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Tai Chi and Qigong for the Treatment and Prevention of Mental Disorders

Ryan Abbott, MD, JD, MTOM^a and Helen Lavretsky, MD, MS^{b,*}

^aSouthwestern Law School, 3050 Wilshire Boulevard, Los Angeles, California

^bDepartment of Psychiatry and Biobehavioral Sciences, Semel Institute for Neuroscience and Human Behavior, David Geffen School of Medicine at UCLA, 760 Westwood Plaza, Los Angeles, CA 90095, USA

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OVERVIEW

Tai Chi and Qigong

Tai Chi and Qigong are traditional Chinese exercises that are widely practiced for their health benefits and as martial arts. Developed over hundreds and thousands of years, respectively, Tai Chi and Qigong are practiced worldwide in a variety of modern and traditional forms. In 2002, there were more than 2.5 million Tai Chi users and 500,000 Qigong users in the United States.¹ Both Tai Chi and Qigong involve sequences of flowing movements coupled with changes in mental focus, breathing, coordination, and relaxation.² There is significant overlap between the 2 practices in terms of movements and in the shared focus on breathing and mindfulness. Both practices are low-impact, moderate-intensity aerobic exercises that are suitable for a diverse patient population with regards to gender, age, and health status.³ Tai Chi and Qigong have been characterized as mind-body interventions and as “meditative movements.”⁴ They are relatively safe, nonpharmacologic practices, which can be used for treatment and prevention of psychosomatic disorders, with few adverse events reported in the literature.⁵

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*Corresponding author. Department of Psychiatry and Biobehavioral Sciences, Semel Institute for Neuroscience and Human Behavior, David Geffen School of Medicine at UCLA, 760 West-wood Plaza, C9-948A, Los Angeles, CA 90095. hlavrets@ucla.edu.

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Putative Physiologic Mechanism of Response

Tai Chi and Qigong have been shown to promote relaxation and decrease sympathetic output.⁶⁻⁹ Relaxation interventions are known to reduce clinical somatic symptoms and to benefit anxiety, depression, blood pressure, and recovery from immune-mediated diseases.¹⁰ Tai Chi and Qigong have been shown to improve immune function and vaccine-response,¹¹ to increase blood levels of endorphins¹² and baroreflex sensitivity,¹³ as well as to reduce levels of inflammatory markers (C-reactive protein [CRP]),¹⁴ adrenocorticotropic hormone,¹² and cortisol.^{15,16}

Electroencephalography (EEG) studies of participants undergoing Tai Chi and Qigong exercise have found increased frontal EEG α , β , and θ wave activity, suggesting increased relaxation and attentiveness.¹⁷⁻¹⁹ These changes have not been present in exercise controls.^{20,21}

Clinical Research Applications of the Use of Tai Chi and Qigong

A growing body of clinical research has begun to evaluate the efficacy and safety of Tai Chi and Qigong. A systematic review of Tai Chi interventions published in 2011 found 31 Tai Chi randomized controlled trials (RCTs) published from 2002 to 2007, and 11 for 1992 to 2001.²² That study found suboptimal quality of reporting of Tai Chi intervention trials, with only 23% of RCTs providing adequate details of the Tai Chi intervention used in the trials. Another review of Tai Chi from 1993 to 2007 found 77 RCTs and concluded “research has demonstrated consistent, significant results for many health benefits in RCTs, evidencing progress toward recognizing the similarity and equivalence of Qigong and Tai Chi.” The study found 6410 participants included across these reported studies.

Problematic research issues within the literature on Tai Chi and Qigong are usually related to small sample size, use of different styles of Tai Chi and Qigong, significant variance in practice duration and frequency, and differences in study durations. Because of the similarity of Tai Chi and Qigong and because clinical research has largely failed to differentiate between the 2 exercises, this review considers the benefits of both practices.²³

Health Outcomes of Tai Chi and Qigong Interventions

RCTs have shown that Tai Chi and Qigong may improve bone density, cardiopulmonary health, arthritis, fibromyalgia, tension headaches, and other medical conditions.²⁴⁻³⁶

Given the relationship between physical and mental health, general improvements in physical health or reductions of chronic disease symptoms may help to improve mental health. Chronic physical health problems are associated with stress, anxiety, depression, and poor mood.^{37,38}

