SPINE Volume 32, Number 22, pp 2415–2422

Qigong and Exercise Therapy in Patients With Long-term Neck Pain

A Prospective Randomized Trial

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Study Design. A randomized, controlled, multicenter trial: 1-year follow-up.

Objective. To compare the effectiveness of qigong and exercise therapy in subjects with long-term nonspecific neck pain.

Summary of Background Data. The evidence for the benefit of treatment programs focusing on persons with long-term, nonspecific neck pain is conflicting. Several studies have shown support for exercise therapy, but the efficacy of qigong has not been scientifically evaluated.

Methods. A total of 122 patients were randomly assigned to receive either qigong (n = 60) or exercise therapy (n = 62). Most of them were women (70%), and the mean age was 44 years. A maximum of 12 treatments were given over a period of 3 months. Neck pain frequency and intensity, neck disability (NDI), grip strength, and cervical range of motion were recorded before and immediately after, at 6 months, and at 12 months after the treatment period. Changes in outcome variables were analyzed and dichotomized as improved or unchanged/deteriorated.

Results. Clinical and demographic characteristics were similar among groups at baseline. No differences were found between the 2 interventions: qigong and exercise therapy. Both groups significantly improved immediately after treatment and this was maintained at the 6- and 12-month follow-ups in 5 of 8 outcome variables: average neck pain in the most recent week, current neck pain (with exception for immediately after treatment period), neck pain diary, NDI, and cervical range of motion in rotation.

Conclusion. These results indicate that treatments including supervised qigong or exercise therapy resulting in reduced pain and disability can be recommended for persons with long-term nonspecific neck pain.

Key words: long-term neck-pain, exercise therapy, qigong, physiotherapy. **Spine 2007;32:2415–2422**

Neck pain (NP) is a frequent and costly problem in the Western world. Two thirds of the population experience NP at some point in their lifetime, and it is a common source of disability in the working-age population.[1,2] NP often results in the utilization of health care resources and is an economic burden to society.[3,4] The origin of NP is thought to be of a multifactorial nature. Work related physical as well as psychologic factors play an important role.[5]

The prevalence of NP varies, and recent studies[1,2,6] point toward 20%. It is more frequent among women than men, and the impact of NP on one's life varies with age. Elderly people report more NP than the adult population.[7]

Physiotherapy treatment for NP disorders vary from massage, nonspecific strengthening exercises, manipulative therapy, transcutaneous electric nerve stimulation, and thermo-therapy to different kinds of ergonomic advice.[8] A commonly used form of physiotherapy treatment for patients with NP is exercise therapy, which incorporates a large variety of methods such as mobilizing exercises, stretching, and strength and endurance training.[9] The aim with exercise therapy is to improve patient's functional capacity, reduce pain, and increase the knowledge on pain mechanisms. Several studies[10–13] have shown findings that support different kinds of exercise therapy for pain control and improved function.

During the last 10 years, interest in complementary medicine has grown in the Western world, and physiotherapists have shown an interest in methods, such as qigong (pronounced "chee gong"), for pain treatment. Qigong is a therapeutic Chinese practice that has been used for 1000 years in order to prevent and cure disease. It is estimated there are more than 3000 varieties of qigong and 5 major traditions exist, of which one is medical. Medical qigong involves slow movements, breathing exercises combined with meditation. In the philosophy of qigong, a primary aim is to maintain or restore balance and harmony of mind and body. The efficacy of qigong in NP is not scientifically evaluated.

Although NP disorders are common in the population, little evidence exists for many standard physiotherapeutic treatments.[4,14–16] Systematic reviews have found a great need for more well-designed, randomized, controlled studies with long-term follow-up to further investigate the effect of different kind of physiotherapeutic treatments on NP.[8,15,17,18]

The aim of this study was to compare the effectiveness of qigong and exercise therapy in patients with long-term NP.

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Acknowledgment date: August 25, 2006. First revision date: February 8, 2007. Second revision date: April 12, 2007. Acceptance date: April 13, 2007.

Supported by the Vardal Foundation, the Ekhaga Foundation, the Development Council of Göteborg and Southern Bohuslän, the Swedish Association of Registered Physiotherapists: Minnesfonden and Renée Eanders Hjälpfond for financial support.

The manuscript submitted does not contain information about medical device(s)/drug(s).

Foundation funds were received in support of this work. No benefits in any form have been or will be received from a commercial party related directly or indirectly to the subject of this manuscript.

