

# Perceptions of People With Multiple Sclerosis Who Practice Tai Chi and/or Qigong: A Mixed-Methods Study

Lita Buttolph, PhD, DSOM; Jamie Villanueva, DAOM; Heena Manglani-Terranova, PhD; Tanya Snyder, BS; Gloria Y. Yeh, MD, MPH; Lindsey Wooliscroft, MD, MS, MCR; Ryan Bradley, ND, MPH; and Heather Zwickey, PhD

## ABSTRACT

**BACKGROUND:** Exercise is important for people with multiple sclerosis (MS) to manage symptoms and improve quality of life. Tai chi and qigong (TCQ) are mind-body exercises shown to benefit physical, emotional, and cognitive health in many conditions, but research has been limited in people with MS. To understand potential benefits from regular TCQ practice and factors influencing feasibility, acceptability, and sustainability, we conducted a mixed-methods study through a survey and focus groups with people with MS who regularly practice TCQ.

**METHODS:** We conducted focus groups with people with MS from across the United States who regularly practice TCQ; the data from these groups were analyzed using reflexive thematic analysis. Participants also completed a brief survey that collected data on demographics, MS health history and symptoms, and TCQ practice (including opinions on content, dosage, and delivery).

**RESULTS:** Thirteen people with MS (85% female, 69% White) participated in the study. Reported TCQ benefits included physical (balance, strength), cognitive (memory), psychological (calming), and social (community building), with a dose-response gain over time. Challenges included learning and remembering movements, physical limitations (strength, endurance, fatigue), and transportation barriers. Adaptations specific to MS included tailoring TCQ content to meet individual needs and symptoms, appropriate pace, online delivery, and safety. Keys to sustainable practice included enjoyment, patience and self-compassion, viewing TCQ as medicine, and scheduling time for practice.

**CONCLUSIONS:** Results suggest people with MS who maintain a TCQ practice may experience physical, emotional, cognitive, and social benefits, especially when specific practice details and facilitators are met. Future studies might investigate how these factors influence sustainable practice.

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**M**ultiple sclerosis (MS) is an autoimmune neurodegenerative condition characterized by demyelination in the central nervous system. Symptoms include balance impairment, weakness, numbness, spasticity, pain, fatigue, cognitive dysfunction, anxiety, and depression.<sup>1</sup> These symptoms, particularly neuropsychiatric and motor dysfunction, have a significant negative impact on the quality of life for people with MS.<sup>2</sup>

Exercise improves MS symptoms, including mobility, mood, fatigue, cognition, and quality of life.<sup>3</sup> Despite the importance of exercise, people with MS are less active than the general population, with only 20% participating in recommended levels of moderate to vigorous exercise.<sup>4,5</sup> As disability increases, exercise becomes more challenging due to deconditioning, fatigue, pain, depression, and cognitive impairment.<sup>5</sup> Finding exercises that are accessible across the lifespan is crucial to promoting long-term health for people with MS.

Tai chi and qigong (TCQ) are ancient Chinese mind-body exercises.<sup>6,7</sup> Qigong encompasses a diverse set of practices with thousands of forms, from gentle flowing movements to vigorous shaking, as well as meditation, tapping, and sound. Tai chi, originally a martial art and later adapted for health promotion, consists of upright movements with longer, choreographed forms. TCQ can be performed standing or seated, making them accessible to all abilities. Because they are overlapping practices, with tai chi sometimes considered a subtype of qigong, we have combined them in this paper.

Evidence has found that practicing TCQ benefits physical and mental health and well-being in several neurodegenerative conditions.<sup>8-14</sup> One potential mechanism is the regulation of the autonomic nervous system by synchronizing breath and rhythmic muscle contraction.<sup>15</sup> TCQ are also multicomponent exercises that integrate physical movement with psychological and cognitive practices, engaging multiple neurological pathways.<sup>16</sup>

Preliminary research on TCQ for people with MS suggests benefits to MS symptoms, including balance, gait, mood, cognition, fatigue, pain, and well-being.<sup>17-22</sup> However, findings from studies have shown mixed results, possibly due to small sample