Health-Related Quality of Life

Health-related quality of life (HRQOL) serves as a comprehensive measure of patient well-being, and it reflects patient perceptions of personal health and life satisfaction over a period of time. Individuals suffering from mental health conditions are particularly likely to report poor HRQOL. A study comparing patients with common medical disorders to those with mental health conditions found significant differences in HRQOL between the 2 groups. Individuals with mental health conditions had significantly greater impairment of HRQOL.³⁹ The ability of Tai Chi and Qigong to improve HRQOL^{31,40,41} is an important consideration for treating patients with mental disorders. Although there is no evidence that Tai Chi and Qigong may be effective for a particular condition, they may still provide some benefit by improving HRQOL.

Tai Chi and Qigong as Exercise

Studies have tried to understand the effects of Tai Chi and Qigong as aerobic versus mindful exercise. Independent from any special benefits Tai Chi and Qigong may confer as meditative movements, they also benefit patients as general, low-impact, moderate-intensity aerobic exercise. There is extensive evidence on general exercise interventions with regards to mental disorders.⁴² Systematic reviews have found that exercise results in significant reductions in depression symptoms comparable with cognitive-behavioral therapy.^{43,44} Two studies found that exercise is comparable with sertraline (Zoloft) in terms of efficacy for treatment of major depressive disorder. In studies comparing the benefits of Tai Chi and Qigong with general exercise, both interventions have been shown to have comparable effects at reducing anxiety.^{45,46} In general, evidence from clinical trials supports a positive association between physical activity and physical and psychological health.^{47–50}

Tai Chi and Qigong as Meditative Practices

Tai Chi and Qigong practices include a mindfulness component, which may explain why some patients experience greater benefits from Tai Chi or Qigong than from general aerobic exercises.^{16,46} A Cochrane collaboration review of meditation therapy for anxiety disorders found only a few studies that permitted firm conclusions on efficacy. The review identified 50 studies of meditation on anxiety, but only 2 that were randomized, controlled and that met criteria for *Diagnostic and Statistical Manual of Mental Disorders* or *International Classification of Diseases* classification of a psychiatric disorder. These 2 studies were of moderate quality with active control comparisons (alternative meditation, biofeedback, or relaxation). One of these studies, which used transcendental meditation, showed a reduction in anxiety and electromyography score comparable with biofeedback and relaxation therapy.⁵¹ The other study compared Kundalini yoga with relaxation/mindfulness meditation and found no significant difference between groups. A separate review concluded that several studies of exercise and yoga have shown benefits comparable with established depression and anxiety treatments. A third review compared 12 RCTs of mindfulness exercises versus nonmindfulness exercises and found that both were effective in causing short-term reductions in depression levels and symptoms.⁴⁹

An RCT of brief daily yogic meditation (Kirtan Kriya) for family dementia caregivers with mild depressive symptoms found that meditation resulted in lower levels of depressive symptoms as well as improvements in mental health and cognitive functioning. Participants in the yogic meditation group showed a 43% improvement in telomerase activity after 12 minutes of daily practice for 8 weeks, compared with 3.7% in relaxation music control participants. This finding suggests that brief daily meditation practices may lead to improved mental and cognitive functioning and may also benefit stress-induced cellular aging. Another report found that Kirtan Kriya reversed the pattern of increased nuclear factor κ B (NF- κ B)-related transcription of proinflammatory cytokines and decreased interferon regulatory factor 1-related transcription of innate antiviral response genes in distressed dementia caregivers. This finding reinforces the relationship between stress reduction and beneficial immune response.⁵²

RESEARCH APPLICATIONS TO MENTAL HEALTH

Psychosocial Well-Being

The evidence base for Tai Chi on psychosocial well-being was evaluated in a meta-analysis published in 2010⁵³ and a systematic review published in 2009.⁵⁴ The meta-analysis identified 40 studies (17 RCTs, 16 nonrandomized comparison studies [NRSs], and 7 observational studies) with a total of 3817 individuals reporting at least 1 psychological health outcome from a search of 11 English and Chinese databases. Twenty-one of the 33

RCTs and NRSs found that in community-dwelling participants between 1 hour up to 1 year of regular Tai Chi significantly increased psychological well-being, reduced stress (effect size [ES], 0.66; 95% confidence interval [CI], 0.23–1.09), anxiety (ES, 0.66; 95% CI, 0.29–1.03), and depression (ES, 0.56; 95% CI, 0.31–0.80), and enhanced mood (ES, 0.45; 95% CI, 0.20–0.69).