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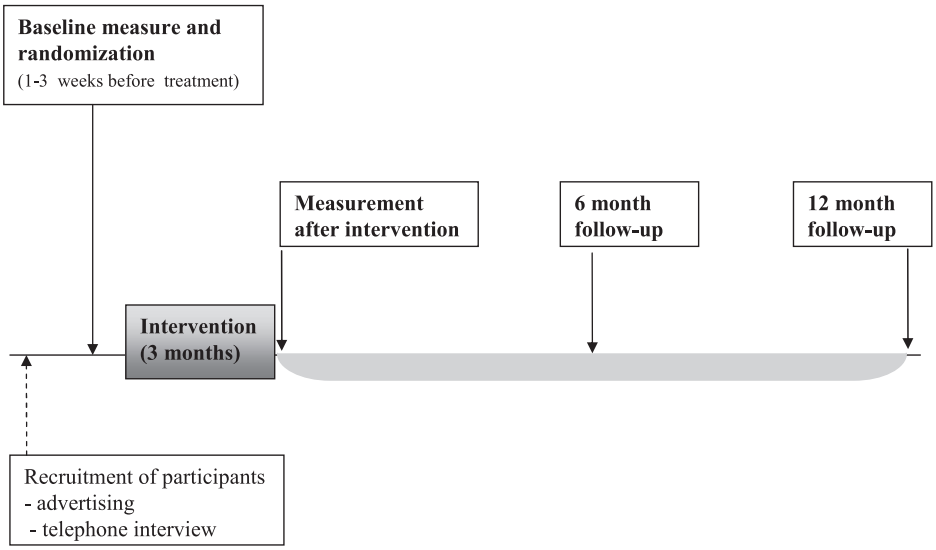

Figure 1. Time plan of the study.

■ Materials and Methods

A prospective, randomized, controlled trial was conducted between 2001 and 2004. The study was performed as a multicenter study in primary care in Göteborg, Lund and Malmö. Patients with long-term NP were randomized to either qigong or exercise therapy. Measurements were made before and after intervention and at 6 and 12 months after intervention (Figure 1). The study was approved by the Ethics Committee of Göteborg University.

Men and women between 18 and 65 years of age with nonspecific, long-term (>3 months) NP were included. They should before intervention have scored an average NP (estimated at the week before screening/baseline measure) with at least 20 mm on a visual analogue scale (VAS, measured in millimeters with the endpoints 0 = no pain and 100 = unbearable pain).[19] Exclusion criteria were chronic tension-type headache, migraine, traumatic neck injuries, neurologic signs or symptoms, rheumatic diseases, fibromyalgia or other severe physiologic or physical diseases, treatment with antidepressive and anti-inflammatory drugs, and difficulties in understanding the Swedish language.

The study population was recruited through advertising in a free sample of a local newspaper. Initial screening was accomplished by telephone, and eligible persons were sent a letter with information about the study. Patients interested to participate were invited to a physiotherapy unit for baseline measure. All patients who fulfilled the inclusion criteria were offered to participate. Additional verbal and written information was given about study design, treatment procedure, and voluntary participation. Those willing to take part in the study had to give an oral approval to participate and after this the randomization took place.

Randomization was done in blocks of 30 and was carried out according to a sealed envelope technique. A total of 139 patients with long-term NP were randomly allocated into the interventions (Figure 2). After randomization but before initiation of intervention, 17 patients (12%) declined to participate. Twelve of these had been randomized to qigong and 5 to exercise therapy. Reasons for dropout included lack of time, financial problems, and personal reasons.

The enrollment of persons, the randomization procedure, and the performance of measurements were conducted by 4 independent physiotherapists. These physiotherapists were trained together in the measurement procedure and did not take part in any intervention. A manual was developed to standardize the administration of the questionnaires and performance-based tests.

Patients. A total of 122 patients started the interventions: qigong (n = 60) and exercise therapy (n = 62) (Figure 2). Eighty-six (70%) were women and 36 (30%) were men, with a mean age of 44 years. Forty-six (38%) patients had a history of NP lasting between 1 and 5 years and 55 (45%) patients more than 5 years. The median (range) for average NP, the week before the baseline measure, was 53 mm (20–100 mm). Only 9 (7%) patients were on sick leave (Table 1).

