

PROJECT TITLE: The Effects of Chinese Medical Exercises (Qigong) on Functional Level, Quality of Life, Depression, and Balance in Patients with Multiple Sclerosis (MS)

INTRODUCTION

Chinese medical exercises (Qigong) consist of exercise sequences originating from traditional Chinese medicine and martial arts. They have been used in China for thousands of years to maintain physical and psychological health and treat diseases, and they have increasingly attracted attention in modern medicine. Qigong is a practice that combines concentration, visualization, breathing, posture, and movement techniques. Its aim is to increase, mobilize, enhance, and balance life energy (qi).

Mechanisms of action:

1. Through the effect of “mindfulness meditation,” Qigong is believed to enhance emotional regulation, attention control, well-being, and body awareness.
2. A second mechanism is explained via the hypothalamic-pituitary-adrenal (HPA) axis. Stressful stimuli activate the amygdala, which stimulates the hypothalamus. Corticotropin-releasing hormone (CRH) is secreted from the hypothalamus, triggering adrenocorticotrophic hormone (ACTH) release from the anterior pituitary. ACTH stimulates the adrenal glands to produce and release cortisol. Cortisol release increases blood pressure, raises blood glucose, converts fatty acids into energy, and suppresses the immune system. Simultaneously, the sympathetic system is activated, and adrenaline (epinephrine) and noradrenaline (norepinephrine) are released into the blood. This triggers the “fight or flight” response, causing pupil dilation, increased heart rate and blood pressure, bronchodilation, and decreased bowel motility. Qigong is thought to activate the parasympathetic system, inducing a “relaxation response.”
3. Thirdly, Qigong regulates the immune system by increasing anti-inflammatory responses. A meta-analysis examining the immune effects of mind-body approaches such as Tai Chi Chuan and Qigong found that these practices reduce inflammatory responses and influence virus-specific immunity. Significant reductions in CRP and IL-6 levels have been observed. Many neurological diseases of interest to Physical Medicine and Rehabilitation physicians reduce patients' quality of life due to chronic disability, dependency, and associated psychosocial disorders such as anxiety and depression. The goal of neurological rehabilitation—“optimal biopsychosocial well-being” aligns with the objectives of mind body medicine. Today, mind-body components are increasingly incorporated into neurological rehabilitation.

In 2014, a study investigated the therapeutic effects of Tai Chi on balance, coordination, fatigue, and depression in MS patients. Thirty-two mildly disabled MS patients participated in 90-minute Tai Chi sessions twice weekly for six months, while the control group received standard treatment. The Tai Chi group showed significant improvements in balance, coordination, and depression (effect size $\eta^2 = 0.16-0.20$). Life satisfaction increased, and fatigue remained stable in the Tai Chi group but worsened in the control group ($\eta^2 = 0.24-0.31$). The results suggested that Tai Chi could be a promising complementary therapy for MS patients.

A 2024 study examined the effects of one year of Tai Chi on balance and coordination in MS patients using both subjective and objective measures. Fifteen female MS patients showed significant improvements in Mini-BESTest, posturography, and 25-Foot Walk Test results after 12 months of regular Tai Chi practice. Statistically significant improvements were also

observed in anxiety and cognitive performance (PASAT). Although trends toward improvement were noted in depression, other cognitive tests, and quality of life, these did not reach significance due to the small sample size. Findings suggest long-term Tai Chi may be beneficial for MS patients but require validation with larger, controlled studies.

Another study compared the effects of Baduanjin and yoga on motor function, posture control, fatigue, and

depression in MS patients. After 24 weeks, both Baduanjin and yoga groups showed significant improvements in balance (BBS), trunk mobility (TIS), fatigue (FSS), and depression (SDS). However, the Baduanjin group showed greater improvements in balance and depression compared to the yoga group. No significant changes were observed in the control group. The study suggested that Baduanjin may be a more effective and suitable option than yoga for MS patients.

