

Meditation and the Brain
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Disclosure

Within the past 24 months, I have received an honorarium from TEVA.
All relevant financial relationships have been mitigated by DMU CME.

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What is Meditation?

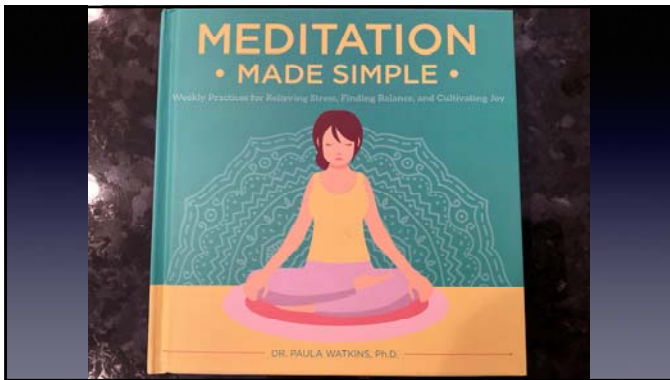
- To be considered a meditative discipline, the technique must meet 5 essential criteria:
- 1. It must involve a specific technique that is both clearly defined and taught.
- 2. It must involve at some stage progressive muscle relaxation.
- 3. It must involve a reduction in logical processing.
- 4. It must be self induced.
- 5. It must involve a tool or an anchor that allows effective focus of the mind.

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Many Different Methods

- Mindfulness
- Zen
- Yoga
- Awareness on sixth senses
- Transcendental Meditation
- Metacognition
- Bead Meditation
- Gazing Meditation
- Centring Prayer
- Mantra Meditation
- Breath Meditation

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Benefits of Meditation

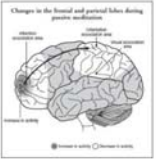
- Stress Reduction
- Blood Pressure Control
- Pulse Reduction
- Decrease in Excessive Activities
- Increased Sense of Patience and Compassion
- Better Sleep

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Changes in the Brain

MINDFULNESS MEDITATION INVOLVES CHANGES IN FRONTAL AND PARIETAL LOBES

Changes in the frontal and parietal lobes during passive meditation



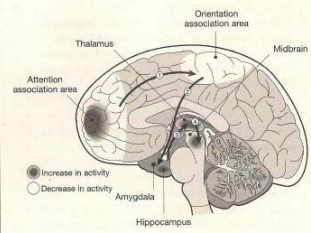
- Frontal lobe
 - Increased activity in attentional networks
 - Decreased activity in surrounding areas
- Parietal lobe
 - Decreased activity in orientation area
 - Decreased activity in networks involved in relaying experiences through language

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Changes Continued

Overall chain of brain processes during passive meditation

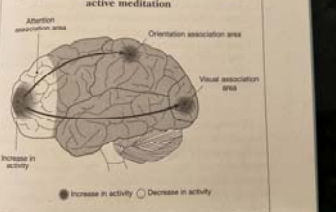


Legend: ● Increase in activity ○ Decrease in activity

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Changes Continued

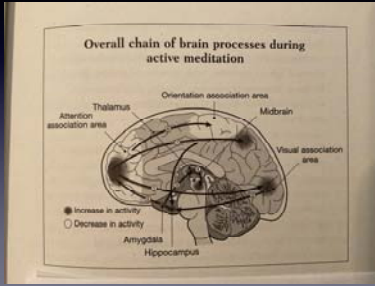
Changes in the frontal and parietal lobes during active meditation



Legend: ● Increase in activity ○ Decrease in activity

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Changes Continued



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Modification of Sense of Self

- A shift from left brained (ego centered) to right brain (holistic) thinking.
- A tension is primarily a right brained function.
- Most individuals navigate life in a fashion dominated by left brain thinking.
- A tension precipitates a shift towards right brain thinking, and allows an escape from the confines of ego-centered existence.
- Further, during meditation, both orientation association areas of the parietal cortices is dampened.

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Brain Wave Changes

- In early stages of meditation there's an increase in alpha wave activity, this is associated with a state of relaxed wakefulness.
- The increase in alpha waves peaks during a transcendental experience.
- These eeg changes have been shown to persist after the meditative experience and so the awareness obtained through meditation spills over into both the normal waking, and sleeping states.

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Brain Wave Changes Cont.

- Theta waves also increase during transcendental experiences.
- These waves are associated with Bliss.

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Brain Wave Changes Cont.

- In deep stages of meditation, some practitioners experience a high frequency of gamma waves.
- This has been demonstrated in Buddhist meditators who practice unconditional loving kindness meditation.

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Shifts in Perspective and Belief

- Regular meditation will reliably lead to change.

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The Perennial Philosophy

- In 1945, Aldous Huxley published a book titled the "Perennial Philosophy"
- He described the common elements that can be found in the traditions and lore of primitive cultures worldwide as well as in all the major world religions. While these religions have considerable superficial differences, the esoteric teachers at their core have striking similarities. Huxley referred to this core of common teaching as the Perennial Philosophy.

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The Perennial Philosophy

- There is an ultimate reality that is both universally imminent in creative and transcendent to it.
- The limited reality that we can apprehend with the five physical sense is embedded within and sustained by a limitless ultimate reality.
- The ultimate reality cannot be reached or described using the rational mind, it is therefore inherently incomprehensible and paradoxical.

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Perennial Philosophy

- There is something in the deeper eternal self of a human being distinct from the personal ego which is similar to, or even identical to this ultimate reality.
- This ultimate reality is the ground of all being through which we are all interconnected.
- Through spiritual and moral practice an individual can experience awareness of and achieve union with this transpersonal reality.
- Once an individual has become aware of a connection with the ultimate reality, this awareness is then accompanied by a growth with compassion and wisdom.

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Personal Growths to be Expected

- Charity
- Joy
- Peace
- Brotherly Kindness
- Fidelity
- Gentleness
- Goodness
- Long Suffering
- Self Control

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References

- "The Blissful Brain" by Dr. Nataraja
- "Centring Prayer" by Basil Pennington
- "Meditation Made Simple" by Dr. Watkins
- "How God Changes Your Brain" by Dr. Newberg
- "The Mystical Mind" by Dr. Newberg

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