WHIOCE PUBLISHING PTE. LTD.
PROVIDING
FIRST-CLASS SCIENTIFIC INFORMATION
FOR TOP SCHOLARS

2025 Volume 10, Issue 4
Advances in Precision Medicine
ISSN: 2424-9106 (Online)
ISSN: 2424-8592 (Print)

# Analysis and Discussion on the Value of Acupuncture Combined with Traditional Chinese Medicine Fumigation in the Treatment of Periarthritis of Shoulder

**Xiaolong Zhu**
Community Health Service Center, Mashan Street, Wuxi 214000, Jiangsu, China



**Abstract:** *Purpose:* This study aims to investigate the synergistic effect of combined acupuncture and traditional Chinese medicine fumigation in relieving pain, promoting joint function recovery, and improving quality of life in patients with shoulder periarthritis. *Methods:* The study was conducted from August 2024 to February 2025, using a randomized controlled design, and 120 patients were randomly divided into two groups: the control group (60 cases who received only conventional acupuncture treatment) and the observation group (60 cases who received acupuncture combined with traditional Chinese medicine fumigation treatment). The treatment cycle is 4 weeks. The treatment effect is evaluated by dynamically monitoring VAS score, Constant-Murley score and serum inflammatory factor levels at multiple time points. *Results:* After treatment, the Constant-Murley score of the observation group was significantly higher than that of the control group, while the VAS score and inflammatory factor levels dropped more obviously, and the difference was statistically significant ($p < 0.05$). *Conclusion:* The combined therapy of acupuncture and traditional Chinese medicine fumigation plays a synergistic anti-inflammatory and improved microcirculation role through the dual approach of "acupuncture dredging-drug penetration", providing an innovative integrated traditional Chinese and Western medicine solution for the treatment of shoulder periarthritis.

**Keywords:** Acupuncture; Periarthritis of shoulder; Traditional Chinese medicine fumigation; Quality of life; Pain; Joint function

***Online publication:*** December 20, 2025

## 1. Introduction

As society enters an aging era and sedentary behaviors become more common, periarthritis of the shoulder has become a key factor in functional disability and labor loss among middle-aged and elderly people, and its global disease burden is increasing [1]. As a typical degenerative disease, current Western medical treatments, mainly including nonsteroidal anti-inflammatory drugs, glucocorticoid injections, and physical rehabilitation, face challenges such as high recurrence rates and slow functional recovery [2]. In the theoretical system of traditional Chinese medicine, periarthritis of the shoulder is classified into disease categories such as "Bi syndrome", "shoulder stiffness" or "frozen shoulder", and its core pathological mechanism can be summarized as "blockage causes pain, and lack of prosperity causes pain" [3]. However,

most of the existing studies are limited to the evaluation of the efficacy of single therapy and lack in-depth exploration of the mechanism of "acupuncture-fumigation" combined intervention [4]. To this end, this study innovatively proposes a combined intervention strategy of "acupuncture analgesia + transdermal absorption of traditional Chinese medicine", aiming to break through the limitations of the traditional single treatment model. Acupuncture relieves pain by regulating local neurotransmitter release, while traditional Chinese medicine fumigation uses thermal effects to promote drug penetration, thereby inhibiting the inflammatory cascade [5]. Through syndrome-specific intervention of acupuncture combined with traditional Chinese medicine fumigation, we are expected to achieve breakthroughs in multiple targets such as "inflammation-fibrosis-metabolic disorders", and then clarify the biological basis of traditional Chinese medicine's "treating different diseases with the same treatment".

# 2. General information

## 2.1. Basic information

This study adopted a randomized controlled design. From August 2024 to February 2025, a total of 120 patients were included and randomly divided into a control group and an observation group. The basic information of the patients is shown in **Table 1**.

**Table 1.** Basic information

| Group | n | Gender (n) | | Age (years) | Course of disease (months) |
|---|---|---|---|---|---|
| | | Male | Female | | |
| Observation group | 60 | 34 | 26 | 57.26 ± 3.15 | 7.46 ± 1.22 |
| Control group | 60 | 30 | 30 | 57.37 ± 3.22 | 7.81 ± 1.18 |
| $\chi^2/t$ | | 1.086 | | 0.134 | 0.134 |
| $p$ | | 0.297 | | 0.894 | 0.894 |

### 2.1.1. Inclusion criteria

(1) Meet the diagnostic criteria in the "Guidelines for the Diagnosis and Treatment of Shoulder Periarthritis";
(2) Voluntarily participate in the study and sign an informed consent form;
(3) The age range is between 40 and 70 years old.

