



Brain and Neuro-Psychiatry Awareness on the Path of Meditation

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Abstract

Meditation can be a good therapeutic alternative in the treatment of many kinds of illness and can be integrated in contemporary sex therapies and sexual medicine. Integrating yoga as a non-pharmacological treatment modality into contemporary sex therapy has the potential to offer beneficial effects for different facets of human sexuality. In addition to exercising brain areas associated with attention and self-control, a mindfulness meditation practice also cultivates a sense of wellbeing by encouraging positive thinking and visualization. Conjuring up happy thoughts artificially, i.e. not in response to a happy stimulus, can in fact improve mood. What Meditation as therapy can offer is focus on the mind-body connection which is lacking in the contemporary approaches in sex therapy. Yoga practice helps to enrich the sexual life which can be elevated from sensual to a spiritual plane. Dynamics in body and mind is certain due to Gamma, Beta, Alpha, Theta and Delta ray in and post meditation practice.

In recent years, meditation has entered public awareness in a big way. The popularity of yoga, an ancient tradition with roots in meditation, has been on the rise in the US since the '80s and continues to boom, with new studios popping up all over the country. The practice of mediation attracts a diverse crowd because its effects are undoubtedly beneficial with zero deleterious side effects. If you're anything like me (i.e. skeptical), then at some point, you have probably judged the practice as phony or reeking of pseudoscience. We used to believe that meditation largely belonged to communities of hippie-dippy and/or deeply religious people—two groups we do not personally identify with. However, with its growth in popularity has come investigation from the science community, and the evidence is mounting in favor of its tangible, quantifiable benefits.

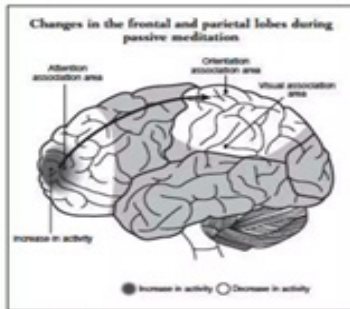
What is Meditation?

The ultimate goal of meditation is to achieve a sense of acceptance, contentment, and awareness of the present moment. The biggest challenge of the practice is to gain emotional control and calm independent from outside anxiety or unhappiness. Before your eyes glaze over from the Zen of that definition, consider the implications of complete emotional control. How would your life change if you could recognize and acknowledge anxiety without allowing it to paralyze you? What if you could generate a sense of contentment and happiness without actively changing anything in your life, and without the aid of medication or recreational drugs? I'm not implying that we can ever have absolute control over our thoughts and emotions; ultimately, human behavior is a product of biochemistry. However, we do think it is possible, with practice, to enhance self-control and more effectively regulate one's own emotions.

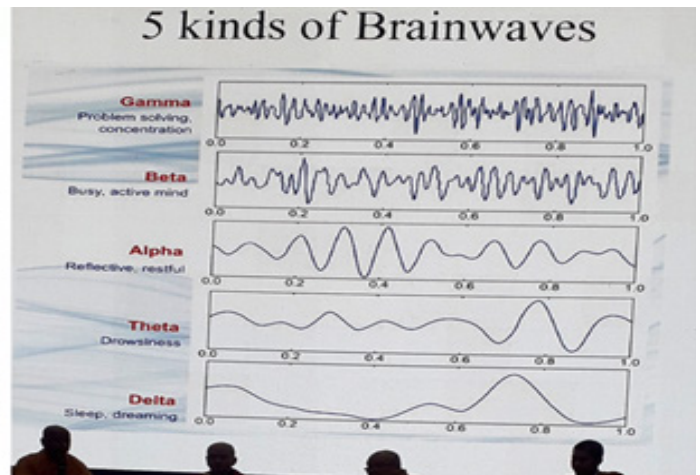
Physical Changes

Out of all the literature written on this topic, identified eight key brain areas through meta-analysis as significantly altered in the brains of meditators as compared to non-meditators [1]. Basic information about these brain areas implicates important brain functions related to attention, self-awareness, sensory processing, emotional regulation, and inter- and intra-hemispherical connectivity, among others. For personally, the most beneficial aspect of meditation training is increased self-control—of emotions and of attention. Psychologists are fond of touting the popular phrase “willpower is like a muscle,” meaning that the more a person practices delaying gratification, the easier it becomes to deny oneself in the short term for a better payoff later. The Gamma, Beta, Alpha, Theta and Delta ray regulate the brain activities as per sleep and function Fig.

