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Qigong and Exercise Therapy for Elderly Patients With Chronic Neck Pain (QIBANE): A Randomized Controlled Study

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Abstract: The aim of this study was to evaluate the effectiveness of qigong compared with exercise therapy and no treatment. Elderly patients with chronic neck pain (>6 months) were randomly assigned to qigong or exercise therapy (each 24 sessions over a period of 3 months) or to a waiting list control. Patients completed standardized questionnaires at baseline and after 3 and 6 months. The main outcome measure was average neck pain on the visual analogue scale after 3 months. Secondary outcomes were neck pain and disability (NPAD) and quality of life (SF-36). One hundred seventeen patients (age, 76 ± 8 years, 95% women) were included in the intention-to-treat analysis. The average duration of neck pain was 19.0 ± 14.9 years. After 3 months, no significant differences were observed between the qigong group and the waiting list control group (visual analogue scale mean difference, −11 mm [CI, −24.0; 2.1], *P* = .099) or between the qigong group and the exercise therapy group (−2.5 mm [− 15.4; 10.3], *P* = .699). Results for the NPAD were similar (qigong vs waiting list −6.7 (−15.4; 2.1), *P* = .135; qigong vs exercise therapy 2.3 (−6.2; 10.8); *P* = .600). We found no significant effect after 3 months of qigong or exercise therapy compared with no treatment. Further studies should include outcomes more suitable to elderly patients, longer treatment, and patients with less chronic pain.

***Perspective:** In a randomized controlled study, we evaluated whether a treatment of 24 qigong sessions over a period of 3 months is (1) superior to no treatment and (2) superior to the same amount of exercise therapy in elderly patients (age, 76 ± 8 years, 95% women) with long-term chronic neck pain (19.0 ± 14.9 years). After 3 and 6 months, we found no significant differences for pain, neck pain, disability, and quality of life among the 3 groups.*

***Key words:** Qigong, chinese medicine, exercise therapy, neck pain.*

Chronic neck pain is a very common medical complaint that has a high socioeconomic impact. Recent studies estimate its point prevalence to be between 13% and 22%,[4,8,14] which increases with age and is higher in women than in men.[4] In Germany, neck pain is the third most common cause of pain in the elderly population.[15]

Suffering from neck pain is very costly due to the increased demand for health care consulting, drug intake, and physical therapy.[3,6,10,13,30,35] However, there is a lack of evidence for most therapies.[1] Moreover, to date, no study has concentrated on investigating neck pain exclusively in elderly patients.

Therapies for chronic neck pain include trigger point injections, transcutaneous electrical nerve stimulation (TENS) or chiropractic therapy. Pain medication, such as ibuprofen or amitriptyline, may be helpful but may also cause side effects.[2]

Exercise therapy is often used to treat neck pain[2] and combines methods such as stretching, isometric and dynamic muscle strengthening, mobilizing exercises, or

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endurance training.[37] Evidence for the effectiveness of exercise therapy is modest and inconclusive, and there is almost no information for elderly patients.[12,13,16,31,34]

The use of complementary and alternative medicine in our society has increased substantially.[9] Qigong is part of traditional Chinese medicine and follows the principles of regulating the "qi" (energy), which is assumed to harmonize mind and body and so might reduce pain.[11] According to recent estimates, about 5% of China's population practice qigong.[26] It has been practiced for over 2000 years and was often used to cure and prevent diseases. Qigong can be divided into 2 broad categories: Internal qigong, for maintaining and improving one's health, and external qigong, for healing others by sending one's qi to them. There are over 3,000 styles of qigong being practiced today. Many of these styles are adaptations of ancient practices. For example, Dayan Qigong is a commonly practiced qigong form in China. The Five Animal Frolics use the specific movements and breathings of 5 animals, the crane, bear, monkey, tiger, and deer, and this is often used in the West. Examples of other styles are Xing Gong, Dantian Qigong, Yuan Ming Gong, Sheng Zhen Wuji Yuan Gong, and Chan Mi Gong. The Dantian Qigong is studied in the present trial.[43] It is a medical qigong style which includes mainly slow controlled movements combined with a focus on breathing exercises and meditative aspects.