The review concluded that “Tai Chi appears to be associated with improvements in psychological well-being including reduced stress, anxiety, depression and mood disturbance, and increased self-esteem. Definitive conclusions were limited due to variation in designs, comparisons, heterogeneous outcomes, and inadequate controls. High-quality, well-controlled, longer randomized trials are needed to better inform clinical decisions.”⁵³ This systematic review limited analysis to 15 RCTs published in English because of concerns about study quality in the non-English literature. The reviewers identified a subset of 8 high-quality trials that together included evaluations of anxiety, depression, mood, stress, general mental health, anger, positive and negative effect, self-esteem, life satisfaction, social interaction, and self-rated health. Tai Chi was found to have a significant positive effect in 13 of the 15 studies, and in 6 of the 8 high-quality trials. Earlier reviews have concluded that Tai Chi seems to improve psychosocial well-being.^{55–57}

The effects of Tai Chi on self-esteem have been evaluated in 3 RCTs.⁵⁸ All of these studies found an increase in self-esteem compared with control groups, but only 1 produced statistically significant between-group results.⁵⁸ That study randomized 21 women diagnosed with breast cancer who had completed treatment within the last 30 months to receive 12 weeks of Tai Chi or psychosocial support 3 times a week. A review of 51 studies of general exercise found that aerobic exercise is effective in improving self-esteem.⁵⁹

Stress Management

The most logical clinical application of mind-body techniques is for stress reduction. Out of 5 RCTs, 4 found a significant association between Tai Chi and Qigong and positive effects on stress.

1. Beneficial effects were found in a study in 2008⁶⁰ that evaluated a population infected with the human immunodeficiency virus (mean age 42 years, n = 252) randomized to practice Tai Chi for 90 minutes once weekly for 10 weeks or to a cognitive-behavioral relaxation group, spiritual growth group, or a wait-list control group.
2. A study in 2001⁶¹ that used a healthy geriatric population (mean age 73 years, n = 72) randomized to practice Tai Chi for 1 hour twice weekly for 24 weeks versus a wait-list control group also found that Tai Chi reduced stress.
3. Tai Chi was shown to reduce stress in a study in 1996⁶² that evaluated health among older adults (mean age 67 years, n = 20) who practiced Tai Chi for 2 hours, once weekly for 10 sessions compared with a routine physical activity group.
4. Positive effects were found in a study in 1992⁴⁵ that looked at healthy adults (mean age 36 years, n = 96) who underwent a single, 1-hour session of Tai Chi versus meditation, brisk walking, or neutral reading.
5. One RCT did not find positive results; a study in 2007⁶³ that evaluated individuals with hip or knee osteoarthritis (mean age 70 years, n = 152) who practiced Tai Chi for an hour twice weekly for 12 weeks found no significant difference compared with a hydrotherapy or wait-list control group.

All studies used subjective stress measures, 1 measured body temperature,⁶² and 2 measured salivary cortisol levels,⁶⁰ which decreased as a result of Tai Chi practice.

Mood, Anxiety, and Depression

Seven RCTs have found that Tai Chi significantly improves mood, including:

- A 2011 study of 100 outpatients (mean age 67 years) with systolic heart failure who received either a 12-week Tai Chi exercise program or time-matched education.
- A study published in 2009 randomized 21 obese women to either a 2-hour weekly session of Tai Chi or a conventional structured exercise program and found that only the Tai Chi group experienced improvements in mood.
- Benefits to mood were also found in a 2005 study of 38 adults (20–60 years old) with advanced HIV/AIDS who participated in 8 weeks of twice weekly, 1-hour-long Tai Chi practice versus aerobic exercise or usual activity.⁶⁴
- A 1995 study of 135 healthy, sedentary adults (mean age 53 years) who practiced Tai Chi for 45 minutes, 3 times a week, for 16 weeks reported improved mood compared with exercise and relaxation control groups.⁶⁵
- Three of the trials described earlier^{45,60,61} also found benefits to mood.