From the Helfgott Research Institute, National University of Natural Medicine, Portland, OR (LB, TS, RB, HZ); College of Nursing, University of Utah, Salt Lake City, UT (JV); Center for Health Outcomes and Interdisciplinary Research, Department of Psychiatry, Massachusetts General Hospital, Boston, MA (HM-T); Osher Center for Integrative Health, Harvard Medical School and Brigham and Women's Hospital, Boston, MA (HM-T, GYY); Division of General Medicine, Beth Deaconess Medical Center, Harvard Medical School, Boston, MA (GYY); Department of Neurology, Oregon Health & Science University, Portland, OR (LB, LW); MS Center of Excellence, VA Portland Health Care System, Portland, OR (LW); Herbert Wertheim School of Public Health, University of California, San Diego, La Jolla, CA (RB). *Correspondence:* Lita Buttolph, PhD, DSOM, National University of Natural Medicine, Helfgott Research Institute, Portland, OR 97201; email: lbuttolph@nunm.edu.

sizes, lack of randomization, lack of blinding, and unmatched controls.<sup>17,19</sup> Other factors leading to conflicting results include variability of forms, delivery, frequency of practice, and learning environment.

To better understand how components of TCQ affect acceptability, adoption, and efficacy, we conducted focus groups and a brief survey with people with MS who regularly practice TCQ. This complements our prior survey of MS experts to identify key components of TCQ for MS.<sup>23</sup> The goal of this study was to gain a patient perspective on TCQ benefits, challenges, barriers, and motivators to practice. Our specific aims were to understand potential benefits and challenges of people with MS who regularly practice TCQ; to identify key factors related to TCQ content and learning environment that influence feasibility, acceptability, and efficacy; and to understand key elements necessary for conducting a clinical trial.

## METHODS

Given the focus on qualitative data, we followed the Consolidated Criteria for Reporting Qualitative Research guidelines.<sup>24</sup> The study was approved by the National University of Natural Medicine Institutional Review Board (IRB No.: LB51122).

### Research Team

Our research team included experts in TCQ research (G.Y., L.B.), traditional East Asian medicine (TEAM; L.B., J.V., T.S.), psychology (H.M-T.), MS neurology (L.W.), and clinical mind-body research (L.B., G.Y., H.M-T., R.B., H.Z.). The first author (L.B.) led the focus groups and data analysis. She has a background in research and TEAM and has been a TCQ practitioner and instructor since 1999 and 2005, respectively. At the time of data collection, she was a postdoctoral researcher with prior experience conducting and analyzing qualitative research. Her familiarity with TCQ enabled her to understand terminology, including movement names, used by participants. However, as a researcher, she was careful to seek clarification for responses that might be understood only from a TCQ practitioner's perspective. Three coauthors (T.S., J.V., H.M-T.) also attended focus groups, assisting with note-taking, timekeeping, technical support, and occasionally asking clarifying questions. T.S. is a TEAM doctoral student, J.V. is a TEAM practitioner and researcher, and H.M-T. is a clinical psychologist and researcher specializing in mind-body therapies for MS. L.B. had a working relationship with one participant and knew a second participant from another study. No other prior relationship existed between the study team and participants.

### Theoretical Framework

We utilized reflexive thematic analysis to analyze qualitative data using a combination of inductive and essentialist approaches to report the experiences, perspectives, and practices of participants.<sup>25</sup>

### Participant Selection

Participants living in the United States were recruited through email blasts and electronic newsletters from the National MS Society, referrals from TCQ instructors, personal contacts,

# PRACTICE POINTS



Tai chi and qigong (TCQ) are mind-body exercises that may offer an accessible, multicomponent form of activity for people with multiple sclerosis.

TCQ can be used across the lifespan with appropriate modifications, including tailored content to meet individual needs, gradual progression in pace and duration, online or hybrid classes to reduce transportation burden, and enhanced safety through physical support, visualization, and skilled instruction.

Intrinsic motivators, such as enjoyment, patience, and self-compassion, combined with extrinsic motivators, such as viewing TCQ as medicine and scheduling regular engagement, can help maintain a sustainable practice. ■

snowball sampling, and targeted emails from iConquerMS. Inclusion criteria were adults ( $\geq 18$  years) with a self-reported clinical diagnosis of MS (any subtype); current TCQ practice ( $\geq 1$  time/week for 10 minutes,  $>3$  months); having a device with internet access; ability to speak, read, and communicate in English; and willingness to participate in a recorded group discussion via video conference.

