

EFFECTS OF QIGONG IN TAI CHI IN THE ELDERLY USING GENERAL HEALTH QUESTIONNAIRE (GHQ)

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Abstract : Objectives : Previous studies have shown health benefits of Tai Chi, including Qigong exercises. This study investigated the effects of Qigong in Tai Chi with elderly volunteers using the General Health Questionnaire (GHQ).

Methods : Eighty-five participants were voluntarily recruited by posters; the present study enrolled 49 healthy participants and randomized them to either the Tai Chi with Qigong group (N=25) or the Tai Chi without Qigong group (N=24). We administered 24-style Tai Chi once a week over 3 months to the participants. We measured GHQ scores of the participants both at the baseline and at the end of the study.

Results : In the Tai Chi with Qigong group, GHQ total score, somatic symptoms score, anxiety/insomnia score, and severe depression score at the end of the study were significantly lower than those at the baseline. In the Tai Chi without Qigong group, GHQ total scores and anxiety/insomnia scores at the end of the study were significantly lower than those at the baseline. Mean change scores from baseline to endpoint in GHQ total scores, and severe depression scores in the Tai Chi with Qigong group were significantly greater than those in the Tai Chi without Qigong group. In the time courses of GHQ total score and severe depression score, significant effects of interaction between group and time were found.

Conclusion : The present study suggested that Qigong of Tai Chi exhibit significant benefits for depressive symptoms in the elderly.

Key words : Qigong, Tai Chi, General Health Questionnaire, elder; depression, quality of life

INTRODUCTION

Tai Chi exercise, often called Tai Chi, has been regarded as both the highest form of martial arts¹⁾ and an important health regimen²⁾. Because of these two good points, Tai Chi has obtained growing popularity not only in the Far East also in many Western countries. Tai Chi consists of Qigong and movement. Qigong can be thought of as a broader class of relaxing, meditative body/mind/spirit exercises; Qigong began in the middle of the first millennium B.C. in China³⁾. Tsang and Fung⁴⁾ 2008 suggested the hypothesis that Qigong increases the level of monoamine neurotransmitters in the brain. As a result, increased levels of tryptophan as a consequence of exercise may result in increased brain serotonin synthesis and release.

Previous studies have shown the health benefits of Tai Chi. Wang et al⁵⁾ examined the effects of Tai Chi in thirty college students using the 36-item short-form health survey

(SF-36) questionnaire. They assessed multidimensional physical (PHD) and mental (MHD) health scores before and after the intervention of Tai Chi, and suggested that Tai Chi had positive effects on the self-assessed physical and mental health of college students. Some studies have shown health benefits of Tai Chi in the elderly. Ho *et al*⁶⁾ examined the effects of Tai Chi on the health-related quality of life (HRQOL) in the senior population using the SF-36 questionnaire, and suggested that Tai Chi improved quality of life among the elderly. In Japan, Kin *et al*⁷⁾ also examined the effects of Tai Chi in 1,844 people who were over 65 years old using the SF-36 questionnaire, and indicated that the HRQOL of the people who practiced Tai Chi was better than that of age-matched national standards.

To our knowledge, no study directly examined the effectiveness of Qigong meditation (Qigong) itself in Tai Chi. To clarify the effectiveness of Qigong meditation, we assessed the effect of Tai Chi with and without Qigong meditation.

METHODS

Participants

Eighty-five participants were voluntarily recruited by posters. We excluded 36 participants, because they were under 60 years old, had psychiatric and/or physical medical history, or had already experienced Tai Chi. The present study enrolled 49 healthy participants and randomized them to either a Tai Chi with Qigong group or a Tai Chi without Qigong group (Fig. 1).

Prior to participation, all participants gave informed consent to the study.

Tai Chi

We administered 24-style Tai Chi once a week for 3 months to participants. The Tai Chi exercise was scheduled for 1 hour per day, and each 1-hour session consisted of a 10-minute warm-up, 45 minutes of Tai Chi practice, and a 5-minute cool-down. We made the exercise that consisted of only movements in 24-style Tai Chi, and named it Tai Chi without Qigong. Regular 24-style Tai Chi was named Tai Chi with Qigong.

General Health Questionnaire (GHQ)

The GHQ is a widely used self-report measure of general health, developed by Goldberg⁸⁾. In the present study, we used the previously-validated Japanese version⁹⁾ of the 60-item GHQ⁸⁾ in order to estimate the participants' HRQOL. The GHQ-60 used in this study consists of four sub-scales: a) somatic symptoms, b) anxiety/insomnia, c) social dysfunction and d) severe depression. Lower scores indicate better mental health. Subjects with a GHQ-60 score greater than or equal to 16 were considered to have psychological distress⁹⁾. This cut-off value has been used in several previous epidemiologic studies in Japanese populations. Those scores of all (the enrolled) participants were under 16. We measured GHQ scores of the participants both at the baseline and at the end of the study.

