

## An Evidence-based Review of Qi Gong by the Natural Standard Research Collaboration

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### Abstract

The objective of this study was to evaluate the scientific evidence on Qi gong, including expert opinion, folkloric precedent, history, pharmacology, kinetics/dynamics, interactions, adverse effects, toxicology, and dosing. This review serves as a clinical support tool. Electronic searches were conducted in 10 databases, 20 additional journals (not indexed in common databases), and bibliographies from 50 selected secondary references. No restrictions were placed on the language or quality of the publications. All literature collected pertained to efficacy in humans, dosing, precautions, adverse effects, use in pregnancy and lactation, interactions, alteration of laboratory assays, and mechanisms of action. Standardized inclusion and exclusion criteria were used for selection. Grades were assigned using an evidence-based grading rationale. The present study reports an abridged version of the complete review (published at [www.NaturalStandard.com](http://www.NaturalStandard.com)) discussing the application of Qi gong in health practice. Evaluation of the literature has revealed a small body of evidence supporting the use of Qi gong as an adjunct to conventional therapy in the management of hypertension. Research concerning Qi gong's efficacy in a number of other health indications remains inconclusive.

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### SYNONYMS/RELATED THERAPIES

AST Chiro, chi, Chi Gong, Chi Kung, Chinese medicine, Chun Do Su Bup, Daoyin-Tuna Qi gong, external Qi gong, Falun gong, hanyu pinyin, healing touch, hexiangzhuang (flying crane) Qi gong, imagery, internal Qi gong, meditation, Nei-Gong, Pa Tuan Jin, Pai Jer Tsuh Jih Gong, Qi gong, Qi gong emitted external Qi (QEQ), Qi gong Waiqi, Qi gong Yangsheng, Qi gongizations, Reiki, tai chi, Therapeutic Touch, traditional Chinese medicine, visualization, Wai Qi Fa Gong, walking Qi gong, Yan Jing Yi Shen Gong, Chan-Chuang qi-gong therapy.

### CLINICAL BOTTOM LINE

#### Brief Background

Qi gong is one modality of traditional Chinese medicine (TCM) believed to be at least 4,000 years-old. Written records referring to Qi and its effects are thought to be as old as 3,300

years (Shang dynasty oracle bones, Zhou dynasty inscriptions). The therapy is based on the traditional Chinese belief that the human body contains a network of energy pathways through which vital energy, called Qi (also called *chi* or *vital energy*) circulates. In Mandarin Chinese, Qi gong means breath work/ technique. Qi gong is the art of managing the breath to achieve and maintain good health, and especially in the martial arts, to enhance the leverage and stamina of the body in coordination with the physical process of respiration.

Qi gong is an umbrella term that subsumes a variety of energy-based healing practices based on Taoist philosophy and principles of Chinese medical theory. There are reported to be several thousand schools of Qi gong practice in its long history in China.

Martial arts is derived from Qi gong, and Qi gong is considered the foundation of the popular practice of tai chi. Qi gong puts a greater emphasis on internal processes, such as medita-

tion, visualization, and breathing, than tai chi, which emphasizes outward movement. However, there is much overlap in techniques and principles.

There are 2 main types of Qi gong practice: internal and external. Internal Qi gong is the self-directed practice of techniques used to cultivate the circulation Qi throughout the practitioner's energy system. The practices involve meditation, subtle movement, visualization, and breathing techniques. External Qi gong is an interpersonal healing practice in which a practitioner projects Qi into another person in order to promote the recipient's health or circulation of Qi.

Traditionally, Qi gong has been practiced regularly to promote health. In China it is common to see lay people in public parks practicing Qi gong in groups or alone, similar to the common public practice of tai chi.

Because Qi gong is a historic cultural phenomenon, there is no single standardized approach to training or credentialing. Many lineages are represented and promoted by individuals who, by consensus, are deemed "masters" based on years of experience and demonstrated abilities.

Today, millions of people around the world regularly practice Qi gong to maintain their health. Qi gong and related disciplines are still associated with the martial arts and meditation that was taught by Taoists, Buddhist monks, martial artists, and their students. Qi gong, a practice that was once closely guarded, is now widely available to the general public both in China and around the world.

The strongest evidence for the use of internal Qi gong is as an adjunct therapy for the treatment of hypertension, and less strong but fair evidence for the use in the management of anxiety associated with pain.

A number of other indications are under investigation, such as atherosclerosis, angina pectoris, immune deficiencies, gastritis, cancer, diabetes, Parkinson's disease, attention deficit hyperactivity disorder, and cardiopulmonary endurance, although for these, there is currently inadequate evidence for or against use. Qi gong has also been suggested as a possible treatment for kidney diseases; however, research is currently lacking in this area.

