

The Medical Benefits of Tai Chi (Taiji)

Harvard Newsletter - *This gentle form of exercise can prevent or ease many ills of aging and could be the perfect activity for the rest of your life.*

Tai chi is often described as "meditation in motion," but it might well be called "*meditation* in motion." There is growing evidence that this mind-body practice, which originated in China as a martial art, has value in treating or preventing many health problems. And you can get started even if you aren't in top shape or the best of health.

In this low-impact, slow-motion exercise, you go without pausing through a series of motions named for animal actions — for example, "white crane spreads its wings" — or martial arts moves, such as "box both ears." As you move, you breathe deeply and naturally, focusing your attention — as in some kinds of meditation — on your bodily sensations. Tai chi differs from other types of exercise in several respects. The movements are usually circular and never forced, the muscles are relaxed rather than tensed, the joints are not fully extended or bent, and connective tissues are not stretched. Tai chi can be easily adapted for anyone, from the most fit to people confined to wheelchairs or recovering from surgery.

Although tai chi is slow and gentle and doesn't leave you breathless, it addresses the key components of fitness — muscle strength, flexibility, balance, and, to a lesser degree, aerobic conditioning. Here's some of the evidence:

Muscle strength. In a 2006 study published in *Alternative Therapies in Health and Medicine*, Stanford University researchers reported benefits of tai chi in 39 women and men, average age 66, with below-average fitness and at least one cardiovascular risk factor. After taking 36 tai chi classes in 12 weeks, they showed improvement in both lower-body strength (measured by the number of times they could rise from a chair in 30 seconds) and upper-body strength (measured by their ability to do arm curls).

In a Japanese study using the same strength measures, 113 older adults were assigned to different 12-week exercise programs, including tai chi, brisk walking, and resistance training. People who did tai chi improved more than 30% in lower-body strength and 25% in arm strength — almost as much as

those who participated in resistance training, and more than those assigned to brisk walking.

"Although you aren't working with weights or resistance bands, the unsupported arm exercise involved in tai chi strengthens your upper body," says internist Dr. Gloria Yeh, an assistant professor at Harvard Medical School. "Tai chi strengthens both the lower and upper extremities and also the core muscles of the back and abdomen."

Flexibility. Women in the 2006 Stanford study significantly boosted upper- and lower-body flexibility as well as strength.

Balance. Tai chi improves balance and, according to some studies, reduces falls. Proprioception — the ability to sense the position of one's body in space — declines with age. Tai chi helps train this sense, which is a function of sensory neurons in the inner ear and stretch receptors in the muscles and ligaments. Tai chi also improves muscle strength and flexibility, which makes it easier to recover from a stumble. Fear of falling can make you more likely to fall; some studies have found that tai chi training helps reduce that fear.

Aerobic conditioning. Depending on the speed and size of the movements, tai chi can provide some aerobic benefits. But in the Japanese study, only participants assigned to brisk walking gained much aerobic fitness. If your clinician advises a more intense cardio workout with a higher heart rate than tai chi can offer, you may need something more aerobic as well.

When combined with standard treatment, tai chi appears to be helpful for several medical conditions. For example:

Arthritis. In a 40-person study at Tufts University, presented in October 2008 at a meeting of the American College of Rheumatology, an hour of tai chi twice a week for 12 weeks reduced pain and improved mood and physical functioning more than standard stretching exercises in people with severe knee osteoarthritis. According to a Korean study published in December 2008 in *Evidence-based Complementary and Alternative Medicine*, eight weeks of tai chi classes followed by eight weeks of home practice significantly improved flexibility and slowed the disease process in patients with ankylosing spondylitis, a painful and debilitating inflammatory form of arthritis that affects the spine.

Low bone density. A review of six controlled studies by Dr. Wayne and other Harvard researchers indicates that tai chi may be a safe and effective way to maintain bone density in postmenopausal women. A controlled study of tai chi in women with osteopenia (diminished bone density not as severe as osteoporosis) is under way at the Osher Research Center and Boston's Beth Israel Deaconess Medical Center.