Data analyses

Group differences in Table 1, Table 2, and Table 3 tested with paired *t* tests. Furthermore, to examine the time-courses of each GHQ score analysis of variance (ANOVA) with repeated-measures was performed with both groups (Tai Chi with Qigong or Tai Chi without Qigong) and time (baseline or endpoint) as factors. All statistical analyses were performed with SPSS 16.0 J for Windows (SPSS, Tokyo, Japan).

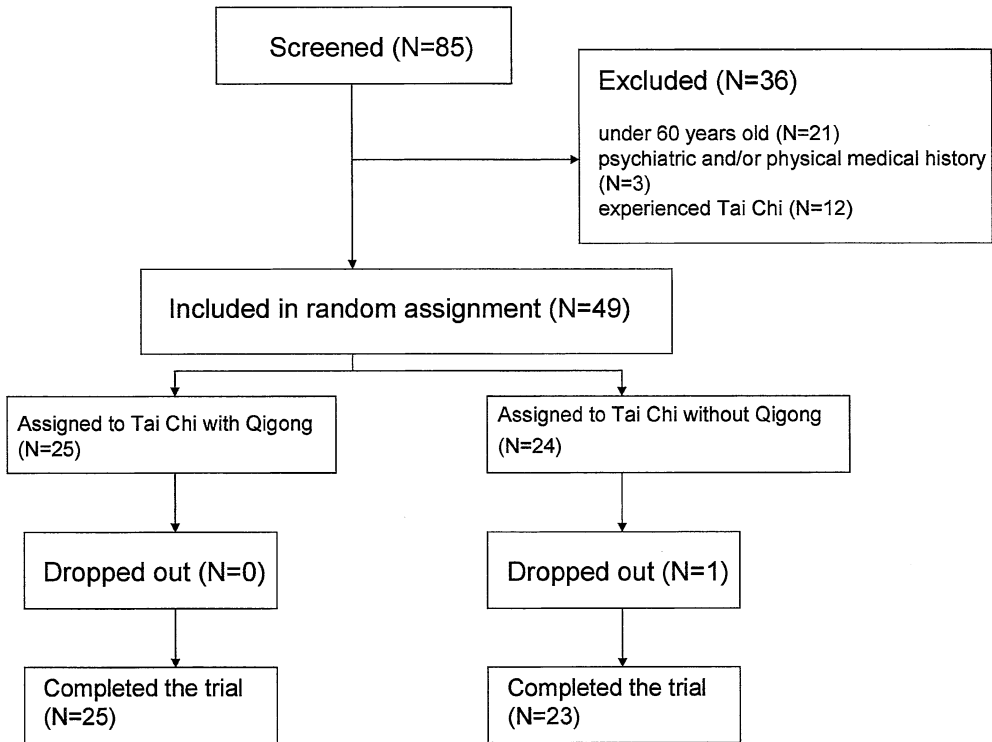


Fig. 1. Participant Flow-chart in a Randomized Trial

RESULTS

As shown in Table 1, there are no significant differences between Tai Chi with the Qigong group and Tai Chi without the Qigong group in sex, age, GHQ total score, somatic symptoms score, anxiety/insomnia score, social dysfunction score, and severe depression score at the baseline. However, at the endpoint, GHQ total score in Tai Chi exercise with the Qigong group was significantly lower than those in the Tai Chi without Qigong group.

As shown in Table 2, in Tai Chi with the Qigong group, GHQ total score, somatic symptoms score, anxiety/insomnia score, and severe depression score at the endpoint were significantly lower than those at the baseline. In the Tai Chi without Qigong group, GHQ total score, and anxiety/insomnia score at the endpoint were significantly lower than those at the baseline.

As shown in Table 3, mean change scores from baseline to endpoint in GHQ total score, and severe depression score in the Tai Chi with Qigong group were significantly greater than those in the Tai Chi without Qigong group.

In the time courses of GHQ total score and severe depression score, significant effects of

Table 1. Participants characteristics

	Tai Chi with Qigong group	Tai Chi without Qigong group	P value
Age	67.76 (4.70)	66.92 (4.34)	0.52
baseline			
Sex(male:female)	25 (7:18)	24 (6:18)	
GHQ total score	5.12 (4.54)	4.58 (3.53)	0.54
somatic symptoms score	1.80 (1.73)	1.71 (1.60)	0.85
anxiety/insomnia score	2.00 (1.78)	2.04 (1.76)	0.94
social dysfunction score	0.60 (1.15)	0.42 (0.78)	0.52
severe depression score	0.72 (1.28)	0.42 (1.10)	0.38
endpoint			
Sex(male:female)	25 (7:18)	23 (5:18)	
GHQ total score	1.08 (1.38)	2.43 (2.42)	0.02*
somatic symptoms score	0.48 (0.77)	0.91 (1.12)	0.12
anxiety/insomnia score	0.48 (0.71)	1.04 (1.33)	0.07
social dysfunction score	0.12 (0.33)	0.17 (0.39)	0.6
severe depression score	0.00 (0.00)	0.30 (0.93)	0.11