An RCT⁶⁶ found no significant impact of Tai Chi on mood. That trial randomized 22 community-dwelling participants (mean age 68 years) with lower extremity osteoarthritis to 12 weeks of twice-weekly, 1-hour-long Tai Chi sessions or to a control group. Tai Chi was found to improve pain, physical function, and other arthritis symptoms (measured using the Arthritis Self-Efficacy Scale) as well as satisfaction with general health status, but it did not result in a statistically significant difference in mood.

Ten RCTs have investigated the effects of Tai Chi on anxiety, 9 of which showed significant positive effects.

- A Japanese trial in 2010⁶⁷ evaluated 34 community-dwelling elderly participants with cerebral vascular disorder who were randomized to receive either Tai Chi or standard rehabilitation in group sessions once weekly for 12 weeks. Participants in the Tai Chi group experienced improvements in sleep quality, anxiety/insomnia, and depression.
- A study in 2008³³ randomized 20 patients with rheumatoid arthritis to 12 weeks of twice-weekly sessions of Tai Chi or attention control. Participants in the Tai Chi group experienced greater improvements in anxiety and depression than the control group.
- A study in 2007³⁵ of 65 patients (mean age 70 years) with chronic heart failure received 16 weeks of either Tai Chi practice twice weekly or standard medical care without exercise rehabilitation. They reported that both groups had a significant reduction in anxiety scores, found no between-group differences in anxiety, and found that depression was reduced only in the Tai Chi group.
- A study in 2007⁶⁸ of 84 sedentary older people (mean age 70 years) contrasted Tai Chi with low-impact exercise for 12 weeks and found that both groups of patients experienced improvements in anxiety.
- A study in 2003⁶⁹ of 76 healthy individuals (mean age 52 years) found improvements in anxiety for participants who received 12 weeks of 50-minute Tai Chi sessions 3 times a week compared with a sedentary life control group.
- Improvements to anxiety were also found in 3 RCTs described earlier.⁴⁵
- One RCT described earlier⁶³ did not find a significant effect on anxiety.

Fourteen RCTs have evaluated the effects of Tai Chi and Qigong on depressive symptoms, 13 of which found positive results. Several of these RCTs have already been described.⁶⁷

- A single-blind, 12-week study⁷⁰ of participants with fibromyalgia (mean age 50 years, n = 66) published in 2009 found that Tai Chi produced greater improvements in depression than a stretching and wellness education group.
- Another single-blind, 12-week trial in 2009⁷¹ randomized 40 patients (mean age 65 years) with knee osteoarthritis to receive either Tai Chi or wellness education and stretching and found that patients in the Tai Chi group experienced greater improvement in depression.
- An RCT in 2008 evaluated 14 community-dwelling older patients from a psychogeriatric outpatient clinic who were randomized to receive a 3-month Tai Chi intervention or to a wait-list control. Only the Tai Chi group experienced improvements in depressive symptoms.
- A trial in 2007 randomized 112 healthy older adults (aged 59–86 years) to 25 weeks of either Tai Chi or health education. Participants in both groups experienced improvements in depressive symptoms.
- An RCT in 2005⁷² of 291 women and 20 men (aged 70–97 years) recruited from 10 matched pairs of congregate living facilities found that 48 weeks of Tai Chi led to a significantly greater reduction in depression than wellness education ($P < 0.001$).
- A Chinese trial in 2004²¹ randomized 14 elderly persons (mean age 73 years) with depression to 12 weeks of Tai Chi 3 times a week for 45 minutes or to a wait-list control group. Only the Tai Chi group experienced improvements in depressive symptoms.
- A trial in 1998⁷³ of 51 patients aged 18 to 60 years with chronic low back pain reported improvements in depressive symptoms compared with a control group after 6 weeks practicing Tai Chi once a week for 90 minutes.
- Only 1 RCT did not find evidence that Tai Chi and Qigong are effective in reducing depressive symptoms or had any effect on anxiety or stress management.⁶³

