

## Abstract 18

### The Effects of Tai Chi on the Heart and the Brain

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Tai chi, a martial art that originated hundreds of years ago in China, is becoming a popular mind-body practice throughout the world. The effect of tai chi practice is holistic. It has proven benefits for mental and heart health and also enhances overall well-being. The authors, as practitioners of tai chi for 10 to 40 years (one being a grand master), discuss the effects of tai chi on brain and heart health based on previous reports and the authors' own tai chi experience.

Tai chi practice has been proven to enhance heart functions. While practicing tai chi, one lowers the thoracic diaphragm and breathes deeply and slowly. This allows more air intake and greatly increases the capacity of the lungs. It is shown that tai chi practice leads to an improvement in oxygen use/aerobic capacity without getting "out of breath." The benefits of tai chi on heart function have been reported in patients with chronic heart failure<sup>1</sup> and those who have undergone coronary artery bypass surgery.<sup>2</sup> Tai chi practice also has consistently been shown to reduce blood pressure.<sup>3</sup>

Tai chi practice also enhances mental health and cognitive functions. Tai chi offers a unique way to combat stress. Tai chi is practiced slowly and with a relaxed focus, and one feels calm in mind during and after practice. For the clinical population, tai chi has been shown to improve mental and emotional function in patients with depression<sup>4</sup> and brain injury.<sup>5,6</sup> Apart from stress relief, tai chi also greatly enhances sensory perception, which is not well known to the public as it is only seen in advanced practitioners and masters. Advanced practitioners show higher

sensitivity to sensory stimulation both in perception acuity and in reaction speed.<sup>7</sup> In real combat, such superb ability allows a tai chi master to detect the intention of the opponent and react fast. Such fast reaction often happens even before the master himself/herself realizes it. This high sensitivity and perception suggest a different neural mechanism from ordinary people in response to these stimulations.

Apart from the effects on the heart and the brain, tai chi also has been shown to improve coordination, balance, and sleep, and it has an effect on multiple diseases such as pain, osteoarthritis, diabetes, and asthma. Taken together, tai chi improves one's general well-being. However, so far the underlying mechanisms for these effects remain unexplored. The authors call for attention and support for the investigation of this issue.

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