MINDFULNESS MEDITATION INVOLVES CHANGES IN FRONTAL AND PARIETAL LOBES



- Frontal lobe
 - Increased activity in attentional networks
 - Decreased activity in surrounding areas
- Parietal lobe
 - Decreased activity in orientation area
 - Decreased activity in networks involved in relaying experiences through language



It turns out that the anterior cingulate cortex (ACC), in tandem with the insular cortex, is largely responsible for executive attention and self-control. demonstrated greater white matter “integrity and efficiency,” which the authors measured using diffusion tensor imaging [2]. Another study by revealed increased cortical thickness in meditating participants [3]. Interestingly, the participants in these two studies were largely naïve to meditating before to their involvement in the experiment. Activation in the ACC was found to be less pronounced in experienced meditators, suggesting the effort required to concentrate and clear the mind decreased with practice. I have found this to be true in my own practice—the more often I attend a meditation-focused yoga class or sit to meditate on my own, the less time and mental exertion it takes me to obtain a peaceful, non-judgmental state of mind.

Emotional Effects

In addition to exercising brain areas associated with attention and self-control, a mindfulness meditation practice also cultivates a sense of wellbeing by encouraging positive thinking and visualization. Conjuring up happy thoughts artificially, i.e. not in response to a happy stimulus, can in fact improve mood. In other words, even “faking it” has its benefits. Research on this phenomenon is not new—the study of positive psychology has existed for decades. One famous study by asked participants to hold a pen in their mouth in such a way as to facilitate or inhibit the facial muscles involved in smiling, without asking participants to pose with a smiling face [4]. Experimenters asked participants to hold the pen either between the teeth lengthwise (smile condition), or with one end in the mouth that required a puckering expression (non-smiling condition). After some time had passed, all participants watched a funny cartoon. Those who had held the pencil lengthwise between the teeth laughed harder and more frequently at the cartoon than the participants in the non-smiling condition. This finding supported the facial feedback hypothesis, which states that facial movement (or in this

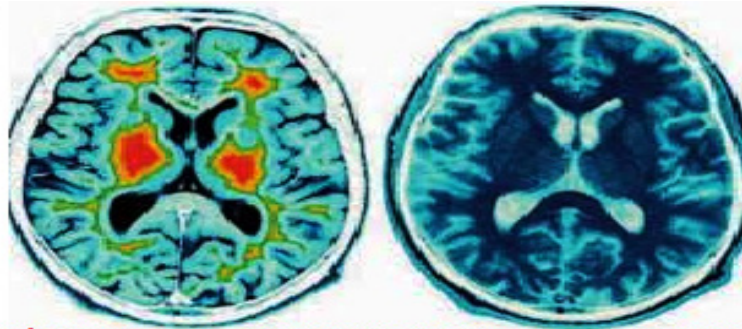
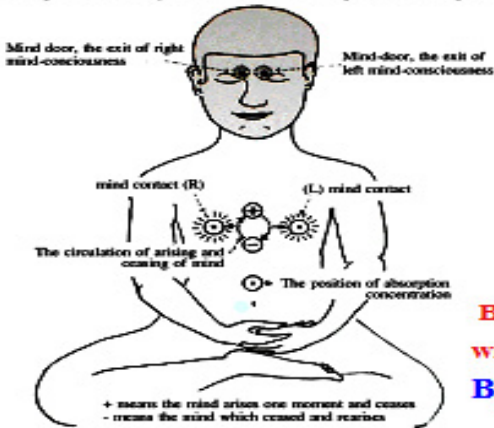
case, position), can influence emotional experience.

