VESTIBULAR DISORDERS ASSOCIATION

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Improving Balance with Tai Chi

By the Vestibular Disorders Association with contributions by Gaye Cronin, OTD, OTR, Atlanta Ear Clinic, Atlanta, GA

The profound dizziness, vertigo, and imbalance symptoms commonly experienced with vestibular (inner ear balance) disorders can cause overwhelming fatigue and anxiety. Many people suffering from vestibular disorders limit their activities because of these factors as well as fear of falling, a risk that increases eight-fold in those actively experiencing the symptoms of their disorder.[1]

Falling can cause injuries that severely impair mobility or end lives, especially for people aged 65 and older, for whom falls are the leading cause of both fatal and non-fatal injuries.[2] However, prolonged inactivity reduces one's ability to compensate for a vestibular disorder and often contributes to other problems, including loss of bone and muscle mass, heart disease, and obesity. The emotional pain of social isolation and the loss of formerly enjoyed activities can be no less profound.

Fortunately, many types of vestibular disorders respond well to vestibular rehabilitation therapy (VRT). VRT exercises are designed to help recalibrate the complex interaction of sensory and motor functions required for good balance. Tai Chi also challenges this same complex interaction. Both VRT and Tai Chi involve exercises that focus on postural orientation (positioning the trunk and head in alignment to each other as well as to the ground and to the visual field) and postural equilibrium (coordinating movement strategies to center and stabilize the body).[3] Extensive medical literature, as well as the direct experience of physical therapists and other clinicians, supports Tai Chi as an excellent complementary therapy to vestibular rehabilitation.

What is Tai Chi?

Originating in China centuries ago, Tai Chi (a shortened version of the more traditional name *tai chi chuan*) is a martial art characterized by gracefully flowing movements and postures. Tai Chi is popularly practiced throughout the world, often with an emphasis on maintaining good health and promoting longevity. It emphasizes the interconnected nature of the body and mind (Figure 1), combining "physical movement, breathing techniques, and cognitive tools to strengthen the body, relax the mind, and balance the flow of life force,"[4] also known as *chi* (also spelled *ki* or *qi*). Chi loosely means "energy," and people performing Tai Chi postures and movements—also called

forms—are encouraged to visualize or imagine their own Chi in order to improve their movements and focus.

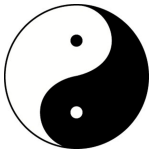

Figure 1. The interconnected nature of body and mind and concept of balance is symbolized by the yin-yang symbol traditionally associated with Tai Chi.

As is common with martial arts, there are several different schools and styles of practice, some more vigorous and challenging than others. However, all share the same forms, which depending on style, instructor, or level of experience can be performed in combinations ranging in complexity from just a few to over a hundred. The most popular type of Tai Chi is the simplified 24-form version developed from the Yang style by the Chinese Sports Committee in 1956 as a public health program. It offers the advantage of maintaining many traditional Tai Chi principles while being simple and gentle enough to be practiced by people of all ages and physical ability.

Balance benefits of Tai Chi

Tai Chi improves balance in several ways:

- It strengthens and improves ankle flexibility, creating a more stable stance.[4,5]
- It helps to distribute movement more evenly among the ankle, knee, and hip joints, enabling faster and smoother walking.[4]
- It helps reduce postural sway by optimizing the use of proprioception—sensory input received by the brain from touch sensors in the muscles and joints—in the balancing process.[6]
- It generally promotes a greater awareness of body and movement.[7]

In addition to balance benefits, Tai Chi offers a broad range of well studied positive health impacts for cardiovascular, respiratory, and immune system improvement.[6] Increased endurance and mental focus, as well as an improved sense of well-being, have also been reported from programs using Tai Chi activities. With the right style and program, Tai Chi is a gentle, low-impact activity easily enjoyed by a wide range of people, including older adults, who are disproportionally affected by vestibular disorders coupled with complicating factors affecting compensation. These factors include multi-sensory loss and general mobility limitations.[8] Tai Chi improves performance of the activities of daily living, and is also particularly helpful in reducing the fear of falling and the general stress that so often accompany symptoms of dizziness and vertigo.[7]

Clinical observation of Tai Chi

One of us (G.C.) has observed the positive affects of Tai Chi in clinical practice (Atlanta Ear Clinic, GA) from working with many patients requiring vestibular rehabilitation and balance retraining. Before beginning any treatment plan, patients who present with balance disorders are carefully evaluated with a sensory organization test (SOT) for their skill in organizing visual, vestibular, and proprioceptive information during six

tasks of increasing difficulty. Other clinical norm-referenced balance assessments are also used to evaluate patients' static and dynamic balance abilities.

Our interest in using Tai Chi in treatment was prompted in part by following eight patients who enrolled in a six-week Tai Chi class. Prior to the class, all had demonstrated abnormal SOT scores. In addition, four had experienced falls, and two were using assistive devices for walking (one cane and one walker). After completing the six-week Tai Chi class, all eight patients scored within normal ranges on the SOT and exhibited increased confidence and activity levels. The two using assistive devices were able to discontinue using them, and six months later, none of the patients had experienced falls.[8] Since then, many patients at the Atlanta Ear Clinic have significantly improved their balance and overall quality of life by incorporating Tai Chi into their vestibular rehabilitation program.

