

Effect of *Yi Jin Jing* (Sinew-transforming Qigong Exercises) plus tuina on scapulohumeral periarthritis

易筋经锻炼配合推拿治疗肩关节周围炎的临床观察

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Abstract

Objective: To investigate the effect of *Yi Jin Jing* (Sinew-transforming Qigong Exercises) plus tuina on scapulohumeral periarthritis (SP).

Methods: A total of 30 cases with SP were randomized into an observation group and a control group. Those in the observation group practiced *Yi Jin Jing* (Sinew-transforming Qigong Exercises) plus tuina therapy; whereas those in the control group received only tuina therapy. Tuina therapy was conducted every other day, 20 min every time for 1 month and *Yi Jin Jing* (Sinew-transforming Qigong Exercises) was conducted once a day for 1 month. The therapeutic effects were assessed by visual analogue scale (VAS) and Constant-Murley scale.

Results: After treatment, the VAS score and Constant-Murley scale were substantially improved, showing statistical significances ($P < 0.01$); the Constant-Murley scale in the observation group was better than that in the control group, showing a statistical significance ($P < 0.01$); the effective rate in the observation group was higher than that in the control group, between-group comparison showed a statistical significance ($P < 0.01$).

Conclusion: *Yi Jin Jing* (Sinew-transforming Qigong Exercises) plus tuina and tuina alone have a verified effect in treating SP, and the former can achieve a better effect than the later.

Keywords: Tuina; Massage; *Yi Jin Jing*; Frozen Shoulder; Periarthritis; Shoulder Pain; Pain Measurement; Visual Analogue Scale

【摘要】目的: 观察易筋经锻炼配合推拿手法治疗肩关节周围炎(SP)的临床疗效。**方法:** 将30例SP患者随机分为两组, 治疗组采用易筋经锻炼配合推拿手法治疗, 对照组采用单纯推拿手法治疗。推拿治疗隔日1次, 每次20 min, 治疗1个月; 易筋经锻炼每日1次, 练习1个月。通过比较治疗前后患者疼痛视觉模拟量表(VAS)评分和Constant-Murley肩关节评分进行疗效评定。**结果:** 治疗后, 两组的VAS评分和肩关节活动度均较本组治疗前明显改善(均 $P < 0.01$); 治疗组Constant-Murley肩关节评分改善情况优于对照组, 组间差异有统计学意义($P < 0.01$); 两组疗效比较, 治疗组优于对照组, 组间比较有统计学意义($P < 0.01$)。**结论:** 易筋经锻炼配合推拿手法和单纯推拿手法治疗SP疗效确切, 且易筋经锻炼配合推拿手法治疗的疗效优于单纯推拿手法治疗。

【关键词】 推拿; 按摩; 易筋经; 肩凝症; 关节周围炎; 肩痛; 疼痛评价; 视觉模拟量表

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Scapulohumeral periarthritis (SP) is an aseptic inflammation affecting soft tissue of the shoulder joint. SP is more common in people at about 50 years old. Its main symptoms include joint pain and stiffness, coupled with functional impairment. Severe SP can affect the patients' daily living. Currently, treatments are focused on pain relief and improvement of joint movement. The main therapy includes drug and non-drug therapy, and also functional exercise. As a traditional external therapy, Chinese tuina is both safe and convenient, and therefore, *Yi Jin Jing* (Sinew-transforming Qigong Exercises) is conducted as the main therapy in treating

SP, is a common exercise among tuina practitioners, as it has the merits of softening tendons and facilitating joint movement. We've observed the effect of *Yi Jin Jing* (Sinew-transforming Qigong Exercises) plus tuina on SP. The results are now summarized as follows.

1 Clinical Data

1.1 Diagnostic criteria

This was based on the diagnosis of SP in the *Criteria of Diagnosis and Therapeutic Effects of Diseases and Syndromes in Traditional Chinese Medicine*^[1]: a chronic onset, history of injury, deficiency of qi and blood coupled with external contraction of wind, cold and dampness; common in people at about 50 years old, female priority; shoulder pain, aggravated at night,

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induced by weather change or fatigue, limited shoulder joint movement, incidence of shoulder muscle atrophy, pressing pain on the front, back and lateral side of the shoulder joint, limited abduction movement, showing typical shoulder lifting symptom; negative X-ray result, osteoporosis may exist in long-term SP.

1.2 Inclusion criteria

Met the diagnostic criteria above; didn't receive any other therapies over the recent 2 months, aged below 75 years old; informed consent.

1.3 Exclusion criteria

Experienced acute inflammation of shoulder, showing red and swollen local skin with severe pain; shoulder injury or bone fracture; shoulder tumor; severe heart, brain or kidney diseases; a history of mental disorder.

