References and abstracts of interest (1996-2011):

Tai Chi and Falls Prevention – Reviews and Frail elders/fallers:

**Comparison of telecommunication, community, and home-based Tai Chi exercise programs on compliance and effectiveness in elders at risk for falls.**
To compare the adherence to and effectiveness of Tai Chi exercise program through a live, interactive, telecommunication-based exercise (Tele-ex) with that of a similar program through a community center-based exercise (Comm-ex) and a home video-based exercise (Home-ex) among community-dwelling elders who are at risk for falls. Three groups randomized controlled trial with pretests and posttests. Exercise programs were community-based, and the outcome measures were laboratory-based. Adults (N=64) age 65+ years with positive fall history in the previous year and/or significant fear of falling. The intervention was a 24-form, Yang-style Tai Chi for 15 weeks, 3 hours a week. The main outcome measures were: Exercise compliance, number of falls, fear of falling (Activities-specific Balance Confidence [ABC] score), self-perceived health (Medical Outcomes Study 36-Item Short Form Health Survey [SF-36]), Timed Up & Go (TUG), single leg stance (SLS), and body sway during quiet stance (medial-lateral foot center of pressure [ML-COP]). Tele-ex and Comm-ex groups demonstrated significantly higher exercise attendance and in-class practice time than the Home-ex group (P<.01) and significant reductions in the mean number of falls and injurious falls (P<.01). There were significant improvements posttraining in SLS, ABC, ML-COP, and Physical Health subscore of the SF-36 (P<.05). Both Tele-ex and Comm-ex groups demonstrated larger improvements than the Home-ex group in TUG, ML-COP, and the Social Function, Mental Health, and Physical Health subscores of the MOS SF-36. Compared with the Home-ex, the Tele-ex and Comm-ex groups are better in exercise compliance, fall reduction and balance and health improvements. Tele-ex is an effective, affordable, and acceptable choice of exercise for elders.

**Health-related quality of life in frail institutionalized elderly: effects of a cognition-action intervention and Tai Chi.**
No previous studies have explored the effects of mind-body approaches on health-related quality of life (HRQoL) in the frail elderly. Cognition and action are an inseparable whole during functioning. Thus, a new intervention-based approach using familiarity-based movements and a nonjudgmental approach of “cognition-action” was proposed and was tested with Tai Chi on HRQoL in frail institutionalized elderly. Fifty-two participants (58% women) age 65-94 took part in a 24-wk Tai Chi (TC) intervention 4 days/wk or a cognition-action (CA) exercise program of 30 min twice a week. Changes in Mini Mental State score, physical (PCS) and mental component (MCS) summaries (SF-12); Falls Efficacy Scale (FES); and exercise self-efficacy were explored. PCS improved from 33.6 +/- 6.7 to 51 +/- 4.8 in the TC group and from 30.6 +/- 9.9 to 45.1 +/- 10.2 in the CA group (p < .001). MCS of SF-12 (p < .001), FES (p < .001), and exercise self-efficacy (p < .01) were enhanced significantly in both groups. Adapted CA programs and Tai Chi were both efficient in improving HRQoL of frail elderly.

**Intense Tai Chi exercise training and fall occurrences in older, transitionally frail adults: A randomized, controlled trial.**
To determine whether an intense tai chi (TC) exercise program could reduce the risk of falls more than a wellness education (WE) program in older adults meeting criteria for transitioning to frailty. Randomized, controlled trial of 48 weeks duration. Twenty congregate living facilities in the greater Atlanta area-Sample of 291 women and 20 men aged 70 to 97. Demographics, time to first fall and all subsequent falls, functional measures, Sickness Impact Profile, CES-Depression Scale, Activities-specific Balance Confidence (ABC) Scale, Falls Efficacy Scales, and adherence to interventions. RESULTS: The risk ratio (RR) of falling was not statistically different in the TC group and the WE group (RR=0.75, 95% confidence interval (CI)=0.52-1.08), P=.13. Over the 48
weeks of intervention, 46% (n=132) of the participants did not fall; the percentage of participants that fell at least once was 47.6% for the TC group and 60.3% for the WE group. TC did not reduce the RR of falling in transitionally frail, older adults, but the direction of effect observed in this study, together with positive findings seen previously in more-robust older adults, suggests that TC may be clinically important and should be evaluated further in this high-risk population.