### **Historical or Theoretical Uses which Lack Sufficient Evidence**

Addiction, anti-aging, anticoagulant, anxiety, asthma, back pain, cardioprotection, cardiovascular diseases, congestive heart failure, depression, endurance (pilot), gastrointestinal disease, headache, health and wellness, heart attack prevention, heart disease, heart rate variability, improved sleep, improved workplace efficiency, kidney disease, liver disease, mania, mental illnesses, multiple sclerosis, neurological disorders, peripheral vascular disease, psychosis, respiration, stroke prevention, suicide prevention, substance abuse, well-being.<sup>1</sup>

### **Strength of Expert Opinion and Historic/Folkloric Precedent**

In traditional Chinese medicine (TCM), Qi gong is considered beneficial for a large variety of medical conditions. Many practitioners believe there is a role for Qi gong in treating chronic

conditions (e.g. cancer, chronic fatigue syndrome), osteoporosis, hypertension, gastric ulcers, and asthma. Most Western healthcare professionals, many practitioners of traditional Chinese medicine, and the Chinese government view Qi gong as a set of breathing and movement exercises, with many possible benefits to health through stress reduction and exercise.

Internal Qi gong is cost effective and actively engages the patient in his or her own healthcare. It is considered to be safe in the general population when practiced in moderation, and it may provide mental, emotional, and physical health benefits as an adjunct treatment for a wide range of conditions.

Most references to the practice of Qi gong refer to internal Qi gong (the self-healing practice). External Qi gong (the projection of Qi by one person to another) is an uncommon practice, and it is considered to be an ability of people regarded as Qi gong masters.

In China, Qi gong is regarded as an efficacious intervention for cancer. In Shanghai there is a hospital devoted to treating cancer with Qi gong methods, and most hospitals include Qi gong (both internal and external) as part of their approach to integrative care.

Qi gong holds many parallels to Western behavioral medicine in terms of its employment of visualization, meditation, and breathing exercises, as well as its reliance on regular practice. As with other mind/body and behavioral self-help practices, the benefits of Qi gong are believed to require daily practice to accrue.

One of the major benefits of Qi gong practice may be induction of the relaxation response.

Some experts believe that the practice of Qi gong can selectively enhance drug uptake although this remains to be scientifically proven.<sup>2</sup>

Qi gong is also claimed to influence the flow of Qi. Internal Qi gong involves deep breathing, concentration, and relaxation techniques used by individuals for themselves. External Qi gong is performed by "Qi gong masters" who claim to be able to cure many different medical conditions with energy released from their fingertips. However, current research has not provided evidence of paranormal powers and has found some evidence of deception.

### **Brief Safety Summary**

**Likely Safe:** For all populations and medical conditions. Qi gong is generally reported to be safe in the general population when practiced according to standard moderate principles and when learned under the guidance of a qualified teacher. However, Qi gong should not delay the time of diagnosis or replace more established treatments.

**Possibly Unsafe:** Unguided exercises may exacerbate symptoms in some patients with mental disorders.<sup>3</sup>

### **DEFINITION AND DESCRIPTION OF TECHNIQUES**

**Definition:** Qi gong is a major branch of Chinese medicine that denotes methods used to cultivate, regulate, and harness Qi (vital energy, life force) for general self-preservation and health,

healing, self-defense, longevity, and spiritual development.<sup>4</sup> Qi gong may be defined as “the way of working with life energy.” There are 3 branches of Qi gong: medical (used for healing), spiritual (for self-awareness), and martial art (for self-protection). Qi gong practice is by definition, harmonious with the natural rhythms of time and season, and may be practiced daily for health maintenance and disease prevention. Medical Qi gong is an active (internal) or passive (externally applied Qi) non-invasive practice or procedure that takes 5 steps in the healing process: meditation, cleansing, strengthening and recharging, circulating, and dispersing stagnated Qi (chi). Specific movements, meditations, and sounds are used for each step.

### Types of Therapies

- **General:** There are many different styles of performing Qi gong, and the Chinese government has reported more than 5,000 types.
- **Internal Qi gong** employs prescribed postures and sequences of visualization, breathing techniques, and movements as a self-healing or health-promotion practice. It is a form of mind/body and behavioral medicine that is completely dependent on frequency and duration of practice. Individuals receive instruction in techniques and then may practice on their own or with others.
- Many techniques involve simply holding a prescribed posture, which, when accompanied by meditation, imagery, and breathing techniques, is believed to facilitate the circulation of energy through the meridians and energy centers. The posture may be either standing or sitting. Some methods involve stationary holding of the posture, while others involve prescribed movements. In all cases, the mental intention is to cultivate the circulation of Qi (chi or vital energy) through the practitioner.
- Vocal sounds are used in some techniques. Specific sounds are believed to be associated with specific meridians or organ systems as defined in Taoist medical theory. Vocalization of the sounds (called “the 6 healing sounds”) is believed to aid the circulation of energy through the specific organ networks.
- Bone marrow Qi gong is a form of internal Qi gong which comprises specific techniques targeting the circulation of Qi through the bone marrow, to strengthen the blood and immune system.
- One paper qualitatively reviews 2 complementary therapies; Qi gong and educational kinesiology (EK).<sup>5</sup> Authors suggest that Qi gong and EK may be united through a qualitative convergence and a shared underlying concept. The authors hypothesize that a coherent rationale can be formed through this conceptual synthesis and propose that to some extent Qi gong movements and EK can be considered to work in unison with each other. The logical synthesis of these 2 therapies is being presented to identify Qi gong movements with concepts of brain gymnastics and also to explain how this new construct can be developed and implemented into practice. When verified,