To our knowledge, there are few studies evaluating the effects of qigong on elderly people: Qigong can be a promising rehabilitation in elderly cardiac patients by improving their physical activity and coordination.[38] It also decreases blood pressure in elderly patients with mild hypertension.[7,38] There is only 1 trial evaluating the efficacy of qigong in neck pain, which results in reduced pain and disability after a qigong intervention over a period of 3 months.[24] However, they included only patients until the age of 65. The aim of our study was to evaluate if qigong is more effective than (1) no intervention (waiting list) and (2) exercise therapy in elderly patients with chronic neck pain.

Methods

Design

Patients were randomly assigned to 1 of the 2 treatment groups (qigong or exercise therapy) or the waiting list group in a 1:1:1 ratio. For random assignment, we used a block design and stratified for centers. The random list (generated with SAS 9.1 software; SAS Institute, Cary, NC) was transferred into a database that was implemented on a portable computer. None of the staff performing the study had access to this random list.

The total follow-up study period per patient was 6 months. The patients in both intervention groups received 3 months of training and were asked to continue to exercise on their own after these 3 months. Patients in the waiting list group did not receive qigong or exercise therapy for the whole period. After 6 months they were offered an intervention of their choice. This was done for motivational reasons and was not part of the evaluation.

The study was undertaken according to common guidelines for clinical trials (Declaration of Helsinki, ICH-GCP). The study protocol was approved by ethics review board of the Charité University Medical Center, and the study protocol has been published.[43]

Patients

Patients were included in our study if they were age 55 years or older, had recurrent neck pain for at least 6 months, had an average pain intensity of 20 mm or more on a 100-mm visual analogue scale in the 7 days before baseline assessment, and gave written informed consent. The exclusion criteria were 1 or more of the following: serious acute or chronic organic illness or mental disorder that disallowed participation in the study, planned start of a physiotherapeutic treatment for neck pain during study participation, or participation in another study during the last 6 months before study entry.

The patients were recruited at 4 residences for elderly people, all situated in central Berlin (Germany). All patients were mobile and lived independently in their own flats. Information sessions were held in each of the residences, where the concept of the study was presented to all interested residents.

Interventions

Study interventions were developed in a consensus process with qigong experts, physicians, and epidemiologists. Qigong was provided by 5 approved qigong therapists, all being members of the German Qigong Society. Exercise therapy was provided by 2 therapists for physical therapy, both employed by the Charité Department for Physical Medicine (Clinic for Physical Medicine and Rehabilitation, Charité Berlin). All therapists had at least 5 years of experience.

Both qigong and the exercise therapy consisted of 24 sessions (each 45 minutes), were held over a period of 3 months (2 sessions per week) in groups of 6 to 12 participants and used the same gymnasiums.

Qigong lessons started with about 10 minutes of typical qigong "opening" exercises, continued with up to 4 exercises of Dantian Qigong, and finished with about 10 minutes of "closing" exercises.

The exercise therapy was based on a standardized program for computer- and workplace-related neck pain. This program was developed by specialists of the Clinic for Physical Medicine and Rehabilitation, Charité Berlin. It included repeated active cervical rotations as well as strength and flexibility exercises. Special intention was paid so that the patients' individual pain limits were not exceeded. About 90% of all exercises were repeated in each lesson; some 10% was exchanged regularly. A detailed description of the interventions has been published.[43]

In all groups, patients were free to treat their neck pain with the treatment or therapies they were using prior to randomization.

Outcome Measurements

All patients were asked to complete standardized questionnaires at the outset of the study (months 0) (baseline, before random assignment) and at 3 and 6 months and to send them in sealed envelopes to the study office.