Intervention. Both groups were trained at 10 to12 occasions, 1 to 2 times per week, during a period of 3 months. Each session lasted approximately 1 hour. The interventions were carried out in physiotherapy departments in primary care and were conducted by experienced physiotherapists with similar levels of education and with long experience of each modality. The physiotherapists responsible for qigong had nothing to do with exercise therapy and *vice versa*. Before the start of the study, the physiotherapists in each intervention discussed its content and a treatment-specific guideline was composed.

During the intervention period, both groups were provided with ergonomic instructions and a pamphlet, including written information concerning NP. An attendance list was kept during the intervention period, and all participants were informed that they had to attend at least 8 of 12 times to be analyzed in the study. The participants were encouraged to practice qigong or exercise therapy, respectively, during the intervention period as well as during the follow-ups. Cointerventions were discouraged.

Qigong was performed according to medical qigong and was conducted in groups of 10 to 15 participants. Each qigong session started with information about the philosophy of medical qigong, followed by selected qigong exercises according to the Biyun method. These exercises, described in a guideline, consisted of 14 exercises. The program started with a general warming up, consisting of soft movements for the whole body followed by specific slow movement sequences combined with breathing techniques and deep concentration (meditation). The

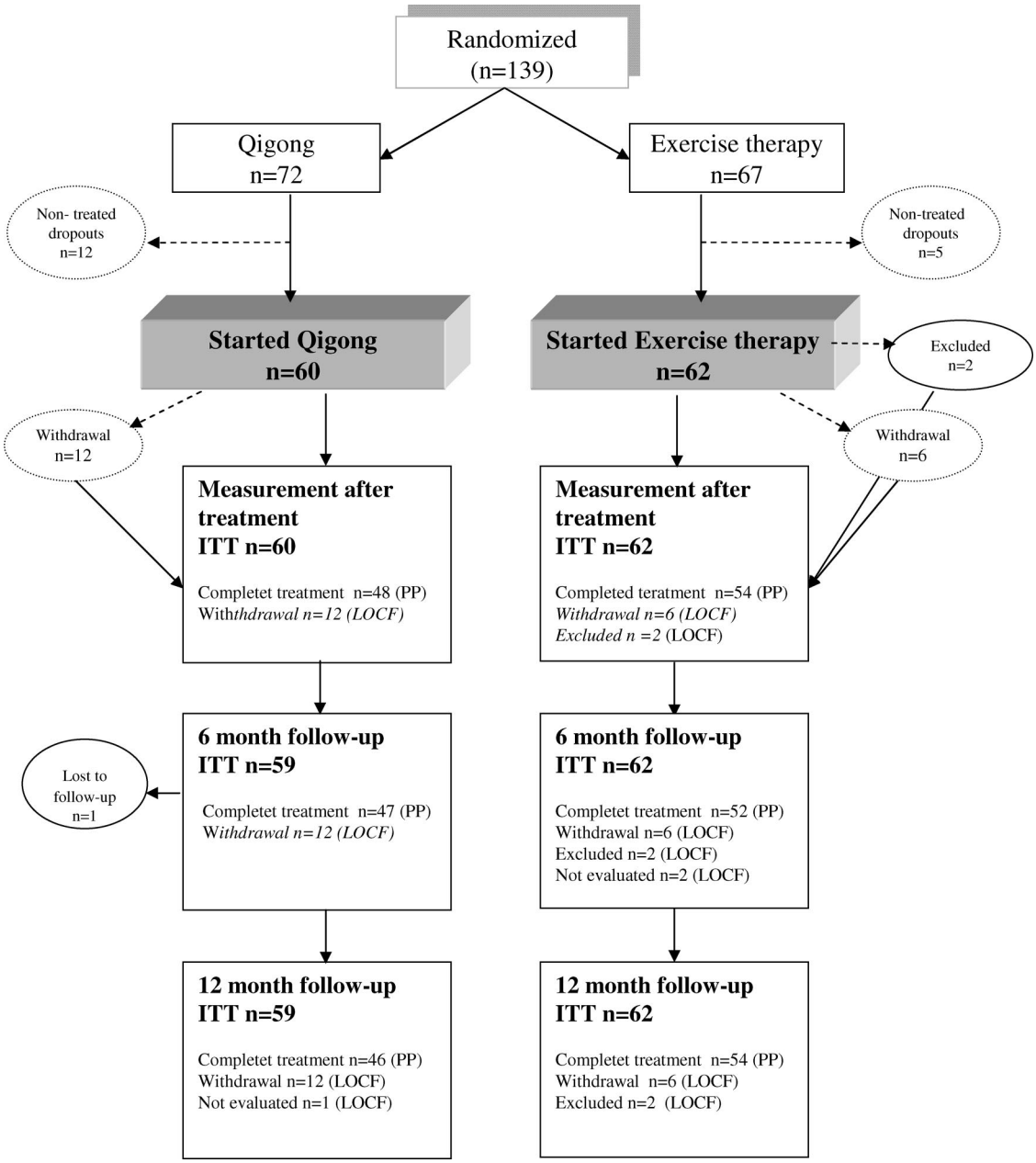

Figure 2. Participant flow of the study. Population analysis according to ITT (intention to treat): PP (per protocol)—participants who fulfilled 8 of 12 training sessions, LOCF (last observation carried forward)—participants who were withdrawals (attended treatment <8 times), excluded (medical reason) or not evaluated (did not attend to the evaluation).

meditation technique uses descriptive visualization focusing on different body parts, for example, how the monk embraces the moon, the butterfly beats its wings, or the crane stretches itself, and by focusing certain bodily sensations, such as heat and joy. Each qigong session ended with relaxation, soft stretching, and self-performed body massage. The participants were recommended to practice different qigong exercises at home every day.