authors conclude this hypothesis will allow individuals to better understand Chinese health exercises from the modern science perspective such as neuroanatomy, neurophysiology, and psychoneuroimmunology.

- **External Qi gong** is the delivery of Qi stimulation by a healer or practitioner to a recipient, to influence circulation of Qi and the wellbeing in the recipient. This is usually done from several inches away from the recipient, with the practitioner sending Qi via the palms of the hands or the fingers pointed at the recipient.
- **Medical Qi gong** is the application of either internal or external Qi gong for healing from specific illness. There are many traditions of medical Qi gong. A typical practice might include 5 steps: meditation, cleansing, recharging/strengthening, circulating, and dispersing Qi. Each step includes specific exercises, meditations, and sounds.

### Standardization

Qi gong studies vary widely in “dosing” (frequency and duration) of the interventions. Studies in internal Qi gong vary in how frequently subjects are told to practice, the duration of each session, duration of the intervention phase of the study, and subject compliance with the instructions. In terms of internal Qi gong, most training prescribes daily practice for 20 minutes or more on an ongoing basis to attain health benefits. Studies in external Qi gong also vary widely in number of sessions delivered, intervals between sessions, duration of each session, and duration of the intervention phase of the study.

### Adverse Effects/Precautions/Contraindications

#### Adverse Effects/Post-Market Surveillance

**General:** Qi gong is generally considered to be safe in most people when learned from a qualified instructor. In theory, underlying psychiatric disorders may worsen with unsupervised internal Qi gong practice. The theoretical basis for this would be that an increased circulation of Qi could induce the release of repressed emotions or thoughts. However, there is no documentation of such occurrences. In cases of potentially serious conditions, Qi gong should not be used as the only treatment instead of more proven therapies, and it should not delay the time it takes to see an appropriate healthcare provider.

Abnormal psychosomatic responses or mental disorder may be induced when Qi gong is practiced inappropriately, excessively, or when practiced unguided in predisposed individuals.

**Dermatologic:** Delayed cutaneous hypersensitivity reactions have been reported in 16 Qi gong trainees. Maximal antigen response time was faster (peak at 24 hour vs. 48 hour) and response antigen number higher ( $P<0.01$ ) in trainee group compared to control group.<sup>6</sup>

**Psychiatric:** Chinese psychiatric literature describes a self-limiting syndrome, “Qi gong induced psychosis,” characterized by the appearance of auditory hallucinations and delusions after the initiation of Qi gong practice. This condition typically resolves itself after cessation of Qi gong.<sup>7</sup> A psychotic reaction has been reported in a Chinese American Woman.<sup>8</sup> In one study,

62% of abnormal psychological reactions to Qi gong practice were in patients with pre-existing mental disorders of varying degrees, and disease onset appeared after beginning exercises.<sup>9</sup> Reactions may take form of emotional disturbances, depression, anxiety, neurosis, or schizophrenia. Qi gong-triggered disorders are usually transient and normalize after practice is terminated.<sup>10</sup> One case report describes a 57-year-old Chinese-American man with no previous psychiatric history who developed auditory hallucinations and delusions following intensive Qi gong practice.<sup>11</sup> In one case report, a male patient developed an acute and transient psychosis with polymorphic symptomatology after meditating.<sup>12</sup> There have been other case reports that have dealt with either a relapse of a pre-existent psychotic disorder or with a brief psychotic reaction in patients without a psychiatric history.<sup>13</sup> Another report of abnormal psychiatric state of Qi gong deviation exists.<sup>14</sup>

**Precautions/Warnings/Contraindications:** Unguided exercise (in absence of teacher) should be used cautiously in patients with mental disorders or in patients not healthy enough for certain exercises per their medical doctor.<sup>15</sup>

**Pregnancy & Lactation:** One study found that Qi gong relaxation exercise was safe and 90% effective in treating pregnancy-induced hypertension (PIH), in women who exercised 3 times daily until labor. However, Qi gong should be used cautiously in this population, as there is limited evidence of safety in pregnant or breastfeeding women.<sup>16</sup>

## Review of the Evidence: Discussion

### Problems in Research

**Internal Qi gong:** There are many varieties of training and instruction in internal Qi gong, and there is no standardization. Different teachers, by virtue of their own idiosyncratic differences in training and experience, may even teach techniques which are described or labeled with the same terms differently. Intervention studies employing instruction in internal Qi gong must describe in great detail the approach used, which still may not be replicable by other researchers.