Meditation, as opposed to relaxation training, has also been shown to improve mood and reduce negative affect. Demonstrated a significant anxiolytic effect of meditation in patients with a variety anxiety disorders, including agoraphobia. Patients attended weekly two-hour guided meditation sessions for a total of eight weeks, followed by three months of post-treatment emotional assessment by experimenters [5].

The authors postulated that much of the benefit of the meditation practice came from the emphasis on noting sensations and emotions without labeling them as catastrophic. In a sense, participants learned how to recognize panic as a physiological response while understanding they were not in real danger, thus easing physical sensations of anxiety.

The implications of these results are far-reaching. In the context of a yoga class, yogis utilize inner focus and acceptance of discomfort and pain for the purposes of increasing pain tolerance and challenging the body to its fullest potential. Focus on the breath rather than on the sensation of burning quadriceps can improve endurance. Off the yoga mat, these techniques may be used to control impulses of anger, as well as to combat the stresses of work, school, relationships, etc. Yoga, which owes some of its philosophy to Buddhism, offers a path to enlightenment through the union of mind and body. When my yoga instructor tells his students to cultivate an “inner smile” in the face of discomfort, he also explains that with practice, it becomes possible to generate legitimate feelings of contentment, peace, and even joy in neutral and uncomfortable situations. While personally I still struggle with the fundamental practice, the science of meditation shows that the potential benefits are worth persevering for.

The picture showing the inner senses are separated into 2 parts



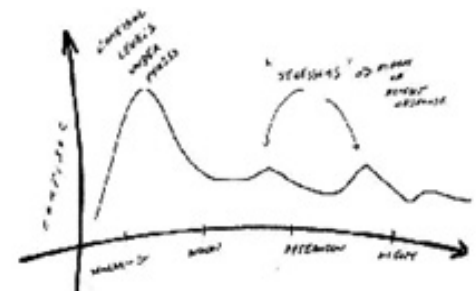
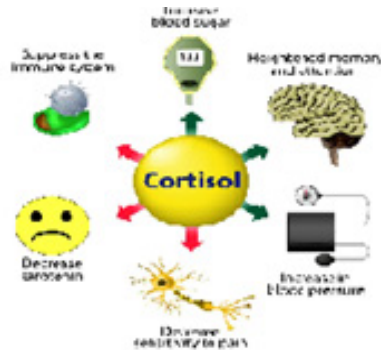
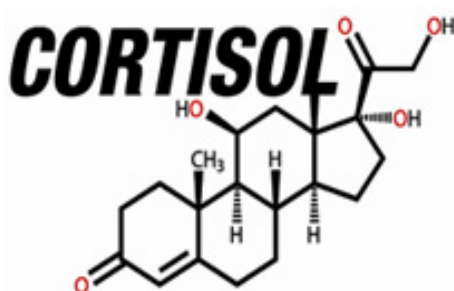
Brain waves can be compared to the four gears of an automobile, with beta being first, alpha second, theta third, and delta fourth. By Meditation things go a lot better with less stress

How Meditation Can Change Your Brain: The Neuroscience of Buddhist Practice—Nirvana is a place on earth. Popularly thought of a Buddhist “heaven,” religious scholars discuss the concept not as an arrival at someplace other than the physical place we are, but as the extinction of suffering in the mind, achieved in large part through intensive meditation. If this state of enlightenment exists in the here and now—the scientific inquirer is justified in asking—shouldn’t it be something we can measure? Maybe it is. Psychologist Daniel Goleman and neuroscientist Richard Davidson set out to do just that when they flew several “Olympic level meditators” from Nepal, India, and France to Davidson’s lab at the University of Wisconsin. Once they put the meditators under Davidson’s scanners, researchers found that “their brain waves are really different,” as Goleman says in the Big Think video above.