### 2.1.2. Exclusion criteria

(1) Patients with a history of shoulder trauma, fracture or surgery;
(2) Patients with secondary shoulder pain caused by rheumatoid arthritis, cervical spondylosis and other diseases;
(3) Patients who are pregnant or suffering from severe cardiovascular and cerebrovascular diseases;
(4) Patients who are allergic to acupuncture or fumigation drugs.

## 2.2. Research methods (observation group)

Observation group: Acupuncture combined with traditional Chinese medicine fumigation

### 2.2.1. Treatment sequence and intervals

Acupuncture treatment is performed first, followed by traditional Chinese medicine fumigation, with an interval of 30 minutes. The specific method of acupuncture was as in the control group.

#### 2.2.2. Basic formula for traditional Chinese medicine fumigation

Cinnamon twig: 15 g; safflower: 10 g; *Herba sibiricum*: 20 g; Clematis: 15 g. Adjustment of fumigation prescription for syndrome differentiation and treatment.

(1) Wind-cold-dampness syndrome: strengthen the warming of the meridians and dispel cold, add cinnamon twig, moxa leaf, and clematis. Fumigation of affected shoulder at 40 ℃.
(2) Syndrome of Qi stagnation and blood stasis: add safflower, frankincense, and hematoxylin, combined with infrared irradiation to enhance the blood-activating effect. Fumigation of affected shoulder at 40 ℃.
(3) Syndrome of phlegm-dampness blocking collaterals: add *Atractylodes rhizome* and Alisma. Fumigation of affected shoulder at 40 ℃.
(4) Qi and blood deficiency syndrome: Add astragalus extract and angelica root. Use low temperature (38 ℃) and long-term fumigation.

#### 2.2.3. Decoction and fumigation methods

(1) Add 1500 mL of water to the medicinal materials, boil, simmer for 30 minutes, and concentrate to 500 mL of medicinal solution.
(2) The patient should sit in a sitting position, keeping a distance of 20 cm between the affected shoulder and the fumigation port.
(3) Continue fumigation for 20 minutes each time, once a day, 5 times a week, for a total of 4 weeks.

### 2.3. Research methods (control group)

Control group: conventional acupuncture:

#### 2.3.1. Acupoint selection

(1) Wind-cold-dampness syndrome
Select acupuncture points such as Fengchi, Dazhui, and Jianli.
(2) Qi stagnation and blood stasis syndrome
Acupuncture treatment is performed on Hegu, Xuehai, Geshu and Jianliao points.
(3) Phlegm-dampness blocking collaterals
Select acupuncture points such as Fenglong, Yinlingquan, Jianjing, etc.
(4) Qi and blood deficiency syndrome
Acupuncture at Zusanli, Pishu, Qihai and Jianzhen points.

#### 2.3.2. Needles and techniques

(1) Use 0.30 × 40 mm disposable sterile acupuncture needles.
(2) In terms of technique, after quickly breaking the skin, lift, insert and twist until the Qi is obtained, using the flat tonifying and flattening method.
(3) The needle retention time is set to 30 minutes.

#### 2.3.3. Treatment frequency and cycle

(1) The frequency is once every other day, and treatment is performed 3 times a week.
(2) The entire treatment cycle lasts for 4 weeks, with a total of 12 treatments.

### 2.4. Observation indicators

Multi-time point sampling: Data on VAS scores, Constant-Murley function, and serum inflammatory factors were collected simultaneously before treatment, 2 weeks, and 4 weeks after treatment.

(1) Serum IL-6 and TNF-α levels (fasting venous blood was collected before treatment and 2 weeks and 4 weeks after treatment, and tested by ELISA).
(2) Constant-Murley, VAS score: VAS (visual analog) score, 0–10 points, the higher the score, the more severe the pain, Constant-Murley (Shoulder Joint Rating Scale) score, a total of 100 points, the higher the score, the better the patient's shoulder joint function.
(3) Data on quality of life were collected at 2 and 4 weeks of treatment, and the two data were averaged and analyzed. Each item was scored on a 100-point scale. The higher the score, the better the quality of life.

### 2.5. Statistical processing

SPSS statistical software, version number is SPSS 26.0, was used for data analysis. The significance level was 0.05, that is, $p < 0.05$. The difference was considered to be statistically significant. Statistics such as mean, standard deviation, and percentage were used for description. Independent sample *t* test and $\chi^2$ test were used for comparison between groups.

## 3. Results

### 3.1. Serum inflammatory factors

As can be seen from **Table 2**, compared with the control group, the serum inflammatory factors in the observation group were reduced ($p < 0.05$).

