coined by Herbert Benson of Harvard Medical School in the early 1970s, these physiological changes are known as the *relaxation response* (Benson & Klipper, 1975).

Newberg and Waldman (2009) were funded by the Alzheimer's Research and Prevention Foundation for a brief study using electroencephalograph (EEG) brain scans to test whether learning and practicing meditation for only eight weeks would show improved function of a patient with aging memory loss and early indications of Alzheimer's. The client, Gus, was to practice a form of meditation called Kirtan Kriya, which involves breathing, sound, and movement. The sound is a repetitive chant of the sounds of *sa, ta, na, and ma*, accompanied with specific sequential finger movement of touching each finger to the thumb with each different sound. Scientifically, each sound and movement keeps the mind both focused and relaxed.

Gus had never meditated prior to his involvement in the study. He was instructed to complete the meditation at least once a day, for at least 12 minutes each session. After only eight weeks of meditation, another resting scan of Gus's brain indicated "a significant increase of neural activity in the prefrontal cortex, an area heavily involved in helping an individual maintain a clear, focused attention upon a task" (Newberg & Waldman, 2009, p. 27). Additional activation was clear in the anterior cingulate, which is involved with emotional regulation, learning, memory, lowering anxiety, irritability, enhancing social awareness, and reducing depression. "Parkinson's and Alzheimer's patients also show reduced metabolic activity in the anterior cingulate, and this suggests to us that the meditation technique should slow down the deterioration caused by these diseases" (p. 27).

Regular meditation practice has been correlated with an increased cortical thickness in the brain (Lazar et al., 2005). fMRI was used to assess cortical thickness in 20 participants with

extensive experience in a specific meditation in which focused attention is directed to internal experiences. “Brain regions associated with attention, interoception and sensory processing were thicker in meditation participants than matched controls, including the prefrontal cortex and right anterior insula” (p. 1893). The data appear to offer the first structural evidence for experience-dependent cortical plasticity as a result of meditation practice.

Meditation may even slow the rate of cellular aging (Kurth, Cherbuin, & Luders, 2017; Thimmapuram, et al., 2017). Telomeres are the protective caps at the ends of chromosomes. The lengths of telomeres offer insight into cell and possibly organ longevity, as shortened telomere length has been linked to chronic stress exposure and depression. In their meta-analysis linking telomere length to cognitive stress. Epel, Daubenmier, Moskowitz, Folkman, and Blackburn (2009) considered two psychological processes that are in direct conflict: threat cognition and mindfulness. Psychological stress cognitions such as negative thoughts and perceived threats can result in prolonged states of reactivity. “Given the pattern of associations revealed so far, we propose that some forms of meditation may have salutary effects on telomere length by reducing cognitive stress and increasing positive states of mind and hormonal factors that may promote telomere maintenance” (p. 34).

Other studies during the past three decades have examined meditation’s efficacy as an intervention in a variety of health care settings (e.g., Murphy, Donovan, & Taylor, n.d.; Shapiro, Walsh, & Britton, 2003):

- Cardiovascular disease (Heo et al., 2017; Zamarra, Schneider, Besseghini, Robinson, & Salerno, 1996);
- Chronic pain (Hilton et al., 2017; Kabat-Zinn, 1982);
- Dermatological disorders (Shenefelt, 2017; Kabat-Zinn et al., 1998);
- Fibromyalgia syndrome (Van Gordon, Shonin & Griffiths, 2016); and
- Medical symptoms reduction in clinical and nonclinical populations (Kabat-Zinn, Lipworth, & Burney, 1985; Reibel, Greeson, Brainard, & Rosenzweig, 2001; Williams, Kolar, Reger, & Pearson, 2001).