### Study Setting

Participants who consented were emailed a short, electronic survey assessing demographics, MS health history, and their TCQ practice. The survey and consent form were administered through a Health Insurance Portability and Accountability Act-compliant REDCap platform. Online focus groups were administered on Zoom. Researchers and participants were instructed to be alone in a private space during the focus group.

### Data Collection

The study collected qualitative data from 3 virtual 2-hour focus groups. Participants were sent the questions in advance. We felt this was important to ensure comfort with questions and minimize cognitive challenges, such as slower processing speed. We also sent guidelines for focus group participation, including expectations about conduct, privacy and confidentiality, breaks, and respect for others.

The first author (L.B.) led the focus groups, starting with reviewing guidelines and followed by introductions and semistructured, open-ended questions. Questions included perceived benefits from TCQ, challenges and barriers to practice, facilitators of practice, and advice for new practitioners. Recordings were transcribed using Descript software and verified for accuracy by L.B. and J.V. Supplemental handwritten notes were compared with transcripts to help identify themes.

**TABLE 1. Participant Characteristics (N = 13)**

<b>Mean age in years (range)</b>	59 (42-77)
<b>Female sex, n (%)</b>	11 (85)
<b>Ethnicity, n (%)</b>	
Non-Hispanic	11 (85)
Hispanic	2 (15)
<b>Race, n (%)</b>	
Black or African American	2 (15)
White	9 (69)
Mixed race (American Indian/Alaska Native, Hispanic/Latino, White)	1 (8)
Other (ie, East Indian)	1 (8)
<b>Education, n (%)</b>	
College degree	6 (46)
Graduate degree	7 (54)
<b>Mean years of TCQ practice (range)</b>	8 (1-25)
Tai chi only	3
Qigong only	3
Tai chi and qigong	7
<b>Mean years since MS diagnosis (range)</b>	19 (7-42)
<b>MS subtype, n (%)</b>	
Relapsing remitting	6 (46)
Secondary progressive	6 (46)
Primary progressive	1 (8)
<b>MS disability status<sup>a</sup></b>	
None/minimal MS symptoms, no limitation in walking or daily activities	1 (8)
MS symptoms limit physically demanding activities; support needed to walk half/full block	3 (23)
Many MS symptoms affect daily activities but can walk full block or less without support	6 (46)
MS symptoms limit daily activities; can walk only short distances with walker or crutches	3 (23)
<b>Currently on a disease-modifying therapy for MS,<sup>b</sup> n (%)</b>	8 (62)

MS, multiple sclerosis; TCQ, tai chi and qigong.

<sup>a</sup>Disability based on a modified Expanded Disability Status Scale score.

<sup>b</sup>MS medications were teriflunomide, dimethyl fumarate, diroximel fumarate, and ocrelizumab.

To characterize participants, we also collected quantitative data through a brief online survey using multiple-choice or short-answer questions. Topics included demographics, MS status (eg, diagnosis, symptoms, and medications), and TCQ experience. Questions also included perceived changes in MS symptoms from TCQ, frequency of classes and home practice, and delivery preferences (eg, group or individual instruction and online or in-person classes).

### Data Analysis

Quantitative survey data were analyzed using summary statistics, and qualitative focus group data were analyzed using reflexive thematic analysis.<sup>25</sup> Two researchers (L.B. and J.V.) independently reviewed and coded the first focus group transcript to identify initial themes and subthemes using Dedoose qualitative software. They then met to discuss and compare codes to ensure congruence. The remaining 2 focus group transcripts were coded based on the initial coding scheme and modified as needed. The 2 researchers then met to discuss themes and presented them to the whole team for iterative review and discussion to arrive at a final set of themes.

