



Evidence-based Tai Chi to Promote Health and Participation

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Abstract

Tai chi holds great potential to increase wellness, prevent impairments, help ameliorate chronic conditions, and improve participation in community activities (Huston & McFarlane, 2016; Li, Yuan, & Zhang, 2014; Li, et al. (2012). Tai chi (which incorporates mindfulness) has increased in popularity over the past 10 years (Lan, Wolf, & Tsang, 2013). As a mind-body practice, tai chi is congruent with the philosophical base of occupational therapy. Clients of occupational therapy could benefit from a referral to a tai chi class, or some of the movement components could be incorporated into therapy sessions. Tai chi has been found beneficial for both patients and health care professionals. Learning about tai chi could be beneficial to occupational therapy practice.

Objectives

1. Describe the basic components of a simplified tai chi based movement and mindfulness program and the relationship of components to client factors.
2. Describe the evidence that supports the benefits of tai chi and mindfulness for reducing stress and anxiety, fall prevention and improving balance, movement disorders such as Parkinson's, and promoting overall health.

Background

Tai chi is a mind-body practice that is considered a complementary health approach in the West. The National Centers for Complimentary and Integrative Health (NCCIH) recommends using the term “**complementary health approaches**” for practices and products of non-mainstream origin and “**integrative health**” for incorporating complementary approaches into mainstream health care. These terms replace Commentary and Alternative Medicine or CAM.

Tai chi is a centuries-old, **mind and body practice**. It involves “certain postures and gentle movements with mental focus, breathing, and relaxation. The movements can be adapted or practiced while walking, standing, or sitting” (<https://nccih.nih.gov/health/taichi/introduction.htm>).

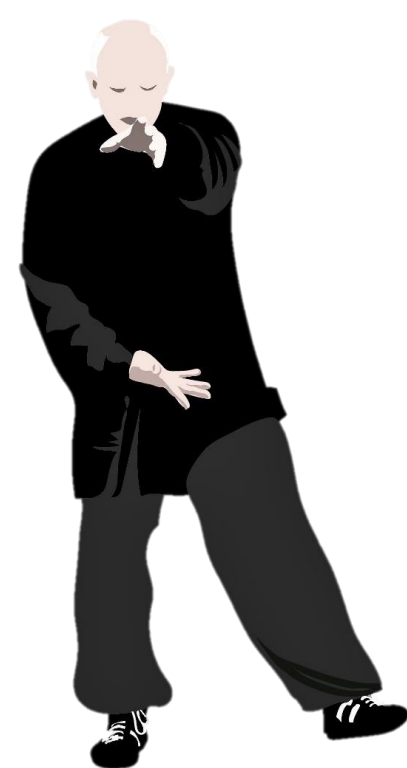
Research on tai chi has increased significantly in the past 10 years (Huston & McFarlane, 2016). While more rigorous research is continuing, Huston & McFarlane, 2016, conclude that “There is abundant evidence on the health and fitness effects of tai chi” (p. 881). The strongest evidence of benefit so far includes (1) **BALANCE and fall prevention**, (2) pain resulting from **osteoarthritis**, (3) **PARKINSON'S disease**, (4) **COPD**, and (5) **cognitive function in older adults**. Good to fair evidence of benefit exists for (6) **anxiety** and (7) **depression**, (8) **PSYCHOLOGICAL well-being**, (9) **fibromyalgia**, and (10) **osteoporosis** (Janke et al, 2010; and Horowitz, 2014; NCCIH, 2016). Research is emerging for the benefit of tai chi for (11) **osteopenia** (Wayne, et al, 2012).

References

See Handout

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What Is Tai Chi?

“Tai chi, also called taiji or tai chi chuan, is a form of mind-body exercise that originated in China. It combines Chinese martial arts and meditative movements that promote balance and healing of the mind and body, involving a series of slowly performed, dance-like postures that flow into one another” (Wang, et al., 2014, p. 605.). It is based on Chinese philosophy and theoretical principles of **Traditional Chinese Medicine** (TCM) (Jahnke, et al., 2010; Wayne, 2013). Tai chi also incorporates breathing and mindfulness. **Mindfulness** or meditation in this context does not mean emptying the mind, but rather using focused awareness of the sensations from the body and purposeful use of intention.

There are **many styles** of tai chi. Some involve sequences of dozens of separate movements that can take years to learn. Simplified forms of tai chi have been created for use with older adults, individuals with health conditions, or people who want the physical and psychological benefits with a less strenuous learning curve (and are less interested in the martial arts application).

The basic stance includes feet that are shoulder width apart, symmetry, alignment, and slightly bent knees. This stance provides a **stable base** from which to move and promotes active relaxation, which, with repetition can become a habit used in daily routines. The feet are **rooted** to the ground, the spine slightly elongated, and the head buoyant. The flowing movements of tai chi also **create spaces** and **promote circulation of fluids** within the body that nourish the cells, connective tissues, and organs.

