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Review Article

Internal Qigong for Pain Conditions: A Systematic Review

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Abstract: **The objective of this systematic review was to assess the evidence for the effectiveness of internal qigong as a treatment option for pain conditions. Nineteen databases were searched through to February 2009. Controlled clinical trials testing internal qigong in patients with pain of any origin assessing clinical outcome measures were considered. Trials using any type of internal qigong and control intervention were included. The selection of studies, data extraction, and validation were performed independently by 2 reviewers. Four randomized clinical trials (RCTs) and 3 controlled clinical trials met all inclusion criteria. One RCT suggested no significant difference for low back pain compared with electromyographic biofeedback. Two RCTs failed to show effects of internal qigong in neck pain compared with exercise therapy and waiting list control. One RCT suggested that qigong is inferior to aerobic exercise in patients with fibromyalgia. There are few RCTs testing the effectiveness of internal qigong in the management of pain conditions. Collectively, the existing trial evidence is not convincing enough to suggest that internal qigong is an effective modality for pain management.**

Perspective: ***This review of controlled clinical trials focused on the effects of internal qigong, a self-directed energy healing intervention involving movement and meditation. Collectively, the existing trial evidence is not convincing enough to suggest that internal qigong is an effective modality for pain management. Future studies should be of high quality with particular emphasis on designing an adequate control intervention.***

Key words: *Internal qigong, pain, systematic review.*

Pain is the most common reason for seeking alternatives to conventional medicine.[1] Because it is often difficult to adequately control and treat pain without adverse effects, complementary medicine is more frequently used by patients with more severe pain.[1,10] Frequently used treatments are acupuncture, massage, and mind-body therapies.[1,10]

Qigong (pronounced */chee-gong/*) is an Asian healing art that uses gentle, focused exercises for mind and body to increase and restore the flow of qi energy with the aim of encouraging and accelerating the healing process.[8] Internal and external qigong can be distinguished. Internal qigong is self-directed and involves the use of movements and meditation. It can be performed with or without the presence of a teacher. Two main aspects are involved in qigong practice: controlled breathing with slow body movements as an aerobic exercise and relaxation.[8] External qigong is performed by a trained practitioner using the hands and any part of body to direct qi energy onto the patient. Usually, external qigong is for the beginner and internal qigong for the advanced practitioner.

Several reviews have been published on the effectiveness and current status of research in qigong.[4-6,15,21,22] A systematic review of external qigong for treating pain reported tentatively positive effects on pain.[15] It is conceivable that internal qigong might also be effective. To our knowledge, no systematic review of the subject has yet been published. The aim of this systematic review was to summarize and critically evaluate the evidence for or against the effectiveness of internal qigong as a treatment option for pain conditions.

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Methods

Data Sources

We searched both Western and non-Western medical databases extensively, imposing no language restrictions on the references returned from these searches. The following electronic databases were searched from their respective inception through February 2009: Medline, AMED, British Nursing Index, CINAHL, EMBASE, PsycInfo, The Cochrane Library 2009, Issue 1, 7 Korean Medical Databases (Korean Studies Information, DBPIA, KMbase, Korea Institute of Science and Technology Information, Research Information Center for Health Database, KoreaMed, and National Assembly Library) and 4 Chinese Medical Databases (China Academic Journal, Century Journal Project, China Doctor/Master Dissertation Full text database, China Proceedings Conference Full text database), and the Qigong and Energy Medicine Database (Version 7.4, Qigong Institute, Melon Park, CA). The search terms used were [qigong OR (chi ADJ gong) OR (chi ADJ kung) OR (qi ADJ kung) OR (jih ADJ gong) OR (qi ADJ gong) OR (Korean and Chinese terms for qigong) AND pain]. Experts were contacted and asked to contribute material, particularly unpublished trials. In addition, the references of all located articles, relevant published book chapters, and our departmental files were hand-searched for further articles. Hardcopies of all articles were obtained and read in full.

Study Selection

Prospective, controlled clinical trials of internal qigong for pain of any origin experienced by human patients were included. Trials comparing any type of internal qigong with any type of control intervention were included. We included trials that used internal qigong as an adjunct to conventional treatment. Trials with qigong as a part of a complex (mixed but not add-on) intervention were excluded. Trials that used both internal and external qigong were also excluded. Trials were excluded if pain was not a central symptom of the condition.

Data Extraction

Data were extracted independently by 2 of the authors (M.S.L., M.H.P.), using a specifically designed data extraction form. For each study, trial design, randomization, blinding and handling of dropouts, inclusion and exclusion criteria, details of treatment and control procedures, main outcome measures, and main results were extracted. Discrepancies were resolved by discussion between the 2 reviewers (M.S.L., M.H.P.), and, if needed, by seeking the opinion of the third reviewer (E.E.). There was no disagreement between the 2 reviewers during the data extraction.

Study Quality and Validity Assessment

Major sources of bias in clinical trials of efficacy include lack of proper randomization, lack of proper blinding, and failure to account for all the patients entered into a trial. The Oxford 5-point scoring system, Jadad score,[12,19] uses 3 criteria. Taking into account that qigong practitioners cannot be blinded to the treatment, we used a modification of this scale. Points were awarded for a maximum of 4 as follows: 1 point if the study was described as randomized; 1 point for appropriate randomization method; 1 point deducted if randomization method was inappropriate; 1 point if the evaluator was blinded to intervention; and 1 point for description of withdrawals and dropouts.

Trial validity was assessed on the Oxford Pain Validity Scale (OPVS). The OPVS was designed specially to examine issues regarding validity in pain trials and has been described previously.[23] It uses 8 criteria (16 points total) to be applied to randomized trials. The criteria include blinding, size, statistics, dropouts, credibility of statistical significance and author's conclusions, baseline measures, and outcomes to examine whether the trial might be considered valid or not.[19]

Results

Study Description

The literature searches revealed 358 articles, of which 351 studies had to be excluded (Figure 1). Excluded articles and their reasons for exclusion are summarized in Appendix 1. Four randomized, controlled trials (RCTs) and 3 controlled clinical trials (CCTs) met our inclusion criteria; key data are listed in Table 1.[13,14,16,24,25,29,30] Among the excluded trials were 2 RCTs[7,27] in which pain was not a central symptom of the condition, 3 other RCTs[2,17,18] that used qigong as part of a mixed intervention, and 2 RCTs[11,28] that used internal qigong together with external qigong (the details of these excluded RCTs were summarized in Appendix 2). One of the included RCTs originated from Canada,[30] 1 from Germany,[25] 1 from Australia,[24] and 1 RCT from Sweden,[14] whereas 2 CCTs were conducted in Korea[13,29] and 1 CCT in Taiwan.[16] All of the included trials adopted a 2-armed parallel group design. The treated conditions were low back pain,[30] neck pain,[14,25] fibromyalgia,[24] cancer pain,[16] labor pain,[13] and shoulder pain.[29] The subjective outcome measures were 100-mm visual analogue scales[13,14,24,25,29] and Likert scales.[16,30] The number of qigong sessions ranged from 4 to about 24. The number of supervised interventions ranged from 1 to 7 sessions weekly with a duration of 15 to 60 minutes per session.