Breast cancer. Tai chi has shown potential for improving quality of life and functional capacity (the physical ability to carry out normal daily activities, such as work or exercise) in women suffering from breast cancer or the side effects of breast cancer treatment. For example, a 2008 study at the University of Rochester, published in *Medicine and Sport Science*, found that quality of life and functional capacity (including aerobic capacity, muscular strength, and flexibility) improved in women with breast cancer who did 12 weeks of tai chi, while declining in a control group that received only supportive therapy.

Heart disease. A 53-person study at National Taiwan University found that a year of tai chi significantly boosted exercise capacity, lowered blood pressure, and improved levels of cholesterol, triglycerides, insulin, and C-reactive protein in people at high risk for heart disease. The study, which was published in the September 2008 *Journal of Alternative and Complementary Medicine*, found no improvement in a control group that did not practice tai chi.

Heart failure. In a 30-person pilot study at Harvard Medical School, 12 weeks of tai chi improved participants' ability to walk and quality of life. It also reduced blood levels of B-type natriuretic protein, an indicator of heart failure. A 150-patient controlled trial is under way.

Hypertension. In a review of 26 studies in English or Chinese published in *Preventive Cardiology* (Spring 2008), Dr. Yeh reported that in 85% of trials, tai chi lowered blood pressure — with improvements ranging from 3 to 32 mm Hg in systolic pressure and from 2 to 18 mm Hg in diastolic pressure.

Parkinson's disease. A 33-person pilot study from Washington University School of Medicine in St. Louis, published in *Gait and Posture* (October 2008), found that people with mild to moderately severe Parkinson's disease

showed improved balance, walking ability, and overall well-being after 20 tai chi sessions.

Sleep problems. In a University of California, Los Angeles, study of 112 healthy older adults with moderate sleep complaints, 16 weeks of tai chi improved the quality and duration of sleep significantly more than standard sleep education. The study was published in the July 2008 issue of the journal *Sleep*.

Stroke. In 136 patients who'd had a stroke at least six months earlier, 12 weeks of tai chi improved standing balance more than a general exercise program that entailed breathing, stretching, and mobilizing muscles and joints involved in sitting and walking. Findings were published in the January 2009 issue of *Neurorehabilitation and Neural Repair*.

http://www.health.harvard.edu/newsletters/Harvard_Womens_Health_Watch/2009/May/The-health-benefits-of-tai-chi

Web MD

Balance and strength. The Oregon Research Institute found that, after six months, tai chi participants were twice as likely to have no trouble performing moderate to rigorous activities as nonparticipants. The benefit was greatest among those who started with the poorest health or worst function. Other studies have shown a reduction in falls among tai chi participants. In the 1990s, two studies sponsored by the National Institute on Aging (NIA) found that tai chi exercises cut the fear of falling and risk of falls among older people. Two small sports medicine studies suggest that tai chi may improve sensitivity to nerve signals in ankles and knees, which might prevent falls. But an evidence-based review of many studies only confirmed better balance -- not a reduction in falls.

Osteoarthritis. Patients with osteoarthritis assigned to a tai chi group during a three-month study reported less joint pain and stiffness than when they started. They also had less pain and stiffness than patients in a control group.

Sleep. Exploring tai chi's impact on sleep, the Oregon researchers found that tai chi participants had improved sleep quality and length. They also had fewer sleep disturbances than people in a low-impact exercise group. A UCLA study of tai chi chih, a Westernized version of tai chi, also supports

claims of sleep benefits. The benefits are similar to those gained through drugs or cognitive behavioral therapy. Two-thirds of the people practicing tai chi chih had major improvements in sleep quality, compared with one-third who of those involved in health education sessions.

Shingles. A viral disease that causes a painful skin rash and blisters, shingles is caused by the same virus that causes chickenpox. In a shingles study supported by the NIA and NCCAM, researchers found that tai chi prompted an immune response to the varicella-zoster virus similar to that prompted by the varicella vaccine. When combined with the vaccine, tai chi helped create even greater levels of immunity -- double those of the control group. Tai chi participants also reported improvements in function, pain, vitality, and mental health.