Studies in internal Qi gong are subject to the same challenges and limitations of other mind/body self-healing techniques such as meditation, imagery, and relaxation training. Outcomes are highly dependent on compliance and “dosing.” Blinding is not possible, so outcomes must be compared to those of usual care or other interventions.

**External Qi gong:** Like internal Qi gong, there are many approaches to external Qi gong and no standardization. Also, external Qi gong is highly subject to individual differences of practitioners who deliver the intervention in terms of skill levels, experience, background of training, and interpersonal qualities that may influence the recipient’s responses and receptivity.

Research with external Qi gong is subject to the same limitations as research with Reiki, Therapeutic Touch, Healing Touch, and other practitioner-delivered forms of energy medicine. Studies that employ multiple practitioners are needed to

produce evidence about what might be expected from practitioners in general. However, no studies have yet been published employing multiple practitioners. Thus the existing studies present data on single practitioners, which may not be representative of other practitioners.

**“Dosing”:** Qi gong studies vary widely in dosing (frequency and duration) of the interventions. Studies in internal Qi gong vary in how frequently subjects are told to practice, the duration of each session, duration of the intervention phase of the study, and subject compliance with the instructions. Studies in external Qi gong also vary widely in number of sessions delivered, intervals between sessions, duration of each session, and duration of the intervention phase of the study.

### Challenges in Research

**Placebo control:** Patient-rated differences (intelligence, competence, wisdom, insight, power) are not always distinguished between actual and simulated Qi gong masters. The “placebo effect” has been found to be beneficial in some circumstances.<sup>17</sup>

**Study sizes:** To date, study populations have been small.

**Technique:** In external Qi gong healing, direct healing effect (Qi emission) varies from one master practitioner to another. In internal Qi gong healing:

1. Persistent practice may be required for effects.<sup>18</sup>
2. Crossover design may not accurately assess technique, as it assumes that once the active agent is removed, then the patient will revert to a previous state. In Qi gong, the assumption is that the person learns at each stage and these learned abilities, however small, do not revert to their original state.<sup>19</sup>
3. Double-blind design may be inappropriate to assess technique, as people exercising Qi gong are active in their treatment, and masters are aware of what they are teaching.<sup>20</sup>

**Definitions:** A clearly defined Qi gong style technique would be useful for clinical decision-making, a large variety of styles and techniques are used in practice and in clinical trials.

**Recruitment:** In the United States, recruitment may be negatively affected due to patient bias, prejudice, or fear. Educated physicians who show knowledge and approval to these techniques may overcome this difficulty.

### Evidence for Specific Medical Conditions

#### Hypertension

**Summary:** Several studies suggest that internal Qi gong, particularly when combined with conventional medication, may be an effective strategy for reducing hypertension. Data are sufficient to recommend internal Qi gong as a self-help adjunctive activity with medical treatment of hypertension. More studies are needed to clarify optimal dosage (frequency x duration of practice) and explore the role of individual differences, to aid in determining realistic expectations. There is good evidence from one controlled study, one case series, and one cohort analysis to support the use of Qi gong as an adjunct therapy in the treatment of hypertension. A randomized controlled trial of adequate statistical power would strengthen this case.