The main outcome measure was neck pain after 3 months as compared with baseline. Therefore, the average neck pain intensity during the last 7 days was assessed on a visual analogue scale (VAS),[20] whereas 0 means no pain and 100 maximal pain. Secondary outcome parameters were pain and disability measured on the Neck Pain and Disability Scale (NPAD)[42] (scale ranges from no [0] to maximal [100] neck pain and disability), health-related quality of life measured by the SF-36[5] (scale ranges from 0 to 100; higher values mean higher quality of life), depression measured on the general scale of depression (ADS)[17] (scale ranges from 0 to 60; higher values mean more depressive symptoms), questions on quality of sleep and digestion, global satisfaction with treatment, and practicing habits. At baseline we documented sociodemographic and clinical characteristics and the patients' expectations of the treatment (before random assignment). Patients were asked to report all serious adverse events and side effects associated with the intervention.

Statistical Analysis

For priori power calculations, we assumed an effect size (group difference divided by the common standard deviation) of .7 between the qigong and the waiting list group. In this case, 34 patients per group were needed to achieve a minimum statistical power of 80% with a 2-sided **t** test at a level of α = 5%. Allowing for a 15% dropout rate, we planned to include 40 patients in each group (120 in total).

All analyses were by intention-to-treat. Missing data were multiply imputed following the suggestions of Rubin: Applying an MCAM algorithm, we created a total of 5 different data sets, which were identical in the observed but differed in the imputed data. These sets of data were separately analyzed, and the results were combined adequately (using the MINANALYZE procedure of the SAS/STAT software).

The main outcome parameter was analyzed by univariate repeated measurement analysis of covariance (ANCOVA). The respective baseline values and the patients' expectations entered the model as linear covariates, group, and time being taken as discrete factors. Within this model we performed a hierarchical test procedure: At first we tested for group differences between the qigong and the waiting list group after 3 months of treatment with an appropriate *F* test. If (and only if) this test was significant, we would continue the analysis with a second *F* test comparing the exercise therapy with the waiting list group after 3 months of treatment. This hierarchical procedure was a priori defined in the study protocol and thus maintained a global type I error of 5%.

All other outcome parameters were analyzed with identical ANCOVA models and their results presented as mean baseline adjusted differences, including 95% confidence intervals (CI) and *P* values.

Results

Between March 9 and May 5, 2006, 328 patients attended the information sessions, 121 patients were randomly assigned, and 117 participated in the study (Fig 1).

At baseline we found no significant differences for baseline characteristics among the 3 study groups (Table 1). The mean age of the study population was 76 $\pm$ 8 years (mean $\pm$ SD). Most of the patients were women (111 of 117; 95%) and the majority lived alone (75 of 117; 64%). The mean duration of the neck pain was approximately 19.0 $\pm$ 14.9 years (mean $\pm$ SD), which reflected the chronicity of this syndrome. Most of the patients (96 of 117; 82%) had already consulted an orthopaedic surgeon because of their neck pain. In the last 3 months before study entry, 43 patients (37%) had consulted at least 1 physiotherapist for their neck pain.

Almost every patient (116 of 117; 99%) had concomitant diseases, with cardiovascular diseases playing the leading role (97 of 117; 83%).

Sixty-three percent (24 of 38) of the qigong patients expected improvement through qigong, and nearly all exercise therapy patients (35 of 39; 90%) expected improvement through their therapy.

During the first 3 months, about two-thirds of the patients (qigong: 24 of 38; 63%; exercise therapy: 23 of 39; 59%) did further exercise additional to their study therapy more than once per week.

After 6 months, these percentages fell slightly to 50% (19 of 38) in the qigong group and 61% (24 of 39) in the exercise therapy group. Almost all patients from these groups positively rated their therapists and stated that they would further recommend the interventions to others (Fig 2).