All multifactorial interventions for community-residing older people should have an exercise component. Exercise recommendations in the 2010 guidelines specify programs that include balance, gait, and strength training, such as Tai Chi or physical therapy, in group programs or as individual programs at home. The 2001 guidelines were unable to recommend Tai Chi because inadequate data were available at that time. ... Current data support exercise programs only for community-dwelling older persons, in contrast to the earlier guidelines, which recommended long-term exercise and balance training for all older people who have had recurrent falls.

**Tai Chi and Falls Prevention – Non-frail elders or general elders:**


Aim: To evaluate the cost-effectiveness of strategies designed to prevent falls amongst people aged 65 years and over living in the community and in residential aged-care facilities. Methods: A systematic review and meta-analysis of the literature was conducted. The pooled fall rate ratio was used in a decision analytic model that combined a Markov model and decision tree to estimate the costs and outcomes of potential interventions and/or strategies. The resulting cost per quality-adjusted life year was estimated. Results: The most cost-effective falls prevention strategy in community-dwelling older people was Tai Chi. Expedited cataract surgery and psychotropic medication withdrawal were also found to be cost-effective; however, the effectiveness of these interventions is less certain due to small numbers of trials and participants. The most cost-effective falls prevention strategies in residential aged-care facilities were medication review and vitamin D supplementation.

**Tai chi as an intervention to improve balance and reduce falls in older adults: A systematic and meta-analytical review. Leung DP, Chan CK, Tsang HW, Tsang WW, Jones AY. Altern Ther Health Med. 2011;17(1):40-8.**

A systematic review was carried out by two independent reviewers among nine electronic databases to identify randomized controlled trials (RCTs) that examined the effects of tai chi on balance improvement and fall reduction in older adults using such key words as tai chi, falls, balance, and randomized trial. The results based on 13 RCTs indicated that tai chi was effective in improving balance of older adults but may not necessarily be superior to other interventions. Results also showed that in the absence of other interventions, tai chi reduced falls in the nonfrail elderly. Tai chi is recommended as an alternative treatment for improving balance so as to reduce falls. Future research with improved research designs such as more consistent outcome measures on balance and fall reduction and longer postintervention follow-up should be conducted to unravel the efficacy of different types of tai chi.


The aim of this overview was to critically evaluate the systematic reviews (SRs) of t’ai chi for any improvement of medical conditions or clinical symptoms. English, Chinese and Korean electronic databases were searched for relevant articles, and data were extracted according to predefined criteria; 35 SRs met inclusion criteria. These were related to the following conditions: cancer,
older people, Parkinson’s disease, musculoskeletal pain, osteoarthritis, rheumatoid arthritis (RA), muscle strength and flexibility, improving aerobic capacity, cardiovascular disease and risk factors, lowering resting blood pressure, osteoporosis or bone mineral density, type 2 diabetes, psychological health, fall prevention and improving balance, and any chronic conditions. In several instances, the conclusions of these articles were contradictory. Relatively clear evidence emerged to suggest that t’ai chi is effective for fall prevention and improving psychological health and was associated with general health benefits for older people. However, t’ai chi seems to be ineffective for the symptomatic treatment of cancer and RA. In conclusion, many SR’s of t’ai chi have recently been published; however, the evidence is convincingly positive only for fall prevention and for improvement of psychological health.