*p<0.05

Table 2. The comparison between baseline and endpoint

	baseline	endpoint	P value
Tai Chi with Qigong group			
GHQ total score	5.12 (4.54)	1.08 (1.38)	0.0002****
somatic symptoms score	1.80 (1.73)	0.48 (0.77)	0.001***
anxiety/insomnia score	2.00 (1.78)	0.48 (0.71)	0.0002****
social dysfunction score	0.60 (1.15)	0.12 (0.33)	0.051
severe depression score	0.72 (1.28)	0.00 (0.00)	0.007***
Tai Chi without Qigong group			
GHQ total score	4.58 (3.53)	2.43 (2.42)	0.02*
somatic symptoms score	1.71 (1.60)	0.91 (1.12)	0.055
anxiety/insomnia score	2.04 (1.76)	1.04 (1.33)	0.03*
social dysfunction score	0.42 (0.78)	0.17 (0.39)	0.18
severe depression score	0.42 (1.10)	0.30 (0.93)	0.71

*p<0.05, **p<0.02, ***p<0.01, ****p<0.001

Table 3. Comparison of GHQ change scores

	Tai Chi with Qigong group	Tai Chi without Qigong group	P value
change scores			
GHQ total score	4.08 (4.00)	1.91 (2.43)	0.03*
somatic symptoms score	1.32 (1.44)	0.65 (0.93)	0.06
anxiety/insomnia score	1.56 (1.66)	0.87 (1.36)	0.12
social dysfunction score	0.60 (1.15)	0.13 (1.18)	0.17
severe depression score	0.72 (1.28)	0.13 (0.46)	0.04*

* $p < 0.05$

interaction between group and time ($F[1,46]=5.037$ ($p=0.030$), $F[1,46]=4.388$ ($p=0.042$), respectively) were yielded. On the other hand, in the time courses of somatic symptoms score, anxiety/insomnia score, and social dysfunction score, there are no significant effects of interaction between group and time ($F[1,46]=3.580$ ($p=0.065$), $F[1,46]=2.460$ ($p=0.124$), $F[1,46]=0.763$ ($p=0.387$), respectively).

DISCUSSION

Previous studies have reported that physical activity and exercise may have beneficial effects on mental health¹⁰⁻¹⁵. The present study indicated that not only Tai Chi with Qigong but also Tai Chi without Qigong were effective to HRQOL in the elderly. That is, the exercise itself of Tai Chi was effective for HRQOL in the elderly. We therefore supported the previous studies suggesting that exercises were effective to HRQOL in the elderly.

Recent studies have shown effects of Tai Chi for depressive symptoms¹⁶⁻¹⁷. Our previous study examined the effect of Tai Chi exercise on a major depressive patient using Hamilton Rating Scale for Depression (HAM-D)¹⁸ and event-related potentials (ERPs) as objective measures. We suggested that Tai Chi could be recommended as a mental training method to ameliorate not only depressive symptoms but also cognitive function, especially attention function¹⁹. However, our previous study had no discussion concerning why Tai Chi was effective for depressive symptoms.

Qigong is a general term for a variety of traditional Chinese energy exercises and therapies. Qigong refers to the self practice of mind-body-breathing integration techniques such as Tai Chi or meditation. Qigong is designed to develop the skill of controlling qi, the vital energy of the body, and consequently to improve spiritual, physical and mental health. We tried to clarify the effectiveness of Qigong meditation, and assessed the effects of Tai Chi with and without Qigong meditation.

The present study found that Tai Chi with Qigong was more effective for both HRQOL and depressive symptoms in the elderly than Tai Chi without Qigong. Our above-mentioned indications were supported, because we found a significant interaction of group by time in GHQ total score and severe depression score. We therefore indicated that Qigong of Tai Chi contributed to the effects of Tai Chi for depressive symptoms in the elderly.

We found a significant effect of Tai Chi exercise in anxiety/insomnia score (Table 2). This result supported the study concluding that Tai Chi can be considered a useful non-pharmacologic approach to improve sleep quality in older adults with moderate complaints²⁰. However, we found that there is no significance in somatic symptoms, anxiety/insomnia, and social dysfunction. Further studies are needed to examine the effects of Tai Chi for other symptoms.

There were two limitations in the present study. First, the sample size was small. In the present study, we could recruit 85 participants, but we could enter only 49 healthy participants in the present study, because we gave several conditions to them. However, we therefore could do a strict study, and get reasonably reliable results. Second, objective measures were not used. Therefore, future studies with large samples and objective measures, such as ERPs, are needed to determine whether the Qigong of Tai Chi is effective for depressive symptoms and cognitive function.

Adverse events were reported in other exercise training. Sigal *et al*²¹ examined the effects of aerobic training, resistance training, or both on glycemic control in type 2 diabetes, and reported that adverse events in aerobic training, resistance training, and combined exercise training were greater than adverse events in controls (40%, 39%, 34%, 16%, respectively). In the present study, all participants completed this study except for one male who dropped out due to being non-contactable. Furthermore, no mental and/or physical adverse events were reported. Tai Chi is therefore the most suitable exercise for the elderly to improve the health-related quality of life.

CONCLUSION

The Qigong in Tai Chi can be effective in depression. Tai Chi is the most suitable exercise for the elderly to improve the health-related quality of life.

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