Study Quality

The methodological quality of the trials was variable (range, 1 to 3 points; Table 1). Four RCTs[14,24,25,30] described the methods of randomization but none described assessor blinding. Sufficient details of dropouts and withdrawals were described in 3 RCT[14,24,25] and 2 CCTs.[13,29] Three trials[14,24,25] mentioned that the outcomes were analyzed by intention-to-treat analysis. Three trials[14,24,25] reported details about allocation concealment, and all used adequate methods using sealed, opaque envelopes. One RCT was conducted with a group size of less than 10.[29] Scores for OPVS ranged from 6 to 11 (maximum of 16). Points were lost mostly for the lack of

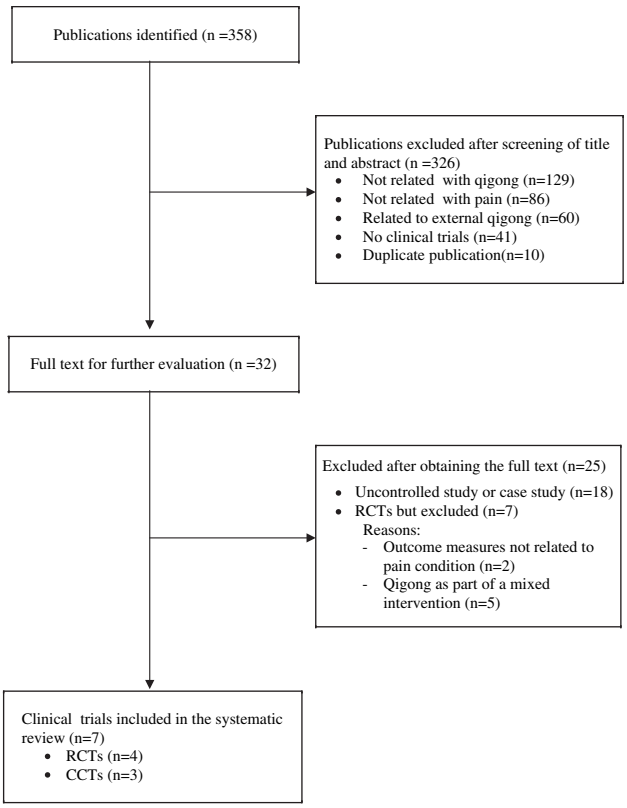

Figure 1. Flowchart of trial selection process. RCT, randomized clinical trial; CCT, non-RCT.

blinding or small sample size. Adverse events were assessed in 2 RCTs.[24,25] One RCT[24] reported none, whereas another RCT[25] reported 5 adverse events by 4 patients including nausea (qigong, 2; exercise, 1), aching muscles (qigong, 2; exercise,2), and muscle tension (qigong, 1; exercise, 2).

Outcomes

One RCT compared the effects of qigong on low back pain with electromyographic biofeedback.[30] Its results suggested no significant pain reduction compared with control. Two RCTs tested qigong in neck pain.[14,25] Both suggested no significant difference in pain relief compared with exercise therapy[14,25] and waiting-list control.[25] The other RCT assessed internal qigong for treating symptoms of fibromyalgia compared with aerobic exercise and suggested that qigong is inferior to aerobic exercise.[24] One CCT[16] suggested that qigong as an adjunct to chemotherapy significantly reduced pain compared with chemotherapy alone in breast cancer patients. Two CCTs compared effects of qigong with no-treatment control.[13,29] One CCT[29] showed favorable effects of qigong on pain reduction in shoulder pain, whereas a further CCT[13] failed to do so in labor pain.

Discussion

Only few controlled trials have tested qigong for pain reduction. The evidence from RCTs of internal qigong for treating pain is far from convincing. Three RCTs[14,25,30] tested the effectiveness of internal qigong compared with other active controls and showed no differences, whereas 1 RCT in patients with fibromyalgia showed effects in favor of aerobic exercise when compared with internal qigong.[24] Whether this reflects in part equivalence of effects is as yet unclear. None of the reviewed trials reported any adverse events. Overall, our findings provide no convincing evidence that internal qigong is beneficial for pain management.

A standard scoring system was used to quantify the likelihood of bias inherent in the studies, based on the description of randomization, blinding, and withdrawals. Blinding of patients who practice internal qigong is impossible. However, assessor blinding could have been performed by a person (not the patient himself) who is unaware of the group assignment. All assessed RCTs failed to include assessor blinding into their trial design and therefore all contain a degree of detection bias. Of the 4 RCTs,[14,24,25,30] 3 RCTs[14,24,25] reported adequate concealment of treatment allocation. Details of dropouts and withdrawals were described in 3 RCTs[14,24,25] and 2 CCTs.[13,29] Three RCTs[14,24,25] used intention-to-treat analysis.

Various internal qigong regimens were compared with a range of control interventions. Qigong did not show superiority for patients with neck pain compared with exercise therapy,[14] which is likely to be beneficial treatment for this condition.[3] Another trial reported that qigong failed to show superiority compared with both exercise therapy and waiting-list control for the same condition.[25] For low back pain, an RCT[30] tested qigong consisting of breathing techniques and meditation compared with electromyographic biofeedback. It failed to show superiority of qigong. However, the sample size of this RCT was small and may have caused a type II error. A further RCT, which assessed qigong for fibromyalgia, failed to show positive effects compared with aerobic exercise. The other 3 CCTs are open to selection bias which, in turn, would render any results uninterpretable.

In the absence of a sufficient number of controlled clinical trials, other types of evidence might be helpful. Uncontrolled trials and case reports imply that qigong reduces pain of several conditions (Appendix 1). Unfortunately, such data are highly susceptible to bias and hence they provide little useful information on the specific effects of qigong as therapeutic intervention for pain management.

A combination of internal qigong with other therapies may be more commonly used when treating patients with pain conditions. Considering this type of trials, we found 5 additional RCTs. One RCT[2] tested the effectiveness of qigong as a part of a treatment package in patients with fibromyalgia, which failed to generate significant differences compared with an education/support control. Another RCT[18] suggested no significant pain reduction compared with normal daily activity. The third RCT[17] compared qigong plus acupuncture with acupuncture alone in migraine and reported significantly higher response rates. There are 2 RCTs that used combinations of internal and external.[11,28] One of these studies[28] compared internal qigong plus external qigong with sham internal qigong and sham external qigong for