- Ospina et al conducted a review to assess and synthesize the state of research on a variety of meditation practices, including: the specific meditation practices examined; the research designs employed and the conditions and outcomes examined; the efficacy and effectiveness of different meditation practices for the 3 most studied conditions; the role of effect modifiers on outcomes; and the effects of meditation on physiological and neuropsychological outcomes.<sup>21</sup> Comprehensive searches were conducted in 17 electronic databases of medical and psychological literature up to September 2005. Other sources of potentially relevant studies included hand searches, reference tracking, contact with experts, and gray literature searches. A Delphi method was used to develop a set of parameters to describe meditation practices. Included studies were comparative, on any meditation practice, had more than 10 adult participants, provided quantitative data on health-related outcomes, and published in English. Two independent reviewers assessed study relevance, extracted the data and assessed the methodological quality of the studies. Five broad categories of meditation practices were identified (mantra meditation, mindfulness meditation, yoga, Tai Chi, and Qi gong). Characterization of the universal or supplemental components of meditation practices was precluded by the theoretical and terminological heterogeneity among practices. Evidence on the state of research in meditation practices was provided in 813 predominantly poor-quality studies. The 3 most studied conditions were hypertension, other cardiovascular diseases, and substance abuse. Sixty-five intervention studies examined the therapeutic effect of meditation practices for these conditions. Meta-analyses based on low-quality studies and small numbers of hypertensive participants showed that Transcendental Meditation, Qi gong, and Zen Buddhist meditation significantly reduced blood pressure. Yoga helped reduce stress. Yoga was no better than mindfulness-based stress reduction at reducing anxiety in patients with cardiovascular diseases. No results from substance abuse studies could be combined. The role of effect modifiers in meditation practices has been neglected in the scientific literature. The physiological and neuropsychological effects of meditation practices have been evaluated in 312 poor-quality studies. Meta-analyses of results from 55 studies indicated that some meditation practices produced significant changes in healthy participants. According to the review authors, future research on meditation practices should be more rigorous in the design and execution of studies and in the analysis and reporting of result.
- Cheung et al randomized 88 patients with mild essential hypertension to Guolin Qi gong or conventional exercise for 16 weeks.<sup>22</sup> The main outcome measurements were blood pressure, health status (SF-36 scores), and Beck Anxiety and Depression Inventory scores. In the Qi gong group, blood pressure decreased significantly from 146.3+/-7.8/93.0+/-4.1 mmHg at baseline to 135.5+/-10.0/87.1+/-7.7 mmHg at week 16. In the exercise group, blood pressure also decreased significantly from 140.9+/-10.9/93.1+/-3.5 mmHg to 129.7+/-11.1/86.0+/-7.0 mmHg. Heart rate, weight, BMI, waist circumference, total cholesterol, renin and 24-hour urinary albumin excretion significantly decreased in both groups after 16 weeks. General health, bodily pain, social functioning, and depression also improved in both groups. No significant differences between Qi gong and conventional exercise were found. The authors conclude that Guolin Qi gong and conventional exercise have similar effects on blood pressure in patients with mild hypertension.
- Lee et al randomized 36 adults with hypertension to a Qi gong group or a wait-listed control group.<sup>23</sup> Blood pressures decreased significantly after 8 weeks of Qi gong, and levels of total cholesterol (TC), high-density lipoprotein (HDL), and Apolipoprotein A1 (APO-A1) were changed significantly in the Qi gong group post-treatment compared with before treatment. The authors conclude that Qi gong acts as an antihypertensive and may reduce blood pressure by the modulation of lipid metabolism. However, an inappropriate randomization method was used (assignment based on geographic origin) and drop-outs were not described.
- Lee et al randomized 36 adults with hypertension to either a waiting list control or a Qi gong group that practiced two 30-minute Qi gong programs per week for 8 consecutive weeks.<sup>24</sup> Systolic and diastolic blood pressure was significantly reduced in members of the Qi gong group after 8 weeks of exercise. Significant improvements in self-efficacy and other cognitive perceptual efficacy variables were also documented in the Qi gong group compared to controls.
- Lee et al randomized 58 patients with hypertension to either a Qi gong group (N=29), or a wait list control group (N=29).<sup>25</sup> In response to 10 weeks of Qi gong, systolic blood pressure (SBP), diastolic blood pressure (DBP), and rate pressure product (RPP) were decreased significantly. There was a significant reduction of norepinephrine, epinephrine, cortisol, and stress level in the Qi gong group. The authors conclude that Qi gong may reduce blood pressure and catecholamines via stabilizing the sympathetic nervous system.
- Lee et al randomized 58 patients with hypertension to either a Qi gong group (N=29), or a control group (N=29).<sup>26</sup> Systolic blood pressure and diastolic blood pressure decreased significantly in the Qi gong group such that both became significantly lower after 10 weeks in the Qi gong than in the control group. Also, there was a significant reduction of norepinephrine, metanephrine, and epinephrine compared to baseline values in the Qi gong group. The ventilatory functions, forced vital capacity and forced expiratory volume per sec, were increased in the Qi

gong group but not the control. The authors conclude that Qi gong may stabilize the sympathetic nervous system, is effective in modulating levels of urinary catecholamines and blood pressure positively, and improves ventilatory functions in mildly hypertensive middle-aged patients.