Exercise therapy was performed according to an individually adjusted training program. The resistance was between 30% and 70% of a person's maximal voluntary capacity, and each exercise was performed between 1 to 3 sets of 10 to 30 repetitions. The amount of resistance and the number of repetitions started at a pain-free level and were gradually increased throughout the treatment period. The program started with warming up on an ergometer-bicycle for 10 minutes followed by active movements of the cervical and shoulder/thoracic regions. After that followed different muscle exercises with the aim to maintain/increase circulation, endurance, and strength. These exercises consisted of resistive exercises against gravity or added weights (rubber expander, dumbbells, and pulley apparatus) and were finished with stretching exercises. A training record was kept of how the exercise was performed and the progression of the load.

Measurements. Measurements were made at 4 occasions (Figure 1), and all participants answered the same questionnaires and underwent the same performance based tests.

A questionnaire was used inquiring demographic data, pain duration, frequency and intensity, pain analgesic medication, smoking, physical activity, and experience of physiotherapy treatment. Duration and frequency were measured by estimating

Table 1. Baseline Characteristics

Baseline Variable	Qigong (n = 60)	Exercise Therapy (n = 62)	Total (n = 122)
Gender [n (%)]			
Women	44 (73)	42 (67)	86 (70)
Age in years			
Mean (SD)	44.9 (12.3)	42.8 (1.4)	43.8 (12.9)
[median (range)]	49 (20–62)	44 (21–65)	45.5 (20–65)
Sick leave [n (%)]			
100%	2 (3)	3 (5)	5 (4)
40%–50%	2 (3)	1 (2)	3 (2)
25%	1 (2)		1 (1)
0%	55 (92)	58 (93)	113 (93)
Length of NP [n (%)]			
3 months–1 year	9 (15)	12 (19.5)	21 (17)
>1 year	23 (38)	23 (37)	46 (38)
>5 years	13 (22)	15 (24)	28 (23)
>10 years	15 (25)	12 (19.5)	27 (22)
Average NP last week/*VAS*			
[median (range)]	50 (20–100)	56 (20–97)	53 (20–100)
Experience of physiotherapy [n (%)]			
Yes	40 (67)	37 (60)	77 (63)
Positive effect: yes or partly	19 (48)	23 (62)	42 (55)
Use of pain analgetic medicine [n (%)]			
Yes	26 (43)	25 (40)	51 (42)
Smoking [n (%)]			
Yes	12 (20)	18 (29.1)	30 (24.6)
Physical activity [n (%)]			
Slightly no exercise	13 (22)	19 (31)	32 (26)
Light exercise <4 hr/wk	27 (45)	21 (34)	48 (39)
Medium or hard exercise 1–4 hr/wk	13 (22)	18 (29)	31 (26)
Hard exercise ≥3 hr/wk	7 (11)	4 (6)	11 (9)

NP indicates neck pain; VAS, Visual Analogue Scale.

the number of months or years as well as days per week of NP. Intensity was measured with VAS by asking about perceived average NP during the last week and perceived current NP.

A pain diary was used to measure NP during 1 week. Daily average NP was registered each evening with VAS. The diary was filled in the week before each measurement.

