

# Analysis of the Influence of Traditional Bone Setting and Loosening Manipulation of Traditional Chinese Medicine on Sports Rehabilitation after Ankle Operation

Chenxing Cao<sup>1</sup> Taifeng Cao<sup>2</sup>

1 GUANGDONG NANHUA VOCATIONAL COLLEGE OF INDUSTRY AND COMMERCE, Guangzhou, 510507, China

2 Henan University of Chinese Medicine, Zhengzhou , 450046, Henan, China.

**Abstracts:** Objective: To explore the clinical effect of traditional Chinese osteosetting and loosening manipulation after ankle surgery and its influence on rehabilitation. Methods: From September 2022 to March 2023, 70 patients with ankle joint injuries admitted to Longzihu Campus Branch of the First Affiliated Hospital of Henan University of Traditional Chinese Medicine were selected, all of whom received surgical treatment. They were divided into the research group and the control group according to the digital double-blind grouping method, with 35 patients in each group. After the operation, traditional bone setting relaxation and conventional rehabilitation therapy were adopted respectively. The effects of rehabilitation therapy, clinical symptom scores and quality of life of the two groups were compared. Results: The excellent and good rate of the study group was 94.29%, which was significantly higher than that of the control group (77.14%); After treatment, the clinical symptom score of the control group was higher than that of the study group, and the quality of life score was lower than that of the study group ( $P < 0.05$ ), which was statistically significant. Conclusion: The application of traditional Chinese medicine bone setting relaxation method in the postoperative rehabilitation treatment of patients with ankle joint injury can improve the treatment effect, improve the ankle joint function of patients, and accelerate the recovery of patients, which is worthy of promotion.

**Keywords:** Traditional Chinese Bone Setting and Loosening Techniques; Ankle Joint; Postoperative Rehabilitation

## 1. Introduction

Among the human joint tissues, the ankle joint is one of the important joints of the lower limbs. It is located at the joint between the lower leg and the foot. It is an important joint composed of the distal end of the tibia, fibula and the foot. For ankle joint injuries caused by trauma or other reasons, surgery is mainly used clinically. Although surgery can fix the damaged part and help the bone grow again, it can not effectively restore the soft tissue of the limbs. In order to enable patients to recover joint function after surgical treatment, rehabilitation treatment must be carried out after surgery, otherwise it will have a serious impact on patients' ankle function [1]. As a classic rehabilitation treatment item in traditional Chinese medicine, the traditional bone setting relaxation technique of traditional Chinese medicine has a significant rehabilitation treatment effect on patients with ankle joint injuries. This paper conducts a study on patients with ankle joint injuries treated in Longzihu Campus Branch of the First Affiliated Hospital of Henan University of Traditional

Chinese Medicine. The report is as follows.

## **2. Data and methods**

### **2.1 General information**

The study samples were selected from 70 patients with ankle injury admitted to Longzihu Campus Branch of the First Affiliated Hospital of Henan University of Traditional Chinese Medicine from September 2029 to March 2023. They were randomly divided into the study group (35 cases) and the control group (35 cases). In the control group, there were 18 males and 17 females, aged 29-59 years, with an average age of  $(41.7 \pm 5.11)$  years; In the study group, there were 20 males and 15 females, aged 32-64 years, with an average age of  $(43.2 \pm 4.96)$  years. There was no difference in basic data between the two groups ( $P > 0.05$ ).

### **2.2 Methods**

The control group adopted conventional rehabilitation treatment. If the patient's lower limbs were seriously congested or swollen, they should be timely detumescence, and regular rehabilitation training should be carried out according to the actual situation of the patient to assist the patient to recover the ankle function, carry out rehabilitation exercise once a day, and massage the patient's ankle [2].

The study group was treated with traditional Chinese bone setting and loosening manipulation. 1. Bone setting and loosening manipulation. Effective rehabilitation treatment will be given to patients in different periods to promote the recovery of ankle function. In the early stage, it will mainly promote blood circulation and pain relief, in the middle stage, it will mainly improve joint mobility, and in the late stage, it will mainly stretch the ankle. The specific measures are as follows: (1) Flexion and extension techniques: invert, plantar flexion, dorsiflexion, and eversion of the patient's ankle, and complete the above four movements in turn as one flexion and extension technique, When flexing and stretching the ankle joint to the obstacle position, we should exert a little force and slightly increase the range of motion by at least 5 degrees, preferably 10 degrees, for 5 seconds. At the same time, we should slightly slide the joint at the fracture position up and down, 10 times as a group, 1 group in the morning and evening every day, twice a day; (2) Rotation manipulation: on the basis of flexion and extension manipulation, rotate the patient, holding the proximal ankle joint with one hand and the back of the patient's foot with the other hand, and then shake and whirl. We can move back and forth according to the range of the patient's ankle joint injury, 10 times as a group, and then increase the range of motion appropriately according to the patient's actual situation [3]; (3) Sorting method: knead and push the front and back legs of the affected limb of the patient with appropriate rolling and kneading methods, three times each; (4) Relaxation technique: gently push the lower part of the patient's lower leg with the palm according to the direction of the meridians, 30 times each time. We relax from the patient's foot back ankle joint calf and other parts in turn, and then push horizontally from the Achilles tendon to both sides, 20 times each time. 2. Functional exercise: ankle patients should follow the principle of "step by step, dynamic and static combination" in the process of functional exercise, which specifically includes the