After 3 months, there was no significant difference for the average neck pain between the qigong and the waiting list group, the difference being estimated at $\Delta = -11.0$ mm (CI, –24.0 to 2.1; $P = .099$, ANCOVA). Moreover, no significant difference between the qigong and the exercise therapy group was observed, the group difference being $\Delta = -2.5$ mm (CI, -15.4 to 10.3, $P = .697$). In addition, for all secondary parameters including quality of life, we did not find any significant difference between the groups after 3 and 6 months (Table 2). Also, we did not find any significant changes in sleep habits, reduction of falls, medication use, consultation to health services, and the use of cointerventions.

Contrary to what we might have expected from these results, most patients recommended their therapy (Fig 2). Twenty-nine percent of the patients in the qigong group and 23% in the exercise therapy group continued their intervention after the end of the study, paying for it out of their own pocket.

Adverse Events

One patient in the qigong group and 1 patient in the exercise therapy group died of cancer in hospital. These

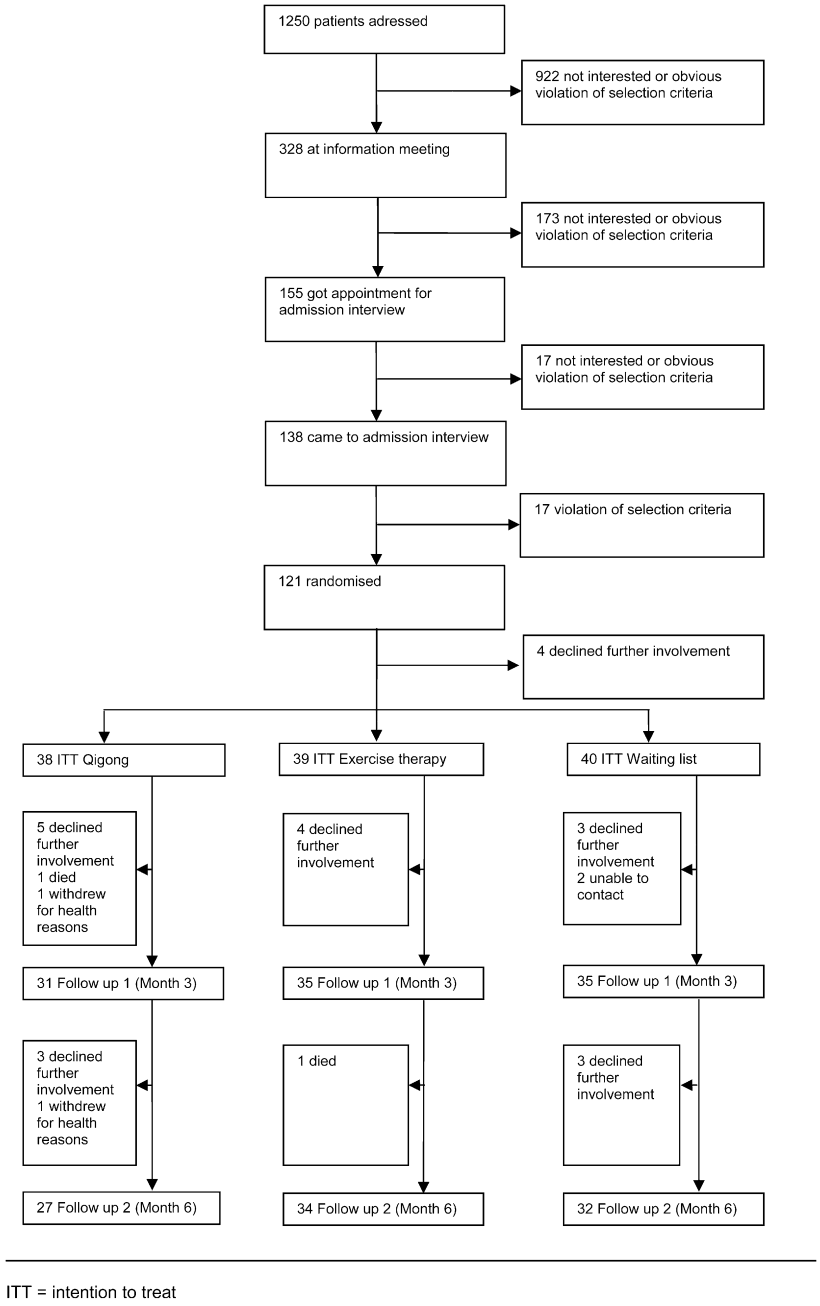


Figure 1. Trial flow chart.

events were not classified as likely to be linked with the intervention.

Moreover, 5 side-effects were reported by 4 patients in the qigong group (2 nausea, 2 aching muscles, 1 muscle tension) and 4 side effects by 2 patients in the exercise therapy group (2 muscle tensions, 1 aching muscles, 1 nausea).

Discussion

Principal Finding

In this study, elderly patients with chronic neck pain who received qigong perceived no significant alleviation after 3 months compared with patients who received no treatment. In addition, we found no difference between qigong and exercise therapy. However, most patients in both interventions highly recommended the treatment.

Strengths and Limitations

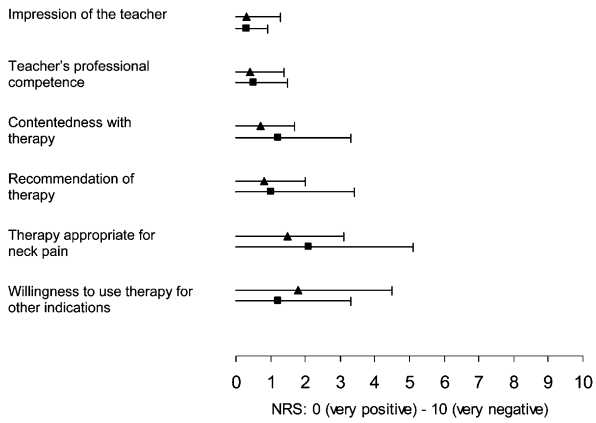