Despite numerous Qigong studies in the literature, no study has compared practical Qigong exercises with conventional rehabilitation methods. This study aims to investigate the effects of Qigong on overall well-being and balance in MS patients.

MATERIALS AND METHODS

Study Type: Randomized controlled clinical trial

Study Sample: Patients diagnosed with MS who present to Başkent University Physical Medicine and Rehabilitation outpatient clinic, enrolled in a rehabilitation program, and consent to participate.

The minimum sample size required for the study, based on a repeated-measures ANOVA with effect size $f=0.25^*$ and 95% power at 95% confidence, is $n=36$ patients.

Inclusion criteria:

- Age 18–65, diagnosed with MS according to McDonald criteria
- Expanded Disability Status Scale (EDSS) ≤ 5 , able to walk independently or with minimal assistance
- No relapse or treatment changes in the last 30 days

Exclusion criteria:

- Participation in hybrid exercise programs including traditional Chinese exercises (Tai Chi, Qigong, yoga, etc.) in the last 3 months
- Severe cardiopulmonary or musculoskeletal problems contraindicating traditional Chinese exercises; communication difficulties due to cognitive issues; progressive comorbid conditions

Randomization: Conducted using computer-generated block randomization (randomizer.org) in order of outpatient presentation.

Conventional Rehabilitation Protocol: Patients in the conventional rehabilitation group will undergo a rehabilitation program at the physical therapy unit for at least 1.5 hours, three times a week. The program includes neurophysiological exercises, strengthening exercises, and balance-coordination exercises (3 sets of 10 repetitions). Warm-up and cool-down periods are included.

Chinese Medical Exercise Protocol (Qigong): Consists of eight traditional movements. While names may vary by region, movement sequences are mostly consistent. Exercises include: Raising Hands to the Sky, Drawing the Bow to Shoot the Hawk, Separating Earth and Sky, Wise Owl Looking Back, Nodding Head and Shaking Tail, Bending to Touch Feet, Clenching Fists and Gathering Energy with a Hard Gaze, and Shaking Body by Stomping

Heels.

The Qigong group will perform 45-minute face-to-face sessions led by a physiotherapist in addition to the 1.5-hour conventional rehabilitation program, three times a week. Sessions include a 5-minute warm-up (five deep breaths), three sets of 10 repetitions with 1–2 minute breaks, and a 5-minute cool-down focusing on energy flow and mindfulness.

Outcome Measures:

- Berg Balance Scale
- Multiple Sclerosis Impact Scale-29 (MSIS-29)
- Barthel Index
- Beck Depression Inventory

All patients will continue their ongoing MS treatment prescribed by neurology and will be fully informed about this.

Assessment Schedule: Patients will be evaluated at the first visit, 1 month, 2 months, and 3 months for functional status, quality of life, balance, and depressive mood.

EXPECTED SCIENTIFIC CONTRIBUTIONS


Although numerous Qigong studies exist, many share common limitations. This study will be the first randomized controlled trial comparing Qigong with conventional rehabilitation in MS patients.