Perhaps the most remarkable findings in the Olympic level meditators have to do with what’s called a gamma wave. All of us get gamma for a very short period when we solve a problem we’ve been grappling with, even if it’s something that’s vexed us for months. We get about half second of gamma; it’s the strongest wave in the EEG spectrum.... What was stunning was that the Olympic level meditators, these are people who have done up to 62,000 lifetime hours of meditation, their brainwave shows gamma very strong all the time as a lasting trait just no matter what they’re doing. It’s not a state effect, it’s not during their meditation alone, but it’s just their everyday state of mind. We

actually have no idea what that means experientially. Science has never seen it before. The meditators themselves describe the state of mind in terms consistent with thousands of years of literature on the subject; “it’s very spacious and you’re wide open, you’re prepared for whatever may come.” Goleman and Davidson have elaborated their findings for the public in the book *Altered Traits: Science Reveals How Meditation Changes Your Mind, Brain, and Body*. For more on Davidson’s work on the subject, see his talk at Google, “Transform Your Mind, Change Your Brain.” The bar to enlightenment seems high. Goleman and Davidson’s “Olympic level” test subjects spent a minimum of 62,000 hours in meditation, which amounts to something like 20 years of eight-hour days, seven days a week (and maybe explains why the path to enlightenment is often spread out over several lifetimes in the tradition). But that doesn’t mean meditation in lesser doses does not have significant effects on the brain as well.

As Goleman explains in the video above, meditation induces a state of hyper-focus, or “flow,” that acts as a gym for your brain: lowering stress, raising the level of resilience under stress, and increasing focus “in the midst of distractions.” At some point, he says, these temporary “altered states” become permanent “altered traits.” Along the way, as with any consistent, long-term workout program, meditators develop strength, stamina, and flexibility the longer they stick with the practice. Find resources to get you started in the Relateds below.



Morning Noon Afternoon Night

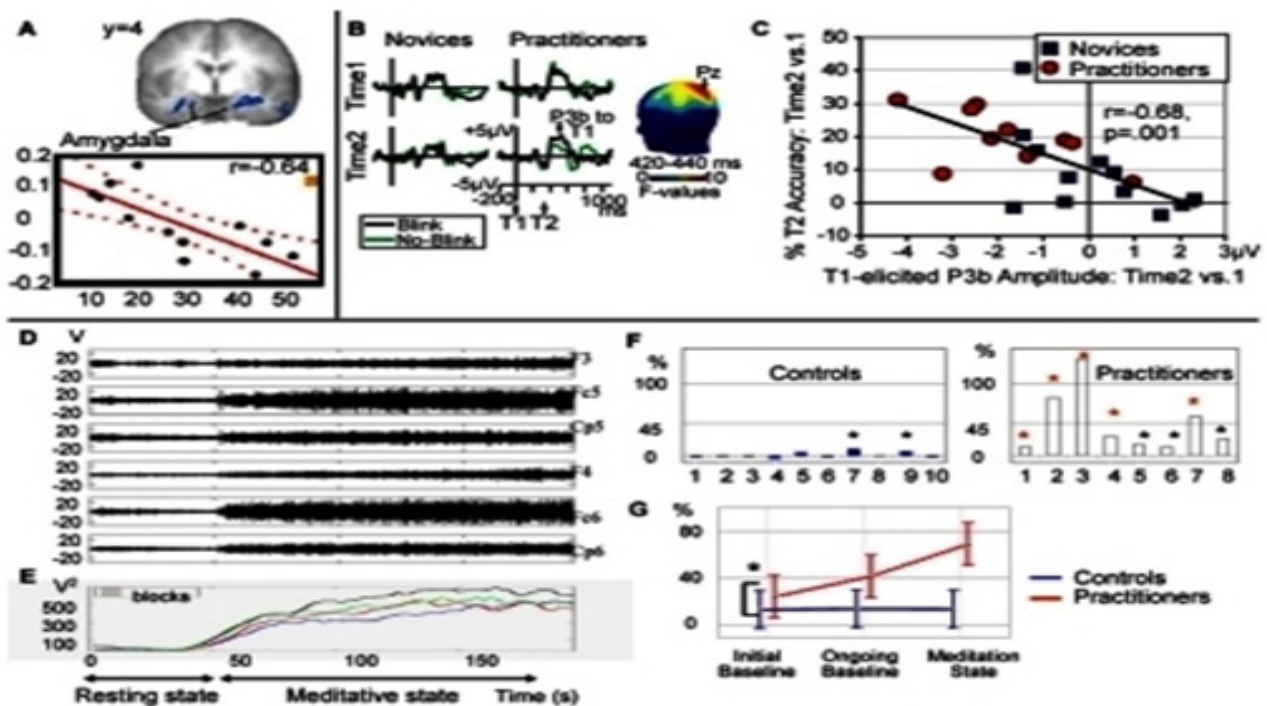
If you're someone that incorporates meditation into your daily routine, then you're well aware of the benefits it provides. Meditation has been known to improve focus, reduce stress and anxiety, and create a sense of calmness. But did you know that the more you meditate, the less you actually have to do? This is because we train our brain in a certain way. In this blog post, we'll explore the neuroscience behind the benefits of meditation and how it works to create a profound shift in the way our brains and neural circuits work. One of the fascinating aspects of meditation is that it reduces the need for sleep. When we meditate, our brain waves slow down, and we enter a state of deep relaxation similar to getting a good night's sleep. This deep relaxation is why many avid meditators can function on less sleep and still feel refreshed and productive the next day. Consciousness, meditation, and psychedelics like LSD and psilocybin used to be talked about together, but they are now separate practices. Both psychedelics and meditation can induce altered states of consciousness, but the brain mechanisms that regulate them are different. When we meditate, we regulate our consciousness through our own effort and mental training.

