

Effects of Ai Chi on balance, quality of life, functional mobility, and motor impairment in patients with Parkinson's disease

[Emine Eda Kurt](#)¹, [Buket Büyükturan](#)², [Öznur Büyükturan](#)², [Hatice Rana Erdem](#)¹, [Figen Tuncay](#)¹

Abstract

Purpose: In this study, we aimed to investigate effects of Ai Chi on balance, functional mobility, health-related quality of life, and motor impairment in patients with Parkinson's disease.

Method: This study was conducted as an open-label randomized controlled trial (ISRCTN26292510) with repeated measures. Forty patients with Parkinson's disease stages 2 to 3 according to the Hoehn and Yahr Scale were randomly allocated to either an Ai Chi exercise group or a land-based exercise control group for 5 weeks. Balance was measured using the Biodex-3,1 and the Berg Balance Scale. Functional mobility was evaluated using the Timed Up and Go Test. Additionally, health-related quality of life and motor activity were assessed with the Parkinson's Disease Questionnaire-39 and the Unified Parkinson's Disease Rating Scale-III.

Results: Although patients in both groups showed significant improvement in all outcome variables, improvement of dynamic balance was significantly greater in the Ai Chi group ($p < 0.001$), Berg Balance Scale ($p < 0.001$), Timed Up and Go Test ($p = 0.002$), Parkinson's Disease Questionnaire-39 ($p < 0.001$), Unified Parkinson's Disease Rating Scale-III ($p < 0.001$).

Conclusion: Our results suggest that an Ai Chi exercise program improves balance, mobility, motor ability, and quality of life. In addition, Ai Chi exercise was more effective as an intervention than land-based exercise in patients with mild to moderate Parkinson's disease. Implications for rehabilitation Ai Chi exercises (aquatic exercises) may help improve balance, functional mobility, health-related quality of life, and motor ability in patients with mild to moderate Parkinson's disease more efficiently than similar land-based exercises. Ai Chi exercises should be considered as a rehabilitation option for treatment of patients with mild or moderate Parkinson's disease.

A 4-week community aquatic physiotherapy program with Ai Chi or Bad Ragaz Ring Method improves disability and trunk muscle endurance in adults with chronic low back pain: A pilot study

[Billy C L So](#), [Joseph K-F Ng](#), [Ken C K Au](#)

Abstract

Objective: To investigate the efficacy of a 4-week community aquatic physiotherapy program with Ai Chi or the Bad Ragaz Ring Method (BRRM) on pain and disability in adults with chronic low back pain (CLBP).

Methods: Adults with CLBP (n= 44; mean \pm SD age, 52.6 \pm 5.5 y; 37 women) were assigned to either an Ai Chi (n= 23) or BRRM (n= 21) program (4 weeks, twice weekly).

Results: Both the Ai Chi (-1.4; 95% CI -2.6 to -0.2; p= .025) and BRRM (-2.0, 95% CI -3.1 to -0.8; p= 0.003) groups demonstrated significant pre- to post-treatment decreases in Roland-Morris Disability Questionnaire scores and improvements in prone bridge duration (Ai Chi: 11.7 s; 95% CI 1.6 to 21.8; p= 0.025; BRRM: 19.0 s; 95% CI 6.1 to 31.8; p= 0.006). The Ai Chi group revealed a significant improvement in single-leg stand test duration (2.9 s; 95% CI 0.1 to 5.7; p= 0.045) and the BRRM group reported significant decrease in pain intensity (-11.6; 95% CI -19.1 to -4.2; p= 0.004).

Conclusions: A 4-week aquatic physiotherapy program with Ai Chi or BRRM resulted in significant pre- to post-treatment improvements in disability and global core muscle endurance. Ai Chi appeared to have an additional benefit of improving single-leg standing balance and BRRM an additional benefit of reducing pain.