following aspects: (1) Weight bearing functional exercise: according to the patient's fracture healing, arrange weight bearing walking exercise for the patient. In the first stage of functional exercise, only let the patient stand alone for 20 minutes, and exercise twice a day; In the second stage, let the patient walk with weight bearing under the support of crutches for 20 minutes twice a day; In the third stage, let the patient keep walking upright for 20 minutes twice a day [4]. (2) Roller function exercise: place a roller under the foot of the patient with ankle joint injury, and let the patient roll the roller back and forth with both feet to complete the forward and backward rotation of the ankle joint. 30 days after surgery, let the patient walk on the roller for 20 minutes a day, 30 to 60 days after surgery, let the patient walk on the roller for 40 minutes a day, twice a day, 60 to 90 days after surgery, let the patient walk on the roller for 60 minutes a day, three times a day. 3. Acupuncture and moxibustion therapy of traditional Chinese medicine: Acupuncture and moxibustion therapy can be used to assist patients with ankle joint injuries, which can play the role of unblocking the meridians, stopping collaterals, activating blood circulation and removing blood stasis. We can take the patient in a supine position, find the patient's tenderness point first, and then take Taixi, Shangqiu, Zhongfeng, Daling, Shenmen, Taiyuan and other points on the foot of the patient. Acupuncture and moxibustion can be carried out for the patient by using the acupuncture and moxibustion therapy of relieving and tonifying. After each acupuncture and moxibustion, the needle should be retained for 20 minutes, and acupuncture and moxibustion can be done once a day [5]. 4. Fumigation and washing of traditional Chinese medicine: The effect of traditional Chinese medicine fumigation and washing on patients with ankle joint injury is to promote blood circulation and remove blood stasis. The prescription of Huoxue Zhitong Powder can be used as follows: 30g Bone Penetrating Herb, 15g Angelica, 15g Curcuma, 15g Angelica, 15g Angelica Dahurica, 15g Tuckahoea, 15g Achyranthes bidentata, 15g Melia azedarach, 15g Cortex Acanthopanax, 15g Notopterygium Notopterygii, 15g Safflower, 9g Sichuan Pepper, 15g Lingxian, 6g Frankincense, 15g Sumu. After boiling the above prescriptions with water, the injured ankle joint of the patient shall be fumigated and soaked. During this process, the patient can appropriately move the injured ankle joint according to the actual situation of the ankle joint. The fumigating and soaking temperature is mainly appropriate, once a day, 20 minutes a day [6].

### **2.3 Observations**

(1) Treatment effect: after six months of treatment, all patients were followed up, and the treatment effect was determined according to the recovery of the ankle joint of the patient. "Excellent" treatment means that the ankle joint function of the patient was completely recovered, and no displacement was found through clinical X-ray examination; "Good" means that the function of ankle joint of the patient has basically recovered, and the X-ray examination shows that the fracture displacement is less than 2mm; "Average" means that the patient's ankle joint has partially recovered, and the patient has a slight maladjustment after exercise. X-ray examination shows that the fracture displacement is between 2mm and 4mm; "Poor" means that the patient's ankle joint function has not been recovered, and the

patient cannot move. X-ray examination shows that the fracture displacement is more than 4mm. The total effective rate of clinical treatment=excellent probability+good probability.

(2) Clinical symptom score: the clinical symptoms of patients before and after treatment were evaluated from the aspects of joint tenderness, joint range of motion, joint ecchymosis, joint pain and joint swelling. The total score of each item was 10 points, and the total score of clinical symptoms was 50 points. The higher the score, the more serious the clinical symptoms.

(3) Quality of life: The quality of life of patients was assessed with the Quality of Life Scale (SF-36) [7], which includes four functions: physical, psychological, social and physiological. The total score of each item is 100 points. The higher the score, the better the quality of life of patients in this category.