**Table 2.** Serum inflammatory factors ($\bar{x} \pm s$)

| Group | n | IL-6 (ng/L) | | | TNF-α (ng/L) | | |
|---|---|---|---|---|---|---|---|
| | | Before treatment | Treatment 2 weeks | Treatment 4 weeks | Before treatment | Treatment 2 weeks | Treatment 4 weeks |
| Observation group | 60 | 97.65 ± 23.23 | 75.22 ± 15.23 | 56.82 ± 13.43 | 102.31 ± 31.45 | 84.91 ± 10.94 | 65.26 ± 18.62 |
| Control group | 60 | 97.36 ± 23.54 | 90.89 ± 16.54 | 81.03 ± 20.11 | 103.03 ± 30.95 | 96.42 ± 10.11 | 86.65 ± 27.63 |
| *t* | | 0.068 | 5.399 | 7.755 | 0.126 | 5.985 | 4.793 |
| *p* | | 0.946 | 0.000 | 0.000 | 0.900 | 0.000 | 0.000 |

### 3.2. Constant-Murley VAS score

From the data analysis in **Table 3**, it can be seen that compared with the control group, the Constant-Murley score of the observation group increased ($p < 0.05$), and the VAS score decreased ($p < 0.05$).

**Table 3.** Constant-Murley, VAS score ($\bar{x} \pm s$)

| Group | n | Constant-Murley score (points) | | | VAS score (points) | | |
|---|---|---|---|---|---|---|---|
| | | Before treatment | Treatment 2 weeks | Treatment 4 weeks | Before treatment | Treatment 2 weeks | Treatment 4 weeks |
| Observation group | 60 | 51.43 ± 2.07 | 71.18 ± 11.12 | 88.92 ± 8.52 | 7.23 ± 1.03 | 4.91 ± 0.94 | 2.17 ± 0.43 |
| Control group | 60 | 51.49 ± 2.13 | 60.09 ± 10.48 | 73.21 ± 10.06 | 7.45 ± 1.09 | 6.42 ± 1.11 | 4.95 ± 0.56 |
| *t* | | 0.156 | 5.622 | 9.231 | 1.136 | 8.041 | 30.499 |
| *p* | | 0.876 | 0.000 | 0.000 | 0.258 | 0.000 | 0.000 |

### 3.3. Quality of life

From the data analysis in **Table 4**, it can be seen that the quality of life of the observation group was higher than that of the control group ($p < 0.05$).

**Table 4.** Quality of life ($\bar{x} \pm s$, minutes)

| Group | n | Physiological functions | Somatic pain | Emotional function | Energy | Mental health | Health status | Physiological function | Social function |
|---|---|---|---|---|---|---|---|---|---|
| Observation group | 60 | 84.59 ± 12.48 | 86.29 ± 10.67 | 85.64 ± 10.52 | 87.56 ± 11.18 | 89.36 ± 10.85 | 85.86 ± 11.52 | 87.26 ± 11.11 | 86.27 ± 11.82 |
| Control group | 60 | 73.82 ± 12.07 | 71.95 ± 12.26 | 73.86 ± 11.92 | 70.09 ± 10.56 | 80.95 ± 10.93 | 71.56 ± 10.86 | 71.22 ± 11.76 | 71.29 ± 11.53 |
| *t* | | 4.805 | 6.834 | 5.739 | 8.799 | 4.230 | 6.996 | 7.680 | 7.027 |
| *p* | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

## 4. Discussion

Shoulder periarthritis, commonly known as “frozen shoulder” or “adhesive capsulitis”, is a chronic degenerative disease characterized by shoulder pain and limited movement [6]. According to global statistics, the incidence of this disease is between 2% and 5%, and as age increases, especially among those aged 50–70, the risk of disease increases significantly [7]. Frozen shoulder has a long course and has a serious impact on patients’ daily life quality and working ability, and has become a major challenge in the field of public health. At present, Western medicine mainly uses nonsteroidal anti-inflammatory drugs (NSAIDs), local closed injections, physical therapy, and joint mobilization to treat frozen shoulder [8]. However, these methods have certain limitations. Long-term use of NSAIDs may lead to gastrointestinal damage and increased cardiovascular risk; although glucocorticoid injections can relieve symptoms in the short term, repeated use may make tendons vulnerable [9]. Relying solely on physical therapy not only has slow onset of effect and poor patient compliance, but also is difficult to effectively solve the problem of deep tissue adhesion. In addition, the recurrence rate of frozen shoulder is high, with about 20–30% of patients having recurring symptoms within one year after treatment, and some patients even develop chronic intractable shoulder pain [10].

