

Health and Medicine

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Chinese meditation boosts brain activity

Posted by [Jim Barlow-Oregon](#) August 16th, 2010

U. OREGON (US)—Just 11 hours of learning a Chinese meditation technique boosts efficiency in a part of the brain that helps a person regulate behavior, according to new research.

The technique—integrative body-mind training (IBMT)—has been the focus of scrutiny by researchers led by Yi-Yuan Tang of Dalian University of Technology in collaboration with [University of Oregon](#) psychologist Michael Posner.

IBMT was adapted from traditional Chinese medicine in the 1990s in China, where it is practiced by thousands of people. It is now being taught to undergraduates involved in research.

The new research involves 45 students (28 males and 17 females); 22 subjects received IBMT while 23 participants were in a control group that received the same amount of relaxation training.

Details are published online ahead of regular publication in the [Proceedings of the National Academy of Sciences](#).

A type of magnetic resonance called diffusion tensor imaging allowed researchers to examine fibers connecting brain regions before and after training.

The changes were strongest in connections involving the anterior cingulate, a brain area related to the ability to regulate emotions and behavior. The changes were observed only in those who practiced meditation and not in the control group.

The changes in connectivity began after six hours of training and became clear by 11 hours of practice. The researchers say it is possible the changes resulted from a reorganization of white-matter tracts or by an increase of myelin that surrounds the connections.

“The importance of our findings relates to the ability to make structural changes in a brain network related to self regulation, says Posner.

“The pathway that has the largest change due to IBMT is one that previously was shown to relate to individual differences in the person’s ability to regulate conflict.”

Writing in [PNAS](#) in 2007, Tang and Posner documented that doing IBMT for five days prior to a mental math test led to low levels of the stress hormone cortisol among Chinese students. The experimental group also showed lower levels of anxiety, depression, anger, and fatigue than students in a relaxation control group.

In the current study, Tang and Chinese colleagues, with assistance from Posner and Mary Rothbart, professor of psychology, found that IBMT subjects in China had increased blood flow in the right anterior cingulate cortex after receiving training for 20 minutes a day over five days.

Compared with the relaxation group, IBMT subjects also had lower heart rates and skin conductance responses, increased belly breathing, amplitude, and decreased chest respiration rates.

The latter findings suggest the possibility that additional training might trigger structural changes in the brain. The researchers currently are extending their evaluation to determine if longer exposure to IBMT will produce positive changes in the size of the anterior cingulate.

Deficits in activation of the anterior cingulate cortex are associated with many problems, including attention deficit disorder, dementia, depression, and schizophrenia.

“We believe this new finding is of interest to the fields of education, health, and neuroscience, as well as for the general public,” Tang says.

The new findings suggest a use of IBMT as a vehicle for understanding how training influences brain plasticity.

IBMT is not yet available in the United States beyond the current research. The practice avoids struggles to control thought, relying instead on a state of restful alertness, allowing for a high degree of body-mind awareness while receiving instructions from a coach, who provides breath-adjustment guidance and mental imagery and other techniques while soothing music plays in the background.

Thought control is achieved gradually through posture, relaxation, body-mind harmony, and balanced breathing. A good coach is critical, Tang stresses.

Researchers from the Dalian University of Technology and the National Institute on Drug Abuse-Intramural Research Program contributed to the study, which was supported by the James S. Bower Foundation, the John Templeton Foundation, National Natural Science Foundation of China and the U.S. National Institute on Drug Abuse-Intramural Research Program.