### **Psychological and Emotional Effects of Meditation**

Three decades of research have indicated the positive psychological effects of meditation across a wide variety of clinical applications as well as improvements in self-perception. Freedman (2010) observed that there have been reported occurrences of alleged psi phenomena during altered mental states such as meditation or hypnosis in which there is decreased self-awareness. Some of these studies have explored meditation’s effects on qualities such as psychological disorders, compulsions, substance abuse, or depression, and positive qualities such as empathy and coherence:

- Anxiety and panic disorder (Edwards, 1991; Hoge et al., 2017; Kabat-Zinn et al., 1992; Miller, Fletcher, & Kabat-Zinn, 1995);
- Substance abuse (Gelderloos, Walton, Orme-Johnson, & Alexander, 1991);
- Reduction of psychological distress for cancer patients (Offidani et al., 2017; Speca, Carlson, Goodey, & Angen, 2000);
- Prevention of depression relapse (Ma & Teasdale, 2004);
- Obsessive-compulsive disorder (Key et al., 2017; Schwartz, Stoessel, Baxter, Martin, & Phelps, 1996; Sguazzin, Key, Rowa, Bieling, & McCabe, 2017);
- Self-actualization (Alexander, Rainforth, & Gelderloss, 1991);
- Intrapersonal (self-directedness), interpersonal (cooperativeness), and transpersonal (self-transcendence; Haimel & Valentine, 2001);
- Empathy (Laneri et al., 2017; Lesh, 1970; Ridderinkhof, de Bruin, Brummelman, & Bögels, 2017; Shapiro, Schwartz, & Bonner, 1998); and
- Sense of coherence and stress-hardiness (Jadhav, Manthalkar, & Joshi, 2017; Kabat-Zinn & Skillings, 1989; Tate, 1994);

**Spiritual Effects of Meditation**

It also is important to consider the spiritual or religious base from which meditation originated. Is there a spiritual and consciousness-enhancing component of meditation, and what are the effects on the brain? M. Ricard, a Buddhist monk with a Ph.D. in molecular genetics, has worked closely with the Mind and Life Institute, the Dalai Lama, and neuroscientist Dr. Richard Davidson during meditation studies. Ricard explained his belief that “spirituality *is* a contemplative science dealing with natural phenomena, a way of studying the mind” (Luisi, 2009, p. 67, emphasis in original).

Physiological changes of these brain circuits have been revealed in multiple EEG and fMRI studies. As adept meditators, Tibetan Buddhist monks have consistently shown an increase in left prefrontal region activity. During compassion meditation, a Buddhist abbot of a monastery in India who had meditated for 30 years showed his “left asymmetry was off the charts —higher than 99.7 percent of everyone ever measured” (Begley, 2007, p. 229). Scientists could not believe the data; they assumed the equipment was flawed. However, after repeatable, demonstrable studies with dozens of monks with advanced meditation experience, the data became clear. The scientists saw real brainwave changes at the exact moment of transition. When practitioners generated compassion, their gamma waves were off the charts.

The brain has specific areas that are involved in altered states of consciousness and may be construed as the brain’s circuitry of spirituality (see Table 1).

Neuroscience research supports the idea that the brain is prepared to believe in a spiritual

source of power, as explored in another complex fMRI study by Kapogiannis et al. (2009) in which it was attempted to “define the psychological