In recent years, traditional Chinese medicine has attracted much attention in the field of treatment of shoulder periarthritis due to its advantages of “simplicity, convenience, effectiveness and low cost”. The theory of traditional Chinese medicine combines the cause, course and clinical manifestations to classify frozen shoulder syndrome into four types:

(1) Wind-cold-dampness syndrome
Closely related to local microcirculation disorder and increased inflammatory exudation. Cold stimulation can activate TRPV1 channels, thereby exacerbating pain. In terms of treatment, the principles are to dispel wind and cold, remove dampness and unblock meridians.

(2) Qi stagnation and blood stasis syndrome
Related to local micro-thrombosis formation, tissue hypoxia and fibrosis progression, often accompanied by abnormal blood rheology. Treatment focuses on promoting blood circulation and removing blood stasis, promoting Qi and relieving pain.

(3) Qi and blood deficiency syndrome
It is often seen in accelerated muscle protein degradation caused by malnutrition and chronic inflammation. It is common in patients with diabetes and frozen shoulder. Treatment mainly focuses on replenishing qi and nourishing blood, moistening tendons and unblocking meridians.

(4) Phlegm-dampness blocking collaterals syndrome

Related to synovial hyperplasia, joint capsule hypertrophy and metabolic syndrome (such as hyperlipidemia). Ultrasound examination often shows abundant synovial blood flow. Treatment is based on the principles of resolving phlegm, removing dampness, and unblocking meridians and dissipating stagnation. Although there are currently research studies on acupuncture and traditional Chinese medicine fumigation, most of the existing studies are limited to observation of the efficacy of single therapies, and there is insufficient exploration of the mechanism of the synergistic effect of "acupuncture-fumigation".

This study innovatively combines the "immediate analgesic effect" of acupuncture with the "sustained anti-inflammatory effect" of traditional Chinese medicine fumigation in a time-sequential manner. This strategy is deeply in line with the treatment concept of traditional Chinese medicine of "treating the symptoms when it is urgent, and treating the root cause when it is slow". In the acute stage, patients often have pain as the main symptom, often characterized by wind-cold-dampness syndrome, Qi stagnation and blood stasis. Treatment focuses on the combined application of acupuncture analgesia and fumigation anti-inflammation. In the chronic phase, patients mainly suffer from limited mobility, common symptoms of Qi and blood deficiency, and phlegm-dampness blocking collaterals. The treatment strategy turns to a combination of warming and tonic acupuncture and fumigation prescriptions for replenishing Qi and resolving phlegm. Research has deeply revealed the synergistic mechanism between acupuncture and traditional Chinese medicine fumigation: acupuncture activates the local neuro-immune regulatory network through mechanical stimulation, exerting an analgesic effect; while traditional Chinese medicine fumigation uses thermal effects to expand capillaries, promote targeted penetration of drug ingredients, and achieve anti-inflammatory effects. The combination of the two may effectively break the vicious cycle of "pain-spasm-adhesion" through the dual-pathway mechanism of "physical dredging-chemical anti-inflammation". In addition, the combined application of acupuncture and traditional Chinese medicine fumigation fully embodies the overall treatment concept of traditional Chinese medicine of "treating both internal and external diseases" and "the combined use of acupuncture and medicine". The significant decrease in VAS scores in the study group was attributed to the analgesic effect of acupuncture treatment by inhibiting the activation of pain-related TRPV1 channels. The active ingredients in traditional Chinese medicine fumigation, such as cinnamic acid in cassia twigs, can further block the co-expression of TRPV1 and substance P, thereby building a "double analgesic barrier." In terms of anti-inflammation, the research team observed a decrease in the levels of pro-inflammatory factors such as IL-6 and TNF-α. This phenomenon is attributed to the inhibition of the NF-κB pathway by acupuncture, thereby reducing the expression of these pro-inflammatory factors. At the same time, traditional Chinese medicine ingredients such as cinnamaldehyde in cassia twigs can inhibit COX-2 activity and reduce the synthesis of prostaglandins; hydroxysafflor yellow A (HSYA) in safflower has the effect of scavenging free radicals and inhibiting the TGF-β1/Smad pathway, thereby delaying the fibrosis process of the shoulder joint capsule; triterpenoids rich in clematis and clematis reduce the degradation of articular cartilage by inhibiting the expression of MMP-9. The improvement of functional scores is closely related to factors such as acupuncture increasing local blood flow (30–50%), relieving muscle spasm, and promoting the release of adhesion tissue. The 40 °C thermal effect of traditional Chinese medicine fumigation can enhance the fluidity of stratum corneum lipids, thereby increasing the drug penetration rate by 3–5 times. Acupuncture stimulates fibroblast proliferation, while fumigation drugs inhibit excessive deposition of collagen. The two jointly regulate the "fibrosis-remodeling" balance of the shoulder joint capsule. After acupuncture, local capillaries dilate and microcirculation is improved, providing an ideal "window period" for subsequent drug penetration of traditional Chinese medicine fumigation. Clinical studies have shown that the efficacy of the group who underwent acupuncture first and then fumigation was 15% higher than that of the group whose order was reversed. However, this study has certain limitations, that is, the follow-up period only extended to 4 weeks after treatment, and it failed to conduct an in-depth assessment of the long-term recurrence rate (such as the situation after 1 year) and the long-term progression of shoulder joint degeneration.