## RESULTS

### Demographic and Clinical Characteristics

We screened 17 people, and 16 were eligible. Three were lost to follow-up prior to the focus groups. Thirteen people participated in focus groups across 3 sessions (5, 5, 3). **TABLE 1** lists participant demographic and health characteristics. Participants were primarily female (mean age, 59 years) and 69% White, and all had at least a college education. Participants resided across 11 US states: California (1), Colorado (1), Maryland (1), Massachusetts (1), Missouri (3), New York (1), North Carolina (1), Oregon (1), Pennsylvania (1), South Carolina (1), and Washington (1). Participants had an average MS diagnosis of 19 years, with all MS subtypes represented. All but 1 participant needed walking support. Participants had, on average, 8 years of TCQ practice: 4 people practicing 1 to 2 years, 3 practicing 4 to 5 years, 3 practicing 8 to 10 years, and 3 practicing 17 to 25 years.

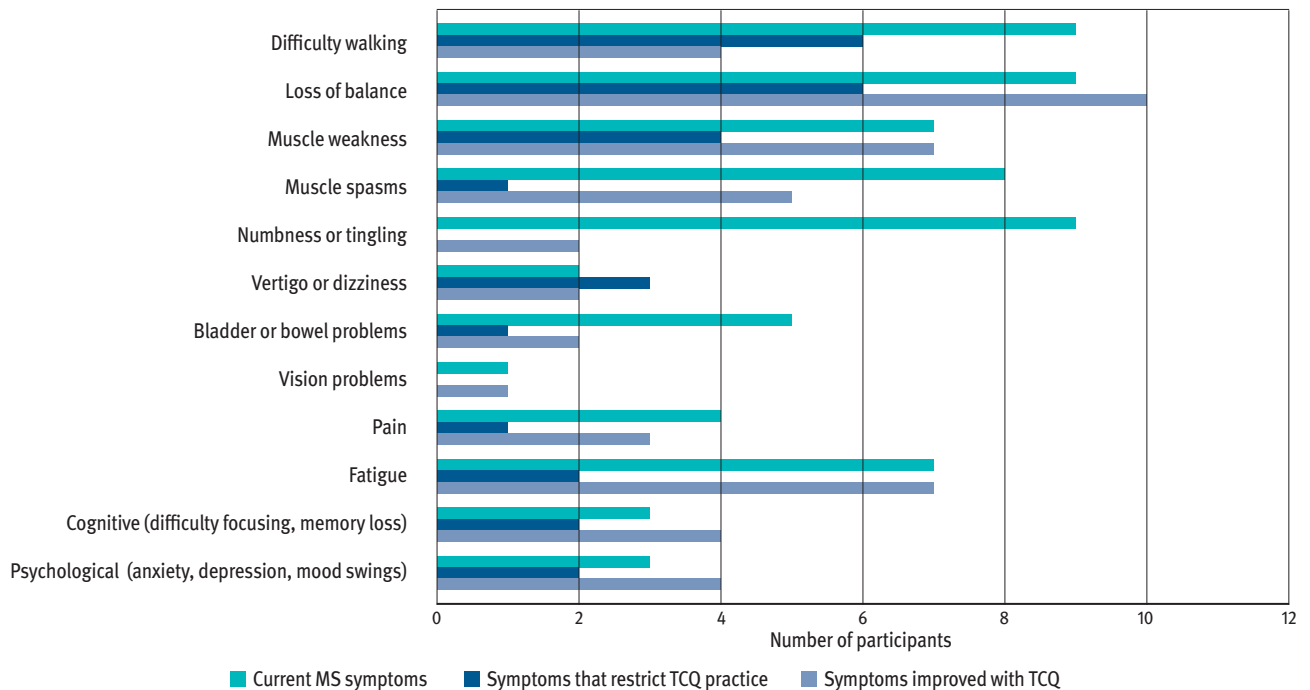
### Survey Results: Quantitative Analysis

#### MS Symptoms

**FIGURE 1** presents self-reported current MS symptoms, symptoms that restrict people's ability to practice TCQ, and perceived symptom improvements from TCQ. The most common current MS symptoms included difficulty walking, loss of balance, numbness and tingling, followed by spasticity, fatigue, and muscle weakness. One participant reported no MS symptoms. Six participants reported that difficulty walking and loss of balance restricted their TCQ practice. Top symptom improvements from TCQ included balance (10), fatigue (7), and muscle weakness (7).