Table 1. Key Data of Controlled Clinical Trials of Internal Qigong for Pain

First Author (Year) Country	Condition Age Disease Duration Sample Size*	Study Design Quality Score,[a] [Validity Score],[b] Allocation Concealment	Intervention (Regimen)	Control (Regimen)	Pain Measurement Methods	Main Results	Comments
Zhuo (1983)[30] Canada	Low back pain Range, 23-71 y 2 wk to 49 y 16/16	RCT, open 2, [6], n.r.	Qigong (breathing, and relaxation with tape instruction, 30 min, twice weekly for 2 wk, n = 8) Total 4 sessions	EMG biofeedback (30 min, twice weekly for 2 wk, n = 8)	4-point Likert-type scale	Intergroup: NS (ES = 0.38) Within group: Qigong: $P < .04$ (ES = 1.24) Biofeedback: NS (ES = 0.39)	Small sample size Total treatment frequency is small
van Trott (2009)[25] Germany	Neck pain ≥55 y >6 mo 117/117	RCT, open 3, [9], adequate	Qigong (movement, breathing, and relaxation, 45 min, 24 sessions for 3 mo, n = 38) Total 24 sessions	(A) Exercise (45 min, 24 sessions for 3 mo n = 39) (B) Waiting list (n = 40)	100-mm VAS	Intergroup Qigong vs (A), $P = .69$ (ES = 0.11) Qigong vs (B), $P = .11$ (ES = 0.36) (A) vs (B), $P = .10$ (ES = 0.38) Within group: Qigong: $P = .14$ (ES = 0.34) Exercise: $P = .62$ (ES = 0.11) Waiting-list: $P = .37$ (ES = 0.20)	Intention-to-treat Adverse events 5 adverse events by 4 patients nausea (Q: 2; A: 1), aching muscles (Q: 2; A:2) and muscle tension (Q: 1; A: 2).
Lansinger (2007)[14] Sweden	Neck pain Range,18-65 yrs >3 mo 122/122	RCT, open 3, [11], adequate	Qigong (Biyan method, 14 exercise, movement, breathing, and meditation, 60 min, 1 or 2 times weekly for 3 mo, n = 60), plus recommendation of additional home qigong exercise Total 10-12 sessions	Exercise (Individual adjusted training program, resistant training plus stretching, 60 min, 1 or 2 times weekly for 3 mo, n = 62) Total 10-12 sessions	100-mm VAS	Intergroup: NS (ES = N/A) Within group: author reported significant effects in both groups[†]	Intention-to-treat Total treatment frequency is small

Table 1. Continued

First Author (Year) Country	Condition Age Disease Duration Sample Size*	Study Design Quality Score,[a] [Validity Score],[b] Allocation Concealment	Intervention (Regimen)	Control (Regimen)	Pain Measurement Methods	Main Results	Comments
Stephens (2008)[24] Australia	Fibromyalgia Range, 8-18 y n.r. 30/30	RCT, open 3, [7], adequate	Qigong (movement, 18 posture routine, 30 min, once weekly supervised session and twice weekly unsupervised sessions using a video program, n = 16)	Aerobic exercise (structured aerobic program of cardio-dance and boxing movement, 30 min, once weekly supervised session and twice weekly unsupervised sessions using a video program, n = 14)	100-mm VAS in C-HAQ	Intergroup: $P = .01$ (ES = 0.97) in favor of aerobic exercise Within group: Qigong: NS (ES = 0.08) Aerobic: $P = 0.003$ (ES = 1.25)	Intention-to-treat Adverse events (none)
Lee (2006)[16] Taiwan	Breast cancer Qigong: 44 y (mean), Control: 49 y (mean) n.r. 67/67	CCT 0, [N/A], n.r.	Qigong (movement, 15-60 min, once daily for 21 d, n = 35), plus chemotherapy (n.r.) Total 21 sessions	Chemotherapy (n.r., n = 32)	5-point Likert type scale	Intergroup: $P < .01$ (ES = N/A) Within group: N/A	
Jeong (2006)[13] Korea	Labor pain 20-35 y (range) N/A 76/60	CCT 1, [N/A], n.r.	Qigong (movement, and meditation, 60 min, 2 times weekly for 4 wk, n = 36) Total 8 sessions	No treatment (n = 40)	100-mm VAS	Intergroup: NS (ES = 0.49) Within group: N/A	No baseline pain
Youn (2005)[29] Korea	Shoulder pain n.r., n.r. 50/45	CCT 1, [N/A], n.r.	Qigong (breathing, and movement, 45 min, 3 times weekly for 6 wk, n = 28) Total 24 sessions	No treatment (n = 22)	100-mm VAS	Intergroup: $P < .001$ (ES = 1.82) Within group: N/A	

[a]Quality score: Jadad score (max, 4); [b]Validity score: Oxford Pain Validity Scale; ES, effect size; C-HAQ, Childhood Health Assessment Questionnaire; EMG, electromyogram; N/A, not applicable; n.r., not reported; NS, not significant; VAS, visual analogue scale; *(randomized/analyzed). [†]We could not calculate the ES because the value was expressed as median and ranges.

complex regional pain syndrome. Its results failed to show analgesic effects of real qigong. The second RCT suggested significant pain reduction compared with waiting-list control in patients with fibromyalgia.[11]

The fact that, overall, there is no good trial evidence is in line with 2 different interpretations. Either qigong is ineffective or it was not administered optimally. For instance, the number of treatment sessions could have been too small to generate a significant effect, or the type of qigong or the applied protocol might not have been suitable for treating pain conditions. There are significant differences between the numerous forms of qigong,[4] which poses difficulties in establishing quality standards of treatment. A clear description of the qigong intervention used should be provided together with a description of the level of expertise of the instructors. Another possible interpretation may be that qigong exercise was mostly created for general health and well-being, not as a therapy to reduce pain.

Limitations of our systematic review, and indeed systematic review in general, pertain to the potential incompleteness of the evidence reviewed.[9,20] In this review there were no restrictions in terms of publication language, and a large number of databases were searched. We are therefore confident that our search strategy has located all relevant data on the subject. Further limitations include the paucity and the often suboptimal quality of the primary data. One should note, however, that design features such as placebo or blinding are difficult to incorporate in studies of qigong and that research funds are scarce. These are factors that evidently influence both quality and the quantity of research.

Even though combining internal qigong with conventional therapies may be a more common practice, future RCTs of qigong for pain conditions should adhere to accepted standards of trial methodology. The studies included in this review showed a number of problems that had been pointed out by other reviews on qigong or tai chi, for example, expertise of qigong practitioners, the pluralism of qigong, frequency and duration of treatment, using validated primary outcome measures and adequate statistical tests, and heterogeneous comparison groups.[6,26] Furthermore, even though it is hard to blind subjects to treatment, using assessor blinding and allocation concealment could reduce bias.

In conclusion, currently there are few trials testing the effectiveness of internal qigong in the management of pain conditions. Collectively, the evidence is not convincing enough to suggest that internal qigong is an effective modality for pain management. Future studies should be of high quality with particular emphasis on designing adequate control interventions.

Supplementary Data

Supplementary data accompanying this article is available online at www.jpain.org, www.sciencedirect.com, and at doi:10.1016/j.jpain.2009.06.002. The supplementary data include Appendices 1 and 2.

