

# MENTAL AND EMOTIONAL HEALTH AND THE SCIENCE OF MEDITATION

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During the last twenty years, pharmaceutical companies have developed a variety of lucrative medications to treat such common psychological issues as depression and anxiety. However, these medications are costing our country billions of dollars in health care costs and causing what appears to be a plethora of unintended side effects.

As a result, researchers are looking for alternative methods to address mental and emotional issues that will effectively and safely address such problems without bankrupting our health care budget and causing additional problems for those who seek treatment.

Given that science knows that emotion originates in certain structures in the brain, and that meditation practitioners have routinely report an increased sense of peace and calm, it would be make sense if meditation was shown to effect those portions of the brain charged with producing and regulating emotion. It was this

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premise that propelled scientists from some of the nation's leading universities to set out to study the impact of meditation on our mental and emotional well being.

## EMOTION, MEDITATION AND THE BRAIN

Researchers from the UCLA School of Medicine have now shown just that. Using MRI's to scan the brains of meditators. UCLA found that meditators brains had significantly larger grey matter volumes in areas that regulate emotions and control emotional response. The UCLA researchers concluded that these differences might account for the ability of meditators to more effectively cultivate positive emotions, retain emotional stability and engage in mindful behavior then their non-meditating counterparts. A recent study at Harvard has also found that areas of the brain that deal with emotional regulation and perspective actually increase in size with as little as eight weeks of daily meditative practice.<sup>2</sup>

Armed with initial evidence that meditation can alter the physical structure of the brain, researchers have now begun to study the effect of meditation on ailments that are clearly connected to the brain such as Alzheimer's, ADHD, Insomnia, Addiction, Depression and Stress.

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<sup>2</sup> Holzel, B.K. et al., "Mindfulness Practice Leads to Increases in Regional Brain Gray Matter Density", *Psychiatry Research: Neuroimaging*, (2010), doi 10.1016/j.psychresns.2010.08.006.

## **ALZHEIMER'S**

Studies have now shown that even short-term meditative practice may have a pronounced affects on memory problems. The Journal of Alzheimer's Disease published a pilot study performed by Newberg's group on patients with memory impairment. The meditation group was given a 12-minute meditation to do for just 8 weeks. The results showed increased cerebral blood flow by more then 10% to portions of the brain that control memory. The study also found a resulting increase in the ability to remember and in overall cognition (i.e. higher brain function) in those who meditated.<sup>3</sup>

## **ADHD, FOCUS AND ATTENTION**

UCLA's Mindful Awareness Research Center trained Adult and Adolescent ADHD patients to meditate for 15 minutes per day in an eight-week course. 78% of the patients reported a reduction in total ADHD symptoms with 30% reporting at least a 30% or more symptom reduction. A 30% reduction in symptoms is often used to identify clinically significant improvement in ADHD medication trials. In other words, it is the standard to which meditation is held. Because the majority of the patients were taking their normal medication treatment during the study, for many of the participants this improvement

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<sup>3</sup> "Meditation Effects on Cognitive Function and Cerebral Blood Flow in Subjects with Memory Loss: A Preliminary Study", Journal of Alzheimer's Disease, 20 (2010) 517-526 DOI 10.32233/JAD-2010-1391.

represents and improvement above and beyond obtainable benefits with medication.<sup>4</sup>

## **INSOMNIA**

Millions of Americans report a difficulty sleeping and those numbers have been steadily increasing over time. Researchers at Northwestern University in Chicago found that meditation could help those with chronic insomnia. After only two months of a meditation practice, patients reported improvements in sleep quality, how long it took to get to sleep, total sleep time, total wake time, sleep efficiency and depression.<sup>5</sup>

## **ADDICTION**

In 1972, Harvard pioneer in mind/body study, Dr. Benson, conducted a large study with over 1,800 participants to see if meditation could impact addiction. The study showed a 90% decrease in drug and alcohol use after two years with 92% of the participants believing that their meditative practice was responsible for the results.<sup>6</sup>

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<sup>4</sup> "Mindfulness Meditation Training in Adults and Adolescents with ADHD", Journal of Attention Disorders, November 19, 2007 as doi:10.1177/1087054707308502.

<sup>5</sup> "Meditation May Help Put Primary Insomnia to Bed", US News and World Report, June 9, 2009.

