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Intervention of Taichi Softball with Infrared Light Therapy for Chronic Shoulder Periarthritis

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Abstract: Periarthritis of the shoulder is a chronic disease. The main symptoms are shoulder pain, extensive adhesion and limited mobility caused by aseptic inflammation of the surrounding tissues and joint capsules. Therefore, based on the problem of chronic shoulder inflammation, this paper explores the intervention effect of Taichi softball combined with infrared therapy on chronic shoulder inflammation. In this study, 120 patients with chronic shoulder scapulohumeral disease were randomly selected from our hospital. According to the difference of treatment methods, the experimental group (60) and the control group (60) were treated with Taiji softball combined with infrared therapy and conventional treatment. The experimental results show that the effect of the experimental group is better than that of the control group in terms of Ridit test, visual analogue scale (VAS) score before and after treatment, and treatment satisfaction between the two groups. Therefore, we can conclude that Taichi softball combined with infrared therapy has a good intervention effect on chronic shoulder inflammation.

1. Introduction

The shoulder joint [1] is the most complex but extremely flexible multi-joint complex of the human body. It includes the ankle joint [2], the acromioclavicular joint [3], the sterno-lock joint and the scapular chest wall joint, wherein the ankle joint is the joint with the largest range of human activity. The proprioceptors of the shoulder muscles, ligaments, joint capsules [4], and joints are important structures for maintaining joint stability. The indeterminate relationship between flexibility and stability necessary for normal movement of the shoulder joint is a potential cause of injury to the shoulder joint during over-shoulder activity or exercise. When the upper limbs are active, the shoulder joint is a comprehensive system with a harmonic link function. This concept is similar to the movement of the shoulder and upper limbs described by some scholars. The ipsilateral upper body, including the occipital, cervical, thoracic, related nerves and soft tissues support the

normal functioning of this shoulder complex. Therefore, the normal shoulder function also includes the stability and flexibility of the ipsilateral upper body. Any part of the abnormality may cause the overall movement mechanics of the shoulder joint to change, which may cause shoulder joint damage and inflammation. Periarthritis of shoulder is also known as inflammation around the shoulder joint. It is mainly characterized by shoulder pain and limited shoulder function. It is a chronic specific inflammatory disease present in the shoulder joint capsule and its surrounding ligaments, tendons and bursa. Some patients can heal themselves. The disease is more common in the elderly. As China's population ages, the number of patients has increased year by year. Because the period of periarthritis of the shoulder is longer, the pain is unbearable at the time of onset, and most of the patients are recurrent, which seriously affects the quality of life of the patient. With the continuous development of clinical and imaging medicine, it has been found that the shoulder joint disease involved in periarthritis of the shoulder is extensive. In order to facilitate the accurate diagnosis of the disease and its subsequent individualized treatment, the periarthritis of the shoulder [5] has been subdivided into several more specific shoulder joint diseases, including rotator cuff injury, biceps femoritis, acromion scapula humerus, shoulder Pulmonary impact syndrome, adhesive shoulder capsule inflammation and calcific supraspinatus tendinitis. They affect the biomechanics of the shoulder joint more or less.

The work of scapulohumeral periarthritis [6] has a long history. In 1872, some scholars first proposed the diagnosis of Peralththrite Scapulo Humerale, which is considered to be the cause of shoulder pain and joint movement limitation. In 1934, some researchers have studied the shoulder pain with no clear cause of trauma and the pathological manifestations of shoulder dysfunction, collectively referred to as the Frozen Shoulder. In 1943, some scholars emphasized that the so-called frozen shoulder is caused by adhesive tenosynovitis of the biceps. In 1951, some researchers pointed out that acromion bursitis [7] and supraspinatus tendonopathy are the main causes of frozen shoulder. In 1952, some scholars studied the association between biceps tendonitis and rotator cuff lesions. As the authors studied the study of frozen shoulder from different angles, different pathological changes were found. They put forward a number of etiological theories, which proves that shoulder scapulohumeral is a syndrome of shoulder joint pain and motor dysfunction. In fact, like lumbar and leg pain, it is a fuzzy concept not a single disease. It is a transitional stage of understanding. In terms of development, further research is required, from fuzzy to precise, to determine a single diagnosis, and targeted treatment can improve the efficacy.