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Appendix 1. Searched Results of Databases and Their Reason for Exclusion (Title: Internal Qigong for Pain Conditions: A Systematic Review)

No	Search Result	Reason for Exclusion
1	Agish T. Effects of external qigong on symptoms of arteriosclerotic obstruction in the lower extremities evaluated by modern medical technology. Artif Organs 22:707-710, 1998	3
2	Agishi T. Evaluation of therapeutic external qigong from a viewpoint of the western Medicine. J Intl Soc Life Info Sci 14(1):102-103,1996	3
3	Agren MS, Ostenfeld U, Kallehave F, Gong Y, Raffn K, Crawford ME, Kiss K, Friis-Moller A, Gluud C, Jorgensen LN. A randomized, double-blind, placebo-controlled multicenter trial evaluating topical zinc oxide for acute open wounds following pilonidal disease excision. Wound Repair Regen 14:526-535, 2006	1
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6	Aoki T and Aoki W. Materials' emission induced by light and its effect on bio-impedance. J Intl Soc Life Info Sci 15(1), 235-246, 1997	1
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22	Chen G. The curative effect observed for 24 (cancer) cases under my emitted qigong treatment. 2nd Int Conf on Qigong 141, 1989	3
23	Chen HH, Yeh ML, Lee FY. The effects of baduanjin qigong in the prevention of bone loss for middle-aged women. Am J Chin Med 741-747, 2006	2
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No	Search Result	Reason for Exclusion
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149	Lee SW, Mancuso CA, Charlson ME. Prospective study of new participants in a community-based mind-body training program. J Gen Intern Med 19:760-765, 2004	1
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169	Liu S. Treatment and clinical research of hypertension. 4th World Conf Acad Exch Med Qigong 161-162, 1998	2
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171	Lu L, Liu Y, Zhuang Y. The clinical study of coronary heart disease treated by qigong with music. 3rd World Conf Acad Exch Med Qigong 135, 1996	2
172	Lu L. Clinical observation on the treatment of hyperplasia of mammary glands by qigong combined with acupuncture therapy. 6th Int Sym on Qigong 74, 1996	3
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207	Morone NE, Greco CM. Mind-body interventions for chronic pain in older adults: A structured review. Pain Med 8:359-375, 2007	1
208	Morony T. Cystic fibrosis. Prog Phys Ther 1:220-231, 1970	1
209	Nabb MT, Kimber L, Haines A, McCourt C. Does regular massage from late pregnancy to birth decrease maternal pain perception during labour and birth?–a feasibility study to investigate a programme of massage, controlled breathing and visualization, from 36 weeks of pregnancy until birth. Complement Ther Clin Pract 12:222-231, 2006	1
210	Nagura O, Sakai K. A study on the scientification of medical qigong- For the purpose of establishing a preventive medical science. 3rd World Conf Acad Exch Med Qigong 161, 1996	2
211	Nakagawa S. Treatment method towards functional disease of the knee joint. 1st World Conf Acad Exch Med Qigong 146, 1988	1
212	Nishimoto S. Report on changes in brain waves of the frontal lobe and in Ryodouraku measurement data caused by healing with energy-irradiated waters, rock crystal, etc. J Intl Soc Life Info Science 20(2):668-674, 2002	1
213	Nishimoto S. Report on the changing of the autonomic nervous system reducing pain of patients treated by external qi with alpha wave 1/F music. 3rd World Conf Acad Exch Med Qigong 147, 1996	3
214	Nishimoto S. Report on two cases where tumors have disappeared with relief of symptoms by healing with energy-irradiated waters, rock crystal, etc. J Intl Soc Life Info Science 21(1), 151-158, 2003	2
215	Niu X, Yang X, Bo J, Fu C, and Luo Z. Effect of step-leap respiration on the cardiovascular function under the analogous qigong state. 2nd World Conf Acad Exch Med Qigong 84, 1993	1
216	Oh B, Butow P, Mullan B, Clarke S. Medical qigong for cancer patients: Pilot study of impact on quality of life, side effects of treatment and inflammation. Am J Chin Med 36:459-472, 2008	5
217	Omura Y, Lin TL, Debreceni L, Losco BM, Freed S, Muteki T, Lin CH. Unique changes found on the qi gong (chi gong) master's and patient's body during qi gong treatment; their relationships to certain meridians and acupuncture points and the re-creation of therapeutic qi gong states by children and adults. Acupunct Electrother Res 14:61-89, 1989	2
218	Omura Y, Losco M, Omura AK, Takeshige C, Hisamitsu T, Shimotsuura Y, Yamamoto S, Ishikawa H, Muteki T, Nakajima H, Urich C. Common factors contributing to intractable pain and medical problems with insufficient drug uptake in areas to be treated, and their pathogenesis and treatment: Part 1. Combined use of medication with acupuncture, (+)qigong energy-stored material, soft laser or electrical stimulation. Acupunct Electrother Res 17:107-148, 1992	2

Appendix 1. Continued

No	Search Result	Reason for Exclusion
219	Omura Y. Asbestos as a possible major cause of malignant lung tumors (including small cell carcinoma, adenocarcinoma and mesothelioma), brain tumors (i.e. Astrocytoma and glioblastoma multiforme), many other malignant tumors, intractable pain including fibromyalgia, and some cardio-vascular pathology: Safe and effective methods of reducing asbestos from normal and pathological areas. Acupunct Electrother Res 31:61-125, 2006	3
220	Omura Y. Non-invasive 6 minute screening of malignant tumors (including mesothelioma), cardiovascular disease, Alzheimer's disease, or autism: Their safe, effective treatment using one optimal dose of DHEA. Acupuncture Electro-Therapeutics Res 32:127-129, 2007	3
221	Omura Y. Non-invasive quick screening of cancer, cardiovascular disease, Alzheimer's disease and pain and their accurate localization using x-, y-axis laser line scanning of the whole body and new, safe and effective treatments with the selective drug uptake enhancement method. Whole Person Health Summit, 2nd Qigong Summit 58, 2005	4
222	Omura Y. Special sunrise and sunset solar energy stored papers and their clinical applications for intractable pain, circulatory disturbances and cancer: Comparison of beneficial effects between special solar energy stored paper and qigong energy stored paper. Acupunct Electrother Res 29:1-42, 2004	1
223	Omura Y. Storing of qi gong energy in various materials and drugs (qi gongnization): Its clinical application for treatment of pain, circulatory disturbance, bacterial or viral infections, heavy metal deposits, and related intractable medical problems by selectively enhancing circulation and drug uptake. Acupunct Electrother Res 15:137-157, 1990	1
224	Ott MJ. Mindfulness meditation: A path of transformation and healing. J Psychosoc Nurs Ment Health Serv 42:22-29, 2004	1
225	Ou W, Li M. An preliminary exploration into the mechanism of drug cessation by pangu qigong . 4th World Conf Acad Exch Med Qigong 138-139, 1998	2
226	Oulton JL, Hobbs GM, Hicken P. Incentive breathing devices and chest physiopathy: A controlled therapy. Can J Surg 24:638-640, 1981	1
227	Park IK. Quality and quantity study about changes for the chronical low back pain through the qigong training: toward the patient had the transformation after be wounded the first lumbar. Master thesis. Department of Physical Education. Myoungji University. 2002	5
228	Pavek RR. Effects of qigong on psychosomatic and other emotionally rooted disorders. 1st World Conf Acad Exch Med Qigong 150, 1988	2
229	Pflug AE, Murphy TM, Butler SH, Tucker GT. The effects of postoperative peridural analgesia on pulmonary therapy and pulmonary complications. Anesthesiology 41:8-17, 1974	1
230	Pitcock CD, Clark RB. From Fanny to Fernand: The development of consumerism in pain control during the birth process. Am J Obstet Gynecol 167:581-587, 1992	1
231	Potts SG, Lewin R, Fox KA, Johnstone EC. Group psychological treatment for chest pain with normal coronary arteries. QJM 92:81-86, 1999	1
232	Price A, Meah M, O'Shaughnessy T. A pilot study to compare qiqong exercises with conventional exercises in pulmonary rehabilitation [abstract]. Thorax ii67 [P032], 2006	2
233	Qian Junshi, Chang Shaoyong, Qian Jianmin, et al. Cold resistance testing. 4th World Conf Acad Exch Med Qigong 116, 1998.	2
234	Qigong Science Research Group. Observations of the curative effect in cases of chronic atrophic gastritis treated with daoying (inducing) or tuina (releasing) therapy. 1st World Conf Acad Exch Med Qigong 103, 1988	2
235	Qilin. Treating vertigo by qigong acupointing. 2nd Int Conf on Qigong 213, 1989	3
236	Quan F. Observations of effect of qigong and acupuncture in treatment of lumbar sprain. 3rd World Conf Acad Exch Med Qigong 152, 1996	5
237	Rampp T, Michalsen A. [Complementary treatment of pneumonia with pleural effusion]. Forsch Komplement Med 13:116-168, 2006	1
238	Reeve J, Denehy L, Stiller K. The physiotherapy management of patients undergoing thoracic surgery: A survey of current practice in Australia and New Zealand. Physiother Res Int 12:59-71, 2007	1
239	Ren D. Sacred healing sounds. 4th World Congress on Qigong and 4th American Qigong Assoc Conf, 2001	1
240	Reuther I, Aldridge D. Qigong yangsheng as a complementary therapy in the management of asthma: A single-case appraisal. J Altern Complementary Med 173-183, 1998	2
241	Reuther I, Kiesewetter E. Report on qigong research (part 2). Chinesische Medizin 22:204-213, 2007	2
242	Rigner KG, Wilhelmsson S. Physical exercise and rehabilitation after myocardial infarction. Scand J Rehabil Med 2:13-16, 1970	1
243	Ritter C, Aldridge D. Qigong yangsheng as a therapeutic approach for the treatment of essential hypertension in comparison with a western muscle relaxation therapy: A randomised, controlled pilot study. Chinesische Medizin 48-63, 2001	2
244	Robb J. Federally funded Reiki study underway in Washington. Acupuncture Today 05(03), 2004	1