- Li et al studied 45 patients with hypertension who were receiving Traditional Chinese Medicine treatment.<sup>27</sup> 31 patients also received external Qi gong treatments while 14 received nifedipine therapy. Plasma 6-K-PGF1 alpha was increased and TXB2 as well as TXB2/6-K-PGF1 alpha ratio were decreased in all subjects ( $P < 0.05$ ). The authors conclude that external Qi gong therapy helps regulate TXB2 and 6-K-PGF1 alpha in patients with essential hypertension comparable to nifedipine.
- Li et al randomized 61 inpatients with hypertension to Qi gong group or a Western medicine (WM) group.<sup>28</sup> The patients in the Qi gong group were treated with both Qi gong and antihypertensive drugs at low dosage, but those in the WM group were treated with the drugs alone. Several laboratory tests concerning sympathetico-adrenomedullary functions were conducted twice respectively at 1st and 9th week after hospitalization of the patients. The results indicated that the Qi gong group after treatment of 9 weeks had more cases with normal sympathetico-adrenomedullary functions than it had before the treatment, and that their urinary CA, E, and NE decreased; MHPG-SO<sub>4</sub> increased; plasma cAMP and cGMP decreased; but cAMP/cGMP ratio increased. The authors suggest that Qi gong could modulate the sympathetico-adrenomedullary functions of patients with Liver Yang exuberance-type hypertension.
- Wang et al randomized 100 hypertensive patients into a Qi gong group (Qi gong with regularly antihypertensive drug taking, N=50) or a control group (with regularly antihypertensive drug taking only, N=50).<sup>29</sup> After 1 year of treatment, in the Qi gong group, the levels of cholesterol (Tc), triglyceride (Tg), LDL-C and AI (AI-Tc-HDL-C/HDL-C) were decreased, while the levels of HDL-C, HDL-C/Tc and HDL-C/LDL-C were significantly increased. In the control group, however, no significant changes were found. The differences between the 2 groups were both statistically significant ( $P < 0.05-0.001$ ). The authors conclude that practicing internal Qi gong could elevate serum levels of HDL-C and regulatory metabolism of lipid.
- Wu conducted a case series to evaluate the effects of Qi gong in 142 patients with essential hypertension (HTN) (137 patients in Stage II).<sup>30</sup> Qi gong therapy consisted of two 30-minute sessions daily for 2 months, and all medications were stopped a week before the therapy. After 2 months of Qi gong therapy, the average SBP decreased 3.99 kPa, and the DBP decreased 186 kPa. No statistical significance was calculated or mentioned. In the discussion, the authors state that according to TCM theory, HTN is a disease of excess Yang and insufficient Yin.

They further comment that cAMP represents Yin, while cGMP represents Yang. From measurements of these 2 parameters, their results suggest that Qi gong could increase the ratio of cAMP/cGMP, suggesting that it can treat Yin deficiency. Weaknesses of the study included: inclusion of healthy people who did not undergo Qi gong therapy, and no statistical analyses were done on blood pressure changes. Future study should be a randomized, controlled study using HTN patients rather than healthy patients as control.

- Kuang et al conducted a cohort study of 244 hypertensive patients treated at the Shanghai Hypertension Institute, Shanghai, China, from 1959 to 1964 to determine the effects of qi gong.<sup>31</sup> A checkup or questionnaire and a regression analysis were done during the follow-up. Patients practicing Qi gong consistently (using exercises learned at the institute, for the most part in sitting position for 20-30 minutes, but no further details provided) were found to have a lower mortality due to heart attack, kidney, and brain complication (13.9%) as compared to the control group who did not practice Qi gong (27.9%) ( $P < 0.01$ ). Morbidity due to stroke was also lower for the Qi gong group (18.0% as compared to 41.0% for the control) ( $P < 0.01$ ). These data suggest that Qi gong may serve in the prevention of stroke in hypertensive patients.
- Qi gong relaxation exercise was used for treatment of pregnancy-induced hypertension (PIH).<sup>32</sup> Patients exercised 3 times a day until labor. There were 2 groups with 60 cases of PIH who delivered in each group: the treatment group used Qi gong, and the control group used medicine. The clinical efficacy was evaluated according to PIH combined scores and showed effective for 54 cases (90.0%) in the Qi gong group and 33 cases (55.0%) in the control group ( $P < 0.01$ ). Meconium stain in amniotic fluid was present in 12 cases (20.0%) in the Qi gong group and 29 cases (48.3%) in the control group ( $P < 0.05$ ). The incidence of abnormal hematocrit (>35%) before treatment was 52.4% and decreased to 23.8% ( $P < 0.05$ ) in the Qi gong group, while in the control group it was 35.7% before treatment and 45.2% after treatment ( $P > 0.05$ ). The mean value of blood E2 by RIA showed increased from 22.97 +/- 13.16 mcg/ml to 33.74 +/- 34.01 mcg/ml after Qi gong treatment in 29 cases. The microscopical observation of fingernail capillaries showed various degrees of improvement of microcirculation after Qi gong exercise for 17 cases and after a course of Qi gong treatment for 11 cases in the Qi gong group. For the control group, there were no changes after sitting still for some time.

### **Cardiovascular rehabilitation**

**Summary:** Preliminary data from one randomized controlled trial suggests the regular practice of internal Qi gong coupled with group support may improve functional quality of life. However, the contribution of Qi gong specifically is not known,

and data are insufficient to form definitive conclusions. More studies are needed before conclusions can be reached.

