Meditation can improve your brain health

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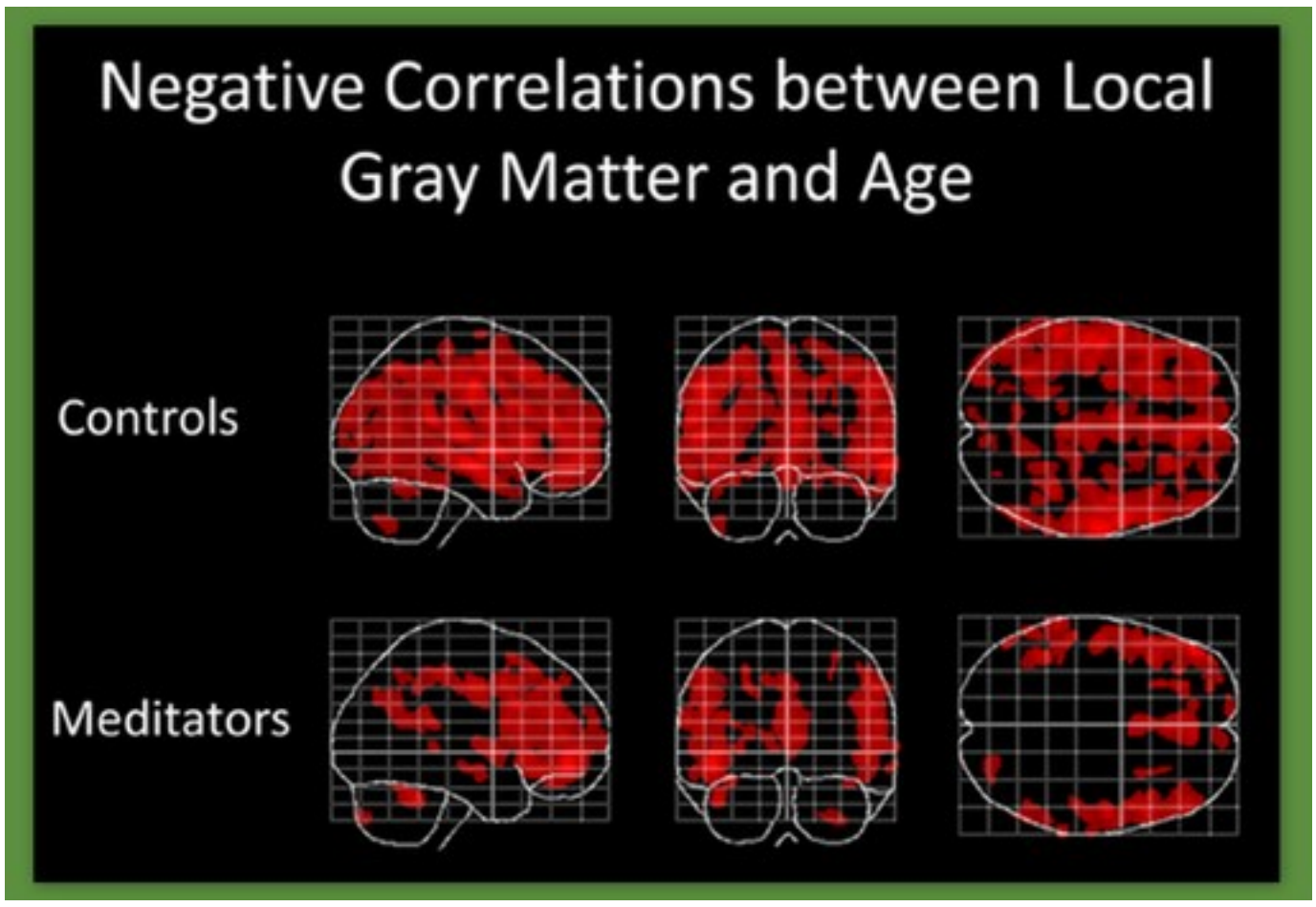

Meditation and Grey Matter in Brain
Kevin Chen

As life expectancy continues to rise, more people fall into the victims of neurodegenerative diseases like dementia, Alzheimer's disease, Parkinson's disease, and other degenerative diseases. Dr. Kevin Chen of University of Maryland School of Medicine reviewed recent research in this area and stated that meditation not only can change your brain to be better but also keep it healthy for longer.