Appendix 1. Continued

No	Search Result	Reason for Exclusion
245	Rosenbaum E, Gautier H, Fobair P, Neri E, Festa B, Hawn M, Andrews A, Hirshberger N, Selim S, Spiegel D. Cancer supportive care, improving the quality of life for cancer patients. A program evaluation report. Support Care Cancer 12:293-301, 2004	1
246	Ryan M, Gevirtz R. Biofeedback-based psychophysiological treatment in a primary care setting: An initial feasibility study. Appl Psychophysiol Biofeedback 29:79-93, 2004	1
247	Ryu H, Jun CD, Lee BS, Choi BM, Kim HM, Chung HT. Effect of qigong training on proportions of t lymphocyte subsets in human peripheral blood. Am J Chin Med 27-36, 1995	2
248	Ryu H, Lee HS, Shin YS, Chung SM, Lee MS, Kim HM, Chung HT. Acute effect of qigong training on stress hormonal levels in man. Am J Chin Med 193-198, 1996	2
249	Saberski L. Relief of intractable low back pain using non-invasive, low level pulsed DC magnetic DC fields - A preliminary report. Whole Person Health Summit, 2nd Qigong Summit 63, 2005	1
250	Sancier KM. Search for medical applications of qigong with the qigong database. J Alt Compl Med 7:93-95, 2001	4
251	Schmitz HST, Pyfer D, Kielwein K, Fimmers R, Klockgether T, U Wl. Qigong exercise for the symptoms of Parkinson's disease: A randomized, controlled pilot study. Movement Disord 543-548, 2006	2
252	Schubert I. Health-promoting factors of quigong yangsheng, part 2: Alleviating musculoskeletal symptoms with qigong exercises. Kranken Gymnastik 56:1892-1901, 2004	4
253	Schwartz GE, Connor M. Spiritual mechanisms of energy healing: Applications of mediumship and after-death communications research. Whole Person Health Summit, 2nd Qigong Summit 63, 2005	1
254	Scordo KA. Mitral valve prolapse syndrome: Interventions for symptom control. Dimens Crit Care Nurs 17:177-186, 1998	1
255	Sha ZG. Chronic pain solutions at the physical, emotional, mental and spiritual levels. 2nd World Congress Qigong 48, 1998	1
256	Shafarman S. Outgrowing back pain, asthma, depression, and other conditions: The somatic paradigm. Whole Person Health Summit, 2nd Qigong Summit 64, 2005	1
257	Shea RA, Brooks JA, Dayhoff NE, Keck J. Pain intensity and postoperative pulmonary complications among the elderly after abdominal surgery. Heart Lung 31:440-449, 2002	1
258	Shen Y. The explanation of embryo breathing. 2nd Int Conf on Qigong 301, 1989	1
259	Shi Y. Research on scapulohumeral periarthritis treated by qigong . 4th World Conf Acad Exch Med Qigong 136-137, 1998	3
260	Shiflett SC. Clinical research in complementary and alternative therapies in cancer: Where's the evidence? First World Symp on Self-Healing and Power of Consciousness 30, 2001	1
261	Shin YI, Lee MS. Qi therapy (external qigong) for chronic fatigue syndrome: Case studies. Am J Chin Med 33:139-141, 2005	2
262	Shu-Xia Z, Hong-Zhang G, Jian Z, Bai-Seng J. Qigong and l-1 straining maneuver oxygen system requirements with and without positive pressure breathing. Aviation Space Environ Med 986-991, 1994	2
263	Silva LM, Cignolini A, Warren R, Budden S, Skowron-Gooch A. Improvement in sensory impairment and social interaction in young children with autism following treatment with an original qigong massage methodology. Am J Chin Med 393-406, 2007	3
264	Simmons D, Chabal C, Griffith J, Rausch M, Steele B. A clinical trial of distraction techniques for pain and anxiety control during cataract surgery. Insight 29:13-16, 2004	1
265	Singh BB, Berman BM, Hadhazy VA, Creamer P. A pilot study of cognitive behavioral therapy in fibromyalgia. Altern Ther Health Med 24:67-70, 1998	1
266	Skoglund L, Jansson E. Qigong reduces stress in computer operators: Complementary therapies in clinical practice 78-84, 2007	5
267	Smith B. The nursing of a patient following lung volume reduction surgery. Nurs Times 101:61-63, 2005	1
268	Songlin H, Qinfang H. 47 cases of cervical spondylopathy treated by qi-conducting massage combined with preventive exercises. China Qigong 7:16, 1996	3
269	Stephens S, Feldman BM, Bradley N, Schneiderman J, Wright V, Singh-Grewal D, Lefebvre A, Benseler SM, Cameron B, Laxer R, O'Brien C, Schneider R, Silverman E, Spiegel L, Stinson J, Tyrrell PN, Whitney K, Tse SM. Feasibility and effectiveness of an aerobic exercise program in children with fibromyalgia: Results of a randomized controlled pilot trial. Arthritis Rheum 59:1399-1406, 2008	Included
270	Sulikowski R. Qigong increases productivity. 3rd World Conf Acad Exch Med Qigong 168, 1996	2
271	Sun J, Yuan R, Yang C. Analysis of 51 cases with coronary heart disease treated by qigong. 1st World Conf Acad Exch Med Qigong 135, 1988	2
272	Sundberg T, Halpin J, Warenmark A, Falkenberg T. Towards a model for integrative medicine in Swedish primary care. BMC Health Serv Res 7:107, 2007	1
273	Taddey JJ. Problems and solutions. TMD patients who are gaggers. Cranio 13:68, 1995	1