#### TCQ Content

Eight participants reported practicing both tai chi and qigong, 2 only practiced tai chi, and 3 only practiced qigong. Specific TCQ forms practiced are listed in **TABLE S1**.

**FIGURE 1.** Participants' Self-Reported Symptoms and TCQ Practice

MS, multiple sclerosis; TCQ, tai chi and qigong.

Note: Data for each outcome do not necessarily reflect the same participant.

### TCQ Dose and Delivery Preferences

The median recommended frequency of TCQ was 2 classes per week, with 5 days of home practice. Ten participants recommended both group and individualized instruction. For instructional delivery, 7 preferred a hybrid format, 3 preferred virtual-only classes, and 3 preferred in-person classes.

### Focus Group Results: Thematic Analysis

Based on our qualitative analysis, we developed themes pertaining to (1) perceived benefits, (2) challenges, (3) adaptations for MS, and (4) developing sustainable practice. **TABLE 2** summarizes themes and subthemes with exemplary quotes and participant identifiers in brackets.

#### Theme 1: Regular TCQ Practice May Benefit MS Symptoms

**Physical benefits.** The most frequently reported physical benefits included increased energy, improved balance and coordination, and enhanced muscle strength. The magnitude ranged from short-term increases in energy to improvement of symptoms and functional performance. Four participants who had practiced TCQ for 10 to 25 years reported partial remission and/or sustained relief of their MS symptoms. One participant shared, “When I started my [TCQ] class, I was walking with a cane, and it looked like I was going to be in a wheelchair and then in a bed.... In 3 months, I no longer walked with a cane. In a year, I could take the stairs. In 3 years, I started seeing changes on the MRI.... It’s been incredible” (P12).

Improvements in fatigue and increased energy were among the most immediate benefits. “Every class, I feel better than when I came.... There’s an immediate impact...if I do tai chi before

something where I require physical energy. I always have more energy after doing tai chi. It does not drain me. It energizes me” (P2).

Long-term practice augmented balance and coordination, allowing participants to engage in other physical activities, such as walking. Over time, improved physical activity led to increased muscle strength. “Within just a couple of months...I noticed that my thigh muscles...were strengthening...and the next thing I noticed was that I was no longer tripping and my walking improved dramatically.... I stopped the falling...” (P10).

**Psychological benefits.** Participants described feeling relaxed and calm after practicing TCQ. Some felt that this calming effect led to long-term emotional resilience: “I feel more relaxed and calm, and I’m able to sit with things—process it instead of reacting right away” (P9). One participant reported that TCQ allowed her to discontinue her anxiety medication. “I was on a medication for my anxiety. Well, the immediate effects of qigong, like when you are doing the exercises, my anxiety went down immediately. But as I did it more and more, I was able to get off my medication within 6 months” (P13).

**Cognitive benefits.** Some participants noted improvements in memory and mental processing: “It has to impact your brain and your memory because you have to know if everybody in the line is going this way and you’re going that way...” (P8).

**Social benefits.** The sense of community among TCQ classmates and instructors was highlighted. Over time, this social support fostered greater confidence and emotional resilience: “I love the