The softball racquet consists of a soft rubber rubber soft-faced frame and a handle made of lightweight material. The Tai Chi Softball [8] is a rubber ball weighing 53-55 grams and having no elasticity and 7 cm in diameter. Taichi Softball Division is divided into singles and doubles. The length is 12 meters, the height is 1.5 meters and the width is 7 meters, the singles are 5 meters wide, and the doubles are 6 meters wide. The game rules are single-play 5 games, 3 wins, doubles, 3 teams, 2 wins, and 15 points. The technical requirement is to use arc-shaped lead-in, using the centrifugal force generated by the rotation of the body to throw the ball, and the direct play is lost. Taiji softball routines are divided into single, double, multi-person collective, self-selected tricks and other projects. In the performance process, the circular action is continuously performed, and the ball is kept away from the racket by centrifugal force and centripetal force, so that it can’t be removed, continuously, and runs through the loose, soft, garden, and uniform. Taichi Softball was born in the early 1990s. It is a sports sport featuring Taichi and with ethnic characteristics. Taichi Softball is an emerging sport that combines badminton, tennis and other ball games with Tai Chi and dance. It represents the flexible coordination of the ball, the softness of the Tai Chi and the graceful dance of the individual, double or collective sports, the movement form is characterized by the arc, the arc in the body's missing, coronal, and transverse planes Shape movement. It has the characteristics of performance, fitness, competition, and strong participation. It contains the theory

of Taichi yin and yang of traditional Chinese medicine. Mainly through the hand-held special racket, the use of welcome, nano, lead, throw and other techniques to throw the ball in the welcome, so that the body gets exercise. The sport integrates fitness, entertainment, performance and competition. At present, domestic scholars are in the preliminary stage of scientific research on Taichi softball. The research shows that Taichi softball has many effects on body function. Taichi Softball is an emerging sport with distinctive national characteristics. It has two forms of Tai Chi softball routine and competitive sports. The Taichi Softball is grafted on the traditional Chinese Taijiquan, and draws on the philosophies of Taijiquan, such as “Rokke Gang”, “Rigid and Soft”, “First Leading and Posting” and “Leverage”. On this basis, the Taichi softball routine was created, which is characterized by skill performance projects. It can be practiced as a single person or as a group or group. In addition, the Taichi Soft Ball combines the characteristics of ball games such as badminton and tennis to form a form of competitive sports against the net. It has the characteristics of the anti-networking project and has a unique "arc-shaped" hitting method. A single person or a pair of two can practice it, which is full of fun. Therefore, the Taichi Softball is a sporting event with traditional characteristics that combines fitness, fun and competition. Tai Chi softball sports have simple requirements on the site, and a flat ground can be used for Tai Chi softball routines. Tai Chi softball competitive sports form, you can also use the tennis, badminton-netting venue, or make a slight adjustment. In addition, Tai Chi softball equipment is cheap and not easily damaged. The ball and the racket are cheap, and the plastic ball and the racket surface material are not easily damaged.

Infrared therapy, also known as heat ray therapy [9], is a method of treating diseases by illuminating the body with infrared rays. Infrared is an invisible light. The wavelength of the radiation used by the hospital is in the middle of $760nm \sim 15\mu m$. Its main biological effect is heat. When infrared radiation [10] is applied to the human body, it will improve local blood circulation and tissue metabolism, thereby promoting the absorption of local exudates. At the same time, it also has the effect of reducing muscle tone and reducing inflammation and analgesia. Therefore, it is widely used in the treatment of different types of chronic arthritis, muscle strain, contusion, thromboangiitis obliterans, shallower neuritis, and neuralgia. The amount of infrared radiation is appropriate for the patient to have a comfortable and gentle feeling. Normally, the distance between the radiator and the skin surface is set to $45cm \sim 60cm$, and the time range for each exposure is $20 \sim 30$ minutes, and the number of exposures per day is 1 to 2 times. Traditional Chinese medicine often uses infrared radiation and massage together, or applies traditional Chinese medicine (mostly activating blood circulation to relieve pain) solvent on the irradiated surface to improve the therapeutic effect, or perform acupoint irradiation (infrared moxibustion).

Although the society continues to develop, the problem of chronic shoulder inflammation is still increasing. Based on the above analysis, we have a better understanding of Tai Chi softball and infrared light therapy. This article will also introduce the Tai Chi soft ball and infrared therapy related knowledge. Therefore, this article takes this opportunity to explore the intervention effect of Taichi softball combined with infrared therapy on chronic shoulder inflammation.

2. Proposed Method

In order to better study this topic, this article introduces in detail the knowledge of Taichi softball and infrared therapy in the second part. For the Tai Chi Softball, the second part introduces its concept and connotation. For infrared therapy, the second part introduces the physical properties of infrared light, the clinical mechanism of infrared light therapy, the clinical mechanism of infrared light therapy and the principle block diagram of infrared light therapy device, which lays a foundation for subsequent experimental research.