1.4 Rejection criteria

Failed to stick to the treatment; those with poor compliance.

1.5 Statistical methods

All data were processed by SPSS 13.0 version software. Measurement data of normal distribution were described by mean \pm standard deviation ($\bar{x} \pm s$) and analyzed by *t*-test. Data not in normal distribution were analyzed by non-parametric test. The enumeration or rank data were analyzed by Chi-square or non-parametric test. A *P* value less than 0.05 indicated a statistical significance.

1.6 General data

A Total of 30 SP cases treated in Tuina Department of our hospital were included in this study. The cases were allocated into an observation group of 15 cases [5 males and 10 females with an average age of (55.3 \pm 6.7) years and duration of (81.2 \pm 6.6) d] and a control group of 15 cases [7 males and 8 females with an average age of (57.6 \pm 8.7) years and duration of (58.5 \pm 5.3) d]. Since there were no significant differences in gender, age and disease duration between the two group (all *P*>0.05), indicating that the two groups were comparable.

2 Treatment Methods

2.1 Observation group

2.1.1 Tuina treatment

Relaxing method: The patient took a sitting position, and the practitioner stood on the affected side, held and slightly extent the upper limb with one hand, and performed Gun-rolling, Na-grasping and Rou-kneading manipulations on the shoulder with another hand, focused on the front, back and deltoid region of the shoulder joint. Passive extension, pronation and supination were combined to relax the muscle and facilitate remission of adhesion.

Relieving spasm and analgesic method: Digital An-pressing and Tanbo-plucking manipulations were

performed separately on Jianjing (GB 21), Bingfeng (SI 12), Tianzong (SI 11), Jianneiling (Extra), Jianzhen (SI 9) and Jianyu (LI 15) to generate a feeling of soreness; Tanbo-plucking manipulation was given to the adhesive and pain region to relieve spasm and pain, and remove adhesion.

Joints movement method: The practitioner held patients' shoulder with one hand, and held the waist or elbow with the other hand, and then took shoulder joint as the center to rotate the arm with gradually increased amplitude. After that, Bashen-pulling and Dou-shaking manipulations were performed in the adduction, abduction, backward extension and internal rotation phases of the shoulder joint to remove adhesion and smooth joint movement.

Relax sinews and blood-activation: Cuo-twisting, Rou-kneading, Na-grasping and Nie-pinching manipulations were performed surrounding the shoulder joint; the practitioner held the patients' waist, lifted the affected arm gradually and then gave Bashen-pulling and Dou-shaking manipulations; finally Cuo-twisting manipulation was conducted from the shoulder to the front arm for 3-5 times to relax shoulder region and thus, relax sinews and activate blood^[2].

The tuina treatment cost 20 min each time, and was given once every other day.

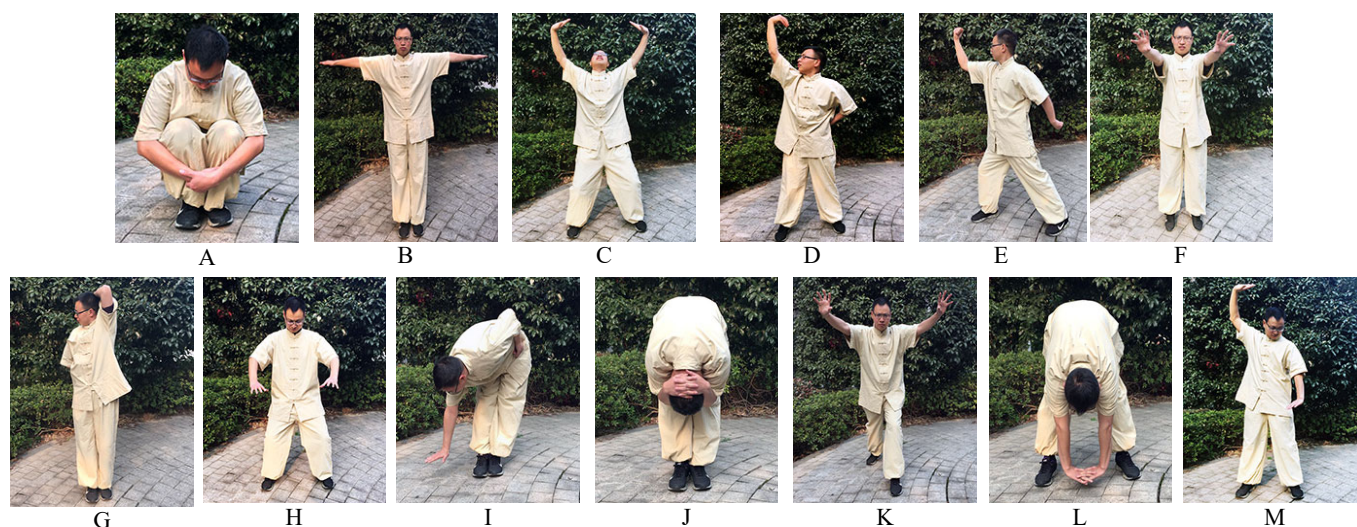
2.1.2 *Yi Jin Jing* (Sinew-transforming Qigong Exercises)