Qigong -- pronounced chee gong -- is a practice that involves a series of postures and exercises -- including slow, circular movements -- regulated breathing, focused meditation, and self-massage.

There is a variety of styles, and they are classified as martial, medical, or spiritual. Some qigong styles are gentler like tai chi and can easily be adapted. Others are more vigorous like kung fu.

One unique feature of qigong is its ability to train the mind to direct the body's energy, or chi, to any part of the body. Some believe that, when moved correctly, chi can bring your body to a natural state of balance. Qigong is believed to relax the mind, muscles, tendons, joints, and inner organs -- helping to improve circulation, relieve stress and pain, and restore health.

As with tai chi, a variety of benefits have been linked to qigong. They include:

- Greater stamina and vitality
- Reduced stress
- Enhanced immune system
- Improved cardiovascular, respiratory, circulatory, lymphatic, and digestive function
- Lower blood pressure
- Less risk of falling

Practiced widely in the clinics and hospitals of China, qigong may have broad health benefits. However, most of the studies conducted on qigong are limited in scope. Many are small case studies conducted in China -- not

large, randomized, controlled trials reported in peer-reviewed English-language journals.

What Are the Health Benefits of Qigong?

Some believe that as a complement to Western medicine, qigong can help the body heal itself, retarding or even reversing the effects of certain diseases linked to aging. Here are a few examples of findings from small studies showing qigong benefits:

High blood pressure. In a study lasting 20 years, patients with hypertension -- whether in the control or qigong group -- were given drugs to control blood pressure. At first, participants in both groups had a drop in blood pressure. But blood pressure in the qigong group stabilized over time. They even were able to lower their use of blood pressure drugs. By contrast, the control group had an increase in blood pressure, requiring greater use of drugs.

Fibromyalgia. One small pilot study showed fewer symptoms and improvement in function among patients with fibromyalgia who were practicing qigong. Fibromyalgia is a chronic condition that can cause widespread pain and fatigue. Larger trials are needed to confirm the results.

For more information about qigong, tai chi, and energy medicine, you can search more than 4,000 citations on line at www.qigonginstitute.org/html/database.php.

<http://www.webmd.com/balance/guide/health-benefits-tai-chi-qigong>

Medicine Net

What are the benefits of tai chi?

In China, it is believed that tai chi can delay aging and prolong life, increase flexibility, strengthen muscles and tendons, and aid in the treatment of heart disease, high blood pressure, arthritis, digestive disorders, skin diseases, [depression](#), [cancer](#), and many other illnesses. Unfortunately, there hasn't been a good deal of scientific evidence to support all of these claims. In a special study of tai chi called a meta-analysis, where many studies on one subject are reviewed, the author concludes that although there is some evidence to support the positive effects of tai chi on health, [fitness](#), and balance and falling, many of the studies are limited by small numbers of

subjects and wide variation in the type and duration of tai chi used. Bearing these limitations in mind, here are some of the documented benefits.

Balance and falling

Most of the research on tai chi has been done in older individuals in the area of balance and fall prevention. This area of research is important because fall-related injuries are the leading cause of death from injury and disabilities among older adults. One of the most serious fall injuries is hip fracture; one-half of all older adults hospitalized for hip fracture never regain their former level of function. Because tai chi movements are slow and deliberate with shifts of body weight from one leg to the other in coordination with upper body movements (sometimes with one leg in the air), it challenges balance and many have long assumed it helps improve balance and reduce fall frequency. This assumption has been credited and strongly supported by some research.

One study compared men age 65 and older who had more than 10 years of experience practicing tai chi and no involvement in any other regular sports and physical activity, with similar-aged men who had not practiced tai chi or any other physical activities (they were sedentary). It was found that the men who studied tai chi performed better on tests of balance, flexibility, and cardiovascular function. In another study involving 22 men and women aged 22 to 76 years with mild balance disorders, it was found that eight weeks of tai chi training significantly improved function on a standard balance test (called the Romberg test).