To examine the effectiveness of cognitive-behavioural strategies with/without intense Tai Chi exercise in reducing fear of falling among community-dwelling elderly adults. Background. Fear of falling is a major health problem among community-dwelling older persons. The prevalence of this fear ranges from 29% to 77%, indicating the importance of developing effective strategies to reduce fear of falling among elderly adults. Data were collected from January to December 2007. A randomized controlled trial with three groups (control, cognitive-behavioural and cognitive-behavioural with Tai Chi). Participants were assessed at baseline for demographic data, falls-related history, and fear of falling. Data on these variables plus falls, mobility, social support behaviour and satisfaction, and quality of life were also collected at 2 and 5 months after interventions. Participants in the three groups differed significantly in both measures of fear of falling (F = 20.89, P < 0.001; F = 6.09, P < 0.001) and mobility (F = 30.33, P < 0.001), social support behaviour and satisfaction (F = 3.32, P < 0.05 and F = 6.35, P < 0.001, respectively), and quality of life (F = 16.66, P < 0.001). In addition, participants who received the cognitive-behavioural intervention with Tai Chi had significantly lower fear of falling scores (P < 0.001) and higher mobility (P < 0.001), social support satisfaction (P < 0.01) and quality of life (P < 0.001) than the cognitive-behavioural alone and control groups at 5 months. The three groups did not differ significantly in falls. The results of this trial suggest that the cognitive-behavioural intervention with Tai Chi exercise helped community-dwelling elderly adults to enhance their mobility, to manage their fear of falling and to increase their quality of life.


To model the population level impact of tai-chi on future rates of falls and fall-related injury in older people as a tool for policy development. An epidemiological and economic model for estimating population-level effectiveness of tai-chi in Australia. Patients or subjects Australian community-dwelling population aged 70+ years, ambulatory and without debilitating conditions or profound visual defects. Intervention Group-based tai-chi, for 1 h twice weekly for 26 weeks, assuming no sustained effect beyond the intervention period. Main outcome measure Total falls and fall-related hospitalisation prevented in 2009. Population-wide tai-chi delivery would prevent an estimated 5440 falls and 109 fall-related hospitalisations, resulting in a 0.18% reduction in the fall-related hospital admission rate for community-dwelling older people. The gross costs per fall and per fall-related hospital admission prevented were $A4414 (€3013) and $A220,712 (€150,684), respectively. A total investment of $A24.01 million (€16.39 million), equivalent to 4.2% of the cost of fall-related episodes of hospital care in 2003/4, would be required to provide tai-chi for 31,998 people and achieve this effect. Substantial investment in, and high population uptake of, tai-chi would be required to have a large effect on falls and fall-related hospitalisation rates. Although not accounted for in this study, investment in tai-chi is likely to be associated with additional significant health benefits beyond falls prevention. This approach could be applied to other interventions to assist selection of the most cost-effective falls-prevention portfolio for Australia and other countries.

Falls are a leading cause of mortality and morbidity among adults age 65 and older. Population models predict steep increases in the 65 and older population bands in the next 10-15 years and in turn, public health is bracing for increased fall rates and the strain they place on health care systems and society. To assess progress in fall prevention, the Centers for Disease Control and Prevention conducted a research portfolio review to examine the quality, relevance, outcomes and successes of the CDC fall prevention program and its impact on public health. A peer review panel was charged with reviewing 20 years of funded research and conducting a SWOT (strengths, weaknesses, opportunities, and threats) analysis for extramural and intramural research activities. Information was collected from grantees (via a survey instrument), staff were interviewed, and progress reports and products were reviewed and analyzed. CDC has invested over $24,900,000 in fall-related research and programs over 20 years. The portfolio has had positive impacts on research, policies and programs, increasing the public health injury prevention workforce, and delivering effective fall prevention programs.

Public health agencies, practitioners, and policy makers recognize that while there are some evidence-based older adult fall prevention interventions available, many remain unused or are infeasible to implement. Specific recommendations across the public health model, include: additional research in gathering robust epidemiologic data on trends and patterns of fall-related injuries at all levels; researching risk factors by setting or sub-population; developing and testing innovative interventions; and engaging in translation and dissemination research on best practices to increase uptake and adoption of fall prevention strategies. CDC has responded to a number of suggestions from the portfolio review including: funding translation research of a proven Tai Chi fall intervention; beginning to address gaps in gender, ethnic, and racial differences in falls; and collaborating with partner organizations who share in CDC's mission to improve public health by preventing falls and reducing fall-related injuries. Industry has an opportunity to develop more accessible and usable devices to reduce injury from falls (for example, hip protectors and force reducing flooring). By implementing effective, evidence-based interventions to prevent falls and reduce injuries from falls, significant decreases in health care costs can be expected.