EXAMPLES:

Pouring weight. From the basic stance the body's weight is “poured” slowly from one leg to the other with a lateral weight shift. Attention is drawn to the leg that is weight bearing (doing) and to the leg that is not weight bearing (not doing).

Cloud Hands. The torso turns as a unit and weight is shifted as the arms float in the direction of the turn. This is repeated with or without stepping to each side.



Brush Knee. With arms rounded (holding a ball with the right on top), pour all weight to left leg and lift right foot. As the right foot steps forward, the right arm drops (white arrow) and the hand brushes the right knee while the left arm (black arrow) moves forward in a soft push position. Repeat with left arm on top, step and brush with left.

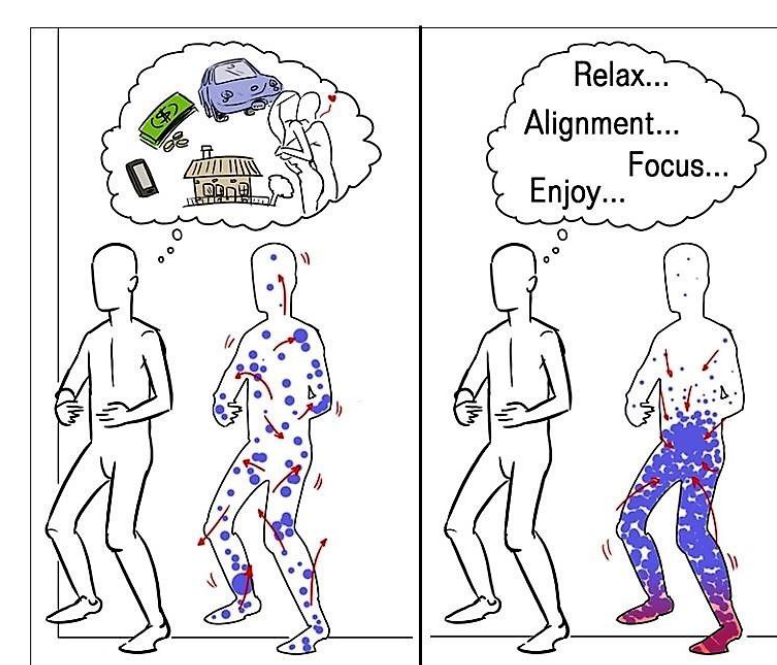
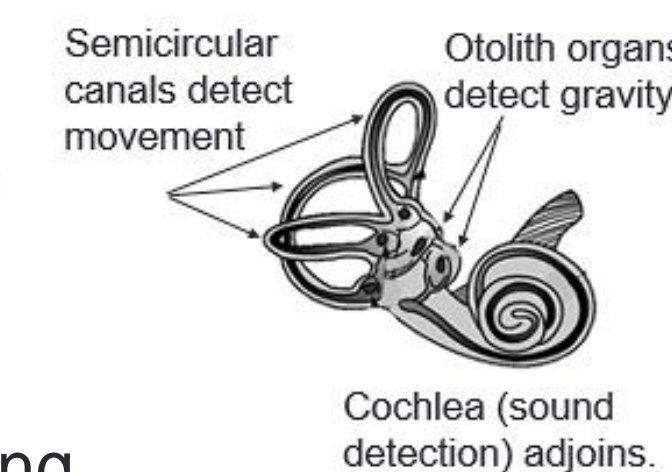


Movements can be strung together in a specified sequence so that all who participate are doing the same movements. Group practice is typical and can bring about **social support** and **embodied spirituality** (Wayne, 2013)

Individual Capacities Enhanced through Tai Chi

The following individual capacities (client factors) are enhanced through the practice of tai chi. The American Occupational Therapy Association defines **client factors** as the “specific capacities, characteristics, or beliefs that reside within the person and that influence performance in occupations” (AOTA, 2014, p. s7).

