Qigong for hypertension: a systematic review of randomized clinical trials
Lee MS, Pittler MH, Guo R, Ernst E

CRD summary
This well-conducted review concluded that there was some evidence to suggest that qigong may lower systolic blood pressure in patients with arterial hypertension, but that further robust research is required to confirm these findings. These cautious conclusions reflected the poor quality of the included trials and are likely to be reliable.

Authors' objectives
To determine the effectiveness of qigong (Chinese meditative exercises) for the treatment of arterial hypertension.

Searching
The following databases were searched up to August 2006: MEDLINE, AMED, British Nursing Index, CINAHL, EMBASE, PsycINFO, the Cochrane Library, Koreanstudies Information Service System (KISS), DBpia (Korean database), Korea Institute of Science and Technology Information (KISTI), Research Information Centre for Health (RISS), China Academic Journals (CAJ), Century Journals Project (CJP), China Doctor/Master Dissertations, China Proceedings of Conferences Database (CPCD), and Qigong and Energy Medicine Database. Search terms were reported. Reference lists of retrieved articles were scanned along with the authors' own files. Experts were also contacted for further trials. No language restrictions were applied.

Study selection
Randomised controlled trials (RCTs) comparing qigong with any control group in patients with hypertension, were eligible for inclusion in the review.

Included studies were conducted in China, Germany or South Korea. Participants were treated with qigong combined with hypertensive medication in the majority of trials. One trial assessed qigong monotherapy. Four trials did not specify whether any other treatments were used. Control groups included anti-hypertensive drugs alone, exercise, waiting list or progressive muscle relaxant therapy. Where reported, included participants ranged in age from 30 to 80 years, the majority were male and the duration of disease ranged from 0.5 to 32 years. The most commonly reported outcomes in the trials were blood pressure changes and fatal/non-fatal cardiovascular events.

Two reviewers independently assessed each study for inclusion in the review.

Assessment of study quality
Two reviewers independently assessed study quality using the Jadad scale (randomisation, blinding and dropout). Each study was awarded a score of between 0 and 5 points. Given that study blinding was difficult, a point was awarded for blinding if the study assessor was blinded to the treatment assignment. Disagreements were resolved through discussion.

Data extraction
Data for all cause mortality, systolic blood pressure, diastolic blood pressure and lipid profiles were extracted. Mean changes were calculated for continuous outcomes.

Three reviewers independently extracted the study data and disagreements were resolved through discussion.

Methods of synthesis
Homogeneous studies were pooled and weighted mean differences with 95% confidence intervals were calculated using random-effects methods. A correlation of 0.4 was used to input the variance of change, as suggested by the Cochrane Collaboration. The $\chi^2$ test was used to assess the level of statistical homogeneity.

Results of the review
Twelve randomised controlled trials (RCTs) were included in the review (n=1,218 participants). Sample sizes ranged from 39 to 346 participants. The mean Jadad score across all trials was 1.2 (range 0 to 3). None of the trials described allocation concealment or assessor blinding. Only two out of 12 trials reported the method of randomisation used. Sufficient information about trial drop-outs and withdrawals was only described in one trial.

Qigong plus antihypertensive drugs versus antihypertensive drugs alone (seven RCTs): Four trials reported that qigong in combination with antihypertensive drug therapy significantly lowered systolic blood pressure (weighted mean difference -12.1 millimetres of mercury (mmHg); 95% confidence interval (CI): -17.1 to -7.0) and diastolic blood pressure (weighted mean difference -8.5 mmHg; 95% CI: -12.6 to -4.4), compared to treatment with antihypertensive drugs alone. One trial reported that the incidence of stroke (p<0.05%) and mortality (p<0.01) were also significantly lower in comparison with antihypertensive therapy alone.

Qigong plus antihypertensive drugs versus muscle relaxation: One trial that compared qigong with muscle relaxation reported that quality of life scores favoured qigong (p<0.08) but failed to find any statistically significant differences between the trial groups for blood pressure.

Qigong plus versus exercise: Two trials that compared qigong with exercise failed to find any statistically significant differences between the study groups for blood pressure.

Qigong versus waiting list: Two trials that compared qigong with a waiting list control reported a significant lowering of systolic blood pressure (weighted mean difference -18.5 mmHg; 95% CI: -23.1 to -13.9), but significant statistical heterogeneity prevented data for diastolic blood pressure being pooled.

No or very little heterogeneity was detected for any of the pooled outcomes.

Authors' conclusions
There is some limited evidence to suggest that qigong may lower systolic blood pressure, but no firm conclusions can be made without further robust research.

CRD commentary
This review addressed a clear research question but inclusion criteria for study outcomes were not clearly defined. A wide range of electronic databases and other sources were used to identify both unpublished and published studies in any language, which suggested that the risk of publication and language bias was low. Also, attempts were made at each stage of the review process to reduce the risk of reviewer error and bias. Study quality was assessed using published criteria and found to be poor. The authors were also careful to assess statistical heterogeneity and only homogeneous trials were pooled. Overall, this was well-conducted review and the authors' cautious conclusions reflected the poor quality of the included trials and are likely to be reliable.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that further rigorously designed trials are required to confirm the effectiveness of qigong.

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