The strengths of this study include interventions based on expert consensus, qualified teachers, validated outcome measurements, the presence of a waiting list, a 6-month follow-up, and a published study protocol.

A limitation of our study was its open nature, because blinding of patients and therapists was not possible. Thus, the results are likely to be biased. We tried to

Table 1. Baseline Demographic and Clinical Characteristics of Trial Groups

Sociodemographic Characteristic	Qigong (N = 38)	Exercise Therapy (N = 39)	Waiting List (N = 40)
Age (years; mean ± SD)	75.9 ± 7.6	76.0 ± 7.2	75.7 ± 7.6
Female (%)	95	95	95
Male (%)	5	5	5
BMI (kg/m^2; mean ± SD)	28 ± 5.3	27 ± 4.3	27.1 ± 3.9
>10 years of school (%)	13.2	10.3	15.0
Family status (%)			
Living in partnership	7.9	15.4	15.0
Living alone	60.5	66.7	65.0
No answer	31.6	17.9	20
Duration of neck pain (years; mean ± SD)	20.1 ± 14.2	17.1 ± 13.5	19.9 ± 16.9
Number of therapist consults because of neck pain (past 3 months) (mean ± SD)	5.4 ± 9.8	2.7 ± 6.0	3.0 ± 7.1
Concomitant diseases (%)	100	100	97.5
Cardiovascular disease	81.6	84.6	82.5
Orthopedic diseases	68.4	69.2	57.5
Medication intake (%)	97.4	89.7	90
Sports and activity (%)			
Physiotherapy	18.4	12.8	10.0
Dancing	10.5	15.4	5.0
Fitness	26.3	28.2	27.5
Yoga	5.3	5.1	5.0
Tai qi/Qigong	5.3	5.1	5.0
Swimming	21.1	10.3	10.0
Others	2.6	2.6	2.5
At least 1	60.5	61.5	47.5
Average neck pain (VAS; mean ± SD)	56.4 ± 19.7	47.1 ± 19.6	49.9 ± 20.3
Neck pain/disability (NPAD; mean ± SD)	38.5 ± 19.2	41.8 ± 24.9	36.1 ± 20.8
Depression (ADS; mean ± SD)	18.7 ± 9.1	18.4 ± 9.4	15.7 ± 7.7
Physical health (SF-36; mean ± SD)	30.4 ± 7.9	28.7 ± 7.2	30.6 ± 9.3
Mental health (SF-36; mean ± SD)	46.8 ± 9.1	49.6 ± 10.9	49.9 ± 9.1
Expected effectiveness of Qigong [1 (very effective) to 5 (ineffective)] (mean ± SD)	2.2 ± 1.0	2.8 ± 0.9	2.5 ± 1.1
Expected effectiveness of Exercise therapy [1 (very effective) to 5 (ineffective)] (mean ± SD)	1.8 ± 0.8	2.2 ± 1.0	2.1 ± 0.9