It is important to determine the effect of adherence to a tai chi program on falls and related functional outcomes in older people. This study examined the effect of a community-based tai chi program on injurious falls, balance, gait, and fear of falling among people aged 65 years and older in Taiwan. In 6 rural villages in Taichung County, 1,200 subjects participated in the initial assessment. During a 1-year intervention period, all study villages were provided with education on fall prevention. Two villages had been provided tai chi exercise (n=472 participants or "tai chi villagers"), and 4 villages served as control villages (n=728 participants or "control villagers"). Injurious falls were ascertained by telephone interviews every 3 months over a 2-year study period; additionally, balance, gait, and fear of falling were assessed in 2 follow-up assessments. Eighty-eight subjects, 83 from the tai chi villages and 5 from the control villages, participated and practiced in the tai chi program (the group labeled "tai chi practitioners"). After the tai chi program, injurious falls among the control villagers significantly declined by 44% (adjusted rate ratio [RR]=0.56; 95% confidence interval [CI]=0.36-0.92). Compared with the results for the control villagers, the decline was 31% greater (RR=0.69; 95% CI=0.30-1.56) among the tai chi villagers and 50% greater (RR=0.5; 95% CI=0.11-2.17) among the tai chi practitioners; the results did not reach statistical significance. Furthermore, compared with the scores for the control villagers, the scores for the tai chi practitioners increased by 1.8 points (95% CI=0.2-3.4) on the Tinetti Balance Scale and increased by 0.9 point (95% CI=0.1-1.8) on the Tinetti Gait Scale. No significant changes in the fear of falling were detected among the tai chi practitioners, tai chi villagers, and control villagers. Tai chi can prevent a decline in functional balance and gait among older people. However, the reduction in injurious falls attained with tai chi did not reach statistical significance; the statistical inefficiency may have resulted partly from the large decline in injurious falls in control villagers. Finally, the unexpected effect of educational intervention on reducing injurious falls in different settings needs to be further examined.

This randomized controlled trial involved a sample of 256 physically inactive, community-dwelling adults aged 70 to 92 (mean age, 77.48 years; standard deviation, 4.95 years) who were recruited through a patient database in Portland, Oregon. Participants were randomized to participate in a three-times-per-week Tai Chi group or to a stretching control group for 6 months. The primary outcome measure was the number of falls; the secondary outcome measures included functional balance (Berg Balance Scale, Dynamic Gait Index, Functional Reach, and single-leg standing), physical performance (50-foot speed walk, Up and Go), and fear of falling, assessed at baseline, 3 months, 6 months (intervention termination), and at a 6-month post intervention follow-up. At the end of the 6-month intervention, significantly fewer falls (n = 38 vs 73; p = .007), lower proportions of fallers (28% vs 46%; p = .01), and fewer injurious falls (7% vs 18%; p = .03) were observed in the Tai Chi group compared with the stretching control group. After adjusting for baseline covariates, the risk for multiple falls in the Tai Chi group was 55% lower than that of the stretching control group (risk ratio, 0.45; 95% confidence interval, 0.30 to 0.70). Compared with the stretching control participants, the Tai Chi participants showed significant improvements (p < .001) in all measures of functional balance, physical performance, and reduced fear of falling. Intervention gains in these measures were maintained at a 6-month post intervention follow-up in the Tai Chi group.


The purpose of this study was to assess the effect of Tai Chi Chuan (TCC) on fall prevention, balance and cardiorespiratory functions in the elderly. A systematic review was carried out according to the Cochrane standards. A computerized literature search was carried out. Studies were selected when they had an experimental design; the age of the study population was >50; one of the interventions was a form of TCC; and when falls, balance or cardiorespiratory functions were used as an outcome measure. A total of seven studies were included, with in total 505 participants, of whom all but 27 were healthy seniors, age between 53 and 96 years. In most studies, the intervention of TCC is a modified Yang style, varying from 10 to 24 forms. The intensity of TCC varies from 1 h weekly for 10 weeks to 1 h every morning for 1 year. One study used falls as outcome measure and reported a beneficial effect of 47% in the TCC group. All studies mention a beneficial effect of TCC, but in most studies this conclusion was based on a pre-post analysis. There is limited evidence that TCC is effective in reducing falls.