**Table 1. Brain centers associated with spirituality**

<u>Brain Center</u>	<u>Function</u>
Frontal lobe	Manages executive functions and mental flexibility and coordinates goals and actions. Integrates all of one’s ideas about God, positive and negative, and includes the logic used to assess one’s beliefs. It predicts one’s future in relationship to a higher Source and intellectually asks the what, why, and where questions associated with spiritual issues. The frontal lobe may go offline in altered states, reducing critical thinking, and can be hyperactive during meditation, indicating increased attentional focus.
Parietal lobe and parietal-frontal circuit	Altered activity here can create an out-of-body feeling or distorted experience of space and time. Establishes the relationship between individuals and their perception of God and allows the experience of God’s presence in space. When activity is decreased by meditation or prayer, the boundaries between a person and God dissolve as a sense of unity increases between the object of contemplation and spiritual beliefs.
Occipital-parietal circuit	Identifies God as an object that exists in the world. Adults can process abstract spiritual concepts, but children see God as a face.
Corpus callosum	The physical connection and communication point between the two disconnected left and right brain hemispheres. Blissful states are associated with greater synchrony between hemispheres and sudden switches of activity from one side to another.
Thalamus	Gives an emotional feeling to the concepts of God. Appears to be the key organ that makes a higher Source feel objectively real. Imparts a holistic perception of the world and may shut off incoming information, sending a person into a world of their own.
Amygdala	Ancient neuron clusters that react to basic survival and fear responses. When over-stimulated, creates the emotional impression of an authoritative, punitive, frightening God and suppresses the frontal lobe’s ability to regard God logically.
Striatum	Inhibits activity in the amygdala, creating a safety in the presence of God or the object of contemplation.
Anterior cingulate	Inhibits activity in the amygdala, allowing the experience of God as loving and compassionate. Decreases religious anxiety, guilt, fear, and anger.
<b>Note:</b> Data in table are adapted from Baars and Ramsøy, 2007; Bear, Connors, & Paradiso, 2007; Carter, 2009; Newberg & Walden, 2009; and Hanson, 2009.	

structure of religious belief, based on fundamental cognitive processes, and to reveal the corresponding pattern of brain activation to determine the relevance of evolutionary theories of cognitive development to the development of religious beliefs” (p. 4876). This study conducted multidimensional scaling (MDS) and evaluated participants’ neural foundations by employing a parallel, functional neuroimaging study.

The first MDS experiment included 26 participants with varying degrees of self-reported religiosity. The second experiment used event-related fMRI to reveal brain activity of 40 new participants. When participants heard phrases such as “God’s will guides my acts” and “God protects one’s life,” the areas of the brain involved in deciphering other people’s emotions and intentions—known as *theory of mind*—lit up. “The MDS results confirmed the validity of the proposed psychological structure of religious belief. The neural correlates of these psychological dimensions were revealed to be well-known brain networks, mediating evolutionary adaptive cognitive functions” (p. 4878).

Radin (2008) reviewed research work explicitly connecting nonlocal experiences with meditation, concluding the link is a strong one and appears to occur among a special population. “In aggregate, this surprisingly large body of meditation research, although principally focused on stress reduction and the psycho-physiological self-regulation benefits meditation practices confer, gives clear indication that these techniques create the inward looking essential to genius manifesting” (Schwartz, 2010, p. 232).

### Conclusion

Research has clearly produced a strong scientific foundation of the significant physiological, psychological, emotional, and spiritual benefits of meditation. These past studies have influenced a rising interest among psychologists in general medicine, CAM, the healing process, the potential impact of models of consciousness on character development, and “the possibility of a new dialogue emerging between science and religion framed in terms of spiritual experience” (Murphy, Donovan, & Taylor, n.d., p. 20).

One of the best established phenomena in neuroscience—brain plasticity—clearly shows that when neurons fire together, they wire together. Cognitive training improves the ability to learn a

foreign language or a golf swing. However, studies have shown that cognitive training benefits only the task used in training and may not necessarily generalize to other tasks. “The holy grail of brain training is something that does transfer, and here are three good candidates” (Begley, 2010, p. 44): (1) Simple aerobic physical exercise, such as walking 45 minutes a day three times a week, which improves episodic memory and executive-control functions by as much as 20%; (2) videogames or computer-based brain games, which might improve general mental agility, such as motor control, visual search, working memory, and decision-making; and (3) meditation, “which can increase the thickness of regions that control attention and process sensory signals from the outside world” (p. 45). With increased practice in the use of spirituality circuitry (Table 1), the changing brain structure and function increases one’s connection to one’s spiritual source and allows greater resilience and recovery from stress, enhanced ability to solve complex problems, and improved management of challenging situations.

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