

The Memory Practice Newsletter

Issue 28, May/June 2009



In this issue Dr. Michelon tells you about **how meditation can change the brain.**

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Meditation can Change the Brain

What we do on a daily basis can have an impact on our brain health, thanks to neuroplasticity.

Neuroplasticity is the lifelong ability of the brain to change. New neurons and new connections between neurons can grow, based on our experiences and our environment.

Previous studies have shown that becoming expert at a specific activity (music, language, navigation, etc.) changes the brain areas involved in this activity. These areas are highly stimulated and usually get bigger as more neurons and connections are generated.

Recent studies show that one-time events, such as studying for an exam, can also change some brain areas.

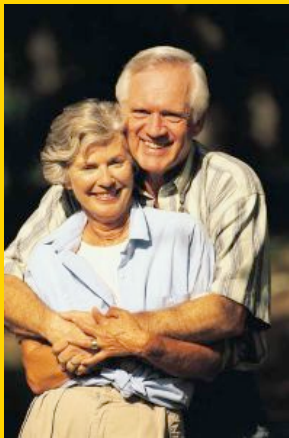
Meditation has been practiced for millennia. Originally, it was intended to develop spiritual understanding and awareness.

Meditation is a practice of concentrated focus upon a sound, object, visualization, the breath, movement, or attention itself in order to increase awareness of the present moment.

Some studies have shown that meditation can reduce stress, promote relaxation, and bolster the immune system. Others suggest that meditation may boost cognitive abilities such as attention.

A 2009 study, conducted by Luders and colleagues at UCLA, scanned and compared the brains of 22 meditators and 22 non-meditators (controls) to examine the effect of meditation on brain structures.

There were 9 men and 13 women in each group. Age ranged between 30 and 71 years (mean age: 53). Years of meditation practice ranged between 5 and 46 years (mean: 24.18 years) and included different styles of meditation.



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The meditators' brains showed more gray matter (increased brain volume) in several regions:

- right orbito-frontal cortex
- right thalamus
- left inferior temporal cortex
- right hippocampus

No regions were bigger in the controls' brains than in the meditators' brains.

Meditation CAN change the Brain

The brain areas that were larger in the meditator's brains are involved in functions that are highly stimulated during meditation.

The orbito-frontal cortex (in the front part of the brain) deals with emotion regulation.

The thalamus is involved in regulating the flow of sensory information.

The hippocampus has several roles ranging from emotional responding to visualization.

Thus it is possible that a long practice of meditation did trigger these brain changes, thanks to neuroplasticity.

It is not know so far how many years of meditation are needed to trigger similar changes.

It is also not know whether these structural changes are directly related to any behavioral changes.

Caution notes

The changes observed in the meditators' brain were small. This study does not provide any indication that meditation is the CAUSE of the changes. Although the 2 groups were carefully matched based on age, gender and education there may be factors other than meditation that caused the brain differences observed.

References

Luders, E., Toga, A. W., Lepore, N., & Gaser, C. (2009). The underlying anatomical correlates of long-term meditation: Larger hippocampal and frontal volumes of gray matter. *NeuroImage*, 45, 672-678.