The revised *Yi Jin Jing* (Sinew-transforming Qigong Exercises) for SP patients were designed on the basis of the 12 original *Yi Jin Jing* (Sinew-transforming Qigong Exercises) postures in *Exercise and Techniques of Tuina*^[3], which included A: preparation posture; B: Wei Tuo presenting the pestle I; C: Wei Tuo presenting the pestle II; D: grabbing and resetting a star; E: dragging nine oxen by their tails; F: showing claws and spreading wings; G: nine demons drawing their swords; H: three plates falling to the floor; I: a bluish dragon extending claws; J: bowing in salutation; K: a hungry tiger at its prey; L: wagging the tail; M: conclusion posture (Figure 1).

Note: Wearing a loose dress, a pair of exercise shoes or shoes with a soft sole; ridding distraction, and making sure the movement must be gradual and gentle instead of rough. Staying away from wind and keeping warm after exercise. Took exercise once a day to get a feeling of sweating slightly.

2.2 Control group

Tuina treatment same as that in the observation group was applied to those in the control group, meanwhile combined with shoulder joint functional exercise during treatment.

Figure 1. *Yi Jin Jing* (Sinew-transforming Qigong Exercises)

2.3 Course

Tuina treatment was done every other day, 20 min each time for 1 month. *Yi Jin Jing* (Sinew-transforming Qigong Exercises) was conducted once a day for 1 month.

3 Therapeutic Efficacy Observation

3.1 Observation items

3.1.1 Pain intensity

Visual analogue scale (VAS) was used to evaluate the shoulder pain intensity. A line of 10 cm in length with a 0 on the left end representing no pain and 10 on the right end representing worst possible pain was presented in front of the patient to mark the most adequate score to reflect their pain intensity. The score was used for before-after treatment and inter-group comparisons.

3.1.2 Constant-Murley shoulder score^[4]

The max range of front and side extension of the shoulder joint and also the degree of external and internal rotation were measured for before-after treatment and inter-group comparisons. The full score was 30 points, a higher score representing a better shoulder joint function (Table 1-Table 3).

Table 1. Front and side extension grading standard

Range of extension (°)	Score (point)
0-30	0
31-60	2
61-90	4
91-120	6
121-150	8
151-180	10

Table 2. External rotation grading standard

Position	Score (point)
Hand on head's back, front elbow	2
Hand on head's back, external elbow	2
Hand on head's top, front elbow	2
Hand on head's top, external elbow	2
Totally raise above head's top	2

Table 3. Internal rotation grading standard

Position	Score (point)
Hand's back on dorsal thigh	0
Hand's back on hip	2
Hand's back on sacroiliac joint	4
Hand's back on L ₃	6
Hand's back on T ₁₂ spinous process	8
Hand's back on interscapular region	10

3.2 Therapeutic efficacy evaluation criteria

Recovery: Absence of shoulder pain along with normal joint motion.

Better: Alleviated joint pain along with better motor functions.

Failure: Symptoms remained unchanged.

3.3 Result

3.3.1 Comparison of VAS score

Before treatment, the VAS scores in the two groups were not significantly different ($P > 0.05$). After treatment, the VAS scores in the two groups both dropped significantly ($P < 0.01$). The improvement in the observation group was significantly better than that in the control group ($P < 0.01$), (Table 4).

Table 4. Comparison of VAS before and after treatment ($\bar{x} \pm s$, point)

Group	<i>n</i>	Before treatment	After treatment
Observation	15	7.33±1.35	0.93±0.88 ¹⁾²⁾
Control	15	7.27±1.28	2.73±0.96 ¹⁾

Note: Intra-group comparison, 1) $P < 0.01$; compared with the control group after treatment, 2) $P < 0.01$

3.3.2 Constant-Murley shoulder score comparison

Before treatment, the inter-group comparison of Constant-Murley shoulder score didn't reveal a statistical significance ($P > 0.05$). After treatment, the Constant-Murley shoulder scores in the two groups both dropped significantly (both $P < 0.01$). The improvement in the observation group was significantly

better than that in the control group ($P < 0.01$), (Table 5).