- Stenlund et al randomized 95 patients (66 men and 29 women) with documented coronary artery disease to an intervention group of group discussion and Qi gong practice (N=48), mean age 77+/-3 (73–82), or to a usual care control group (N=47), mean age 78+/-3 (73–84).<sup>33</sup> The intervention groups met weekly for 3 months. Physical ability was assessed at baseline and after the intervention. Patients in the intervention group increased their self-estimated level of physical activity ( $P=0.011$ ), their performance in the one-leg stance test for the right leg ( $P=0.029$ ), coordination ( $P=0.021$ ), and the box-climbing test for right leg ( $P=0.035$ ). The authors conclude that a combination of Qi gong and group discussions appear to be a promising rehabilitation for elderly cardiac patients in terms of improving self-reported physical activity, balance and coordination. However, the effects of Qi gong and the group experience were not separated out, making conclusions about Qi gong impossible. Randomization was not described but dropouts were explained.
- Pippa et al conducted a randomized, controlled trial to evaluate the effects of 16 weeks of a medically assisted Qi gong training program on the physical rehabilitation of patients with stable chronic atrial fibrillation and preserved left ventricular function.<sup>34</sup> Researchers conducted the trial because evidence indicates that low energy expenditure protocols derived from traditional Chinese medicine may benefit patients with cardiac impairment. Thirty men and 13 women (mean age 68+/-8 years) were randomized to Qi gong or to a waitlist control group. Qi gong training was well-tolerated, and, compared to baseline, trained patients walked an average 114 meters more (27%) at the end of treatment ( $P<0.001$ ) and 57 meters more (13.7%) 16 weeks later ( $P=0.008$ ). Control subjects showed no variation in functional capacity. These results seem promising and deserve confirmation with further research.
- Hui et al conducted a clinical trial to evaluate 2 behavioral programs, Qi gong versus progressive relaxation, in improving the quality of life in cardiac patients.<sup>35</sup> Chinese patients ages 42 to 76, with a mean age of 65, were recruited for the study. All 65 patients were diagnosed with cardiac diseases, including ischemic heart disease, myocardial infarct, postcoronary intervention, and valve replacement. All patients were medically stable to undergo phase II cardiac rehabilitation and were cognitively intact and able to follow instructions. Patients were excluded if they had motor impairments or psychiatric disorders that prevented them from participating in Qi gong or relaxation exercises. There were no significant differences in the demographic and social background between the 2 treatment groups, as determined by chi-squared analysis. Patients were trained in one of 2 practices: progressive relaxation (developed by Yung in 1996) or Qi gong (based on the methods of Master

Lam Ching). A total of 8 sessions (20 minutes each) were conducted. Fifty-nine patients completed all 8 sessions. Six subjects stopped treatments, mostly by the second session; 2 dropouts were admitted to the hospital, and 4 cited financial reasons and discontinued treatment. Blood pressure, heart rate, and psychological questionnaires were taken and compared to baseline measures. Systolic blood pressure (SBP) and diastolic blood pressure (DBP) was taken using an automated monitor. The psychological and quality of life (QoL) assessment was performed using Chinese versions of Short Form 36 (C-SF-36), State-Trait Anxiety Inventory (C-STAI), and General Health Questionnaire (C-GHQ-12). The C-SF-36 measured the following domains of health: physical function (PF), role disruption caused by physical difficulties (RP) or emotional difficulties (RE), social functioning (SF), mental health (MH), and vitality (V). The C-STAI measured state or trait anxiety and was sensitive to improvements in cardiovascular condition after treatment or cardiac surgery. The C-GHQ-12 assessed the general psychological status of the individual. At the end of treatment, patients who practiced progressive relaxation had significantly lower BPs than those who practiced Qi gong (SBP,  $P=0.028$ ; DBP,  $P=0.006$ ). There was no significant difference in most of the psychological parameters in SF-36 except role emotion (RE), in which the Qi gong group scored significantly higher ( $P=0.027$ ). End-of-treatment measures for the progressive relaxation group showed significant reductions in SBP ( $P=0.000$ ) and DBP ( $P=0.024$ ). Improvements were also seen in state anxiety ( $P=0.010$ ), trait anxiety ( $P=0.003$ ), and GHQ-12 ( $P=0.001$ ). In the Qi gong group, only SBP was lowered ( $P=0.013$ ). Similar improvements in state anxiety ( $P=0.000$ ), trait anxiety ( $P=0.000$ ), and GHQ were shown in the Qi gong group when compared to the relaxation group. However, the Qi gong group showed more improvements in SF-36, with 7 of 8 domains showing significant improvement: PF ( $P=0.000$ ), RP ( $P=0.005$ ), GH ( $P=0.001$ ), V ( $P=0.006$ ), SF ( $P=0.001$ ), RE ( $P=0.003$ ), and MH ( $P=0.003$ ). Limitations of this study included lack of randomization and lack of a no-treatment control group. Furthermore, the methods used for statistical analysis were not described, and  $P$  values of 0.000 were reported incorrectly.

