

Easing Ills through Tai Chi

Researchers study the benefits of this mind-body exercise • by Nell Porter Brown



cal School (HMS) instructor who has practiced for 15 years. “I’m stronger in my legs, more alert, more focused, and more relaxed—it just puts me in a better mood all around.” Although she also practices sitting meditation and does a lot of walking, she says that the impact of tai chi on her mood were so noticeable—even after she was diagnosed with a chronic immune system cancer—that she has devoted her professional life to studying the effects of mind-body exercise on the brain at Harvard’s Osher Research Center.

Kerr is careful to note that tai chi is “not a magic cure-all,” and that Western scientific understanding of its possible physiological benefits is still very rudimentary. Yet her own experience and exposure to research have convinced her that its benefits are very real—especially for older people too frail to engage in robust aerobic conditioning and for those suffering from impaired balance, joint stiffness, or poor kinesthetic awareness.

For anyone who practices tai chi regularly, “brain plasticity arising from repeated training may be relevant, since we know that brain connections are ‘sculpted’ by daily experience and practice,” explains Kerr, who is investigating brain dynamics related to tai chi and mindfulness meditation at HMS. “Tai chi is a very interesting form of training because it combines a low-intensity aerobic exercise with a complex, learned, motor sequence. Meditation, motor learning, and attentional focus have all been shown in numerous studies to be associated with training-related changes—including, in some cases, changes in actual brain structure—in specific cortical regions.”

SCHOLARS SAY tai chi grew out of Chinese martial arts, although its exact history is not fully understood, according to one of Kerr’s colleagues, assistant professor of medicine Peter M. Wayne, who directs

CATHERINE KERR has found an antidote for the hectic pace of laboratory life in the daily practice of tai chi. This centuries-old Chinese mind-body exercise, now gaining popularity in the United States, consists of

Kerr practices outside to “feel the sensations of the sun and wind and the ground beneath my feet.”

slow-flowing, choreographed meditative movements with poetic names like “wave hands like clouds,” “dragons stirring up the wind,” and “swallow skimming the pond” that evoke the natural world. It also focuses on basic components of overall fitness: muscle strength, flexibility, and balance.

“Doing tai chi makes me feel lighter on my feet,” says Kerr, a Harvard Medi-

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the tai chi and mind-body research program at the Osher Center. “Tai chi’s roots are also intertwined with traditional Chinese medicine and philosophy, especially Taoism, and with another healing mind-body exercise called *qigong*,” he explains. “Though these roots are thousands of years old, the formal name *tai chi chuan* was coined as recently as the seventeenth century as a new form of kung fu, which integrates mind-body principles into a martial art and exercise for health.”

Tai chi chuan is often translated as “supreme (grand) ultimate fist”: the first part (“tai chi”) refers to the ubiquitous dialectical interaction of complementary, creative forces in the universe (yin and yang); the second, the fist, is what Wayne describes as the “manifestation or integration of these philosophical concepts into the body.”

According to traditional Chinese medicine, when yin and yang come together they create a dynamic inner movement. “While practicing, tai chi moves the chi and the blood and the sinews in the body—purportedly correcting health imbalances,” adds Wayne, who has founded The Tree of Life Tai Chi Center, in Somerville, Massachusetts, where he also teaches. “One key principle of tai chi is analogous to the saying ‘A rolling stone gathers no moss,’—if you maintain inner mindful movement in the body, it may improve your health.”

Tai chi, considered a soft or internal form of martial art, has multiple long and short forms associated with the most popular styles taught: Wu, Yang, and Chen (named for their originators). Plenty of people practice the faster, more combative forms that appear to resemble kung fu, but the slower, meditative movements are what many in the United States—where the practice has gained ground during the last 25 years—commonly think of as tai chi.

Qigong, sometimes called the “grammar” of tai chi, comprises countless different smaller movements and breathing exercises that are often incorporated into a tai chi practice. “One reason tai chi is popular is that it is adaptable and safe for people of all ages and stages of health,” Wayne points out. “Recent tai chi forms have even been developed for individuals to practice in wheelchairs. And although

few formal medical-economic analyses have been conducted, tai chi appears to be relatively cost-effective.”

SURVEYS, including one by the National Center for Complementary and Alternative Medicine (<http://nccam.nih.gov/health/taichi>), have shown that between 2.3 million and 3 million people use tai chi in the United States, where a fledgling body of scientific research now exists: the center has supported studies on the effect of tai chi on cardiovascular disease, fall prevention, bone health, osteoporosis, osteoarthritis of the knee, rheumatoid arthritis, chronic heart failure, cancer survivors, depression in older people, and symptoms of fibromyalgia. One study on the immune response to varicella-zoster virus (which causes shingles) suggested in 2007 that tai chi may enhance the immune system and improve overall well-being in older adults. However, “in general, studies of tai chi have been small, or they have had design limitations that may limit their conclusions,” notes the center’s website. “The cumulative evidence suggests that additional research is warranted and needed before tai chi can be widely recommended as an effective therapy.”