2.1. The Concept and Connotation of Taichi Softball

(1) Concept

Taiji Softball is an emerging sport that combines badminton, tennis and other ball games with Tai Chi and dance. It represents the flexible coordination of the ball, the grace of the Tai Chi and the beautiful individual, double or collective sports of the dance. An arc characterizes its movement form, which is an arc-shaped movement on the body's ruined, coronal, and transverse planes. It can be divided into competitive routines and performance routines. It embodies a collective, entertaining, performance, economical, and fun way of exercising. It uses the racket to greet, lead, and throw continuous non-stop rhythmic movements.

(2) Connotation

With the development of society, mass sports have attracted more and more people's attention. However, the development of sports among the masses has become more and more popular. It represents the progress of the times and the improvement of living standards, and has certain times, groups, trends and so on. Softball is a popular sport. As it continues to grow, more people are involved. People can exercise through soft-ball exercise and increase communication with others while exercising, which enhances the emotions of each other and enhances people's spiritual needs.

2.2. Physical Properties of Infrared

A section of wavelength in the spectrum from 0.76 to 400 microns is called infrared light, and infrared light is a kind of light that cannot be combined. For all substances above absolute zero (-273 degrees Celsius) they can produce infrared light. Today's physics calls it a heat ray. Infrared rays used in medicine can be divided into two categories: one is near infrared rays and the other is a far infrared ray. Near-infrared light is also known as short-wave infrared light and has a wavelength between 0.76 and 1.5 microns. It penetrates into the body tissue to a depth of about 5 to 10 mm. Far infrared is also known as long-wave infrared, and its wavelength range is 1.5 to 400 microns. The surface skin of the human body absorbs most of this infrared light, and it penetrates into the human tissue to a depth of less than 2 mm.

2.3. Clinical Mechanism of Infrared Phototherapy

Infrared light is different for the selective spectral power of the human body, and the absorption depth of the light of different spectra is different to the human body. Long waves can only reach the upper layer of the skin, and visible and short wave infrared radiation may reach the lower layers of the skin, including blood vessels, lymph, nerve endings and subcutaneous tissue. When infrared radiation hits the surface of human tissue or skin, a portion of it is reflected by the surface of the tissue. The other part shoots the skin and the inside of the tissue, absorbs and absorbs by absorption and scattering, and converts the light energy into heat energy and chemical energy. Which is:

$$I = I_0 e^{-(\tau+\sigma)x} \tag{1}$$

Where I_0 is the incident beam energy. I is the energy of the beam when the beam enters the human body at a depth of x. τ is the absorption coefficient and σ is the coefficient of scattering. The human body absorbs infrared radiation, mainly skin and subcutaneous tissue, and their percentages of long- and short-wave radiation absorption in each layer are shown in Table 1.

The skin's reflection of the infrared beam energy varies according to the skin condition. Non-pigmented skin can reflect the infrared beam energy of humans by 55-62%; when pigmentation, the reflection drops to about 42%; when the skin is congested, it quickly drops to

14%. Therefore, the lesion (smashed surface) absorbs more light power, and the non-lesion tissue absorbs less.

Table 1. Radiation absorption rate of long-wavelength radiation from infrared light beam to various layers of skin (%)

Skin level (average)	Absorption, scattering, and reflection of short-wave radiation (0.76-1.5 microns) (%)	Absorption, scattering, reflection of long-wave radiation (1.5-400 microns) (%)
Epidermis	34	34
Cuticle	20	59
Transparent layer	20	59
Granular layer	16	6.4
Hair growth layer	16	6.4
Nipple layer	19	0.6
Mesh layer	19	0.6
Subcutaneous tissue	11	0

2.4. Infrared Light Therapy Device Block Diagram

Infrared light therapy device is an instrument that uses infrared light therapy to treat diseases. It usually consists of two parts: the treatment head and the control box. For different indications, the user selects the required optical power, illumination time and other parameters on the control box panel, and manipulates the treatment head to irradiate the lesion to achieve the purpose of treating the disease. The schematic diagram of the infrared light therapy device is shown in Figure 1.

