Can Meditation Amend Your Brain? Rising Thoughts in Neuroscience of Meditation

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Abstract

Meditation is becoming increasingly popular as a topic for scientific research and are being increasingly used for stress, psychological well being, coping with chronic illness as well as adjunctive treatments for psychiatric disorders. Research suggests that these meditations have differential, dissociable effects on a wide range of cognitive (control) processes, such as attentional selection, conflict monitoring, divergent, and convergent thinking. Although research on exactly how the various meditations operate on these processes is still lacking, different kinds of meditations are associated with different neural structures and different patterns of electroencephalographic activity. The present communication suggest how the different meditations may affect cognitive processes and provide directions of future research.

Keywords: Meditation, Electroencephalography, Neural Networks, Cognition**.**

INTRODUCTION

Consciously directing awareness to present moment experience not only modifies the brain activity but also its structure!

Yes, it can. One simple activity leads to the efficient functioning of the body with homeostasis through improved functioning of the *psycho-immuno-neuro-endocrine* system including cognitive benefits, lowering stress levels, counteracting age-associated loss of brain cells, and improving your ability to pay attention, remember, and make decisions, all these changes make us eager to take advantage of it? Well, increasingly, research is providing evidence that mediation is just an activity. The term meditation describes a variety of techniques that involve quieting that mind and relaxing the body by focusing attention on an object, word, or sensation and ignoring interrupting thoughts.

Although there are many specific approaches to meditation, but such

practices are divided into two basic categories. The first category is one in which the subjects simply attempt to clear all thought from their sphere of attention. This form of meditation is one in which the practitioner attempts to reach a subjective state characterized by a sense of no space, no time, and no thought. Further, this state is cognitively experienced as fully integrated and unified, such that there is no sense of a self and other. This includes practices such as those associated with traditions such as Theravada Buddhism.

The second category is one in which the subjects focus their attention on a particular object, image, phrase, or word, and it includes practices such as transcendental meditation and various forms of Tibetan Buddhism. This form of meditation is designed to lead one to a subjective experience of absorption with the object of focus. There is another distinction in which some meditation is guided by following along with a leader, either in person or on tape, who is verbally directing the practitioner. Others practice the meditation on their own volition. We might expect that this difference between volitional and guided meditation should also be reflected in specific differences in cerebral activation.

Phenomenological analysis suggests that the end results of many practices of meditation are similar, although these results might be described using different characteristics depending on the culture and individual. Therefore, it seems reasonable that while the initial neurophysiological activation occurring during any given practice may differ, there should eventually be a convergence. "All types of meditation involve regular sessions-ideally in 20 minutes or more each day- in which you spend uninterrupted time calmly becoming aware of your thoughts and distancing yourself from those thoughts. The process has been aptly describes as "*thinking about not-thinking*".

A number of scientific investigations have provided evidence that regular practice of meditation can improve mental and physical health, mood, and cognitive functioning. For example, a study in the Journal Cognitive Science suggests that meditation can protect memory from the negative effects of stress [1]. „Previous studies have suggested that *meditation can help diminish a person's susceptibility and responsiveness to stress*. Lower levels of stress hormone cortisol, and reduce tension and anxiety," says Dr. Lazar. This study adds yet another that in people under stress-who often experience decline in cognitive ability-regular practice of meditation, can help preserve normal cognitive functioning" [2].

Regular meditation has been associated with a number of positive effects on cognition [3], in addition to lowering stress [4] and protecting working

memory [5] (a type of memory used in managing cognitive demands and regulating emotions). Researchers have identified many cognitive benefits associated with meditation, including: reversing memory loss, increased tolerance to pain, and improved ability to focus [5].

Thinking and engaging in activity can physically alter the brain, a concept called, "**neuroplasticity**". Repeated thoughts and activities can turn our genes on or off. Modern scientists have observed that when you think repeatedly, concentrate or meditate, you turn on genes to make proteins that change the structure of the neurons and increase the number of connections between brain cells. In essence, neurons become better communicators.

Meditation appears to have a direct influence on the structure and activities of the brain; Dr. Lazar [6] suggests that twice-daily sessions of meditation over an eight-week period can cause physical changes in brains of people who are chronically stressed. At the outset of the study, brain scans of study participants with chronic stress showed that a region of the brain called the *amygdala*, which is activated by emotional arousal, appeared denser than in individuals who were not overly stressed. Following eight weeks of meditation, participants reported significantly reduced feelings of stress, and brain scans showed a corresponding decrease in the density of gray matter in the amygdala.

In earlier research, Dr. Lazar [6] found evidence that regular practice of meditation causes thickening of the brain‟s prefrontal cortex and right anterior insula, regions that are associated with decision making, attention, memory, and sensory processing. Since these regions of the brain normally thin with age, the findings suggest that meditation may be effective strategy for slowing the aging process by building up these areas and strengthening memory and attention abilities that decline with people‟s age.

Various studies have been published in the different journals found significant differences in brain wave activity between people who were engaged in meditation and those who simply rested [7-12]. Brain waves-short bursts of electrical activity produced by transmission of signals among groups of neurons-are associated with thinking and other brain activity and can be measured with electroencephalograph (EEG) testing and brain scanning.

The researchers found that compared with resting state, meditation involved more abundant theta waves [10] (associated with relaxed attention and alertness) across all brain regions, and especially in the frontal and

temporal central areas of the brain. Meditation was also associated with more abundant alpha waves (an indication of wakeful rest in which brain relaxes from intentional, goal-oriented tasks) in the posterior brain regions.

Other research suggests that the brain‟s gamma waves [13] (associated with awareness, concentration, and consciousness) also increase. Gamma waves are especially powerful and well organized in experienced meditators, who show evidence of greater gamma wave activity compared to novice meditators even when are not meditating.

Extensive studies are still going on to see the effect of meditation on human brain & body.

Now the Question comes in our Mind that……What Can We Do To Modify Our Precious Brain without Any Cost to Promote Happiness and Positive Behavior?

Just a **simple way** that is to practice meditation for **20 minutes** which has been associated with improved memory in adults who experienced memory problems; which help in the prevention of disease and promote health.
One way of practicing meditation at home; the following steps involve:

1. Sit quietly and comfortably with hands resting, palms up, on your lap.

2. Say out loud the four syllables SA, TA, NA, and Ma. As you say “SA” touch your index finger to your thumb; with “TA” touch your middle finger to your thumb; with “NA” touch your ring finger to your thumb and with “MA” touches your little finger to your thumb. (These four primal sounds are believed to stand for: SA- infinity, cosmos, beginning, TA-life existence. NA-death, MA-rebirth).

3. Perform this sequence repeatedly for two minutes, saying the syllables out loud, then repeat the sequence for another two minutes while whispering the syllables.

4. Next, perform the sequence silently for four minutes.

5. Whisper the sequence once again for two minutes, and end by saying out loud for a final two minutes.

6. Remain relaxed for a moment before resuming your normal activities.

So Do It!
&
Feel the Happiness & Improve your Cognitive skills as well as Well Being

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