Neck Disability Index (NDI)[20] was used to measure function and activity level. This questionnaire is a modification of the original Oswestry Low Back Pain Disability Questionnaire[21] and consists of a 10-item scaled questionnaire. The items assess NP according to intensity, personal care, lifting, reading, headache, concentration, work, driving, sleeping, and recreation. Each item has 6 potential responses describing an increasingly greater degree of disability, and the total scores are then recalculated to percent (0%, no pain and difficulties; 100%, maximum pain and difficulties). The Swedish version of NDI has been shown to be valid and reliable.[22]

Grip strength was measured by using a Grippit (AB Detektor, Göteborg, Sweden), which is an electronic force instrument measuring maximum force and mean force in Newtons over a 10-second time period. A standardized test procedure was followed. No verbal encouragement was given during the test procedure. The reliability of Grippit was demonstrated to be high.[23]

Cervical range of motion (ROM) was measured with a Myrin goniometer (Medema, Stockholm, Sweden). The total ROM was measured in flexion-extension and total rotation right-left. The instrument has demonstrated sufficient reliability and validity.[24]

Statistical Analyses. All analyses were performed on an intention-to-treat (ITT) basis and involved all patients who were randomized and started interventions. Baseline data and subject characteristics are summarized in Table 1. Effect of intervention measured in outcome variables is presented by intervention group. Changes in outcome variables from baseline were dichotomized (as improved or unchanged/deteriorated). Differences in efficacy between interventions were measured as the proportion of improved outcome scores and analyzed using the χ^2 test. The efficacy of the 2 interventions was estimated using the proportion of patients with improved scores and the corresponding 95% confidence interval.

■ Results

A total of 122 patients started in the interventions (qigong n = 60, exercise therapy n = 62); and of these, 102 (84%) patients completed the interventions and were analyzed according to protocol (Figure 2). In total, 20 (16%) patients withdrew or were excluded during the intervention period. Qigong had 12 withdrawals and exercise therapy had 6 withdrawals. Two patients in exercise therapy were excluded (Table 2).

Of the 102 patients who completed the interventions, 98% participated in the long-term follow-ups. In the qigong group, 1 patient was lost (due to death) at the 6-month follow-up and 1 patient did not attend the 12-month follow-up due to personal reasons. In the exercise therapy group, 2 patients did not attend the 6-month follow-up: 1 patient due to low back pain problem and 1 patient due to personal reasons. All subject who withdrew or were excluded during the intervention or did not attend the follow-ups were analyzed according to last observation carried forward and were included into the ITT analysis of the population (n = 122).

Comparisons Between Groups at Baseline

The 2 groups were almost balanced for baseline characteristics and for outcome variables as NP frequency, average NP in the most recent week, current NP, NP diary, and NDI. In total, median (range) NP frequency was 7 days per week (1–7 days). Measured with VAS, average NP during the most recent week was slightly over 50 mm (20–100 mm), current NP was around 40 mm (2–100 mm), and the NP diary showed slightly below 50 mm (4–90 mm). NDI ranged around 25% (6%–60%) in disability (Table 3).

Table 2. Reasons for Not Completing the Intervention

	Qigong	Exercise Therapy
Withdrawal (n = 18)		
Difficulties with time	5	2
Do not want Qigong/exercise	2	2
Other disease	3	—
More pain	—	2
Personal reason	1	—
Other reason	1	—
Excluded (n = 2)		
Medical reason	—	2

Table 3. Outcome Variables, NP Frequency, Average NP Last Week/VAS, Current NP/VAS, NP Diary/VAS, and NDI for the 2 Interventions at Baseline, After Intervention, and at the 6- and 12-Month Follow-up