Fear of falling and improvement in self-confidence

In an interesting twist on studies of falling, researchers found that the frequency of fear of falling was reduced from 56% to 31% in a large group of adults 70 years and older who practiced tai chi regularly. Confidence about not falling, and self-confidence in general, may be an unintended benefit of tai chi but one that is certainly worth pursuing. In a similar tai chi study of older adults, 54% of the subjects who practiced tai chi attributed their improved sense of confidence to improved balance. The authors concluded that "when mental as well as physical control is perceived to be enhanced, with a generalized sense of improvement in overall well-being, older persons' motivation to continue exercising also increases."

Strength and endurance

One study took adults in their 60s and 70s who practiced tai chi three times a week for 12 weeks (60-minute classes). These adults were given a battery of physical-fitness tests to measure balance, muscular strength and endurance, and flexibility before and after the 12 weeks. After just six weeks, statistically significant improvements were observed in balance, muscular strength, endurance, and flexibility measures. Improvements in each of these areas increased further after 12 weeks. The authors of the study concluded that tai chi is a potent intervention that improved balance, upper- and lower-body muscular strength and endurance, and upper- and lower-body flexibility in older adults.

Aerobic capacity

Aerobic capacity diminishes as we age, but research on traditional forms of aerobic exercise show that it can improve with regular training. In another meta-analytic study, researchers looked at seven studies focusing on the effects of tai chi on aerobic capacity in adults (average age 55 years). The investigators found that individuals who practiced tai chi for one year (classical yang style with 108 postures) had higher aerobic capacity than sedentary individuals around the same age. The authors state that tai chi may be an additional form of aerobic exercise.

Walking

Walking speed decreases with age and research suggests that it may be associated with an increased risk of falling. In one study, however, it was found that individuals who practiced tai chi walked significantly more steps than individuals who did not. Walking has clearly been associated with a decreased risk of cardiovascular disease, diabetes, and other chronic illness, and so if tai chi can improve walking, then it's certainly worth giving it a try.

Fibromyalgia

Fibromyalgia (FM) is one of the most common musculoskeletal disorders and is associated with high levels of impaired health and painful symptoms that frequently flair up without relief. The cause of FM is unknown, and there is no known cure. In a study of 39 subjects with FM who practiced tai chi twice weekly for six weeks (one-hour classes), it was found that FM

symptoms and health-related quality of life improved after the study. This could be good news for many other individuals who suffer from this disorder.

Stress

The demands of living are stressful for adults of all ages. Although one cannot directly point to studies showing a reduction in stress from practicing tai chi (though in one study subjects who practiced tai chi reported that mental control was one of the benefits), the breathing, movement, and mental concentration required of individuals who practice tai chi may be just the distraction you need from your hectic lifestyle. The mind-body connection is one that deserves special attention, as it has been reported that breathing coordinated with body movement and eye-hand coordination promote calmness. I know that when I practice yoga or tai chi, the inner sense of peace and calm is indisputable, and so I suggest that you give tai chi a chance if you're looking for a creative and physically active way to improve how you mentally and physically respond to stress.

Some more reasons to practice tai chi:

- Movements are low-impact and gentle and put minimal stress on your muscles and joints.
- The risk of injury is very low.
- You can do it anywhere, anytime.
- It requires very little space and no special clothing or equipment.
- You do it at your own pace.
- It's noncompetitive.
- It can be done in groups or by yourself
- There are lots of movements to keep you interested, and as you become more accomplished you can add those to your routine.

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http://www.medicinenet.com/tai_chi/page2.htm

National Institutes of Health

A compelling body of research emerges when Tai Chi studies and the growing body of Qigong studies are combined. The evidence suggests that a wide range of health benefits accrue in response to these meditative movement forms, some consistently so, and some with limitations in the findings thus far. This review has identified numerous outcomes with varying levels of evidence for the efficacy for Qigong and Tai Chi, including bone health, cardiopulmonary fitness and related biomarkers, physical function, falls prevention and balance, general quality of life and patient reported outcomes, immunity, and psychological factors such as anxiety, depression and self-efficacy. A substantial number RCTs have demonstrated consistent, positive results especially when the studies are designed with limited activity for controls. When both Tai Chi and Qigong are investigated together, as two approaches to a single category of practice, meditative movement, the magnitude of the body of research is quite impressive.

Full study at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3085832/>