Kevin W Chen, Ph.D., an associate professor at the Center for Integrative Medicine and Department of Psychiatry at University of Maryland, has years of experience and training in blending eastern and western perspectives, and hands-on knowledge of mind-body practice. He is an active researcher in mind-body medicine, which is funded through grants by the National Institutes of Health (NIH) and various foundations. In a recent article published in **Yang Sheng** magazine, he cited a few research to exhibit that meditation has three major effects on the brain health. Meditation can slow down the brain's aging process, rewire the brain, and lead to structure changes in key areas of the brain.

Grey matter is a major component of the **central nervous system**. It contains most of the brain's neuronal cell bodies. The grey matter includes regions of the brain involved in muscle control and sensory perception such as seeing and hearing, memory, emotions, speech, decision making, and self-control. White matter is another component of the **central nervous system**, in the brain and superficial spinal cord. It is the tissue through which messages pass between different areas of gray matter within the central nervous system. Dr. Chen pointed out the **UCLA Brain Mapping Center** had completed a few important research regarding meditation and the brain health. In 2011, it concluded that meditation could slow down the white matter degeneration. The same lab also reported that long-term meditation is associated with larger hippocampal that helps better behavior inhibition, memory, and spatial concept and frontal volumes of gray matter in its research in 2009 and 2012. A study published in **January 2015 Frontiers in Psychology** reported that meditation may protect the brain from aging, or slow down the aging process. The study used functional MRI technology to scan participants' brain, and compared 50 long-term meditators (average years of meditation 20 years) with 50 match non-meditators. While both groups showed a decline in gray matter with older age, the longtime meditators experienced significantly smaller reductions in gray matter volume than those who did not meditate. This suggests the gray matter in the long-term meditators was better preserved. Dr. Chen further introduced a 2014 research published by Harvard University's neuroscientists that individuals can improve their levels of psychological wellbeing (PWB) through utilization of psychological interventions, including the practice of mindfulness meditation. Harvard reported that an 8-week-mindfulness-based stress reduction course lead to increases in gray matter concentration in several brain areas.

Dr. Chen challenged the conventional thinking that the adult brains were fixed. He introduced **Sharon Begley's** book *Train Your Mind, Change Your Brain* to explain the brain can be rewired differently for better results. He gave example of UCLA neuro-psychiatrist Jeffrey Schwartz's work that "Mental action can alter the brain chemistry of an obsessive-compulsive disorder (OCD) patient. The mind can change the brain." A **study by Drs. Tang and Posner** with diffusion tensor imaging technology, reported that meditation training could induce changes both in specific brain networks and in brain state. This dynamic pattern change of white matter could provide a means for intervention to improve or prevent mental disorders. They hypothesized that frontal theta (for cognitive control) induced by meditation produces a molecular cascade that increases brain's connectivity. Dr. Kilpatrick and associates at ULCA used MRI and found out that compared to control group, meditation subjects showed (1) increased functional connectivity within auditory and visual networks, (2) increased functional connectivity between auditory cortex and areas associated with attentional and self-referential processes, (3) greater anticorrelation between auditory and visual cortex, and (4) greater anticorrelation between visual cortex and areas associated with attentional and self-referential processes. These findings suggest that 8 weeks of mindfulness meditation training alters intrinsic functional connectivity in ways that may reflect a more consistent attentional focus, enhanced sensory processing, and reflective awareness of sensory experience.

The most amazing finding is that the structure of the brain in certain key areas can be modified through meditation. Dr. Chen said the same group of neuroscientists from Harvard University has reported that brain structures change after only eight weeks of meditation practice. After completing the mindfulness course, the MRI scans showed that mindfulness groups increased gray matter concentration within the left hippocampus, the posterior cingulate cortex, the temporoparietal junction, and the cerebellum; in other word, the brain regions involved in learning and memory, emotion regulation, sense of self, and perspective were improved. The research by a group of neuroscientists from Seoul National University in South Korea confirmed that long-term meditators had structural differences in both grey matter and white matter. Research by other scientists in the U.S., Demark, Belgium, and Hong Kong also support the theory that the structure of the brain can be modified for better through meditation.

So what are you waiting? Let's start meditation by doing Tai Chi (Taiji) standing post, practicing Tai Chi movements, or simply sitting and meditate.

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