

Tai Chi: Good for the Mind, Good for the Body

Editorial Staff

A group of U.S. and Canadian scientists, after reviewing nearly four dozen studies conducted in North America, Australia and Asia, has reached a pair of interesting conclusions regarding the ancient art of *tai chi*. Their analysis, published in a recent issue of the *Archives of Internal Medicine*, shows that practicing *tai chi* appears to offer a wealth of physical and mental benefits for people with chronic diseases, particularly elderly people. The researchers have also concluded, however, that because most *tai chi* studies are of poor quality, it is difficult to determine exactly what those benefits are, and whether *tai chi* produces any benefits in the long term.

The researchers reviewed the abstracts of 743 English- and Chinese-language articles pertaining to the practice of *tai chi* and published between 1963 and April, 2002. Of those, 696 were omitted because they did not meet the researchers' criteria. The remaining 47 studies all evaluated *tai chi* for the treatment of a chronic condition and included some type of outcome data, and were included in the analysis. The studies were then grouped into seven general categories, based on the condition being studied.

Several Positive Benefits Reported

The majority of the studies included in the systematic review found that *tai chi* had a wide range of positive benefits on overall health and well-being, from increased muscle strength and flexibility, to lowered blood pressure, to enhanced immune function. A brief synopsis of each category is as follows:

Balance control and falls: Eleven studies, including two randomized, controlled trials, measured postural stability, strength, flexibility, and other aspects crucial to a person's ability to maintain balance. Seven trials found that continual *tai chi* training (between 8 and 16 weeks) improved balance, flexibility and knee strength, and reduced the incidence of falling in the elderly. Three cross-sectional studies found that long-term *tai chi* practitioners had greater flexibility in the lower extremities than non-practitioners, and that *tai chi* improved one's gait.

Cardiovascular and respiratory systems: More than a dozen studies were analyzed, involving patients of various age and several styles of *tai chi*. Two studies found that elderly patients who practiced *tai chi* four times a week for one year exhibited enhanced cardiorespiratory function, strength and flexibility compared with a control group. Another study reported that long-term *tai chi* practitioners had higher oxygen uptake rates and lower body fat percentages than their less active counterparts.

Endocrine and immune systems: Two studies evaluated the effects of *tai chi* on immunity and the endocrine system. One study of 98 elderly men found that *tai chi* could significantly affect endocrine function, particularly activity of the pituitary gland. The second study found that patients who practiced *tai chi* regularly for four years or more had "significantly higher" numbers of a class of immune cells called T-cells in the blood compared to untrained patients.

Hypertension: Four studies involving more than 400 patients were included in the analysis. The duration of *tai chi* training lasted from 8 weeks to 3 years; blood pressure, oxygen uptake and heart rate were among the variables measured in each study. One randomized, controlled trial found similar reductions in systolic blood pressure between patients practicing *tai chi* and those engaging in regular aerobic exercise. Another study of recovering heart attack patients found reductions in both systolic and diastolic blood pressure levels among those who performed *tai chi* exercises.

Musculoskeletal conditions: Four studies investigated the use of *tai chi* for certain musculoskeletal conditions. One randomized, controlled trial of osteoarthritis patients reported that practicing *tai chi* for 12 weeks resulted in improved arthritis symptoms, decreased tension, and greater satisfaction with general health. Another study, this time of rheumatoid arthritis patients, showed no appreciable difference in arthritis systems between those who practiced *tai chi* and control groups; however, the author suggested that *tai chi* could be used as a form of exercise in arthritic patients, and provided extraneous benefits such as stimulating bone growth and strengthening connective tissue. A non-randomized study suggested that *tai chi* could improve muscle strength and endurance in the knees of elderly individuals, and a fourth study of patients with multiple sclerosis found that subjects who practiced *tai chi* experienced improvements in vitality, social functioning, mental health, and the ability to carry out certain physical activities.

Psychological responses: Six studies investigated the psychological effects of *tai chi*. Results from two trials indicated that older adults who participated in a *tai chi* exercise program showed demonstrably better scores on indices that measured depression, psychological distress, and positive well-being. A non-randomized, controlled study, meanwhile, showed that patients with multi-infarct dementia or Alzheimer's disease who participated in twice-weekly *tai chi* sessions for 7 weeks demonstrated "thinking that was focused and insightful, beyond the level normally manifested for this group of participants."

Other: The three studies in this group examined *tai chi*'s effects on a wide range of disorders. One study showed that older adults practicing classical Yang-style *tai chi* twice a week for six months were better able to achieve their desired results when performing certain functions. A case-control study of elderly men revealed that those who practiced *tai chi* for more than 11 years had higher skin blood flow levels and improved blood vessel conductance compared to sedentary men. The final study of 22 young people found that by practicing *tai chi*, one could significantly reduce the number of nightmares experienced during sleep.

Quality of Studies Leaves Much to Be Desired

For all of the positive benefits associated with *tai chi*, the researchers held back little in their assessment of the validity of the studies included in the review. While they noted that the practice of *tai chi* "appears to have physiologic and psychosocial benefits and appears to be safe and effective" for older adults, the researchers also believed the majority of *tai chi* studies "lack scientific method." Among the limitations noted in the review:

- Of the 47 studies included in the meta-analysis, only nine were randomized, controlled trials (RCTs), which is considered the highest standard for scientific research.
- In addition, all of the RCTs were considered "short duration" studies; none of them examined the effectiveness of practicing *tai chi* beyond 16 weeks.
- None of the studies from Asia were RCTs. Furthermore, nearly all of the studies published in China, Hong Kong and Taiwan reported positive results. These findings led the authors to

conclude that the studies "may have been conducted with different levels of methodologic rigor," and that "publication bias" may be greater in some countries.

Based on the poor quality of the studies, the relatively small number of RCTs in the review, and the lack of any studies that examined its effects for a significant length of time, the authors were unable to draw any firm conclusions about *tai chi* and the treatment of chronic diseases. "Therefore, long-term effects of *tai chi* practice are still unknown, and there is insufficient information to recommend tai chi to patients with chronic conditions," the authors wrote, adding that more rigorous scientific studies were needed to determine *tai chi*'s effectiveness.

"Well-defined study questions, adequate selection criteria, groups similar at baseline, valid statistical methods, accounted-for confounders, appropriate outcome, and adequate follow-up are needed for proper evaluation of the effects of *tai chi*," the authors concluded. "Patients and physicians who use *tai chi* intervention will be better informed by high-quality RCTs that report short- and long-term risks and benefits."

In an interview with the Reuters news service, Dr. Chenchen Wang, the study's lead author, elaborated on her team's results. She said that while several signs point to the benefits that can be derived from *tai chi*, it is still too early for health care providers to recommend the exercise to their patients.

"All the indications from this review show *tai chi* is beneficial," Wang said. "But we cannot yet draw scientific conclusions." Wang added that she and her colleagues would soon embark on a new study to determine why *tai chi* works, and which patients can get the most benefits from it.

References

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