Appendix 1. Continued

No	Search Result	Reason for Exclusion
274	Takeshige C, Sato M. Comparisons of pain relief mechanisms between needling to the muscle, static magnetic field, external qigong and needling to the acupuncture point. Acupunct Electrother Res 24:119-131, 1996	3
275	Tekur P, Singphow C, Nagendra HR, Raghuram N. Effect of short-term intensive yoga program on pain, functional disability and spinal flexibility in chronic low back pain: a randomized control study. J Altern Complement Med 14:637-644, 2008	1
276	Tian Yuan. Prevention and cure diseases of the cardiovascular and cerebrovascular system. 4th World Conf Acad Exch Med Qigong 159-161, 1998	2
277	Timmers PC. Qigong for health and healing. 7th Int Sym on Qigong 8-14, 1998	2
278	Tong P. Acupuncture of mixture unity of energy stream. 2nd Int Conf on Qigong 138, 1989	1
279	Tsang HW, Fung KM, Chan AS, Lee G, Chan F. Effect of a qigong exercise programme on elderly with depression. Int J Geriatr Psychiatry 890-897, 2006	2
280	Tsang HW, Mok CK, Au Yeung YT, Chan SY. The effect of qigong on general and psychosocial health of elderly with chronic physical illnesses: A randomized clinical trial. Int J Geriatr Psychiatry 18:441-449, 2003	2
281	Tseng RK. Qigong: An approach to health and longevity. Dissertation Abstracts International: Section B: The Sciences and Engineering 59:1607, 1998	2
282	von Trott P, Wiedemann AM, Ludtke R, Reibauer A, Willich SN, Witt CM. Qigong and exercise therapy for elderly patients with chronic neck pain (QIBANE): A randomized controlled study. J Pain 10:501-508, 2009	Included
283	Vives P, Ossart M, Boulard M, de Lestang M, Perron JM, Dorde T. [Interest of prolonged peridural anaesthesia in the treatment of thoracic injuries (author's transl)]. J Chir (Paris) 117:43-49, 1980	1
284	Wahbeh H, Elsas SM, Oken BS. Mind-body interventions: Applications in neurology. Neurology 70:2321-2328, 2008	1
285	Walter DA. Waking up the gastric bypass patient. Obes Surg 7:374-375, 1997	1
286	Wang CX, Xu DH, Qian YS. [Effect of qigong on preventing hypertensive stroke and its mechanism: Follow up of 242 hypertensive patients for 30 years]. Chin J Gerontol 90-92, 1994	2
287	Wang CX, Xu DH. [Influence of qigong therapy upon serum hdl-c in hypertensive patients]. Zhong xi yi jie he za zhi = Chinese journal of modern developments in traditional medicine / Zhongguo Zhong xi yi jie he yan jiu hui (chou), Zhong yi yan jiu yuan, zhu ban 543-544, 516, 1989	2
288	Wang D, Zhao J, Chen K, Ma K, Zhou G, Lu J, Mao Z, Shong J. The analysis of treatment of gallstone by emitted qi. 2nd Int Conf on Qigong 121, 1989	3
289	Wang F. Reports of treatments of shoulder inflammation by qigong tapping of insertion points and artificial bleeding methods. 2nd Int Conf on Qigong 153, 1989	3
290	Wang J, Li D, Zhao J . Experimental research on compound analgesia by qigong information treating instrument and acupuncture. 2nd Int Conf on Qigong 135, 1989	1
291	Wang S, Wang B, Shao M, Li Z. Clinical study of the routine treatment of cancer coordinated by qigong. 2nd World Conf Acad Exch Med Qigong 129, 1993	2
292	Wang Y. Clinical observation on 30 cases of cancer treated by qigong therapy. 2nd World Conf Acad Exch Med Qigong 131, 1993	3
293	Wang Y. Miraculous qigong for slimming down. 4th Intl Conf on Qigong 30-31, 1995	4
294	Wang Y. Treatment of gastritis with qigong and xinxi water. Analysis of 33 cases. 2nd Int Conf on Qigong 145, 1989	3
295	Wang Z. External - qi of qigong effects on the contents of L - EK and the threshold of pain in the rat . 7th Int Sym on Qigong 60, 1998	3
296	Wang CX, Xu DH, Qian YC, et al. [Effect of qigong on heart-qi deficiency and blood stasis type of hypertension and its mechanism]. [Chinese]. Chung Kuo Chung Hsi I Chieh Ho Tsa Chih 454-458, 1995	2
297	Wen R. Lumbar problems treated by qigong. 4th World Conf Acad Exch Med Qigong 16, 1998	3
298	Wenneberg S, Gunnarsson LG, Ahlstr G. Using a novel exercise programme for patients with muscular dystrophy. Part i: A qualitative study. Disabil Rehabil 26(10):589-594, 2004	5
299	Wenneberg S, Gunnarsson LG, Ahlstr G. Using a novel exercise programme for patients with muscular dystrophy. Part ii: A quantitative study. Disabil Rehabil 595-602, 2004	7(a)
300	Weydert JA, Shapiro DE, Acra SA, Monheim CJ, Chambers AS, Ball TM. Evaluation of guided imagery as treatment for recurrent abdominal pain in children: A randomized controlled trial. BMC Pediatr 6:29, 2006	1
301	Whipple B, Josimovich JB, Komisaruk BR. Sensory thresholds during the antepartum, intrapartum and postpartum periods. Int J Nurs Stud 27:213-221, 1990	1
302	Wiedemann AM, von Trott P, L?dtke R, Willich SN, Witt CM. Randomised, controlled, multicenter pilot study comparing qigong and back school for elderly patients with chronic neck pain. Fosch Komplementarmed. 14:8-9, 2007	Duplicate (282)
303	Wiedemann AM, von Trott P, Ludtke R, Reisszlihauer A, Willich SN, Witt CM. Developing a qigong intervention and an exercise therapy for elderly patients with chronic neck pain and the study protocol. Forsch Komplementmed. 15:195-202, 2008	4