Abbreviations: BMI, body mass index; VAS, visual analogue scale for assessing the average neck pain intensity; NPAD, neck pain and disability scale; ADS, depression scale (Allgemeine Depressionsskala); SF-36, MOS 36-item short-form quality-of-life questionnaire.
NOTE. No significant differences between groups ($P > .05$ for all comparisons).



▲= Qigong; ■ = Exercise therapy; Data are mean ± SD; NRS = numeric rating scale

Figure 2. Evaluation of the teacher and therapy after 3 months.

overcome this limitation by adjusting all results from the patients' expectations to their offered treatment. This should help to overcome most of the problems but can naturally not solve them all.

The age of the patients and the long duration of neck pain could have influenced the outcome measured by the questionnaires, because these are mainly used by patients younger than in this study. Additionally, definitions of neck pain can vary, and this could result in a less precise diagnosis than more experimental studies perform; however, it reflects usual care.

Interpretation of Findings

In this confirmatory study, we found qigong ineffective to improve long-term neck pain and disability in elderly patients. Aside from this explanation for the results, other aspects should be discussed. Usually, one would expect a difference between the qigong and the waiting list group, simply because of the study context: An intervention of 24 group sessions given by a highly motivated and sympathetic teacher should have a positive effect on its own.[27,33] Moreover, there was a high expectancy of pain relief in most patients, which, again, should induce some nonspecific positive effects.[28]

There was an obvious discrepancy in our results: Although there were close to no improvements on all of the outcomes, most patients recommended their intervention for others. This might have different explanations. With a median duration of nearly 20 years in our study, the neck pain was extremely chronic, and severe chronic neck pain is known as a predictive factor of poor outcome in neck pain questionnaires.[18]

Possibly, the duration of the therapy was too short to see any therapeutic effects on neck pain. Both interventions were practiced over a period of 3 months. In other studies, the duration of qigong ranged from 3 weeks[45] to 1½ years.[46] Exercise therapies usually ranged from 5 weeks[29] to 1½ years.[19,22] This, however, was a point of