The purpose of this investigation was to evaluate the effects of two forms of exercise, Tai Chi (TC), and computerized balance training (BT), on reducing frailty and fall-related injuries in older persons. The study looked at 200 persons aged 70 years and older who were living in the community. There were 162 women and 38 men and the mean age of participants was 76.2. Two outcomes were measured: 1) Specified Primary Outcomes: a) Biomedical; strength, flexibility, cardiovascular endurance, body composition; b) functional (IADL), and psychosocial well-being; CES-D scale, fear of falling questionnaire, self perception of present and future health, mastery index, perceived quality of sleep, intrusiveness. 2) Secondary outcome: Occurrence of falls. The intervention period was 15 weeks with primary outcomes measured before and after, and at 4-month follow-up. Results: grip strength declined in all groups; lower extremity range of motion showed limited but statistically significant change; lowered blood pressure before and after 12 minute walk following TC participation; fear of falling and intrusiveness responses were reduced after TC intervention; TC was found to reduce fall risk factor by 47.5% after adjusting for fall risk factors. Note: Reduction in risk of falls was not significant when trips were excluded from the data. Moderate TC intervention can favourably impact biomedical and psychosocial indices of frailty, and occurrence of falls.
Tai Chi and Fear of Falling:

The aim of this report is to investigate the effects of 8 weeks of intensive Tai Chi Chuan (TCC) training on physiological function and fear of falling (FOF) in the less robust elderly. Forty-nine community-dwelling elderly, aged 60 or older, were classified randomly into a TCC training or control group. Physical performance measures (including one-leg stance, trunk flexion, and walking speed) and interviews were conducted before and after the intervention. The TCC group showed significant improvements in balance and flexibility, and a reduced FOF, when compared with the control group after the intervention. However, walking speed did not change significantly. The results suggest that a high-frequency, short-term TCC training program can improve balance, flexibility, and increase the confidence of less-robust elderly. These suggest the effectiveness of TCC for intervention as a means to prevent falling among high-risk elderly populations. (falls were not measured).


To determine whether an intense tai chi exercise program could reduce fear of falling better than a wellness education (WE) program in older adults who had fallen previously. Cluster-randomized, controlled trial of 48 weeks' duration. Sample of 291 women and 20 men, aged 70 to 97. Activity-related fear of falling using the Activities-Specific Balance Confidence Scale (ABC) and the Fall Efficacy Scale at baseline and every 4 months for 1 year. Mean ABC was similar in both cohort groups at the time of randomization but became significantly higher (decreased fear) in the tai chi cohort at 8 months (57.9 vs 49.0, P < .001) and at study end (59.2 vs 47.9, P < .001). Mean ABC after 12 months of intervention was significantly greater in the tai chi group than in the WE group, with the differences increasing with time (mean difference at 12 months=9.5 points, 95% confidence interval=4.8-14.2, P < .001). Tai chi led to a significantly greater reduction in fear of falling than a WE program in transitionally frail older adults. The mean percentage change in ABC scores widened between tai chi and WE participants over the trial period. Tai chi should be considered in any program designed to reduce fear of falling in transitionally frail older adults.

To compare the effects of a short style of Tai Chi versus brisk walking training programme on aerobic capacity, heart rate variability (HRV), strength, flexibility, balance, psychological status and quality of life in nineteen community-dwelling, sedentary women (aged 71.4 +/- 4.5 years). They were randomly assigned to Tai Chi Chuan (TCC; n = 11) or brisk walking group (BWG; n = 8). A separate group of elderly women was recruited from the same population to act as a sedentary comparison group (SCG; n = 8). The exercise groups met for 1 h, three days per week for 12 weeks. Outcomes measured before and after training included estimated VO2max, spectral analysis of HRV (high-frequency, low-frequency power as well as high- and low-frequency power in normalised units) as a measure of autonomic control of the heart, isometric knee extension and handgrip muscle strength, single-leg stance time, the State Trait Anxiety Inventory (STAI), Profile of Mood States (POMS) and Short Form-36 (SF-36) questionnaires. Significant improvement was seen in estimated VO2max in the TCC group (TCC versus SCG P = 0.003, TCC versus BWG P = 0.08). The mean within-person change of high-frequency power in normalised units (+Fnu) increased [8.2 (0.14-16.3)], representing increased parasympathetic activity, and low-frequency power in normalised units (LFnu) decreased [-8.7 (-16.8-0.5)], representing decreased sympathetic activity, in the TCC group only. Significant gains were also seen in the non-dominant knee extensor strength and single-leg stance time (TCC versus BWG P < 0.05). A short style of TCC was found to be an effective way to improve many fitness measures in elderly women over a 3-month period. TCC was also found to be significantly better than brisk walking in enhancing certain measures of fitness including lower extremity strength, balance and flexibility.
Tai Chi and Bone:


Tai chi may have beneficial effects with respect to balance, falls and non-vertebral fractures. The purpose of this systematic review was to evaluate evidence from controlled clinical trials testing the effectiveness of tai chi for osteoporosis. Five randomized clinical trials (RCTs) and two controlled clinical trials (CCT) met all inclusion criteria. In postmenopausal women, one RCT found tai chi to be superior for loss of bone mineral density (BMD) compared with sedentary lifestyle, while two other RCTs found no differences between tai chi and exercises or calcium supplementation for BMD. The meta-analysis showed no significant effect of tai chi on BMD change at the spine compared with no treatment in postmenopausal women. One RCT failed to show favorable effects of tai chi compared with resistance training (RT) for total hip BMD in elderly women. A further RCT compared tai chi with RT on bone metabolism and reported favorable effects compared with RT in the elderly. The evidence for tai chi in the prevention or treatment of osteoporosis is not convincing. More rigorous research seems warranted.


The beneficial role of exercise in improving bone mineral density, muscle strength and balance, has been documented predominantly in younger populations. These findings may not apply to elderly populations with limited ability to perform exercises of high intensity. To examine the effects of Tai Chi (TC) and resistance exercise (RTE) on bone mineral density (BMD), muscle strength, balance and flexibility in community living elderly people. Randomised controlled trial, using blocked randomization with stratification by sex. A community in the New Territories Region of Hong Kong, China. One hundred eighty subjects (90 men, 90 women) aged 65-74, were recruited through advertisements in community centres. Subjects were assigned to participate in TC, RTE three times a week, or no intervention (C) for 12 months. Measurements were carried out at baseline, 6 and 12 months. Compliance was high (TC 81%, RTE 76%). In women, both TC and RTE groups had less BMD loss at total hip compared with controls. No effect was observed in men. No difference in either balance, flexibility or the number of falls was observed between either intervention or controls after 12 months. The beneficial effects of TC or RTE on musculoskeletal health are modest and may not translate into better clinical outcomes.

Tai Chi in Frail Elders – other outcomes:


Tai chi, a Chinese exercise derived from martial arts, while gaining popularity as an intervention for reducing falls in older adults, also may improve health status. The purpose of this study was to determine whether intense tai chi (TC) exercise could improve perceived health status and self-rated health (SRH) more than wellness education (WE) for older adults who are transitionally frail. Study subjects were 269 women who were >or=70 years of age and who were recruited from 20 congregate independent senior living facilities.: Participants took part in a 48-week, single-blind, randomized controlled trial. They were randomly assigned to receive either TC or WE interventions. Participants were interviewed before randomization and at 1 year regarding their perceived health status and SRH. Perceived health status was measured with the Sickness Impact Profile (SIP). Compared with WE participants, TC participants reported significant improvements in the physical dimension and ambulation categories and borderline significant improvements in the body care and movement category of the SIP. Self-rated health did not change for either group. These findings suggest that older women who are transitionally frail and participate in intensive TC exercise demonstrate perceived health status benefits, most notably in ambulation.