	Baseline [median (range)]		After Intervention [median (range)]		6-Month Follow-up [median (range)]		12-Month Follow-up [median (range)]	
	Qigong (n = 60)	Exercise Therapy (n = 62)	Qigong (n = 60)	Exercise Therapy (n = 62)	Qigong (n = 60)	Exercise Therapy (n = 62)	Qigong (n = 60)	Exercise Therapy (n = 62)
NP frequency (days/wk)	7 (2.5–7)*	7 (1–7)	6.5 (0–7)	4 (0–7)	5 (0–7)*	3.5 (0–7)	5 (0–7)*	4 (0–7)
Average NP last week/ VAS	50 (20–100)	56 (20–97)	41 (2–81)	26 (0–84)	34 (0–95)*	27 (0–85)	35 (0–87)*	30 (0–91)
Current NP/VAS	45 (2–100)	39 (3–76)	31 (0–82)	22 (0–83)	26 (0–90)*	23 (0–76)	28 (0–79)*	21 (0–86)
NP diary/VAS	47 (7–90)*	44 (4–80)*	29 (1–77)*	24 (0–77)*	30 (0–82)*	25 (0–71)*	28 (0–86)*	23 (0–87)*
NDI	26 (6–60)*	22 (8–52)*	24 (2–68)	17 (2–52)	22 (0–64)*	18 (0–56)	22 (0–54)*	18 (0–52)
Cervical ROM rotation right and left	123 (50–170)	123 (63–190)	140 (50–200)	140 (63–180)	140 (50–200)*	140 (63–180)	140 (50–180)*	150 (63–180)
Cervical ROM flexion-extension	110 (60–153)	110 (50–160)	120 (46–198)	118 (73–175)	120 (60–198)*	115 (73–160)	120 (60–170)*	119 (73–165)

*One to three missing cases.
NP indicates neck pain; VAS, Visual Analogue Scale; NDI, Neck Disability Index; ROM, range of motion.

Comparisons Between Interventions in Outcome Variables

Differences between the 2 groups were measured immediately after intervention and at 6- and 12-month follow-ups compared with baseline and categorized for improved or unchanged/deteriorated. No differences between groups could be statistically demonstrated for NP frequency, average NP in the most recent week, current NP, NP diary, NDI, grip strength, and cervical ROM flexion-extension. The ROM rotation revealed a significant difference ($P = 0.028$) immediately after intervention compared with baseline (Table 4).

Within-Group Changes in Outcome Variables

Changes within all patients (n = 122) in this study were evaluated (Figure 3). The proportion of patients who were improved immediately after intervention and at the 6- and 12-month follow-ups were statistically demonstrated to be above 50% for average NP in the most recent week, NP diary, NDI, cervical ROM in rotation,

Table 4. Number and Proportion of Patients With Improved Scores Compared With Baseline in Outcome Variables After Intervention and at the 6- and 12-Month Follow-up

	Qigong (n = 60) [% (n)]	Exercise Therapy (n = 62) [% (n)]	95% CI	*P*
Change immediately after intervention compared with baseline				
NP frequency	33 (19)	47 (29)	−31; 3	0.101
Average NP last week/VAS	65 (39)	71 (44)	−23; 11	0.608
Current NP/VAS	52 (31)	61 (38)	−26; 9	0.284
NP diary/VAS	69 (40)	77 (47)	−24; 8	0.32
NDI	61 (36)	67 (39)	−23; 11	0.483
Grip strength, maximum right hand	50 (30)	52 (32)	−20; 16	0.859
Cervical ROM rotation	54 (32)	73 (45)	−36; −2	0.028
Cervical ROM; flexion-extension	55 (33)	52 (32)	−15; 21	0.779
Change at 6-month follow-up compared with baseline				
NP frequency	50 (29)	53 (33)	−21; 15	0.724
Average NP last week/VAS	64 (38)	73 (45)	−25; 7	0.333
Current NP/VAS	64 (38)	66 (41)	−19; 15	0.842
NP diary/VAS	64 (36)	77 (47)	−29; 3	0.129
NDI	64 (34)	70 (40)	−24; 12	0.501
Grip strength, maximum right hand	49 (29)	52 (32)	−21; 15	0.787
Cervical ROM rotation	61 (36)	71 (44)	−27; 7	0.248
Cervical ROM; flexion-extension	61 (36)	52 (32)	−9; 27	0.344
Change at 12-month follow-up compared with baseline				
NP frequency	48 (28)	44 (27)	−14; 22	0.603
Average NP last week/VAS	66 (39)	66 (41)	−17; 17	0.997
Current NP/VAS	59 (35)	68 (42)	−26; 8	0.336
NP diary/VAS	61 (35)	74 (45)	−30; 4	0.151
NDI	65 (37)	66 (39)	−18; 16	0.893
Grip strength, maximum right hand	58 (34)	60 (37)	−20; 16	0.819
Cervical ROM rotation	54 (32)	68 (42)	−31; 3	0.128
Cervical ROM; flexion-extension	59 (35)	52 (32)	−12; 24	0.449

NP indicates neck pain; VAS, Visual Analogue Scale; NDI, Neck Disability Index; ROM, range of motion; CI, confidence interval.