An Ai Chi-based aquatic group improves balance and reduces falls in community-dwelling adults: A pilot observational cohort study

[Elizabeth H Skinner](#)^{1,2,3,4}, [Tammy Dinh](#)¹, [Melissa Hewitt](#)^{1,5}, [Ross Piper](#)⁶, [Claire Thwaites](#)¹

Abstract

Background: Falls are associated with morbidity, loss of independence, and mortality. While land-based group exercise and Tai Chi programs reduce the risk of falls, aquatic therapy may allow patients to complete balance exercises with less pain and fear of falling; however, limited data exist.

Objective: The objective of the study was to pilot the implementation of an aquatic group based on Ai Chi principles (Aquabalance) and to evaluate the safety, intervention acceptability, and intervention effect sizes.

Design: Pilot observational cohort study.

Methods: Forty-two outpatients underwent a single 45-minute weekly group aquatic Ai Chi-based session for eight weeks (Aquabalance). Safety was monitored using organizational reporting systems. Patient attendance, satisfaction, and self-reported falls were also recorded. Balance measures included the Timed Up and Go (TUG) test, the Four Square Step Test (FSST), and the unilateral Step Tests.

Results: Forty-two patients completed the program. It was feasible to deliver Aquabalance, as evidenced by the median (IQR) attendance rate of 8.0 (7.8, 8.0) out of 8. No adverse events occurred and participants reported high satisfaction levels. Improvements were noted on the TUG, 10-meter walk test, the Functional Reach Test, the FSST, and the unilateral step tests ($p < 0.05$). The proportion of patients defined as high falls risk reduced from 38% to 21%. The study was limited by its small sample size, single-center nature, and the absence of a control group.

Conclusions: Aquabalance was safe, well-attended, and acceptable to participants. A randomized controlled assessor-blinded trial is required.

Effects of a programme of aquatic Ai Chi exercise in patients with fibromyalgia. A pilot study]

[Sagrario Perez-De la Cruz¹](#), [Johan Lambeck](#)

Abstract

Introduction: Fibromyalgia is rheumathological disease a combination of physical, psychological and social limitations. The aim of the present study is to determinate the benefits of Ai Chi program on quality of life, depression and pain.

Patients and methods: An experimental study was performed with 20 fibromyalgia patients two different cities. Outcome measures were functional capacity (Fibromyalgia Impact Questionnaire), pain (Visual Analogue Scale) and quality of life (Short Form-36). Measures were performed at baseline and after ten weeks post-intervention.

Results: After ten weeks of treatment, the results showed significant reduction ($p < 0,05$) in virtually all outcome measures.

Conclusion: An Ai Chi aquatic therapy programme contributes to reduce pain and improve quality of life as well as physical and mental health in patients with fibromyalgia.

Effects of Ai-Chi on balance, functional mobility, strength and fatigue in patients with multiple sclerosis: a pilot study

[Deniz Bayraktar¹](#), [Arzu Guclu-Gunduz](#), [Gokhan Yazici](#), [Johan Lambeck](#), [Hale Zeynep Batur-Caglayan](#), [Ceyla Irkec](#), [Bijen Nazliel](#)

Abstract

Background: Multiple Sclerosis (MS) patients are often referred to aquatic physical therapy, but unfortunately, researches on the effects of aquatic therapy in MS patients are limited.

Objective: The purpose of this study was to investigate the effects of Ai-Chi on balance, functional mobility, strength and fatigue in ambulatory patients with MS.

Methods: Twenty-three ambulatory female patients were divided into two groups as experimental (n = 15) or control (n = 8) for an 8-week treatment program. The experimental group underwent Ai-Chi exercises in a swimming pool and the control group performed active arm and leg exercises combined with abdominal breathing exercises at home. Static standing balance was measured with duration of one-leg stance, functional mobility was evaluated with Timed-up and Go test and 6 minute walk test, upper and lower muscle strength was assessed with hand-held dynamometer and fatigue was evaluated with Fatigue Severity Scale.

Results: Improvements were observed in static standing balance, functional mobility, upper and lower extremity muscle strength and fatigue in the Ai-Chi group ($p < 0.05$), but no significant differences in any outcome measures were observed in the control group ($p > 0.05$) after the intervention.