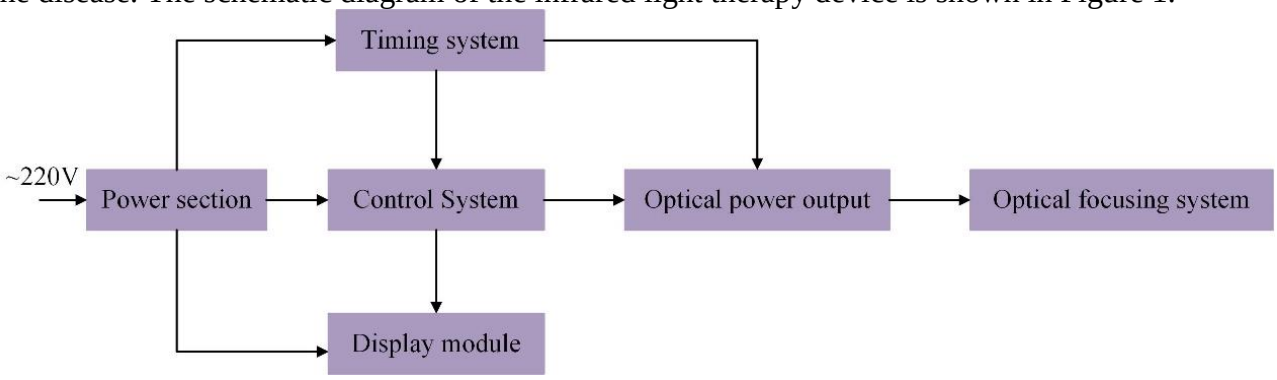

Figure 1. Infrared light therapy device block diagram

2.5. The Physiological Role of Infrared Rays in Therapeutic Effects

(1) The reflection and absorption of infrared rays by the human body. After the infrared rays hit the surface of the body, part of it is reflected and the skin absorbs the other part. The degree of reflection of the skin by infrared light is related to the condition of pigmentation. When irradiated with infrared light having a wavelength of 0.9 μm, the non-pigmented skin reflects about 60% of its energy. The pigmented skin reflects about 40% of its energy. When irradiated with long-wave infrared rays having a wavelength of 1.5 mm or more, most of them are reflected and absorbed by the shallow skin tissue. The depth of penetration through the body's skin is only between 0.05 and 2 mm. Therefore, long-wave infrared rays can only be applied to the surface tissue of the skin. Short-wave infrared rays with a wavelength of less than 1.5 μm and a near-infrared portion of red

light penetrate deep into the tissue. It penetrates to a depth of 10 mm and acts directly on the blood vessels, lymphatic vessels, nerve endings and other subcutaneous tissues of the skin.

(2) Infrared erythema. When the infrared light of sufficient intensity is applied to the skin, he may have infrared erythema, and the red spot will disappear after stopping the irradiation. When a large dose of infrared light is applied to the skin multiple times, it produces brown marble-like pigmentation, which is related to the pigmentation of melanocytes in the basal cell layer of the blood vessel wall.

(3) The therapeutic effect of infrared rays. The basis of the therapeutic effect of infrared light is the warming effect. Under infrared irradiation, the tissue temperature will increase, which will lead to telangiectasia, increased blood flow velocity, enhanced material metabolism, increased tissue cell viability and regenerative capacity. When infrared rays treat chronic inflammation, it can improve blood circulation, increase the phagocytic capacity of cells, eliminate swelling, and promote the dissipation of inflammation. Infrared rays can reduce the excitability of the nervous system, while infrared rays have analgesic effect, relieve striated muscles and smooth muscle spasms, and promote the recovery of nerve function. In the treatment of chronic infectious wounds and chronic ulcers, infrared rays can improve tissue nutrition, improve tissue nutrition, eliminate granulation edema, promote granulation growth and accelerate wound healing. Infrared irradiation also has the effect of reducing exudation of burn wounds. Infrared rays are also often used to treat sprain contusions, which promote the dissipation of hematoma and reduce post-operative adhesions. At the same time, infrared rays can alleviate scar contracture and promote scar softening.