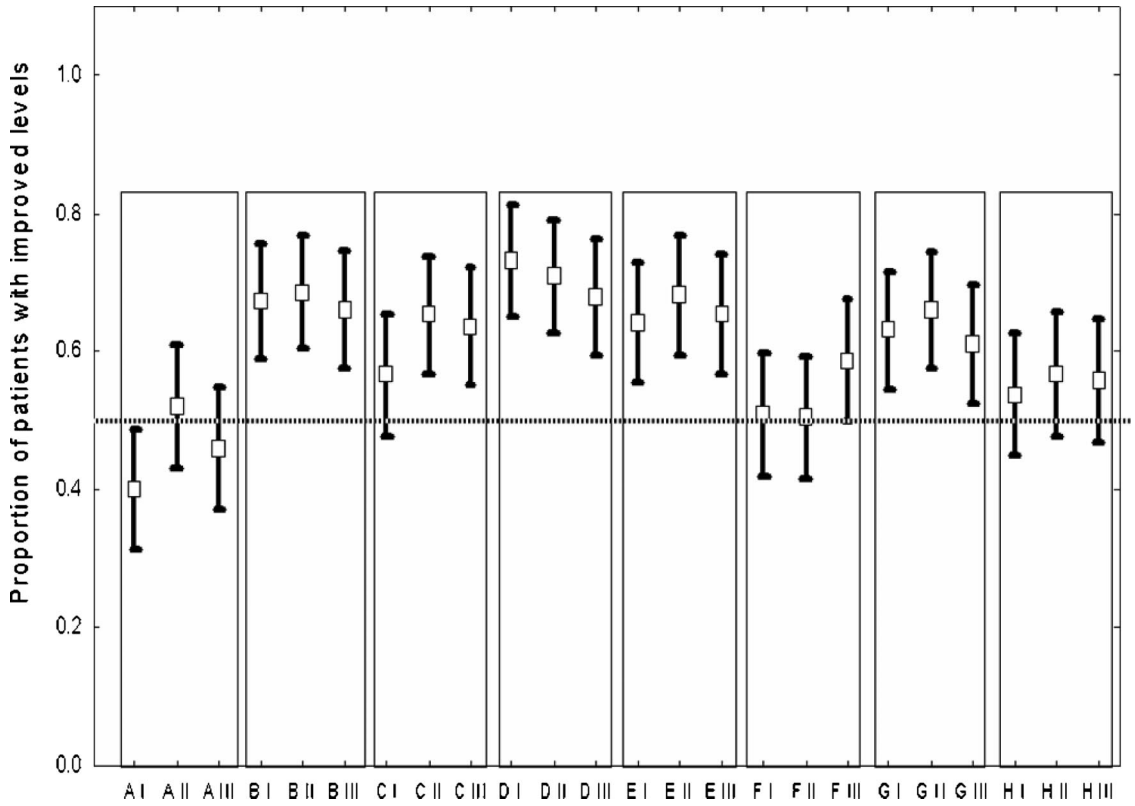

Figure 3. Graph shows proportion of patients (small square) and corresponding 95% confidence interval (whiskers/tails) with improved levels in outcome variables (**A**–**H**), immediately after intervention (**I**) and at the 6 (**II**) and 12 month (**III**) follow-ups, compared with baseline. A, neck pain frequency; B, average neck pain last week/VAS; C, current neck pain/VAS; D, neck pain diary/VAS; E, Neck Disability Index (NDI); F, grip strength, maximum right hand; G, cervical range of motion rotation; H, cervical range of motion; flexion-extension.

and current NP (but not for the time immediately after the intervention period). No statistical improvement above 50% could be demonstrated in pain frequency, grip strength, and cervical ROM in flexion-extension.

■ Discussion

The main findings in this randomized clinical trial were that there were no differences in the effect of qigong and exercise therapy in patients with long-term NP. Both interventions resulted in reduced NP and disability in the long-term follow-up.

The calculated power in this study was a difference of ≥20%. No such differences of clinical interest were found between the 2 groups, but smaller differences may be present in the population but could not be detected. This may be an effect of an underpowered study design caused by too few patients in the ITT analysis of the population or be due to the fact that dichotomization of data reduced the power of the study.

The patients who after randomization never started the intervention were measured for baseline characteristics. Their baseline data were similar to those of the patients who started intervention in all respects and consequently no imbalance was present.