## 2.4 Statistical methods

SPSS24.0 statistical software was used to analyze the research data, and the measurement data were expressed with  $(\bar{X} \pm S)$  and tested with t value; The counting data is expressed in%.  $\chi^2$  test is used to compare the results of the two groups of data. If the P value is less than 0.05, it is statistically significant.

## 3. Results

### 3.1 Treatment effect

The excellent and good rate of the control group was 77.14%, which was significantly lower than 94.29% of the study group. Compared with the two groups, it was statistically significant ( $P < 0.05$ ), as shown in Table 1.

Table 1 Comparison of treatment efficiency between two groups (%)

Group	Numerical value (n)	Excellent	Good	Average	Poor	Excellent rate (%)
Research Group	35	25	8	2	0	94.29
Control group	35	17	10	3	5	77.14
$\chi^2$	/	/	/	/	/	4.2000
P value	/	/	/	/	/	0.0404

### 3.2 Clinical symptom score

There was no difference in clinical symptom scores between the two groups before treatment, but there was a significant difference after treatment ( $P < 0.05$ ), which was statistically significant (see Table 2).

Table 2 Comparison of clinical symptom scores of two groups ( $\bar{X} \pm S$ , points)

Group	Numerical value (n)	Before treatment	Three months of treatment	Six months of treatment
Research Group	35	45.22±2.48	17.11±1.88	7.25±0.74

Control group	35	45.14±3.01	26.04±1.23	15.25±1.47
t value	/	0.1213	23.5155	28.7580
P value	/	0.9038	0.0000	0.0000

### 3.3 Quality of life

The quality of life of patients in the study group and the control group is comparable ( $P < 0.05$ ), as shown in Table 3.

Table 3 Comparison of quality of life scores between the two groups ( $\bar{X} \pm S$ , points)

Group	Numerical value (n)	Somatic function	Psychological function	Social function	physiological function
Research Group	35	72.1±5.26	73.1±4.11	70.4±5.74	75.6±6.85
Control group	35	46.5±4.99	47.9±5.21	51.9±5.22	53.9±5.82
t value	/	20.8888	22.4662	14.1065	14.2824
P value	/	0.0000	0.0000	0.0000	0.0000

## 4. Discussion

Ankle joint is an important joint in the human body. Because it bears a large weight, ankle joint injuries are more likely to occur in life. If severe injuries occur to the ankle joint, if treatment is not timely, it will affect the recovery of patients' limb functions, and even lead to movement disorders [8]. For patients with ankle joint injuries, timely surgical treatment should be carried out. After surgical treatment, the success rate of treatment is high and the joint fixation effect is good. Although it can improve the patient's condition and relieve the patient's pain, only surgical treatment ignores the recovery of the patient's joint function. Therefore, active postoperative rehabilitation treatment can further promote the recovery of the patient's joint function after surgery, and improve the quality of life of patients. In the post-operative rehabilitation treatment of patients with ankle joint injuries, the main goal should be to restore the joint function, and improve the joint function by helping patients to restore the range of motion of the joint. However, in the past, in the post-operative rehabilitation treatment of patients with ankle joint injuries, the conventional rehabilitation treatment has certain limitations, and it is lack of pertinence to help patients recover the joint activity by carrying out functional exercise on time. Nowadays, traditional Chinese bone setting and loosening techniques are widely used for rehabilitation treatment. Through four techniques including flexion and extension, rotation and wholeness, and relaxation, they help patients promote blood circulation at the injured ankle joint, reduce joint swelling and congestion, and improve ankle joint activity; At the same time, in addition to the treatment of bone setting and loosening manipulation, it also cooperated with functional exercise, acupuncture and moxibustion therapy, herbal fumigation and washing therapy and other treatment measures to further help patients maintain joint stability. Among them, functional exercise can improve the activity of patients,

acupuncture and moxibustion can promote blood circulation and unblock collaterals, and herbal fumigation and washing therapy can promote blood circulation and relieve pain. The comprehensive rehabilitation treatment effect is significant [9].

In this study, the patients with ankle joint injury were treated with conventional rehabilitation therapy and traditional Chinese bone setting loosening manipulation rehabilitation therapy. The results showed that the clinical symptom score of the study group was lower than that of the control group, and the treatment effect was higher than that of the control group, and the quality of life after treatment was higher. Therefore, the results of this experiment show that the application of traditional Chinese bone setting relaxation techniques in the treatment of ankle injury patients can improve the therapeutic effect, improve the clinical symptoms of patients, and further improve their quality of life, which is worth further recommending in clinical practice.

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