REFERENCES

- 1.Liu T, Qiang Xm. Chinese Medical Qigong. 1st ed. London and Philadelphia: Singing Dragon; 2013.
- 2.Qigong: What You Need to Know. National Center for Complementary and Integrative Health. Retrieved March 10, 2022, from: <https://www.nccih.nih.gov/health/qigong-what-you-need-to-know>
- 3.Tang YY, Leve LD. A translational neuroscience perspective on mindfulness meditation as a prevention strategy. *Transl Behav Med.* 2016;6(1):63-72. doi: 10.1007/s13142-015-0360-x.
- 4.Benson H, Beary JF, Carol MP. The relaxation response. *Psychiatry.* 1974;37(1):37-46. doi: 10.1080/00332747.1974.11023785.
- 5.Morgan N, Irwin MR, Chung M, Wang C. The effects of mind-body therapies on the immune system: meta-analysis. *PLoS One.* 2014;9(7):e100903.
- 6.Wang CW, Chan CH, Ho RT, Chan JS, Ng SM, Chan CL. Managing stress and anxiety through Qigong exercise in healthy adults: a systematic review and meta-analysis of RCTs. *BMC Complement Altern Med.* 2014;14:8. doi: 10.1186/1472-6882-14-8.
- 7.Zeng Y, Luo T, Xie H, Huang M, Cheng AS. Health benefits of Qigong or Tai Chi for cancer patients: a systematic review and meta-analyses. *Complement Ther Med.* 2014;22(1):173-186. doi: 10.1016/j.ctim.2013.11.010.
- 8.Karataş L. Mind-body medicine and neurological rehabilitation. In: Demirsoy ÜN, Özyemişçi Taşkiran Ö, editors. *Mind-Body Medicine.* Ankara: Türkiye Klinikleri; 2022. p. 40- 45.
- 9.Burschka JM, Keune PM, Oy UH, Oschmann P, Kuhn P. Mindfulness-based interventions in multiple sclerosis: beneficial effects of Tai Chi on balance, coordination, fatigue, and depression. *BMC Neurol.* 2014;14:165.
- 10.Menkyova I, Stastna D, Novotna K, et al. Effect of Tai Chi on balance, mood, cognition, and quality of life in women with multiple sclerosis: a one-year prospective study. *Explore (NY).* 2024;20(2):188-195.
- 11.Pan Y, Huang Y, Zhang H, Tang Y, Wang C. The effects of Baduanjin and yoga exercise

programs on phy-sical and mental health in patients with Multiple Sclerosis: A randomized controlled trial. Complement Ther Med. 2022;70:102862.

Ethical Approval

 **T.C. BAŞKENT ÜNİVERSİTESİ REKTÖRLÜĞÜ**
Girişimci Olmayan Klinik Araştırmalar Etik Kurulu

Sayı : E-91694447-604.01-555723
Konu : Proje Onayı

16.02.2026

FİZİK TEDAVİ VE REHABİLİTASYON ANABİLİM DALINA

Ana Bilim Dalınızda görev yapmakta olan Prof. Dr. Sevgi İkhali Afşar tarafından yürütülecek olan KA25/357 nolu "Çin tıbbi egzersizlerinin (Çigong) multiple skleroz tanılı hastalarda fonksiyonel düzey, yaşam kalitesi, depresyon ve denge üzerine etkisi" başlıklı araştırma projesi Girişimci Olmayan Klinik Araştırmalar Etik Kurulu'nun 22/10/2025 tarih ve 25/246 sayılı kararı ile uygun görülmüştür. Projenin başlama tarihi ile çalışmanın sunulduğu kongre ve yayımlandığı dergi konusunda Kurulumuza bilgi verilmesini rica ederim.

Not: Çalışma bildirisi ve/veya makale haline geldiğinde "Gereç ve Yöntem" bölümüne aşağıdaki ifadelerden uygun olanın eklenmesi gerekmektedir.

— Bu çalışma Başkent Üniversitesi Tıp ve Sağlık Bilimleri Araştırma Kurulu ve Etik Kurulu tarafından onaylanmış (Proje no:...) ve Başkent Üniversitesi Araştırma Fonunca desteklenmiştir.

— This study was approved by Baskent University Institutional Review Board and Ethics Committee (Project no:...) and supported by Baskent University Research Fund.

Prof. Dr. Tolga Reşat AYDOS
Kurul Başkanı

Bu belge, görsel elektronik imza ile onaylanmıştır.

Belge Dağıtım Kodu: BSKRP7NEFI Belge Dağıtım Adresi: <https://www.turkiye.gov.tr/baskent-universitesi-etk>

Tokent C. ad. 37. Sok. No 11 Beşevler/Beşiktaş / Ankara
Ticaret Sicil No: 27.299.65 - 272914 Sok. No: 012 220 37 00
e-Posta adresimiz: baskent.ada@baskent.edu.tr İnternet Adresi: www.baskent.edu.tr
Ayrıca: baskent.ada@baskent.edu.tr