Appendix 1. Continued

No	Search Result	Reason for Exclusion
304	Wirth DP, Chang RJ, Eidelman WS, Paxton JB. Haematological indicators of complementary healing intervention. Complement Ther Med 14-20, 1996	3
305	Wirth DP, Cram JR, Chang RJ. Multisite electromyographic analysis of therapeutic touch and qigong therapy. J Alternative Complement Med (New York, NY) 109-118, 1997	3
306	Witt C, Becker M, Bandelin K, Soellner R, Willich SN. Qigong for schoolchildren: A pilot study. J Alternative Complement Med 41-47, 2005	2
307	Wolsko PM, Eisenberg DM, Davis RB, Phillips RS. Use of mind-body medical therapies. J Gen Intern Med 19:43-50, 2004	1
308	Worthington EL Jr, Martin GA, Shumate M. Which prepared-childbirth coping strategies are effective? JOGN Nurs 11:45-51, 1982	1
309	Wu H. Chinese super power meditation – the experiment, healing effort, and theory of a new technique for training qi-energy_. 2nd Int Conf on Qigong 267, 1989	1
310	Wu H. Qigong exercise and health of elderly. 6th Int Sym on Qigong 54, 1996	2
311	Wu T, Wu J. Increase the immune system naturally. 2nd World Congress Qigong 51, 1998	1
312	Wu T, Wu J. Qigong - Oriental medicine without medication. 2nd World Congress Qigong 52, 1998	4
313	Wu W, Bandilla E, Ciccone D, Wu Y, Shen R. Qigong and late-stage reflex sympathetic dystrophy (RSD). 2nd World Congress Qigong 52, 1998	Duplicate (315)
314	Wu W. Controlled trial shows complex regional pain syndrome responding to qigong training. HealthInform: Essential Information on Alternative Health Care 5(1): 5, 1999	Duplicate (315)
315	Wu WH, Bandilla E, Ciccone DS, Yang J. Effects of qigong on late-stage complex regional pain syndrome. Altern Ther Health Med 5:45-54, 1999	7(b)
316	Xian Shengping, He Kui, Hu Fang. Treatment and nursing of cancer patients with pain. Chin Nursing Res 18, 2005	1
317	Xiong HF, Long YD. [a study on the mechanism of qigong (breathing exercise) in the treatment of coronary heart disease]. Chin J Sports Med 29-34, 1983	2
318	Xu MX. The treatment of wrist swelling pain and dysfunction following distal-ulnar or radial fracture by Wei's maneuvers. J Trad Chin Orthop Traumatol 04, 1993	3
319	Xue H. 50-case study of Jing qigong to correct and cure short-sightedness. 2nd Int Conf on Qigong 118, 1989	2
320	Xue YY, You GX, Wu B, Liu XH, Lu SQ, Xie BS. [Study on anti +gx respiratory maneuver and its training method]. Space Med Med Eng (Beijing) 15:402-405, 2002	1
321	Yan B. Functions of qigong (breathing exercise) in clinical practice. 2nd Int Conf on Qigong 209, 1989	4
322	Yang F. Analysis of 270 cases of hepatitis b with hepatitis B powder in combination with qigong. 4th World Conf Acad Exch Med Qigong 142, 1998	2
323	Yang K, Guo Z, Xu H, Lin H. Influence of electrical lesion of the periaqueductal gray (PAG) on the analgesic effect of emitted qi in rats. 1st World Conf Acad Exch Med Qigong 43, 1988	3
324	Yang K, Xu H, Guo Z, Zhao B, and Li Z. Analgesic effect of emitted qi on white rats. 1st World Conf Acad Exch Med Qigong 45, 1988	3
325	Yang KH, Kim YH, Lee MS. Efficacy of qi-therapy (external qigong) for elderly people with chronic pain. Int J Neurosci 115:949-963, 2005	3
326	Yang S, Shi J, Yang Q, Zheng Z. Experimental research on the braking phenomenon of the upper limbs evoked by qigong waiqi (emitted qi). 3rd Nat Acad Conf on Qigong Science 44, 1990	3
327	Yang Y, Verkuilen J, Rosengren KS, Mariani RA, Reed M, Grubisich SA, Woods JA. Effects of a taiji and qigong intervention on the antibody response to influenza vaccine in older adults. Am J Chin Med 597-607, 2007	2
328	Yang Y, Verkuilen JV, Rosengren KS, Grubisich SA, Reed MR, Hsiao-Wecksler ET. Effect of combined taiji and qigong training on balance mechanisms: A randomized controlled trial of older adults. Medical science monitor. Int Med J Exp Clin Res Cr 339-348, 2007	2
329	Yao Q, Yujun T, Cunzhe Q. Effect of short wave infrared qigong information therapy on chronic active hepatitis. Chin J Infect Dis 64-67, 1986	1
330	Yao S. The application of the needle and the eight methods of Linggui to the qigong theory. 2nd Int Conf on Qigong 242, 1989	4
331	Yennie R. From ancient to modern man, secrets of the body electric. 4th World Conf Acad Exch Med Qigong 223-224, 1998	4
332	Yildirim G, Sahin NH. The effect of breathing and skin stimulation techniques on labour pain perception of Turkish women. Pain Res Manag 9:183-187, 2004	1
333	Yoshimura A, Kitamura T, Suga T, Suzuki M. Clinical effects of AST qi-gong therapy on treatments of ulcerative colitis. J Mind-Body Sci 13(1):15-25, 2004	2
334	Youn HM, Kim MY, Kim YS, Lim JS. Effects of doing gigong exercise on the shoulder pain in women. J Korean Acupunct Moxibustion Soc 22(1):177-190, 2005	included
335	Yu WL, Li XQ, Tang WJ, Li Y, Weng XC, Chen YZ. FMRI study of pain reaction in the brain under state of "Qigong." Am J Chin Med 35:937-945, 2007	5