Comprehensive results show that the combined treatment of acupuncture and traditional Chinese medicine fumigation effectively improved the symptoms of frozen shoulder through a multi-target mechanism, and showed significant effects in improving patients' quality of life, reducing inflammatory reactions and restoring joint function. Therefore, this treatment strategy has high application value and promotion potential.

## About the author

Zhu Xiaolong, male, Han, born in Guang'an, Sichuan Province in March 1985, bachelor's degree, attending Chinese medicine practitioner, research direction: comprehensive treatment of bone and joint diseases such as shoulder, neck, waist and knee joints with traditional Chinese medicine.

## Disclosure statement

The author declares no conflict of interest.

## References

[1] Ding Z, Tian Y, Jia W, et al., 2024, Clinical Study on the Treatment of Acute Shoulder Periarthritis Based on Renyingcunkou Pulse Syndrome Differentiation, Tendon Management and Bone-Setting Manipulation Combined with Meridian Acupuncture. Chinese Journal of Orthopedics and Traumatology of Traditional Chinese Medicine, 32(9): 47–51.

[2] Cui Z, Shi G, Zhang G, et al., 2024, The Efficacy of Ziwu Flow Acupuncture Combined with Traditional Chinese Medicine Fumigation in the Treatment of Patients with Knee Osteoarthritis and Its Effect on Serum Inflammation Levels. Sichuan Traditional Chinese Medicine, 42(9): 203–206.

[3] Zhang Z, Xiong J, 2022, Analysis of the Efficacy of Three Lumbar Acupuncture and Conventional Acupuncture Combined with Joint Mobilization in the Treatment of Patients with Lumbar Disc Herniation. Journal of Neck and Low Back Pain, 43(5): 765–766.

[4] Du W, Feng M, Zhu L, et al., 2024, Analysis of the Efficacy and Safety of Bushen Huoxue Recipe Combined with Jiaji Point Acupuncture in the Treatment of Discogenic Low Back Pain. Journal of Neck and Low Back Pain, 45(5): 933–936.

[5] Zhou X, Hou L, Zhang Y, et al., 2024, Clinical Efficacy of Bushen Jubi Decoction Combined with Acupuncture in the Treatment of Patients with Frozen Shoulder and Its Impact on Serum Transforming Growth Factor-β1 and Prostaglandin E2. World Journal of Integrated Traditional Chinese and Western Medicine, 19(11): 2217–2221 + 2227.

[6] Zheng Y, Zhu X, Zhang K, et al., 2022, Clinical Observation on the Treatment of Frozen Shoulder with Wind-Cold-Dampness Type by External Application of Miao Medicine Fumigation Combined with Acupuncture at Pain Points. Chinese Journal of Traditional Chinese Medicine, 37(6): 3604–3607.

[7] Liu J, Wang H, Yu T, et al., 2023, Network Meta-Analysis of Massage and Massage Combined with Other Traditional Chinese Medicine External Treatments in the Treatment of Shoulder Periarthritis in the Adhesive Stage. China Medical Herald, 20(22): 105–109.

[8] Guo Z, Ge K, 2023, Gegen Decoction Combined with Microwave in the Treatment of Acute Shoulder Periarthritis. Acta Chinese Medicine, 38(9): 2007–2011.

[9] Tian T, Qin L, Lu T, et al., 2024, Clinical Study on Shoulder Three-Needle Acupuncture Combined with Bloodletting and Cupping in the Treatment of Frozen Shoulder (Qi Stagnation and Blood Stasis Syndrome). Chinese Journal of Traditional Chinese Medicine Emergencies, 33(4): 605–607.

[10] Yang Z, Bai R, Wang J, et al., 2023, Acupoint Acupuncture Combined with Physical Therapy to Treat 76 Cases of Frozen Shoulder. Anhui Medicine, 27(2): 285–287.