**TABLE 2.** Themes and Subthemes of Transcripts of Focus Groups

Regular TCQ practice may benefit MS symptoms	
<b>Physical benefits</b>	“What I noticed is that my legs are stronger and...I was able to coordinate everything better. My spasticity and spasms go way down. I sleep better. My balance is much improved. My eyes and vision are somewhat better.... My bladder symptoms are definitely improved, and I have much less pain” (P2).
<b>Psychological benefits</b>	“After each class, I feel more peaceful and more energetic and more positive” (P4).
<b>Cognitive benefits</b>	“And in time, my memory improved...and now I can remember people’s names and all kinds of things that I never thought I’d be able to do. So it was worth it to stick with it” (P12).
<b>Social benefits</b>	“For me, one of the biggest reasons [to practice] is the community.... It’s what wakes me up every morning. There’s about 20 to 25 of us that meet internationally, and it’s like, I just can’t wait to, to get up in the morning and see everybody” (P7).
Challenges to practice	
<b>Cognitive challenges</b>	“I felt like it was taking me a long time to grasp what was going on. Take others, it felt like they were getting it more quickly, but my teacher, he would say, ‘You have a lot of healing going on.... You know, just follow along,’ ...so that’s what I did” (P12).
<b>Physical challenges</b>	“Balance is a big obstacle to a lot of it, and strength, you know, like when you’re raising your leg, keeping, maintaining position for a long time” (P4).
<b>Transportation challenges</b>	“Where I have found qigong classes, transportation is an issue. I’m not able to, you know, get to those places or afford to get to those places” (P13).
Adaptations for MS	
<b>Tailored content</b>	“I think anytime you move slow with purpose, it’s very beneficial. The movements themselves have medicine in them.... I think it depends on what’s hurting and what you’re trying to address as to which movements you should choose” (P12).
<b>Start slowly and gradually</b>	“...they should be gentle with themselves, to give permission for resting, for modifying, for sitting. Just making someone feel very at ease if they need to do it at their own pace. It’s not about...winning” (P6).
<b>Virtual delivery</b>	“During the pandemic, everything went virtual...and I’m now doing it 7 days a week pretty religiously, at least an hour to an hour and a half a day, and I think it’s helped me a ton” (P1).
<b>Safety</b>	
<b>Physical safety</b>	“I always have a desk or a chair or something I can hold onto nearby...a wall, so if I need help with balance, I’ve got it” (P1).
<b>Emotional safety</b>	“It’s very important that the instructor gives permission and space for the student to feel OK doing modifications...being a little more gentle with themselves or sitting if they need to” (P6).
Developing a sustainable practice	
<b>Enjoy the practice</b>	“I also think it’s extremely fun. It’s just very enjoyable. I practice every day, rain or shine. No matter what, I will practice qigong” (P10).
<b>Have patience and self-compassion</b>	“It’s like taking a long road trip; you’re going to encounter construction detours.... Just try to stay in the moment with the different challenges and barriers.... Don’t let it stop you. Just keep going.... Keep listening to your body and loving your body throughout the whole practice” (P7).
<b>View TCQ as medicine</b>	“Qigong is the most powerful medicine that you can do for MS. With all its benefits...there’re no downsides. There’s only strengthening...healing your own energy in your own body” (P6).
<b>Schedule time to practice</b>	“I put it on my calendar, and it’s reoccurring every Tuesday at that time, 4 o’clock. That’s what I have it as my...tai chi time” (P11).

MS, multiple sclerosis; TCQ, tai chi and qigong.

sense of community and the support.... And it’s just, it’s fun.... It almost has...built me this sense of confidence that I have about myself.... Things still happen, but it’s the way that I handle it and move through it now that is so different, and I do attribute it to the community of veterans I practice with” (P9).

### Theme 2: Challenges to TCQ Practice

Overall, participants considered TCQ highly accessible but encountered some challenges when developing a practice. The most common challenges were related to distance and transportation. Cognitive difficulties associated with MS

also posed challenges to learning movements, leading to feelings of emotional vulnerability during in-person classes: “I didn’t want to take a lot of instructor time, but it did take me longer than other people to learn [the movements]. And so that was uncomfortable” (P2).

Physical symptoms, both related and unrelated to MS, were additional barriers to practice, including postsurgical pain, muscle weakness, and fatigue: “There are days where...my fatigue wins.... I have to tell myself...‘This is medicine.’ But yeah, I’ll be honest, there are days that I skip my medicine because I am exhausted” (P13).

### Theme 3: Adaptations for MS

**Tailored content.** Responses were mixed regarding which TCQ forms were most beneficial for MS. In general, movements that focused on balance, cross-body movements, and flowing arm movements were helpful. Short forms between 10 and 24 movements were recommended for beginners. Several participants emphasized the adaptability of TCQ and a wide range of modifications. Some endorsed online classes tailored to specific symptoms or diseases.

**Start slowly and increase gradually.** Participants noted the importance of starting slowly, either by taking fewer classes per week and/or limiting practice duration. Sessions could be as short as a few minutes or only involve visualization. Some recommended short forms of 10 or fewer movements. Over time, as endurance improved, participants increased the number of weekly TCQ sessions. More frequent practice resulted in greater benefits: “I practice every day, but I didn’t always.... The better I felt, the more I could practice.... At first, I could just do a little bit...but it was the regularity of it...that really brought the healing. Yeah, so now I do it every day because I love it” (P14).