<sup>6</sup> Benson, H, et. al., "Decreased Drug Abuse with Transcendental Meditation: A Study of 1,862 Subjects", Drug Abuse: Proceedings of the International Conference, ed., pp. 369-376, Philadelphia.

## **DEPRESSION**

Recent preliminary studies offer hope that meditation may be an effective treatment for depression. In two recent studies involving African Americans and Native Americans ages 55 years and older, meditation was shown to reduce depressive symptoms by 48%.<sup>7</sup> In a 2009 study conducted at Oxford University, researchers found that daily meditation successfully reduced depressive symptoms in patients who suffered from chronic and recurrent depression.<sup>8</sup>

A recent study at Harvard indicates that an eight week meditation practice can increase the size of portions of the brain that comprise what is known as the norepinephrine system whose neurons are known to impact a variety of cognitive dysfunctions including depression. These regions of the brain are actually the sites that are acted upon by frequently prescribed antidepressant drugs and it is believed that these findings may explain why

other studies have found that meditation can reduce depression.<sup>9</sup>

## **STRESS**

There are a multitude of studies available that prove meditation's ability to lower stress. For example, in a recent a study conducted at the University of Massachusetts Medical School, researchers recorded the brain waves of stressed out workers at a high tech firm. After just over eight weeks of meditation practice, a pronounced increase was found with regards to activity in those portions of the brain that produced feelings of happiness and calm and a profound decrease in activity in those portion of the brain that produce fear.<sup>10</sup>

Similarly, studies have shown that meditation can be effective in reducing stress in students as well as the working population. A study involving 298 students from the American University and other schools in the Washington D.C. area showed that those who meditated, had lower blood pressure and significant improvements in total psychological distress, anxiety, depression, anger/hostility and coping ability.<sup>11</sup>

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<sup>7</sup> Studies from Charles Drew University in Los Angeles and University of Hawaii, Physorg.com, April 7, 2010; Research Presented at the 31<sup>st</sup> Annual Meeting of the Society of Behavioral medicine in Seattle, Washington, April 9, 2010.

<sup>8</sup> Barnhofer, T., "Mindfulness Based Cognitive Therapy as Treatment for Chronic Depression: A Preliminary Study", Behavioral Research and Therapy, Vol. 47, Issue 5, May 09, Pg 366-373.

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<sup>9</sup> Holzel, B.K. et al., "Mindfulness Practice leads to Increases in Regional Brain Gray Matter Density", Psychiatry Research: Neuroimaging, (2010), doi 10.1016/j.psychresns.2010.08.006.

<sup>10</sup> Psychology Today.com /Articles/200304 "The-Benefits of Meditation."

<sup>11</sup> Nidich SI, et al., "A Randomized Controlled Trial on Effects of the Transcendental Meditation Program on Blood Pressure, Psychological Distress and Coping in Young Adults", American Journal of Hypertension, Dec. 2009; 22(12): 1326-1331.

## **PAIN**

A study published in the April 6, 2011 issue of the journal of Neuroscience found that meditation was more effective than morphine at controlling pain. In this study, conducted by the Wake Forest University School of Medicine, participants were given four 20 minute meditation training sessions. When a painful stimulus was applied to the participants legs, those who were meditating reported a 40% reduction in pain intensity and a 57% reduction in pain unpleasantness.

Functional MRI scans that were performed during the study showed that meditation was working in multiple areas of the brain's processing of pain. For example, the somatosensory cortex that was quite active when the painful stimulus was applied to participants showed a dramatic reduction in activity during meditation. The study found that meditation changed both the nature of the pain before it was perceived as well as a person's ability to handle the pain after it was perceived.<sup>12</sup>

explosion in the number of diagnosed cases of Alzheimer's, ADHD, Chronic Pain and Depression, these findings should have a far-reaching impact on our society's attitude towards and approach and treatment of these all too common issues.

## **SUMMARY**

Although the science in this area is just emerging, it appears that meditation may offer an alternative and/or complimentary method of treating some of our most common mental and emotional issues. With the

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<sup>12</sup> "In Pain? Try Meditation", [www.cnn.com](http://www.cnn.com) , April 5, 2011. See also, "Meditation Beats Morphine in Pain", [www.newsmaxhealth.com](http://www.newsmaxhealth.com), April 16, 2011.