3.3.3 Comparison of clinical efficacy

By non-parametric rank-sum test, the clinical efficacy of the observation group was better than that in the control group, showing a statistical significance ($Z = -2.156$, $P = 0.031$), (Table 6).

Table 5. Comparison of Constant-Murley shoulder score before and after treatment ($\bar{x} \pm s$, point)

Group	<i>n</i>	Before treatment	After treatment
Observation	15	10.67±2.58	25.87±2.97 ¹⁾²⁾
Control	15	10.00±2.39	22.67±3.27 ¹⁾

Note: Intra-group comparison, 1) $P < 0.01$; compared with the control group after treatment, 2) $P < 0.01$

Table 6. Inter-group comparison of clinical effects (case)

Group	<i>n</i>	Recovery	Better	Failure	Total effective rate (%)
Observation	15	7	7	1	93.3 ¹⁾
Control	15	2	9	4	73.3

Note: Compared with the control group, 1) $P < 0.05$

4 Discussion

SP pertains to Bi-Impediment syndrome in traditional Chinese medicine (TCM), also known as *Lou Jian Feng* (wind attacking shoulder), *Wu Shi Jian* (shoulder of the fifty years old), or *Dong Jie Jian* (frozen shoulder). TCM holds that it's closely linked with invasion of pathogenic wind, cold and dampness, in which, dampness is characterized by sticky and turbid, and thus easily obstructs normal qi-blood flow to cause adhesion of shoulder joints. At the same time, liver-kidney deficiency, deficiency of qi-blood, malnourishment of sinews, pain due to blood deficiency for a long history, nutrient-defense disharmony, and contracture of tendons are also known as the common causes for this disease^[2].

Yi Jin Jing (Sinew-transforming Qigong Exercises) is one of the traditional exercise methods in Chinese history, *Yi* means change, *Jin* refers to muscles and sinews, *Jing* means methods, so *Yi Jin Jing* literally means a way to change muscle and sinews. *Yi Jin Jing* (Sinew-transforming Qigong Exercises) takes the harmony of body, breath and mind as its basic principle, it stresses the unity of strength and meditation and consists of a perfect combination of static postures and dynamic movements. Through that, it can circulate qi and blood, strengthen limbs and improve physiological functions of tissues and organs, and also arrest spasm^[5-6]. Research has shown that *Yi Jin Jing* (Sinew-transforming Qigong Exercises) can accelerate blood circulation, increase basal metabolic rate, enhance strength and flexibility of musculoskeletal

system of upper arm. At the same time, through rotary and revolving movements, for example, Wei Tuo presenting the pestle, grabbing and resetting a star, dragging nine oxen by their tails or nine demons drawing their sword, conglutinated shoulder joint can be released to improve the functional movement^[7-12]. Clinical features of SP include pain and joint movement disorder, in which pain mostly occurs at night, so sleep disorder is common among SP patients. Research also shows that pain and sleep disorder are usually accompanied with anxiety and depression. In China, the incidence of anxiety in chronic pain people is between 23.08%-57.25%, whereas that of depression is between 21.90%-55.13%^[13-16]. Therefore, treatment for SP should also stress on regulating negative emotions caused by chronic pain and life disturbance. *Yi Jin Jing* (Sinew-transforming Qigong Exercises) can benefit both mind and body. A research had been conducted to compare the anxiety, depression and somatization scale before and after *Yi Jin Jing* (Sinew-transforming Qigong Exercises), showing that after 6 months of *Yi Jin Jing* (Sinew-transforming Qigong Exercises), multiple factors of depression and anxiety dropped significantly, with a statistical significance when compared with the control group ($P < 0.01$). It indicated *Yi Jin Jing* (Sinew-transforming Qigong Exercises) could improve exercisers' mental condition^[17].

The Gun-rolling, Na-grasping and Rou-kneading tuina manipulations can relax sinews and activate collaterals to relieve pain. Tanbo-plucking, Dou-shaking and Bashen-pulling manipulations can release adhesion and smooth joint movement, thus alleviate pain and

improve joint movement condition^[18]. *Yi Jin Jing* (Sinew-transforming Qigong Exercises) can increase the strength and flexibility of musculoskeletal system of upper limb and enhance the dynamic stability of shoulder joint; tuina manipulation can relieve pain and smooth joint movement to create a good condition for *Yi Jin Jing* (Sinew-transforming Qigong Exercises). *Yi Jin Jing* (Sinew-transforming Qigong Exercises) can consolidate curative effect of tuina on one hand, and regulate patients' mental health on the other hand. Combination of these two methods can achieve a better clinical effect and is thus worth popularization.

Conflict of Interest

The authors declared that there was no potential conflict of interest in this article.

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Statement of Informed Consent

Informed consent was obtained from all individual participants included in this study.

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