Conclusions: According to these findings Ai-Chi may improve balance, functional mobility, upper and lower extremity muscle strength and fatigue in patients with MS.

Does the speed of aquatic therapy exercise alter arm volume in women with breast cancer related lymphoedema? A cross-over randomized controlled trial

[Rosalind Deacon](#)¹, [Marcos de Noronha](#)², [Leah Shanley](#)¹, [Kaye Young](#)¹

Free PMC article

Abstract

Objective: To identify whether slow aquatic exercise in the form of modified Ai Chi is more effective than conventional (faster pace) aquatic therapy at reducing arm volume in women with or at risk of breast cancer related lymphoedema.

Methods: Randomized, cross-over controlled trial with concealed allocation and blinded assessment. Eighteen women with a history of breast cancer related lymphoedema were recruited. Participants received two intervention sessions (randomized order) with one week apart. Interventions were a 50min conventional aquatic intervention or a 50min modified Ai Chi. Arm volume was measured as the difference between affected and unaffected arm; bio-impedance was measured as an index of extracellular fluid; satisfaction was measured via a 12 question form. Outcomes were measured before, immediately after and one hour after intervention.

Results: Comparison between interventions showed larger decreased arm volume of 140mL (95%CI 17-263) immediately after intervention in favor of the Ai Chi intervention, however it was not sustained at 1h follow-up. A post hoc analysis showed 72% of participants had a decrease in arm volume immediately after Ai Chi compared to 28% immediately after conventional aquatic therapy; with a number needed to treat of 3 (95%CI 1.4-6.6). There were no differences between interventions for bio-impedance. Satisfaction was good for both interventions.

Conclusion: Slow pace aquatic exercise is more effective than conventional aquatic exercise immediately after intervention for arm volume. Also, undesirable increase in arm volume seems to subside after 1h, which can be beneficial if therapy does not address arm volume.

The effect of Ai Chi aquatic therapy on individuals with knee osteoarthritis: a pilot study

[Billy C L So¹](#), [Iris S Y Kong¹](#), [Roy K L Lee¹](#), [Ryan W F Man¹](#), [William H K Tse¹](#), [Adalade K W Fong¹](#), [William W N Tsang¹](#)

Free PMC article

Abstract

[Purpose] To examine the efficacy of Ai Chi in relieving the pain and stiffness of knee osteoarthritis and improving, physical functioning, proprioception and quality of life.

[Subjects and Methods] Twenty-five persons with knee osteoarthritis completed 5 weeks Ai Chi practice (60 minutes per session, twice per week, 10 sessions in total). Knee pain and stiffness were measured before and after the intervention program. [Results]

Significant improvements in pain, self-perceived physical functioning and self-perceived stiffness were observed after the Ai-Chi intervention. On average, no significant change in knee range of motion, 6-minute walk test distances or proprioception was observed.

[Conclusion] A five-week Ai Chi intervention can improve the pain and stiffness of knee osteoarthritis and self-perceived physical functions and quality of life improvement. Ai Chi may be another treatment choice for people with knee OA to practice in the community.

Comparison between Three Therapeutic Options for the Treatment of Balance and Gait in Stroke: A Randomized Controlled Trial

[Sagrario Pérez-de la Cruz¹](#)

Free PMC article

Abstract

Stroke patients are more likely to be at risk of falling, which leads to limitation in their abilities to perform daily living activities and participate in society. The aim was to compare the relative effectiveness of three different treatment groups for improvements in postural control and for improvements in balance. Forty-five participants diagnosed with acquired brain injury, with over one year's evolution, were divided into a dry land therapy group (control group), an experimental group (Ai Chi aquatic therapy), and a combined group (therapy on dry land and aquatic therapy with Ai Chi). The Berg balance scale, tandem stance, the timed up and go test, and the five times sit-to-stand test were used. After twelve weeks of treatment, the results improved significantly for the combined therapy group ($p < 0.01$), and were significantly higher compared to the dry land therapy group ($p < 0.01$). In addition, improvements were also found in the aquatic Ai Chi therapy group. In conclusion, aquatic Ai Chi and/or the combination of aquatic therapy with dry land therapy is effective for the improvement of static and dynamic balance and for enhancing functional capacity, therefore, increasing the quality of life of acquired brain injury patients.