Table 2. Primary and Secondary Outcomes at 3 and 6 Months

	Qigong (mean ± SD)	*Exercise therapy (mean ± SD)*	*Waiting list (mean ± SD)*	*Difference Qigong vs Waiting list* (95% CI)*	*P* (F Test)*	*Difference Qigong vs Exercise therapy* (95% CI)*	*P* (F Test)*
At 3 months							
Average neck pain (VAS)	47.4 ± 30.8	44.5 ± 25.7	54.9 ± 28.5	-11.0 (-24 to 2.1)	0.10	-2.5 (-15.4 to 10.3)	0.70
Neck pain/disability (NPDS)	34.3 ± 23.6	33.6 ± 25.5	39.1 ± 21.7	-6.7 (-15.4 to 2.1)	0.14	2.3 (-6.2 to 10.8)	0.60
Depression (ADS)	19.7 ± 7.4	20.2 ± 9.8	18.6 ± 8.0	-1.0 (-5.2 to 3.1)	0.62	-1.1 (-5.8 to 3.6)	0.65
SF-36 Quality of life							
Physical functioning	33.5 ± 10.0	30.3 ± 9.0	30.8 ± 11.4	1.0 (-2.8 to 4.7)	0.62	0.7 (-3.0 to 4.4)	0.73
Role physical	37.1 ± 9.5	37.0 ± 13.1	36.4 ± 12.2	2.4 (-2.8 to 7.6)	0.36	1.3 (-3.9 to 6.5)	0.63
Bodily pain	27.8 ± 4.8	28.4 ± 5.2	26.6 ± 4.1	1.4 (-0.5 to 3.3)	0.14	-0.4 (-2.3 to 1.5)	0.70
General health perception	36.3 ± 9.1	37.2 ± 7.2	36.4 ± 9.8	1.4 (-2.7 to 5.6)	0.50	-0.0 (4.1 to 4.0)	0.99
Vitality	42.1 ± 7.6	42.3 ± 10.8	41.6 ± 9.6	1.2 (-2.3 to 4.7)	0.50	0.3 (-3.1 to 4.7)	0.85
Social functioning	45.6 ± 9.0	44.6 ± 9.8	44.5 ± 11.2	2.0 (-2.6 to 6.6)	0.40	0.6 (-3.9 to 5.2)	0.79
Role emotional	43.0 ± 11.2	42.1 ± 14.0	42.8 ± 13.4	3.8 (-2.9 to 10.4)	0.27	4.2 (-2.3 to 10.7)	0.21
Mental health	43.9 ± 10.5	43.9 ± 11.1	43.4 ± 11.4	1.4 (-2.9 to 5.7)	0.53	2.6 (-1.7 to 6.8)	0.24
Physical Component Score	30.4 ± 7.4	30.3 ± 7.8	28.6 ± 9.7	1.6 (-1.7 to 4.9)	0.35	-0.5 (-3.6 to 2.5)	0.74
Mental Component Score	48.8 ± 9.8	49.2 ± 10.9	49.8 ± 12.6	1.9 (-3.3 to 7.1)	0.48	2.3 (-2.8 to 7.4)	0.37
At 6 months							
Average neck pain (VAS)	53.1 ± 30.6	47.7 ± 30.5	59.9 ± 25.5	-9.8 (-23.7 to 4.2)	0.17	0.1 (-13.4 to 13.7)	0.99
Neck pain/disability (NPAD)	39.8 ± 25.8	34.3 ± 24.8	41.3 ± 23.4	-5.5 (-14.6 to 3.6)	0.23	7.4 (-1.4 to 16.1)	0.10
Depression (ADS)	22.7 ± 7.4	20.9 ± 10.2	19.8 ± 9.0	-0.2 (-4.5 to 4.1)	0.93	0.4 (-3.7 to 4.5)	0.85
SF-36 Quality of life							
Physical functioning	33.5 ± 10.9	30.5 ± 10.9	30.9 ± 12.4	1.5 (-2.5 to 5.5)	0.46	-0.2 (-4.1 to 3.6)	0.90
Role physical	35.6 ± 11.2	34.8 ± 10.8	35.5 ± 10.2	1.6 (-3.9 to 7.1)	0.57	1.1 (-4.2 to 6.4)	0.69
Bodily pain	27.2 ± 4.2	27.3 ± 4.0	27.7 ± 4.2	-0.2 (-2.2 to 1.9)	0.88	0.1 (-2.0 to 2.1)	0.94
General health perception	36.1 ± 8.4	34.8 ± 10.6	36.9 ± 9.2	0.9 (-3.1 to 5.0)	0.66	1.1 (-3.9 to 3.6)	0.94
Vitality	40.5 ± 8.2	41.8 ± 9.1	42.4 ± 9.2	-0.6 (-4.2 to 2.9)	0.72	-0.1 (-3.6 to 3.3)	0.40
Social functioning	40.4 ± 10.4	42.9 ± 10.3	42.5 ± 11.0	-0.8 (-5.8 to 4.1)	0.74	-2.5 (-7.3 to 2.3)	0.30
Role emotional	38.6 ± 14.2	39.2 ± 13.3	36.5 ± 12.3	5.5 (-1.2 to 12.1)	0.11	1.9 (-4.8 to 8.7)	0.57
Mental health	40.3 ± 9.6	41.9 ± 12.8	40.7 ± 10.3	1.3 (-3.3 to 5.8)	0.59	1.2 (-3.1 to 5.5)	0.59
Physical Component Score	31.4 ± 7.7	29.3 ± 8.5	31.5 ± 8.3	0.3 (-3.0 to 3.6)	0.86	0.4 (-2.8 to 3.6)	0.79
Mental Component Score	43.5 ± 10.8	45.5 ± 10.8	44.4 ± 10.7	2.4 (-2.7 to 7.5)	0.35	1.1 (-4.0 to 6.2)	0.66