Most of these studies were conducted in patient populations without known mental disorders. Only 2 studies involved participants with clinically diagnosed depression.⁷² A review in 2009⁷⁴ of Tai Chi and Qigong in older adults found 36 clinical trials with 3799 participants and concluded that Tai Chi and Qigong practice causes significant improvement in depression and anxiety. Tai Chi has been particularly recommended as a first-line treatment of mild depression in geriatric populations given its known benefits in improving balance and reducing falls.⁷⁵ Depression and falls are associated through a complex bidirectional relationship.⁷⁶ Antidepressant use has also been associated with falls,⁷⁷ especially selective serotonin reuptake inhibitors, which are associated with fragility fractures to a higher degree than other classes of psychotropic medications.^{78,79}

On the other hand, more recent research has produced mixed results on the effectiveness of Tai Chi and Qigong for prevention of falls. One Cochrane collaboration meta-analysis⁸⁰ found that Tai Chi had a moderate effect on reducing falls in community-based geriatric populations, and a second meta-analysis⁸¹ found insufficient evidence to support the use of Tai Chi for prevention of falls. One of the most recent RCTs of Tai Chi as a community-based falls prevention intervention was an 11-site multicenter study conducted in New Zealand.⁸² A total of 684 community-residing older adults with at least 1 risk factor for falls were randomized to receive 20 weeks of either Tai Chi once a week, Tai Chi twice a week,

or general exercise once a week. All groups experienced a reduction in rate of falls; however, there was no statistically significant difference between groups over the 17-month follow-up period.

Sleep Disturbance

Tai Chi and Qigong may also be able to improve sleep quality, with corresponding impact on mental health.

- An RCT⁶ of Tai Chi for improving sleep quality in older adults with moderate sleep complaints randomized⁶⁷ 112 participants to receive 25 weeks of either Tai Chi or health education. The study found that participants in the Tai Chi group were more likely to achieve a treatment response and to show global improvements in sleep quality.
- A second RCT⁸³ in a geriatric (aged 60–92 years) population (n = 118) found that Tai Chi, practiced for an hour, 3 times weekly for 24 weeks, was more effective than general exercise at improving sleep quality and daytime sleepiness.
- A third RCT,⁶⁷ described earlier, found that 12 weeks of Tai Chi practice once a week was more effective at improving sleep quality than a rehabilitation control group. Chronic sleep problems are associated with impaired health status and depressive symptoms.⁸⁴
- A fourth RCT⁸⁵ assigned 102 community-dwelling participants (mean age 68.9 years) in Vietnam to receive 6 months of Tai Chi training or to maintain their routine daily activities. Compared with the control group, individuals in the Tai Chi group experienced significant improvements in sleep quality, balance, and cognitive performance.

Substance Abuse

A Chinese RCT⁸⁶ of 86 patients randomized to a Qigong treatment group, medication group, or no-treatment control group reported that participants in the Qigong group experienced comparatively fewer withdrawal symptoms. Qigong was also credited with a lower relapse rate and improved anxiety scores. A nonrandomized controlled trial of 248 patients in a short-term residential treatment program who self-selected participation in either a Qigong meditation program or stress management plus relaxation program reported that Qigong participants experienced a higher treatment completion rate and greater reduction in cravings.⁸⁷ Participants were offered Qigong meditation twice daily, 5 or more days a week, for a total of 2 weeks. The study noted that female Qigong participants reported significantly more reduction in anxiety and withdrawal than any other group.

Cognitive Functioning

Published interim results from a year-long Chinese RCT⁸⁸ suggest that Tai Chi may provide a cognitive benefit. The study randomized 389 geriatric participants with dementia or amnesic mild cognitive impairment to either a Tai Chi group or a strengthening and toning exercise group. After 5 months of triweekly practice sessions, both groups showed improvements in global cognitive function, delayed recall, and subjective complaints. Only the Tai Chi group maintained a stable clinical dementia rating and showed improvements in visual spans.

Another RCT of healthy community-dwelling older adults (mean age 69 years, n = 132) found that Tai Chi produced greater improvements in a cognitive function measure than a Western exercise or attention control group. The improvement in cognitive functioning was

maintained throughout the 12-month follow-up period. An RCT described earlier found that Tai Chi improves motor speed and visual attention in elderly individuals.