Comparison of Ai Chi and Impairment-Based Aquatic Therapy for Older Adults With Balance Problems: A Clinical Study

[Laura G Covill](#)¹, [Cynthia Utley](#), [Cheryl Hochstein](#)

Abstract

Background and purpose: Older adults with balance deficits often fear falling and limit their mobility. Poor balance is multifactorial, influenced by medication interactions, musculoskeletal and sensory system changes, and poor neuromuscular response to changes in body positions. Aquatic physical therapy (APT) is an intervention used to improve balance and decrease falls. Ai Chi is a water-based exercise program. It incorporates slow movements of progressive difficulty utilizing the upper and lower extremities and trunk coordinated with deep breathing. It is used for relaxation, strengthening, and balance training. The purpose of this study was to determine whether Ai Chi provides better results than conventional impairment-based aquatic therapy (IBAT) for older adults with balance deficits.

Methods: Thirty-two community-dwelling adults, 65 to 85 years old, were referred to 2 different community pools for APT. Fifteen participants received Ai Chi-based aquatic interventions and 17 participants received an IBAT program. Physical therapists trained in both programs completed interventions and determined discharge. Physical balance measures, which included the Berg Balance Scale (BBS) and Timed Up and Go (TUG), were collected pre- and posttherapy. Self-reported outcome measures, the Activities-Specific Balance Confidence Scale (ABC) and Numerical Pain Rating Scale (NPRS), were collected pre- and posttherapy and 3- and 6-month postdischarge.

Results: A 2-way (group by time) mixed-model analysis of covariance with initial outcome scores as a covariate revealed no difference between groups in any of the outcome measures (BBS, $P = .53$; TUG, $P = .39$; ABC, $P = .63$; NPRS, $P = .27$). Repeated-measures analysis and dependent t tests showed significant improvements in the BBS ($P = .00$) and TUG ($P = .03$) after APT. The ABC and NPRS did not improve significantly (ABC, $P = .27$; NPRS, $P = .77$).

Conclusions: There were no significant differences found in balance measures, balance confidence, or pain levels for community-dwelling older adults between the Ai Chi and IBAT programs. Physical outcome measures improved with APT but patient-reported measures did not. Further study is indicated to determine the most effective treatment frequency and duration for this population.

The effects of Ai Chi for balance in individuals with chronic stroke: a randomized controlled trial

[Pei-Hsin Ku](#)¹, [Szu-Fu Chen](#)², [Yea-Ru Yang](#)¹, [Ta-Chang Lai](#)³, [Ray-Yau Wang](#)⁴

Free PMC article

Abstract

This study investigated the effectiveness of Ai Chi compared to conventional water-based exercise on balance performance in individuals with chronic stroke. A total of 20 individuals with chronic stroke were randomly allocated to receive either Ai Chi or conventional water-based exercise for 60 min/time, 3 times/week, and a total of 6 weeks. Balance performance assessed by limit of stability (LOS) test and Berg balance scale (BBS). Fugl-Meyer assessment (FMA) and gait performance were documented for lower extremity movement control and walking ability, respectively. Excursion and movement velocity in LOS test was significantly increased in anteroposterior axis after receiving Ai Chi ($p = 0.005$ for excursion, $p = 0.013$ for velocity) but not conventional water-based exercise. In particular, the improvement of endpoint excursion in the Ai Chi group has significant inter-group difference ($p = 0.001$). Both groups showed significant improvement in BBS and FMA yet the Ai Chi group demonstrated significantly better results than control group ($p = 0.025$). Ai Chi is feasible for balance training in stroke, and is able to improve weight shifting in anteroposterior axis, functional balance, and lower extremity control as compared to conventional water-based exercise.