The effect of Tai Chi exercise on blood pressure: a systematic review
Yeh GY, Wang C, Wayne PM, Phillips RS

CRD summary
The review concluded that t’ai chi exercise may reduce blood pressure and serve as a practical adjunct to conventional hypertension management, but that further studies were needed. These conclusions were suitably cautious in reflecting the limited evidence available and appear likely to be reliable.

Authors' objectives
To assess the effect of t’ai chi on blood pressure and hypertension.

Searching
MEDLINE, EMBASE, CAB, Alt HealthWatch, BIOSIS Previews and Science Citation Index were searched. Search dates ranged from 1945 to January 2007. Search terms were reported. Chinese Medical Database, China Hospital Knowledge Database, China National Knowledge Infrastructure and China Traditional Chinese Medicine Database were searched from inception to June 2005. Handsearches of two libraries and of retrieved articles were undertaken. Only studies published in English or Chinese were eligible for inclusion.

Study selection
Clinical studies of t’ai chi that examined long-term (non-acute) blood pressure changes (>1 week) were eligible for inclusion. Studies were of patients with hypertension, coronary heart disease, cardiovascular conditions, chronic rheumatological and dermatological conditions and also of healthy populations. Most of the t’ai chi used was Yang style.

The authors did not state how many reviewers selected studies for inclusion.

Assessment of study quality
Study quality was assessed by two authors independently based on methods used in reports of AHRQ (Agency for Healthcare Research and Quality) evidence-based practice centers. Discrepancies were resolved by discussion.

Criteria were based on different items and gradings for different study designs, but were related to factors such as unbiased selection methods, sample size and description of the intervention and comparison groups. Studies were classified (grouped separately by study design) as A (least bias), B (some bias, but not sufficient to invalidate results) and C (significant bias that may have invalidated results).

The Jadad scale was used to assess randomised controlled trials (RCTs), modified to include a score for blinding for assessors only (rather than participants and investigators). Other scoring items related to methods of randomisation and withdrawals/dropouts.

Data extraction
Magnitude of blood pressure changes and their associated standard deviations (where reported) were extracted for t’ai chi groups by two authors independently.

Methods of synthesis
Studies were pooled narratively, grouped by population type.

Results of the review
Twenty-six studies were included in the review: nine RCTs (n=1,087), 13 Non-randomised controlled and non-controlled studies (n=622) and four observational studies (n=226). Treatment duration ranged from eight weeks to three years (where specified).
Four of the nine RCTs received an A score and two received a B. Eleven of the 13 non-randomised controlled and non-controlled studies received a B, one received an A and one received a C. One of the four observational studies received an A and three received a B. Jadad scores for RCTs ranged from 1 to 4.

**Patients with hypertension (eight studies):** All eight studies (three RCTs) reported statistically significant within-group reductions in mean blood pressure following t’ai chi. Changes in the t’ai chi groups ranged from -7 to -32mmHg (systolic) and -2.4 to -18mmHg (diastolic).

**Patients with cardiovascular conditions (three studies):** One RCT found significant reductions of both systolic (-3mmHg) and diastolic (-2mmHg) blood pressure.

**Patients without cardiovascular conditions (and healthy populations) (15 studies):** The range of blood pressure reductions reported was -4 to -18mmHg (systolic) and -2.3 to -7.5mmHg (diastolic).

No adverse effects were reported.

**Authors’ conclusions**
T’ai chi exercise may reduce blood pressure and serve as a practical adjunct to conventional hypertension management, but further studies are needed.

**CRD commentary**
The review addressed a clear question and was supported by broad but appropriate inclusion criteria. Attempts to identify relevant studies in English or Chinese (which reduced the risk of language bias) were undertaken by searching electronic databases and several other methods. Suitable methods were employed to reduce the risks of reviewer error and bias for the processes of data extraction and assessing study quality; the authors did not report on whether such methods were used to select studies for inclusion. Study quality was assessed and was used in interpretation of the results of the review. Study details were provided, but neither results for comparison groups nor p-values were presented, which made it difficult to interpret individual results. An appropriate narrative synthesis of the data was undertaken. Around half of the studies had fewer than 50 patients.

The authors’ conclusions were suitably cautious in reflecting the somewhat limited evidence available and appear likely to be reliable.

**Implications of the review for practice and research**
**Practice:** The authors stated that t’ai chi may be a safe and effective alternative to conventional exercise programmes (for patients unable or unwilling to engage in other forms of physical activity, or as a bridge to more rigorous activity in frail patients).

**Research:** The authors stated that further adequately powered RCTs were needed. Studies needed carefully defined populations and use systolic and diastolic blood pressure as primary outcomes. The t’ai chi interventions needed to be well-validated to allow meaningful comparisons across studies.

**Funding**
(American) National Institutes of Health National Center for Complimentary and Alternative Medicine.

**Bibliographic details**

**PubMedID**
18401235

**DOI**
Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.