Appendix 1. Continued

No	Search Result	Reason for Exclusion
336	Yuan Z. Survey of 100 doctors using simulated qigong in the USA. 2nd World Conf Acad Exch Med Qigong 144, 1993	4
337	Yue Z, Chen X, Chang W, Huang Y, Li J. Preliminary observation of 9 cases of Sjogren's syndrome treated mainly by "Kong Jing Gong." 2nd World Conf Acad Exch Med Qigong 140, 1993	2
338	Yuen K. Qigong for the rehabilitation of acute and chronic pain. 3rd World Conf Acad Exch Med Qigong 145, 1996	5
339	Yumiko K. Aesthetic qigong. 4th World Conf Acad Exch Med Qigong 175-176, 1998	5
340	Zacherl H, Benzer H, Domanig E, Lepier W, Navratil J. [Intra- and postoperative care of patients in coronary surgery]. Wien Klin Wochenschr 84:577-580, 1972	1
341	Zauner-Dungl A. [Is qi gong suitable for the prevention of low back pain?]. Wien Med Wochenschr 154:564-567, 2004	4
342	Zhang J, Chen Y, He J, Xian T, Yi Y. Analgesic effect of emitted qi and the preliminary study of its mechanism. 3rd Nat Acad Conf on Qigong Science 37, 1990	3
343	Zhang J, Hu D, Ye Z. Effect of waiqi (emitted qi) on experimental bone fracture in mice. 3rd Nat Acad Conf on Qigong Science 57, 1990	3
344	Zhang LT, Shen FD, Ji ZH. [Clinical study on yigan qigong in the treatment of chronic hepatitis b]. Chin J Integrated Trad Western Med Liver Dis 7-9, 1993	1
345	Zhang WB, Yu WL, Yang YJ. Absence of an analgesic effect of qigong "External qi" In rats. Am J Chin Med 24:39-46, 1998	3
346	Zhang Wenbin Yu Weilin Yang Yuanjing. A preliminary study on the mechanism of qigong anaesthesia. Chin J Integrated Trad Western Med S1, 1998	3
347	Zhang Wenbin Yu Weilin Yang Yuanjing. An investigation on analgesic effect of qigong "external qi" in rats. Acta Universitatis Traditionis Medicalis Sinensis Pharmacologiaeque Shanghai. 01, 1998	3
348	Zhang Y, Huolong Zhengjing - Gong (Fire-Dragon Qigong). 4th World Conf Acad Exch Med Qigong 241-242, 1998	2
349	Zhang Y. Immortal five-element miraculous pills. 4th World Conf Acad Exch Med Qigong 242-243, 1998	1
350	Zhao M, He M, Li S. Studies of dynamic meridian transmission of qi-circulation therapy and its clinical effect. 3rd World Conf Acad Exch Med Qigong 124, 1996	3
351	Zhao M. Channel phenomenon research on the qigong condition (1). 3rd Nat Acad Conf on Qigong Science 109, 1990	4
352	Zhou D, Li Z, Zhang Ji. An experimental observation on the effect of qigong on improvement of body flexibility. 2nd Int Conf on Qigong 111, 1989	2
353	Zhou HZ, Li HZ, Liu YY. [The effect of 'qigong' training on the rheoencephalogram]. Chin J Sports Med 55-56, 1993	2
354	Zhu D. A preliminary study on therapeutic effects of qigong on patients with low back pain. Journal of Zhongshan Medical College. 6(2):41-45, 1985	5
355	Zhuo DH, Dighe J, Basmajian JV. EMG biofeedback and chinese "Chi kung": Relaxation effects in patients with low back pain. Physiother Canada 35:13-18, 1983	included
356	Ziemer MM. Does prepared childbirth mean pain relief? Top Clin Nurs 2:19-26, 1980	1
357	Ziemer MM. Effects of information on postsurgical coping. Nurs Res 32:282-287, 1983	1
358	Zumfelde HeC. Qigong yangsheng in pain therapy. Deutsche Zeitschrift fur Akupunktur 47:18-24, 2004	4

1. Not related to qigong; 2. not related to pain; 3. related to external qigong; 4, not a clinical trial (comment, testimonials, experience, survey); 5. uncontrolled trials or case report or case series; 6. nonrandomized clinical trials; 7. RCT not fit on the inclusion criteria (a, not pain condition but include pain outcome; b, part of a mixed intervention).

Appendix 2. Detailed of Excluded Randomized Clinical Trials

First Author (Year)	Condition Sample Size (randomized/analyzed)	Study Design Quality Score,[a] [Validity Score], Allocation Concealment	Intervention (Regimen)	Control (Regimen)	Pain Measurement Methods	Main Results	Comments
Cheung (2005)[20]	Hypertension 91/88	Parallel open 3, [10], adequate	Qigong (2 h, twice weekly for 16 wk, n = 47)	Exercise (2 h, twice weekly for 16 wk, n = 44)	MOS SF-36 bodily pain score	Intergroup: NS (ES = 0.25) Within group: N/A	Body pain improved in both groups but there was no significant difference between qigong and exercise group. No pain condition
Wenneberg (2004)[21]	Muscular dystrophy 36/31	Parallel, AB 4, [9], n.r.	Qigong (n.r., total 9 group meeting , n = 18), plus home-based qigong (3 mo) Total 9 sessions	Waiting list (n = 18)	SF-36 bodily pain score	Intergroup: NS (ES = 0.3) Within group: Qigong: NS (ES = 0.23) Control: NS (ES = 0.11)	There was no significant difference in effects on pain between groups. No pain condition
Astin (2003)[22]	Fibromyalgia 128/65	Parallel, AB 4, [12], n.r.	Mindfulness meditation combined with qigong (2.5 h, once weekly for 8 wk, n = 64) Total 8 sessions	Education/support (2.5 h, once weekly for 8 wk, n = 64)	MOS SF-36 bodily pain score	Intergroup: NS (ES = −0.1) Within group: Qigong: NS (ES = 0.46) Control: $P < .04$ (ES = 0.52)	Sample size was calculated Large dropout (39%) Total treatment frequency is small Qigong was embedded as part of treatment
Liao (1997)[23]	Migraine 120/120	Parallel open 1, [5], n.r.	Qigong (n.r., n = 60), plus acupuncture n.r.	Acupuncture (n = 60)	Respond rate	$P < .03$ (ES:N/A)	No information of frequency Qigong was embedded as part of treatment
Mannerkorpi (2004)[24]	Fibromyalgia 36/36	Parallel, AB 3, [9], n.r.	Body awareness therapy (1.5 h, including 20 min qigong once weekly for 3 mo, 14 sessions in total, n = 19) Total 9 sessions	Normal daily activity (n = 17)	Fibromyalgia Impact Questionnaire (pain subscale: 10-point score)	Intergroup: NS (ES = N/A) Within group: Qigong: NS (ES = N/A) Control: $P < .02$ (ES = N/A)	Small sample size Qigong was embedded as part of treatment
Haak (2007)[25]	Fibromyalgia 57/56	Parallel open 2, [8], n.r.	Group internal qigong (20 min, 9 group session), plus home-based internal qigong (20 min 2 times daily, n = 29) and external qigong (2 times) Total 9 sessions	Wait-list control (n = 28)	7 points Likert-type scale	Intergroup: $P < .05$ (ES = 0.63) Within group: Qigong: $P < .01$ (ES = 0.70) Control: NS (ES = 0.14)	Total treatment frequency is small Internal qigong plus external qigong

Appendix 2. Continued

First Author (Year)	Condition Sample Size (randomized/ analyzed)	Study Design Quality Score,[a] [Validity Score], Allocation Concealment	Intervention (Regimen)	Control (Regimen)	Pain Measurement Methods	Main Results	Comments
Wu (1999)[26]	Complex regional pain syndrome 26/21	Parallel, SB 4, [9], n.r.	Qigong instruction and external qigong by real master and real qigong (40 min, twice weekly for 3 wk, n = 13), plus home-based real qigong (7 weeks) Total 6 sessions	Similar instructions by sham master and simulated internal qigong (40 min, twice weekly for 3 weeks, n = 13), plus home-based sham qigong (7 weeks)	100-mm VAS	Intergroup: NS (ES = 0.39) Within group: Qigong: NS (ES = 0.03) Control: NS (ES = 0.41) Acute effects Qigong: NS (ES = 0.40) Control: NS (ES = 0.13) Intergroup:NS (ES = 0.49)	Small sample size Total treatment frequency is small Internal qigong plus external qigong

[a]Quality score: Jadad score (max 5); MED, mean estimated difference; ES, effect size; AB, assessor blind; N/A, not applicable; n.r., not reported; NS, not significant; SB, subject blind; VAS, visual analog scale.