- **Proprioceptive** (*awareness of the position of body parts, weight bearing, and force*)
Tai chi emphasizes tuning in to sensations from skin, joints, and muscles. Awareness is focused on both “doing” and “not doing” and is perceived through weight and position of limbs.
- **Vestibular** (*detects gravity, movement of head in space, balance, and eye movements*)
Slow movements through space enhance awareness and integration of inputs from the vestibular system (gravity, direction and velocity of movement of the head, and stabilizing gaze).
- **Joint mobility and stability** (*structural integrity of joints and range of motion*)
Tai chi involves blending stability and mobility of joints. It contributes to bone health through weight bearing.
- **Control of voluntary movement** (*eye-hand and eye-foot coordination, bilateral integration and crossing the midline, gross motor coordination*)
The movements in tai chi involve coordination of the **right and left sides** of the body, the **upper half with the lower half** of the body, **ipsilateral** and **contralateral** movements, and **crossing the midline**. Movements require **gradation** of movement (movements are slow and flowing) and moving through a comfortable range (not extremes).
- **Respiratory system functions** (*rate, rhythm, and depth of respiration*)
In tai chi, inhalation is enhanced with movements that involve chest expansion and exhalation with movements that involve chest compression. Vital capacity is enhanced by flexibility of the trunk. Tai chi has been effective in reducing shortness of breath in individuals with COPD (Wayne, 2013).
- **Physical endurance** (*stamina*)
Tai chi involves low to moderate intensity levels of aerobic activity (Wayne, 2013). Practice over time contributes to endurance.
- **Higher-level cognitive functions** (*metacognition, praxis, cognitive flexibility, insight*).
Tai chi can attenuate age-related cognitive decline and executive function (Wayne, et. al., 2014). The mindfulness component involves metacognition and cognitive flexibility.



Balance and Fall Prevention

Falls are the leading cause of fatal and nonfatal injuries among adults ages 65 and older (CDC). The CDC, the American Geriatrics Society, and the British Geriatrics Society recommend tai chi as a “particularly good type of exercise to improve balance and prevent falls” in older adults. (Horowitz, 2014, p. 263). In addition to the biomechanical characteristics of tai chi, the “movements may also have unique characteristics for **improving postural control capacity**” (Horowitz, 2014, p. 264). Among the applications of tai chi with the strongest and most consistent evidence is fall prevention (Jahnke, et al., 2010). A meta-analysis by Song, et. al., 2015, found that individuals with a **high risk of falling showed significant improvement** in balance after 8 to 10 weeks of tai chi while those with low risk of falling required 12 weeks to reach a significant improvement in balance. Furthermore, tai chi also **decreases fear of falling**, which is strongly associated with fall risk (Wayne, 2013).

Parkinson's Disease

Huston & McFarlane, 2016, reported excellent evidence exists for the use of tai chi to **improve mobility and balance** in persons with Parkinson's disease. A randomized control trial by Li, et. al., 2012, found **improved postural control** in persons with idiopathic Parkinson's disease and who ranged from stages 1 to 4 on the Hoehn and Yahr staging scale. The 195 participants and were randomly assigned to twice weekly sessions for 24 weeks of tai chi, resistance training, or stretching sessions. The primary outcome was measured using computerized dynamic posturography (the limits-of-stability test), and secondary outcomes included measures of gait and strength, scores on the functional reach and timed up and go tests, number of falls, and motor scores on the Unified Parkinson's Disease Rating Scale. The tai chi group performed significantly better than the other 2 groups on posturography limits of stability, and better than the stretching group all secondary outcomes. The benefits of tai chi were maintained 3 months after the end of the intervention.

Psychological Well-being

A summary of eight systematic reviews found that there is good evidence for the effectiveness of tai chi in reducing depression (Huston & McFarlane, 2016). Other authors report benefits of tai chi for **improving depression, anxiety, self esteem, and overall psychologic well-being** (Horowitz, 2014; Wang, et al., 2014). In a meta-analysis by Wang, et. al., 2014, 16 studies led to significant improvement in depression compared to routine medication, education, and a variety of control groups including exercise. “This systematic review revealed that the slow, focused movements of tai chi may counteract erratic movements and thoughts by increasing awareness of and eventually releasing muscle holding patterns and their associated emotions caused by stress” (Wang, et. al., 2014, p. 615). Slow movements and deep breathing also activate the parasympathetic nervous system.

OT and Tai Chi

“It is the position of the American Occupational Therapy Association (AOTA) that numerous complementary health approaches and integrative health (CHAIH) products and practices **may be used responsibly** by competent occupational therapy practitioners to **prepare and enhance participation** and **engagement in occupation** by persons, groups, and populations. ... The occupational therapy profession's philosophical background and client-centered approach to practice supports the use of CHAIH in practice” (AOTA, in press, p. 1).

CHAIH may be used as preparatory methods and tasks, occupations, and activities “when **incorporated into an overall occupational therapy plan of care** that supports a client in active engagement and participation in meaningful occupations” (AOTA, in press, p. 2).

Sabel & Gallagher (2014) describe using tai chi to promote occupational performance. Tai chi postures and movements can be used to address client factors that interfere with a client's ability to participate in specific occupations. For example the basic tai chi stance uses a stable base of support with “soft knees” that provides postural stability when reaching (such as during **dress**ing, **reach**ing for an item on a shelf, opening and closing a **door**). Slowly shifting weight and rotating the torso is a component of many tai chi movements and can be applied to functional activities such as **lift**ing and **relocat**ing objects.