- Omura and Beckman describe various methods of improving circulation and enhancing drug uptake that were used in treating some intractable medical problems caused by infections, and 2 syndromes based on the coexistence of Chlamydia trachomatis infection (mixed with either Lyme Borrelia burgdorferi or Cytomegalovirus) with increased uric acid.<sup>36</sup> The principal author's previous studies have indicated that there are 2 opposite types of Qi gong energy: positive (+) and negative (-). (+) Qi gong energy has been used clinically to enhance circulation and drug uptake in diseased areas where there is a microcirculatory

disturbance and drug uptake is markedly diminished. (-) Qi gong energy has completely the opposite effect and therefore has not been used, although there may be some as yet undiscovered application. Since the late 1980s the principal author has succeeded in storing (+) Qi gong energy on a variety of substances including small sheets of paper, and recently has been able to intensify this energy by concentrating it as it passes through a cone-shaped, tapered glass or plastic object placed directly on the (+) Qi gong energy stored paper. Application of (+) Qi gong energy stored paper on the cardiovascular representation area of the medulla oblongata at the occipital area of the skull often improved circulation and enhanced drug uptake. If the drug-uptake enhancement was still not sufficient for the drug to reach therapeutic levels in the diseased organ, direct application of (+) Qi gong from the practitioner's hand often enhanced the drug uptake more significantly. However, this direct method often results in the practitioner developing intestinal microhemorrhage within 24 hours, which may or may not be noticed as mild intestinal discomfort with soft, slightly tarry stool. For intensifying (+) Qi gong energy, one of the most efficient shapes is a cone with increased intensification occurring at an optimal height. However when the total mass and the total distance from base to peak are increased beyond an optimal limit, the power decreases. Clinical application of Intensified (+) Qi gong stored energy was evaluated in this preliminary study, which indicated that intensified (+) Qi gong energy application on the heart representation area of the middle finger on the hands markedly improved circulation in the corresponding organ and increased drug uptake and acetylcholine even more effectively than some of the previously used drug enhancement methods (Shiatsu massage of the organ representation areas and/or application of (+) Qi gong energy stored paper to the occipital area above the cardiovascular representation area of the medulla oblongata).

### Quality of life

**Summary:** Qi gong may be beneficial for improving the quality of life in cardiac and cancer patients; further study is necessary to make a firm conclusion.

- A great number of clinical studies merging traditional Chinese medicine (TCM) and Western medicine have proved the complementary healing effects of Qi gong in medical science.<sup>37</sup> Traditional Chinese respiration exercises help regulate the mind, body, and breathing and coordinate the internal organs, remove toxins, and enhance immunity. Domestic and foreign studies indicate that Qi gong can relieve chronic pain, reduce tension, increase activities of phagocytes in coenocytes, improve cardiopulmonary function, improve eyesight, and influence the index of blood biochemistry. Due to the obvious healing effects of Qi gong therapy, through introducing Qi gong

concepts and related medical research, this paper aims to inspire healthcare workers to integrate Qi gong therapy into medical treatments and nursing care, or to carry out further studies in order to make good the shortfall in provision of holistic medicine and nursing in the interests of the quality of patient care.

- TCM employs methods of treatment such as acupuncture, acupressure, and Qi gong (treatment based on meditation).<sup>38</sup> The nurse using TCM can affect rehabilitation patient outcomes positively. With TCM training, nurses have an opportunity to learn the nuances of the Oriental environment and integrate them into their skills to nurse the spirit, mind, and body of patients in a holistic manner.
- Energy medicine techniques derive from traditional Chinese medicine and are based on the concept that health and healing are dependent upon a balance of vital energy, a still mind, and controlled emotions.<sup>39</sup> Physical dysfunctions result from longstanding disordered patterns of energy, and reversal of the physical problem requires a return to balanced and ordered energy. Qi gong is a system that teaches an individual to live in a state of energy balance. Shen Qi is a sophisticated form of Qi gong that relies on no external physical interventions but rather relies on mind control to prevent illness, heal existing physical and emotional problems, and promote health and happiness. This paper describes the use of these techniques with people who have long-term physical disabilities.

### Stress

**Summary:** Preliminary study shows that Qi gong may be beneficial for relieving stress, although more study is warranted in this area.

- Linder et al conducted a randomized controlled trial to assess the ability of Qi gong to relieve stress.<sup>40</sup>

Other publications that may be of interest include: Wagner, B. [Chinese meditation pattern. Qi gong: to learn from tigers and bears. Series: relaxation technic 1. Centers of vital energy]. *Fortschr Med.* 1999;117(8):55.

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