Tai Chi is an exercise training that is becoming increasingly popular as an intervention for single fall prevention. This meta-analysis was performed to evaluate the efficacy of Tai Chi on fall rate, fear of falling and balance in older people. Randomized controlled trials published between 1988 and January 2009 were included. In the Netherlands (2009) we used random effects models for the analyses, with data reported as incidence rate ratios (IRR) for falls and standardized mean differences (SMD) for fear of falling and balance. Nine trials (representing 2203 participants) were included in the analyses. Compared with exercise controls, Tai Chi participants showed significant improvements in fall rates (2 trials included, IRR: 0.51, 95% CI 0.38-0.68) and static balance (2 trials included, SMD: 0.47, 95% CI 0.23-0.72). Compared with non-exercise controls, no improvement was found for Tai Chi participants in fall rates (5 trials, IRR: 0.79, 95% CI 0.60-1.03) or static balance (2 trials, SMD: 0.30, 95% CI 0.50-1.10), but a significant improvement was found for fear of falling (SMD: 0.37, 95% CI=0.03-0.70). Currently there is insufficient evidence to conclude whether TC is effective in fall prevention, decreasing fear of falling and improving balance in people over age 50 years.


Considerable research evidence has been accumulated since 1990 that practicing Tai Chi can ameliorate multiple characteristics in older adults that place them at increased risk of falling, including poor balance, loss of strength, limited flexibility, and fear of falling. However, relatively few studies have directly examined the influence of Tai Chi practice on falls in this population. Results: Nine randomized controlled trials utilizing Tai Chi (n = 6), or Tai Chi-inspired exercise (n = 3), were published between 1996 and July, 2007. The studies varied considerably on study settings, participant characteristics, sample size, type of Tai Chi intervention, length of intervention and quality of the study design. Of the six studies that used Tai Chi forms, three showed significant improvement in fall-related outcomes. One study using Tai Chi-inspired exercise also had a significant fall-related outcome. Conclusion: Despite the evidence demonstrating the beneficial influence of Tai Chi practice on known risk factors for falling in older adults, evidence indicating an actual impact on falls-related outcomes is equivocal. More large-scale, longitudinal studies with consistent intervention parameters and clinically meaningful outcome variables are needed to a clarify the role of Tai Chi in effective falls prevention programs. The recent development of a standardized, research-to-practice Tai Chi falls prevention program may be an important step in this process.

Tai Chi, Quality of Life, Glucose Control and Cardiovascular Risk Factors:


Tai Chi Chuan (TCC) is a traditional Chinese medicine practice and martial art with biopsychosocial aspects. This study aimed to examine the impact of participation in TCC on multiple domains of Quality of Life (QoL) and to assess the involvement of the psychological factors of self-efficacy, Locus of Control (LoC) and Hope in these effects. A total of 68 participants from the general community (13 males and 55 females) aged between 18 and 68 (M=43.55 years) and not currently suffering from a mental or physical illness took part in the study. It was found that TCC participants, as a group, scored significantly better than those in sedentary (book club) and active (gym exercise) control conditions on Psychological and Physical QoL, and that the Physical QoL benefits of TCC continue to accrue with years of practice. The three psychological factors were shown to variously mediate (self-efficacy) and moderate (internal LoC and Hope) this latter relationship. Whilst the results bear limitations (in particular small sample sizes), it is hoped that these findings will encourage further research into TCC, and consideration of TCC as part of the range of treatment options available in community-based mental and physical health management.


Whether Tai Chi (TC) is effective in the cardiac rehabilitation of patients with chronic heart failure (CHF) remains controversial. We performed a meta-analysis to examine the effects of TC on exercise capacity and quality of life (QoL) in CHF patients. PubMed and EMBASE databases were searched (up to May 2012) for relevant studies. Studies including participants with reduced left ventricular systolic function (ejection fraction ≤ 45%) were selected. Interventions considered were TC with or without comparisons (education or usual

To examine the effects of a Tai Chi Chung (TCC) program, an efficiency approach, on anxiety and cardiovascular risk factors. Design. A quasi-experimental study. Setting. A community in Taipei City, Taiwan. Subjects. One hundred thirty-three adults aged 55 years and older. Intervention. Sixty-four participants (experimental group) attended a 60-minute Tai Chi exercise three times per week for 12 weeks, whereas 69 participants (control group) maintained their usual daily activities. Measures. Anxiety states, systolic blood pressure (SBP), diastolic blood pressure (DBP), body mass index (BMI), and waist circumference (WC) were assessed at baseline, 6 weeks into the experiment, and 12 weeks into the experiment. Analysis. Generalized estimating equations were used to evaluate the changes. Results. Participants showed a greater drop in anxiety levels ($\beta = -2.57, p = .001$) and DBP ($\beta = -7.02, p < .001$) at the 12-week follow-up than did the controls. SBP significantly decreased in the 6-week follow-up and 12-week follow-up tests. The participants in the intervention achieved a greater drop in BMI at the 6-week and 12-week follow-up visits than the controls. The interventions demonstrated decreased average WC at the 6-week and 12-week follow-up visits as compared to the controls. Conclusion. The results highlight the long-term benefits of a TCC program in facilitating health promotion by reducing anxiety and risk factors for cardiovascular diseases.