**Virtual delivery.** Participants attended classes in person, synchronously online, and through prerecorded videos. During the COVID-19 pandemic, many classes shifted to online venues, which improved accessibility and increased practice frequency for several participants: “Well, the first year and a half, we did it inside about once a week.... For the last 2 and a half years, we’ve been doing it virtually through Zoom, and I’m doing it 5, 6 days a week. Very quickly there, I feel like I started to feel the benefits a lot more” (P5).

**Safety.** Participants noted the importance of modifying forms to ensure safety for in-person and virtual classes, including using support props such as a wall or chair. Participants also discussed sitting or lying down to help with balance and fatigue as well as visualizing movements when they could not be performed physically. Important instructor qualities included verbally encouraging and demonstrating modifications, ensuring visibility during online teaching, and creating an emotionally safe space.

### Theme 4: Developing a Sustainable Practice

**Enjoy the practice.** When respondents were asked what advice they would give future practitioners, they most frequently reported that enjoying TCQ was key to long-term success and adherence (TABLE 2).

**Have patience and self-compassion.** Another notable theme was to honor one’s individual path or journey through patience and self-compassion: “Everybody’s kind of on their own journey.... Just embrace it, enjoy it, and get into it” (P7).

**View TCQ as medicine.** When participants were asked how they maintain motivation to practice, many described viewing TCQ as medicine or as an important aspect of their health care regimen: “I practice every day, rain or shine. No matter what, I will practice

qigong. So it’s...just part of my life. It’s part of my health management system. It’s nonnegotiable” (P10).

**Schedule time to practice.** Proactively scheduling time for the class was another key factor in maintaining motivation and developing sustainable practice: “I do try to schedule it in my calendar and stick with it, so that’s how I know to practice it, because I don’t schedule anything else during that time” (P13).

## DISCUSSION

Our qualitative and quantitative findings show TCQ has many perceived benefits, including improved physical function (eg, balance, muscle strength, energy level, walking ability), cognition (eg, improved memory and mental clarity), and mood (greater sense of calm, stress reduction). These results can be compared with those of a meta-analysis by Shi et al, which found TCQ improved balance, activities of daily living, quality of life, and depression in people with MS.<sup>13</sup>

Our participants practiced a wide variety of TCQ forms and movements, which mirrors findings from our survey of TCQ and MS experts.<sup>23</sup> In results from that survey, several respondents stressed that form was not as important as keeping movements simple and easy to learn and following basic TCQ principles, including intentional movement, proper alignment and posture, focused awareness, rhythmic breathing and movement, and a relaxed mind and body.<sup>23</sup>

Practice frequency also made a difference in perceived TCQ benefits. Participants encouraged beginners to start slowly and gradually increase the frequency of practice as allowable, noting the importance of regular, frequent practice to achieve greater benefits. These findings have important implications for people with MS attending community classes as well as for designing clinical trials. For example, although participants recommended 2 classes per week and 5 days of home practice, these could be titrated up over time, as needed.

Online classes, which became more prominent during the COVID-19 pandemic, facilitated opportunities to increase practice frequency; class options, including more frequent classes; and a wider variety of styles. Indeed, our survey results found that most participants preferred virtual or hybrid delivery formats compared with in-person formats only. This aligns with findings from other studies that found online exercise programs to be acceptable and feasible for people with MS.<sup>26-28</sup> Online exercise programs have also been shown to benefit physical and mental health among people with MS<sup>29</sup> and increase accessibility, particularly for people with transportation limitations or those who live in remote locations.<sup>30</sup>

Long-term practice was also found to make a difference in health benefits for some participants. Four participants who practiced TCQ for 10 to 25 years reported significant improvements in their MS symptoms with long-term practice. This is consistent with findings from other studies reporting the long-term benefits of TCQ.<sup>21,31</sup> Results from one study comparing active older adults who were tai chi naive with those who had practiced for more than 5 years found higher levels of physical function (including balance, grip strength, functional mobil-

ity, functional reach, and lower extremity power) among the long-term tai chi practitioners.<sup>31</sup>

Adaptations of TCQ for people with MS were important for promoting accessibility. Physical safety included a chair or wall for balance and strength support as well as rest breaks. Safety was facilitated by the instructor having an awareness of students' limitations and encouraging and demonstrating modifications. This guidance extended to creating a learning environment that felt emotionally safe and free from judgment.