Parkinson Disease

An RCT in 2012⁸⁹ of 195 patients found that 24 weeks of Tai Chi was more effective than resistance training or stretching at improving primary balance outcomes (maximum excursion and directional control). The Tai Chi group also performed better than the stretching group in all secondary balance measures, including strength, functional reach, timed up-and-go tests, motor scores, and number of falls. The Tai Chi group performed better than the resistance group in stride length and functional reach. The effects of Tai Chi training were maintained 3 months after the end of the intervention, and no serious adverse events were observed. The study concluded that Tai Chi seems to reduce balance impairments in patients with mild-to-moderate Parkinson disease, with the additional benefits of improving functional capacity and reducing falls.

Other trials of Tai Chi and Qigong in populations with Parkinson disease have found similar results. An RCT in 2008 (n = 33) found that 20, 1-hour sessions of Tai Chi were effective at improving several balance measures, and at improving well-being compared with a no-intervention control group.⁹⁰ Another RCT (n = 30) found that a 12-week Tai Chi program was effective in reducing falls and slowing functional decline.

Traumatic Brain Injury

With the increased interest in traumatic brain injury (TBI), an RCT of 20 patients with TBI found that participation in Qigong improved mood and self-esteem relative to a nonexercise control group, but it found no difference in physical functioning between groups. Participants in that study attended a Qigong exercise session for 1 hour per week over 8 weeks, whereas control participants engaged in non-exercise-based social and leisure activities. A second RCT⁹¹ evaluated 18 participants with TBI assigned to either a wait-list control or Tai Chi group and found that Tai Chi provided short-term benefits after TBI. The participants in the 6-week Tai Chi course had improved outcomes in HRQOL, self-esteem, and mood. Patients with TBI often suffer from cognitive, emotional, and mental challenges.⁹²

See Table 1 for a summary of RCTs of Tai Chi and Qigong for mental disorders.

SUMMARY/DISCUSSION

Complementary Approaches to Pharmacologic Strategies

Tai Chi and Qigong are nonpharmacologic treatments that can be used in conjunction with pharmacologic treatments. Nonpharmacologic approaches to mental disorders are particularly important given that many patients fail to achieve symptomatic remission and functional recovery with first-line pharmacotherapy.^{99,100} Treatments are needed to complement pharmacotherapies to help patients achieve remission, experience reductions in mental disorder symptoms, and enjoy improved social and health functioning.¹⁰¹

Limited research has specifically evaluated Tai Chi and Qigong as a combined treatment with pharmaceutical intervention. A study of older adults with major depression found that the complementary use of Tai Chi augments the use of escitalopram (Lexapro). The study randomized 73 partial responders to escitalopram, who continued to use escitalopram daily, to a 10-week course of either Tai Chi or health education. Individuals in the Tai Chi group were more likely to report greater reduction in depressive symptoms and to achieve a depression remission ($F_{[5, 285]} = 2.26; P < .05$). Those individuals also showed greater

improvements in HRQOL physical functioning (group \times time interaction: $F_{[1, 66]} = 5.73$; $P = .02$) and cognition (ie, memory; group \times time interaction: $F_{[1, 65]} = 5.29$; $P < .05$), and a decline in an inflammatory marker, CRP (time effect: $F_{[2, 78]} = 3.14$, $P < .05$ and group \times time trend in posttreatment period: $F_{[1, 39]} = 2.91$; $P = .10$).¹⁴

Clinical Recommendations

There is not strong evidence that Tai Chi and Qigong are effective as either primary or complementary treatments for mental disorders. Only a few mental and neurologic disorders have been specifically evaluated in the literature. As the evidence for Tai Chi and Qigong continues to develop, promising results from multiple RCTs suggest that these are potentially effective treatments for reducing stress, anxiety, depression, and low mood, as well as for improving self-esteem and general psychosocial well-being. Results from the RCTs evaluating Tai Chi and Qigong for specific mental diseases suggest that they may be effective for improving symptoms of Parkinson disease, TBI, sleep disturbance, substance abuse, and cognitive impairment. There remains a pressing need for methodologically robust studies of Tai Chi and Qigong for mental disorders. Multiple RCTs may have produced mixed results on the efficacy of Tai Chi and Qigong for a particular indication because of the variations in designs, comparisons, patient populations, and interventions.⁵⁴ Few studies evaluated patient populations with diagnosed mental disorders.