When we meditate, our brains activate different regions that are responsible for controlling bodily senses and interpretation of emotions. One of these regions is the left dorsal lateral prefrontal cortex, which allows us to interpret what's going on emotionally and make good decisions based on that information. The prefrontal cortex has control over the anterior cingulate cortex, which regulates how fast we breathe and what's going on inside

and on the surface of our bodies. The insula interprets what's going on outside of us, so all of these brain parts work together to have a neural conversation. As we meditate, we develop awareness of the present moment and anticipation of the future. Our thoughts change our bodily state, but when we're mindful, all of these brain parts are talking together and in sync. This synchronicity allows us to be more efficient and effective thinkers. The more these brain regions work together and have connecting conversations, the faster and more effective our brains become.

How Meditation Influences Neurohormones

Meditation heavily influences the Hypothalamus-Pituitary-Adrenal (HPA) Axis, a brain-body circuit which plays a critical role in the body's response to stress. Inhibition of the sympathetic nervous system during meditation has many calming, anti-anxiety effects on the nervous system; for example, inhibiting the hypothalamus, which in turn, inhibits the pituitary gland and thereby the release of ACTH (adrenocorticotropic hormone). ACTH stimulates the production of adrenal hormones. The hypothalamus, an important component of the limbic system, integrates mind-body responses throughout the autonomic and somatic nervous systems. (Common physiological meditation effects, such as decreases in blood pressure, blood lactate and urinary vanillylmandelic acid, result from inhibition of the hypothalamus.)



Adrenocorticotrophic hormone (ACTH)-Many studies have established that long-term practice meditative practice has a lasting influence on adrenocortical activity (steroid hormones produced by the adrenal glands) both during meditation and after. Specifically, cortisol and ACTH (adrenocorticotrophic hormone) activity is reduced [6].Beta-Endorphins People who meditate regularly have higher levels of endorphins, natural opioids that are produced endogenously (within) the body (primarily the hypothalamus) and used internally as painkillers — modulate the body’s pain pathways. Higher levels of the neurotransmitter glutamate during meditation stimulates the hypothalamus to release beta-endorphins.

Meditation Can Help with Addiction

A growing number of studies has shown that, given its effects on the self-control regions of the brain, meditation can be very effective in helping people recover from various types of addiction. One study, for example, pitted mindfulness training against the American Lung Association's freedom from smoking (FFS) program, and found that people who learned mindfulness were many times more likely to have quit smoking by the end of the training, and at 17 weeks follow-up, than those in the conventional treatment. This may be because meditation helps people “decouple” the state of craving from the act of smoking, so the one doesn’t always have to lead to the other, but rather you fully experience and ride out the “wave” of craving, until it passes. Other research has found that mindfulness training, mindfulness-based cognitive therapy (MBCT), and mindfulness-based relapse prevention (MBRP) can be helpful in treating other forms of addiction.

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