The aim of this study was to determine the effects of Tai Chi exercise on glucose control, neuropathy scores, balance, and quality of life in patients with type 2 diabetes and neuropathy. A pretest-posttest design with a nonequivalent control group was utilized to recruit 59 diabetic patients with neuropathy from an outpatient clinic of a university hospital. A standardized Tai Chi for diabetes program was provided, which comprised 1 hour of Tai Chi per session, twice a week for 12 weeks. Outcome variables were fasting blood glucose and glycosylated hemoglobin for glucose control, the Semmes-Weinstein 10-g monofilament examination scores and total symptom scores for neuropathy, single leg stance for balance, and the Korean version of the SF-36v2 for quality of life. Thirty-nine patients completed the posttest measures after the 12-week Tai Chi intervention, giving a 34% dropout rate. The mean age of the participants was 64 years, and they had been diagnosed with type 2 diabetes for more than 12 years. The status was significantly better for the participants in the Tai Chi group (n=20) than for their control (i.e., nonintervention) counterparts (n=19) in terms of total symptom scores, glucose control, balance, and quality of life. Tai Chi improved glucose control, balance, neuropathic symptoms, and some dimensions of quality of life in diabetic patients with neuropathy. Further studies with larger samples and long-term follow-up are needed to confirm the effects of Tai Chi on the management of diabetic neuropathy, which may have an impact on fall prevention in this population.


To evaluate the effects of Tai chi exercise on balance, sleep quality, and cognitive performance in community-dwelling elderly in Vinh city, Vietnam. One hundred two subjects were recruited. Subjects were divided randomly into two groups. The Tai chi group was assigned 6 months’ Tai chi training. The control group was instructed to maintain their routine daily activities. The Falls Efficacy Scale (FES), Pittsburgh Sleep Quality Index (PSQI), and Trail Making Test (TMT) were used as primary outcome measures. Participants in the Tai chi group reported significant improvement in TMT (part A) ($F[1, 71] = 78.37, P < 0.001$) and in TMT (part B), ($F[1, 71] = 175.00, P < 0.001$) in comparison with the control group. Tai chi participants also reported better scores in FES ($F[1, 71] = 96.90, P < 0.001$) and in PSQI ($F[1, 71] = 43.69, 9/10
P = 0.001) than the control group. Tai chi is beneficial to improve balance, sleep quality, and cognitive performance of the elderly.

Tai chi and reduction of depressive symptoms for older adults: a meta-analysis of randomized trials.

The aim of the present article was to systematically review the effectiveness of tai chi for reducing depressive symptoms among older adults. Electronic databases were searched through January 2011. Reference lists of systematic reviews and identified studies from the search strategy were also screened. Randomized controlled trials of tai chi compared with waiting list controls in older adults with depressive symptoms measured by a self-report depression rating scale were included. Two authors independently identified eligible studies, extracted data and assessed the included studies for risk of bias. Estimates of depressive symptoms reduction used a random effects model, and the I(2) statistic was applied to examine heterogeneity. Four trials with a total of 253 participants met the inclusion criteria. Two studies were assessed as being of high quality; the remaining two studies were rated as moderate quality. All four studies compared tai chi with a waiting list control group. The pooled standard mean difference for these studies was -0.27 (95% CI -0.52 to -0.02, P=0.03). Tai chi appeared to have a significant impact on reducing depressive symptoms compared with the waiting list control groups. Further research is recommended with larger sample sizes, more clarity on trial design and the intervention, longer-term follow up, and concomitant economic evaluations.