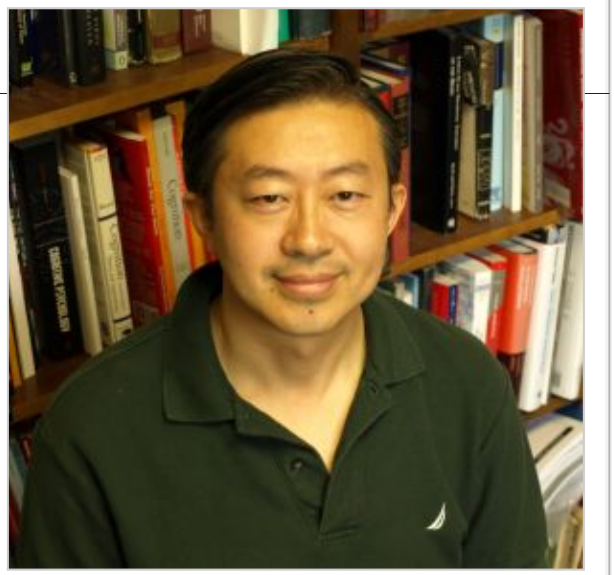
Of body and mind, and deep meditation

Chinese data unraveled at University of Oregon show a training technique has brain, physiological linkage



EUGENE, Ore. --(May 19, 2009)-- Chinese researchers have unlocked the mechanism of an emerging mind-body technique that produces measurable changes in attention and stress reduction in just five days of practice.

The practice -- integrative body-mind training (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 on the method at the University of Oregon.

Media Relations Affiliations

Media Relations is part of the Office of Communications under the umbrella of Public and Government Affairs in University Advancement.

Other affiliated offices are:

- Design and Editing Services
- Development
- Development Communications
- Government and Community Relations
- KWAX-FM

AUDIO: The new findings

Posner (33")**:** *Findings*

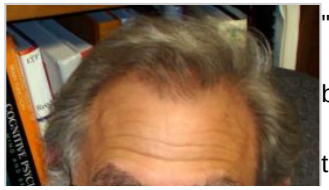
Posner (20")**:** *Importance*

Tang (38")**:** *Implications*

In October 2007, researchers led by visiting UO professor Yi-Yuan Tang and UO psychologist Michael Posner documented in the Proceeding of the National Academy of Sciences that doing IBMT 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.

"The previous paper indicated that IBMT subjects showed a reduced response to stress." Tang said. "Why after five days did it work so fast?" The new findings, he said, point to how IBMT alters blood flow and electrical activity in the brain, breathing quality and even skin conductance, allowing for "a state of ah, much like in the morning opening your eyes, looking outside at the grass and sunshine, you feel relaxed, calm and refresh without any stress, this is the meditation state."

This week, in a paper appearing online ahead of regular publication in PNAS, Tang and 13 Chinese colleagues define brain and physiological changes triggered by IBMT. Data were drawn from several technologies in two experiments involving 86 undergraduate students at Dalian University of Technology, where Tang is a professor. The data were analyzed and prepared for publication at the UO with help from Posner and psychology professor Mary K. Rothbart, who are not co-authors on the paper.



"We were able to show that the training improved the connection between a central nervous system structure, the anterior cingulate, and the parasympathetic part of the autonomic nervous system to help put a

- Office of Marketing and Brand Management
- Oregon Quarterly
- Web Communications

Campus Calendar & Events

- University Calendar
- Academic Calendar
- EMU Calendar
- Athletics All-Sports Calendar

Helpful Info

- Public Records Procedure
- UO Catalog
- Points of Pride
- Campus Maps
- Directions to UO

Search

person into a more bodily state," Posner said. "The results seem to show integration -- a connectivity of brain and body."

In each experiment, participants who had not previously practiced relaxation or meditation received either IBMT or general relaxation instruction for 20 minutes a day for five days. While both groups experienced some benefit from the training, those in IBMT showed dramatic differences based on brain-imaging and physiological testing.

Single photon emission computed tomography (SPECT) -- a scanning method less distracting than functional magnetic resonance imaging (fMRI) -- showed IBMT subjects had increased blood flow in the right anterior cingulate cortex, a region associated with self regulation of cognition and emotion.

Physiological tests also revealed significant changes. Compared with the relaxation group, IBMT subjects had lower heart rates and skin conductance responses, increased belly breathing amplitude and decreased chest respiration rates, all of which, researchers wrote, "reflected less effort exerted by participants and more relaxation of body and calm state of mind."

Finally, researchers noted, IBMT subjects had more high-frequency heart-rate variability than their relaxation counterparts, indicating "successful inhibition of sympathetic tone and activation of parasympathetic tone [in the autonomic nervous system]." Sympathetic tone becomes more active when stressed.

Preliminary findings of a recently completed but unpublished UO study involving a small group of U. S. students are showing nearly identical results, Posner said. The UO study used fMRI rather than

IBMT 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 said.

"Life is full of stress, and people need to learn methods to handle stress and improve their performance," Tang said. "There is physical training but we wanted to see about mental training. This method appears to have benefit for the modern society where the pace is fast."

China's Natural Science Foundation and Ministry of Education and the U.S.-based James S. Bower and John Templeton foundations funded the research.

About the University of Oregon

The University of Oregon is a world-class teaching and research institution and Oregon's flagship public university. The UO is a member of the Association of American Universities (AAU), an organization made up of the 62 leading public and private research institutions in the United States and Canada. The University of Oregon is one of only two AAU members in the Pacific Northwest.

Media Contact:

Jim Barlow, director of science and research communications, jebarlow@uoregon.edu, 541-346-3481

Sources: Yi-Yuan Tang, professor of neuroinformatics (Dalian University of Technology, China) and visiting scholar (University of Oregon), yiyuan@uoregon.edu; and Michael I. Posner, UO professor emeritus of psychology, 541-346-4939, mposner@uoregon.edu

Categories: Campus Community Life Sciences Research News Social Sciences