Abbreviations: VAS, visual analogue scale for assessing the average neck pain intensity; NPAD, neck pain and disability scale; ADS, depression scale (Allgemeine Depressionsskala); SF-36, MOS 36-item short-form quality-of-life questionnaire.
*Treatment differences and *P* values from a repeated-measurement ANCOVA model with all 3 treatment groups, baseline values and expectancy as covariates.

discussion even before the study started: During the consensus process, it was believed that the effects of exercise therapy can be expected in a shorter time than the effects of qigong. Three months was seen to be an adequate compromise. In further studies, longer-lasting qigong interventions might be more suitable.

A central question is whether the questionnaires were able to measure the outcomes in the right way. The age of our patients might have played a relevant role in understanding and filling out the questionnaires. The often used VAS could be difficult to understand for elderly patients.[21] Despite little research on the ability of the elderly to use pain scales, it is possible that elderly patients might find it difficult to achieve the level of abstraction required to fill in pain scales adequately.[23,36] As recent research has shown, there is a need for a comprehensive approach to pain assessment in the elderly.[39]

Few studies regard the effects of qigong for chronic pain.[25,32,41,45] Most of them have shown findings that support different kinds of qigong for pain reduction or improving the biopsychosocial health. To date, there is only 1 trial comparing qigong and exercise therapy in 122 patients with chronic neck pain.[24] In this study, the average neck pain and other outcome variables improved significantly after 3 months of therapy in both groups. This positive effect was maintained in both 6- and 12-month follow-ups. Compared with our study (mean, 76 years; maximum: 95 years) the patients in this study were much younger (mean, 44 years; maximum, 65 years), as they were in all other studies cited

above (maximum age, 65 years).[13,19,22,29,45,46] Although the number of elderly patients in our society is increasing, most studies still exclude patients over 65 years of age. For the future, there is a need to develop measurement instruments, which are more suitable for the elderly to support their inclusion into studies.

Middle-aged women are high utilizers of complementary and alternative medicine[40] and have good knowledge about these methods, whereas in our elderly study population, knowledge about complementary and alternative medicine could be expected to be small.[44] When including the patients in our study, we found that most of them had no knowledge about qigong, whereas exercise therapy was well known. This might explain why more patients in the exercise therapy group continued their therapy after 6 months than in the qigong group.

The results of the present study must be interpreted with caution. Nevertheless, they point out that, for research with elderly patients, special issues have to be taken into account. To provide further information about the background of these findings, we are currently performing semistandardized interviews with study participants to identify characteristics of pain measurement in elderly patients.

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