Given that Tai Chi and Qigong are nonpharmacologic and noninvasive treatments, recommending these exercises to patients with mental disorders generally seems an appropriate option for clinicians, particularly for conditions that have been studied in RCTs. Whether or not Tai Chi and Qigong can improve disease-specific outcomes, significant evidence supports the assertion that Tai Chi and Qigong can improve HRQOL and mental health. Tai Chi and Qigong may be particularly appropriate for patients who have physical comorbidity known to be responsive to Tai Chi and Qigong practice, in geriatric populations, who are more susceptible to adverse effects from pharmacologic therapies, or in patients who choose to use exercise or mind-body practices.

Instructor quality may affect patient outcomes, but this has not been addressed in clinical research. There is no licensing body that regulates Tai Chi teachers and no certifying body that clearly distinguishes higher-quality instructors. Consumers in this market rely largely on word of mouth and local reputation. Although Tai Chi has traditionally been taught 1-on-1 or in class settings, a variety of home exercise programs are publically available for patients who are logistically or financially unable to study in person or who prefer to study independently. For example, Beachbody, LLC (Santa Monica, California), makers of the popular home exercise program *P90X*, sell a home DVD exercise Tai Chi program, *Tai Cheng*.

Practice style, frequency, and duration have been variable. The predominant style of Tai Chi used in the RCTs evaluated in this review was the Yang style or Yang style short-form. Most styles are similar in practice although it is frequently claimed by practitioners that one style is superior. It is unclear that there is any benefit from one style versus another at this point. Regardless of the form of Tai Chi being evaluated, most studies had participants practicing 30 minutes to 2 hours, 1 to 3 times per week. Clinicians prescribing Tai Chi should consider recommending that patients practice for a minimum of 30 minutes, 3 times a week on an ongoing basis. Alternatively, those recommendations may be left to an experienced instructor. Practice durations in the literature are generally in the range of a few weeks to a few months, although studies found both short-term benefits from as little as 1 practice session and long-term benefits in multiyear practitioners. Comparative effectiveness research has not yet addressed the optimal duration of the exercise.

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KEY POINTS

- Tai Chi and Qigong are evidence-based approaches to improve health-related quality of life, and they may be effective for a range of physical health conditions.
- Evidence from randomized controlled trials suggests that Tai Chi and Qigong may be effective in reducing depressive symptoms, stress, anxiety, and mood disturbances.
- Minimal research supports Tai Chi and Qigong as promising treatments for Parkinson disease, traumatic brain injury, insomnia, substance abuse, and cognitive impairment.
- Indications for Tai Chi and Qigong include inadequate response to other evidence-based treatments, physical comorbidities known to be responsive to Tai Chi and Qigong, patients interested in exercise-based or mindfulness-based interventions, and in geriatric patients who are more susceptible to adverse effects from pharmacologic therapies.

Table 1

The summary of the RCTs of Tai Chi and Qigong for mental disorders

	Positive Findings	Negative Findings
Depression	Thirteen studies with significant positive findings, ^{11,21,33,34,61,63,65-73,93} ; only 2 with clinically diagnosed depression populations ^{21,72}	One study did not find effect on depressive symptoms ⁶³
Stress	Four studies with significant positive findings, ⁶⁰ subjective stress measures, ^{45,60-63} body temperature, ⁶² and salivary cortisol levels ^{45,60}	One study did not find effect on subjective stress measures ⁶³
Anxiety	Eight studies with significant positive effects ⁶⁷	One study had negative findings on anxiety ^{35,63}
Mood and psychological well-being	Seven studies with significant positive effects ^{93,94}	One study did not find positive effect on mood ⁶⁶
Self-esteem	One study with significant positive effects ⁵⁸	Two without positive effect ^{65,95}
Parkinson disease	Three studies with significant positive effects ^{89,90,96}	
TBI	Two studies with significant positive effects ^{91,97}	None reported
Sleep disturbance	Three studies with significant positive effects ^{67,83,91}	None reported
Substance abuse	One study with significant positive effects ⁸⁶	None reported
Cognitive functioning	Two studies with significant positive effects ^{88,98}	None reported