Motivators of TCQ practice adherence included enjoyment of the practice, patience and self-compassion, viewing TCQ as medicine, and scheduling regular practice time. These align with self-determination theory, which views motivation on a continuum from self-motivated (intrinsic motivation) to externally influenced (through social pressure, rewards, or threats).<sup>32</sup> For our study, enjoyment of TCQ could be viewed as an intrinsic motivator, whereas viewing TCQ as medicine and scheduling practice times could be viewed as extrinsic motivators associated with rewards and accountability. Self-determination theory also views motivation as influenced by human needs related to competence (eg, self-efficacy), relatedness (eg, feeling of belonging and connectedness to others), and autonomy (eg, behaving and thinking independent of external pressure). Our theme of patience and self-compassion is critical to developing competence and autonomy. Social support from the instructors and classmates also serves as a relatedness motivator. Encouraging a sense of belonging and connectedness has been shown to benefit sustainable physical activity among people with MS.<sup>33</sup>

We are not aware of any studies that have compared TCQ with conventional exercise in people with MS. However, findings from studies in other neurological conditions have suggested comparability or even advantages in functional outcomes.<sup>34,35</sup> For example, Chang et al reported improved motor symptoms in people with Parkinson disease with both tai chi and aerobic exercise,<sup>36</sup> whereas Wang et al reported greater improvements with tai chi in people with fibromyalgia.<sup>37</sup> Notably, current exercise guidelines for mild to moderate MS disability recommend aerobic exercise and strength training plus flexibility and balance exercises.<sup>3</sup> For higher MS disability, guidelines include exercises that promote breathwork, flexibility, core activation, functional strength, and balance.<sup>3</sup> Our results support a potential role for TCQ either as an accessible, stand-alone treatment that addresses many of these recommendations or as an adjunct to other aerobic exercise. TCQ includes slow, mindful, whole-body movements that integrate breathwork and focus on posture and relaxation, which may be attractive to older adults or people with more limited mobility. In addition, TCQ movements are easily modified (eg, to seated positions), further enhancing accessibility.

### Recommendations for Future Studies

Because participants were primarily women and people older than 40 years, with a mix of disability levels, future studies may seek to understand TCQ acceptability and symptom outcomes based on demographic profiles (eg, sex, age, MS subtype, and disability level). Future studies could also examine different practice frequencies and durations and titrating dosages based

on comfort and need. Clinical trials in people with MS with active comparators (eg, aerobic or strength training) that include physical, psychological, cognitive, and social outcomes are also warranted.<sup>35</sup>

### Strengths and Limitations

One strength of this study was the range of experiences of people with MS with both short and long TCQ practice. Further, findings from this study identified benefits and challenges over time in a sample of people who had lived with MS for a wide range of years (ie, 7-42).

Limitations of this study include a small, relatively homogeneous sample, consisting mostly of college-educated White women, which limits generalizability. Future studies targeting a more diverse population, including more racially diverse populations, men, and people of different educational statuses, are needed to compare findings. Results may be subject to selection bias, as participants were committed TCQ practitioners with mostly positive experiences. People with MS who started a TCQ practice and discontinued were not included and may have benefits and challenges not captured in this study. Participants' MS diagnosis, status, and symptom changes were self-reported, which may be prone to error. We also acknowledge the possibility of recall bias and social desirability bias with the focus group format.

### CONCLUSIONS

The goal of this study was to understand the diversity of experiences among people with MS who regularly practice TCQ to generate hypotheses and inform future clinical trials. Our results suggest that TCQ may be an effective, accessible form of exercise for people with MS to address physical, emotional, and cognitive symptoms. Accessibility, safety, and enjoyment play critical roles in supporting sustainable TCQ practice for people with MS, suggesting that any program design or study on TCQ should consider these elements. Future studies may consider how specific class content, frequency and duration, and safety considerations affect successful adoption and sustainable practice. ■

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