Compliance was good among the patients who fulfilled intervention and almost all attended the follow-ups. Twenty patients did not complete intervention, which might be a weakness. However, according to ITT, they were included in the statistical analysis with baseline data carried forward. Compliance during intervention was higher in exercise therapy than qigong. One reason might be that each session of exercise therapy was individually planned while the qigong was performed as group treatment with preset sessions before the intervention period started.

Pain and disability are important determinants for persons with NP.[25] Our results on reduced pain and disability (measured with NDI) are in line with other studies.[13,26] Even if our patients had significantly decreased pain intensity at the 12-month follow-up as compared with baseline, the majority still had remaining NP. A pain-free result might not to be expected in this case where most of the patients had experienced NP for a long time.

The NDI scores for the patients in this study were somewhat lower at baseline than in other studies.[20,27] The score improved significantly at the follow-ups, and the participants showed a decrease of 10% at the 12-month follow-up compared with baseline. This improvement may seem slight but is large enough to be defined as being clinically important.[28] A high degree of pain in long-term NP does not in most cases correspond with high levels of NDI. This could indicate that these patients have learned to compensate for pain in different kinds of activities.[22]

Cervical ROM and grip strength as outcome measures for pain and disability seem to be weak, and their predictive value in NP has been questioned in some studies.[29,30] The observed individual changes in cervical ROM in rotation were small and within the range of what could be expected as measurement errors. Therefore, the observed changes between and within the interventions should not be regarded as clinically important and should be interpreted with care.[24]

Other investigations comparing different kinds of exercise therapy to treat patients with chronic NP have achieved similar improvements as were seen in our study and with no difference between the interventions at follow-ups.[13,26] In a recent published systematic review,[17] assessing the effect of exercise therapy for NP disorders, the author concluded that there is still limited evidence of the benefit for a variety of exercises, such as active ROM exercises without resistance as well as stretching and strengthening exercises for mechanical NP. Strong evidence was found of the benefit of a multimodal care approach of exercise combined with mobilizations or manipulations.

The aim of the study was to compare a commonly used and scientifically evaluated treatment as exercise therapy with the nonevaluated treatment as qigong. There is a lack of scientific research on qigong, and only a few studies have focused on the effect of qigong for chronic pain.[31,32] The effect of qigong on NP could be that the combination of slow movements combined with breathing exercises and concentration gives relaxation. Qigong seems to decrease stress, which is regarded as an important factor for the origin of NP.

It can be assumed that our patients were representative of a working-age population with long-term nonspecific NP. The method of recruiting participants may have affected the results. One can presume that a majority of the participants sought care on their own initiative, and this may create a group that was highly motivated and interested.

The lack of a precise diagnosis contributes to a misclassification bias; the definitions of NP vary as does the period of pain, and there is a wide variety of clinical characteristics such as age, gender, and level of pain. A nontreated control group would have provided more reliable information about the effects of the interventions, and it may be that the observed improvements merely reflect the effect of natural history and placebo. Another bias could be that it was not possible to blind the evaluators. However, every effort was made to minimize bias by asking the patients not to reveal information to the evaluators about assigned treatment.

The strengths in this study are the large number of patients, the randomized controlled trial design, the use of the ITT principle, the standardized measure procedure, the use of reliable and valid outcome measures, the attempt to follow a treatment guideline, the expertise of physiotherapists, and the good compliance in the interventions.

■ Conclusion

This study demonstrates that patients with long-term NP effectively reduced their NP and neck disability after a 3-month intervention with supervised qigong or exercise therapy and that this improvement was maintained over the 1-year follow-up. Both interventions appear to have a positive effect, but it is still an open question which type of training might be of less importance. Our study has not provided a definite evidence of treatment efficacy and the reason for the long-term effect remains speculative. Further studies are needed to explore the cost-effectiveness of these interventions and to assess the effect of qigong and exercise therapy compared with no treatment or a minimal intervention such as advice for self-care.

■ Key Points

- For long-term neck pain, there is no difference in the effect of qigong compared with exercise therapy.
- Both qigong and exercise therapy resulted in decreased neck pain and neck disability both after intervention as well as 6 and 12 months of follow-up.
- In a clinical setting, patients should be given a choice of treatment approaches encouraging self-management.

Acknowledgments

The authors thank Jan Kowalski for statistical support, physiotherapist Britta-Lena Rundcrantz for helping us with the study design and the evaluations, and the physiotherapists who were responsible for the treatments.

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