Implementing a Tai Chi program for fall prevention

A variety of Tai Chi programs are available for implementing at a clinic or community level. One example is *Tai Chi: Moving for Better Balance* (TCMBB), a Yang-style program developed by Fuzhong Li, PhD, of the Oregon Research Institute (Eugene, OR). It is supported with a grant from the Centers for Disease Control to help create clinically appropriate, evidence-supported fall-prevention strategies.[9] A six-month, three-times per week version of program has been shown to be effective in improving functional balance and reducing falls by 55% in physically inactive persons aged 70 or older.[10]

To facilitate this program's implementation at community and senior centers, a simplified version of the TCMBB program is being taught to instructtors. One of us (M.R.) attended this training at Emanuel Legacy Hospital (Portland, OR) led by Suman Sensei Barkhas, a nationally certified yoga therapist and Tai Chi teacher-trainer. The program modifies the 24-form Yang style even further to a gentle, easily performed eight-form style. The eight forms were chosen for their accessibility as well as their focus on "weight-bearing and non-weight-bearing stances, posturally correct body alignment, and multiple, coordinated movements executed in a continuous, circular, and flowing manner."[11]

The lynchpin of this eight-form style is the first form students learn, and is called *hold a ball* (Figure 2). This form begins by firmly rooting and centering the stance, then focusing on visualizing chi, drawing it out from the center of the body and then shaping the hands in a circle around it. Students then gently step from side-to-side, a movement often repeated throughout the rest of the forms. The next seven forms—*part the wild horse's mane*, *single whip*, *hands like clouds*, *repulse monkey*, *brush knee*, *fair lady works the shuttles*, and *grasp the peacock's tail*—borrow their names and

movements from the natural world as well as activities historically common to Chinese life. *Fair lady works the shuttles*, for instance, references hands rising up and down as if working a loom.

Figure 2. The *hold a ball* form is the basis for many of the movements in the "Tai Chi: Moving for Better Balance" program. Photo used with permission from Juliette McCawley and distributed under a Creative Commons license via www.flickr.com/photos/75304241@N00/.

Each form coordinates multiple movements of the hands and feet with slow, relaxed breathing; for example, *hold a ball* consists of 14 separate postures. The TCCMB program is designed to introduce only one or two forms in each class and to build to increasing levels of complexity. The last form students learn, *grasp the peacock's tail*, consists of 23 separate postures—a level of complexity made possible by the program's careful attention to building on previous progress.

A user-friendly resource package[11] for implementing the TCCMB program advises class instructors to devote several minutes of each class to warming up and cooling down and to progress slowly, having students practice each form for 8–10 times as needed. The program's focus is on building core strength and focusing thought on balance so that participants can become more aware of the body and its movements. Safety is emphasized, with instructors trained to encourage their students to consult a health care provider before engaging in the program and to adapt the forms to their unique circumstances and physical limitations. Those with low or no mobility can start by participating from a seated position. Also emphasized is the sense of Tai Chi as fun, a form of play with psychological benefits as profound as the physical ones. Instructors are to encourage their students to take pleasure from performing the forms, and to focus their energy and breathing on achieving a calm but alert state of mind.

Enrolling in a Tai Chi program

Before enrolling in a Tai Chi program, seeking advice from a physical therapist or physician with vestibular disorder expertise is strongly recommended to make sure that the forms can be performed safely. Additionally, because Tai Chi instructors use varied programs and have different levels of expertise in helping people with balance disorders, asking for recommendations from a health care provider can be useful when

selecting the particular course to take. Senior centers and balance and wellness programs are also good resources for finding qualified instructors.

It is important to take a class for beginners that is taught in a gentle style such as Yang, with session lengths no longer than an hour. Ideally, the course should be taught by a qualified instructor who is widely experienced with teaching people with balance disorders or limited mobility. Once a program is selected, a discussion with the Tai Chi instructor is important so that he or she is aware of all balance challenges or other physical problems that may limit mobility. Tai Chi emphasizes deliberate and gentle movement, but it is still possible to perform the forms incorrectly, leading to strain or injury. A Tai Chi instructor well experienced in teaching people with vestibular disorders can provide careful one-on-one instruction to correct errors in movement and help to prevent overstrain. The instructor may also help to adapt the program as needed.

Finally, anyone starting a Tai Chi course should be prepared to commit to an 8–12 week program, because benefits take time to become noticeable. Classes do not require wearing special athletic equipment or clothing, although wearing loose-fitting clothing and flat comfortable shoes or going barefoot is recommended. Programs with an accompanying DVD, such as is available for the TCMBB program, make home practice easier once the Tai Chi class concludes. No matter what level of mobility or physical ability that individuals bring with them to Tai Chi, improvement—and just as important, enjoyment—is possible for everyone.

Additional resources

Some helpful publications from the Vestibular Disorders Association (VEDA) include *Balance and Aging* and *Vestibular Rehabilitation: An Effective, Evidence-Based Treatment*. For more information on *Tai Chi: Moving for Better Balance*, contact Li Fuzhong (www.ori.org) or Suman Sensei Barkhas (http://shantalaya.com).

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