Most recently, Wayne and his fellow researchers have focused on balance issues and on cardiovascular and bone health—areas where tai chi’s benefits have begun to be evaluated most rigorously. “We’ve conducted systematic reviews of the literature, and in older people there is sound evidence that suggests tai chi can improve balance and reduce risks for falls, which have significant consequences on public health, particularly given our aging population,” he reports.

Wayne points to a study by Fuzhong Li at the Oregon Research Institute (which carries out assessments of tai chi’s impact on health conditions, including a current project with Parkinson’s patients): it looked at 256 elderly people, from 70 to 92 years old, and compared how they benefited from tai chi and seated exercise, respectively. “They reported greater than a 40 percent reduction in the number of falls in the group that received tai chi,” Wayne reports. “This is a very significant finding. Older people with thinning bones are at

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very high risk for fractures; a fall related to hip fracture, for example, is associated with a 20 percent increase in mortality within one year and very high medical costs.”

Studies conducted in Asia have reported that tai chi may benefit women with thinning bones. This has led Wayne and his colleagues to pursue another current research project—a randomized controlled trial with post-menopausal women diagnosed with osteopenia that examines bone density markers as well as computerized motion analysis to quantify how tai chi affects weight-bearing in the skeleton.

In addition, clinical trials and basic research studies on patients with heart failure “suggest tai chi may be of benefit to patients in terms of greater exercise capacity and quality of life,” Wayne continues. “More definitive studies to confirm these observations are under way, as well as pilot studies with patients with chronic pulmonary disease.”

Yet from a Western scientific standpoint, it’s difficult to pinpoint why and how tai chi affects us. In typical drug trials, a well-defined chemical compound targets physiological systems, and outcomes can be measured against placebo controls. But tai chi is a multicomponent intervention, Wayne notes, with many active ingredients—movement, breathing, attention, visualization, and rich psychosocial interactions with teachers and other students. All of these can affect many physiological systems simultaneously. Moreover, many of the older study subjects also have complex chronic conditions, so identifying a logical control is challenging: it’s just not possible to have a placebo in a tai chi study. “For these reasons,” he says, “we need to be creative in designing tai chi trials, and cautious in interpreting the results.”

HMS INSTRUCTOR and pathologist Marie-Helene Jouvin, who has practiced tai chi for a decade and teaches at the Brookline Tai Chi school near Boston (<http://brooklinetaichi.org>), has noticed the large number of students who attend classes there for medical reasons—after surgery, or if they are suffering from chronic or autoimmune diseases. But tai chi and

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qigong are not limited to being done in a classroom with a teacher, she adds. "They can be done when you are sick, or lying in bed."

Indeed, Wayne, Jouvin, and Kerr all agree that the beauty and ease of tai chi offer multifold benefits as far as its daily practice: it is adaptable to numerous physical positions and requires no special equipment, expensive outfits, or specific athletic conditioning. "It's not a high-cardio workout, it's all about deepening the relaxation in the movement," Kerr says. "In aerobic exercise we're taught to tense the muscle and push hard. Tai chi is the opposite approach; it's about the flow of the whole body in the movement."

Like tai chi, qigong also accommodates busy schedules because it can be done incrementally—and sometimes involves only the smallest parts of the body. Jouvin, for example, sometimes performs an ultra-slow form of twiddling the thumbs under the table at meetings; she focuses on the minutest sensations—skin, heat, joint rotation, relationships among the clasped and moving fingers—and finds this tends to calm her down, especially during heated professional debates, she says with a smile. "These are things you can easily do to help yourself and focus," she adds.

Perhaps because of these multiple forms and its adaptability, tai chi looks easy to do. Yet in demonstrating to a novice the most basic short form of the Wu style, Jouvin painstakingly explains 18 precisely choreographed movements that flow together in a set order and take about four minutes to complete properly. "It's hard to assess if you are doing it correctly without having a trained teacher or practitioner helping you," she acknowledges. "It can look like people waving their arms and legs around."

At the Brookline school, this same Wu short form is taught during the course of 21 weeks of classes. "Most beginners will do the moves as if they were purely aerobic exercise," Jouvin says. "It will take a while for them to feel the exercise internally. There seems to be an internal logic to the movements. It's a form that was built over centuries and probably reflects how the body functions." ♪