3. Experiments

3.1. Subject and Diagnostic Criteria

120 patients with periarthritis of the shoulder who were admitted to our hospital from January 2019 to July 2019 were selected as subjects. According to the time of admission, they were randomly divided into control and treatment groups, 60 cases each. There were 60 patients in the control group, 25 males and 35 females, aged 36-60 years, with an average age of (42.45±2.36) years, a disease course of 3 months to 2 years, and average disease duration of (0.65±1.12) years. There were 60 patients in the treatment group, 26 males and 34 females, aged 35-63 years, mean age (45.63±2.23) years old, duration of 3 months to 2 years, mean disease duration (0.79±1.23) years. In the statistics, there was no significant difference between the two groups of general data such as age ($P>0.05$), which can be used for comparative analysis. Refer to the diagnostic criteria for frozen shoulder in the "Diagnostic Efficacy Standards for TCM Syndrome". (1) The diagnosis results were consistent with the criteria of periarthritis of the shoulder, and were diagnosed as frozen shoulder by CT and X-ray examination. (2) The performance of periarthritis is not shorter than 3 months. (3) No other lesions were found in the shoulder muscles and bones. (4) All patients are younger than 35 years old and not more than 60 years old. (5) All case files were established in our hospital. Exclusion criteria: (1) Patients who refused to receive hospital research and treatment. (2) Patients with severe heart, blood, liver, spleen and other diseases. (3) Patients with rheumatic and rheumatoid arthritis, shoulder fractures or joint dislocations. (4) Patients with other bone trauma. (5) Patients with severe cardiovascular and cerebrovascular diseases. (6) Patients who do not follow the doctor's advice to perform moderate recovery exercises on their shoulders.

3.2. Research Methods

(1) Literature data method. According to the needs of the project, we used the Chinese academic journal network, China Knowledge Network, Wanfang.com, and foreign language periodicals to

check a large number of authoritative materials related to Taichi Softball and infrared light therapy, and downloaded dozens of excellent master's thesis and journals. And focus on reading a lot of literature, providing a solid theoretical basis for this research.

(2) Questionnaire survey method. The content of the questionnaire includes the form of Taiji softball exercise, the content of the development, the basic situation of the participants, gender, age, frequency of activities, location of the event, etc. At the same time, we also conducted a questionnaire on the attitude of patients with periarthritis of the shoulder on the application of infrared therapy intervention.

(3) Control experiment method. In this study, the subjects were randomly assigned to two groups, which were the experimental group and the control group, respectively, and the control experiments were performed. The grouping situation is shown in Table 2.

Table 2. Grouping situation

Group	n	Average age
Test group	60	42.45±2.36
Control group	60	45.63±2.23

Table 3. Arrangement of Tai Chi Soft Ball Movement

Number of weeks	Exercise time (min)	Movement frequency (time / d)
1	15	2
2	15	2
3	20	2
4	20	3
5	25	3
6	25	3
7	30	3

The experimental group treatment method: 7-week incremental load taichi softball exercise combined with infrared light therapy. The Taichi Softball exercise was performed twice a day in the previous week, and the exercise time was gradually increased once in the morning and evening. After 4 weeks, every morning, noon and evening, and then continue to increase the time of a single exercise. The results of the exercise arrangement are shown in Table 3. At the same time, each time the Tai Chi soft ball exercise 20 minutes after infrared light treatment, it uses infrared light therapy instrument to illuminate A, shoulder, shoulder and arm. Treatment in the control group: 7 weeks of infrared light therapy was used, and the treatment method was the same as that of the experimental group.

3.3. Observation Index

Compare the clinical treatment effect of the two groups of patients, Constant-Murley shoulder function score, including pain, activities of daily living, joint mobility, muscle strength, each 0 to 8 points, 0 to 15 points, 0 to 8 points, 0 ~20 points, total score 0 to 80 points, 0 points, 80 points respectively indicate that the shoulder joint function is poor and good. Efficacy evaluation criteria: There is obvious effect: it indicates that the patient's pain symptoms disappeared and the shoulder joint function returned to normal. Effective: It indicates that the shoulder function of the patient recovers to a certain extent, the degree of pain is relieved to a certain extent, and normal life is basically restored. No effect: indicates that the patient's clinical symptoms have not been alleviated or aggravated, and the condition has worsened.

$$\text{Efficient} = (\text{Significant} + \text{effective})/n \times 100\% \quad (2)$$

3.4. Statistical Analysis

The data was analyzed and processed by SPSS18.0 software, and the measurement data was expressed by (mean ± standard deviation), and t test was used. The count data was expressed as (n, %), the grade data was analyzed by Ridit test, and the difference was statistically significant at $P < 0.05$.

4. Discussion

4.1. Comparison of Clinical Efficacy between the Two Groups of Patients

The clinical efficacy of the two groups was compared by Ridit test, $P < 0.05$, with statistical difference. The positive rate of the experimental group and the control group were 91.67% and 46.67%, respectively, indicating that Taichi soft ball combined with infrared light therapy can effectively improve the shoulder joint function of patients. At the same time, the clinical efficacy is significantly improved. The comparison results are shown in Table 4 and Figure 2.

Table 4. Comparison of clinical effects between the two groups of patients (example)

Group	n	Have obvious effect	Effective	No effect
Test group	60	30	25	5
Control group	60	8	20	32

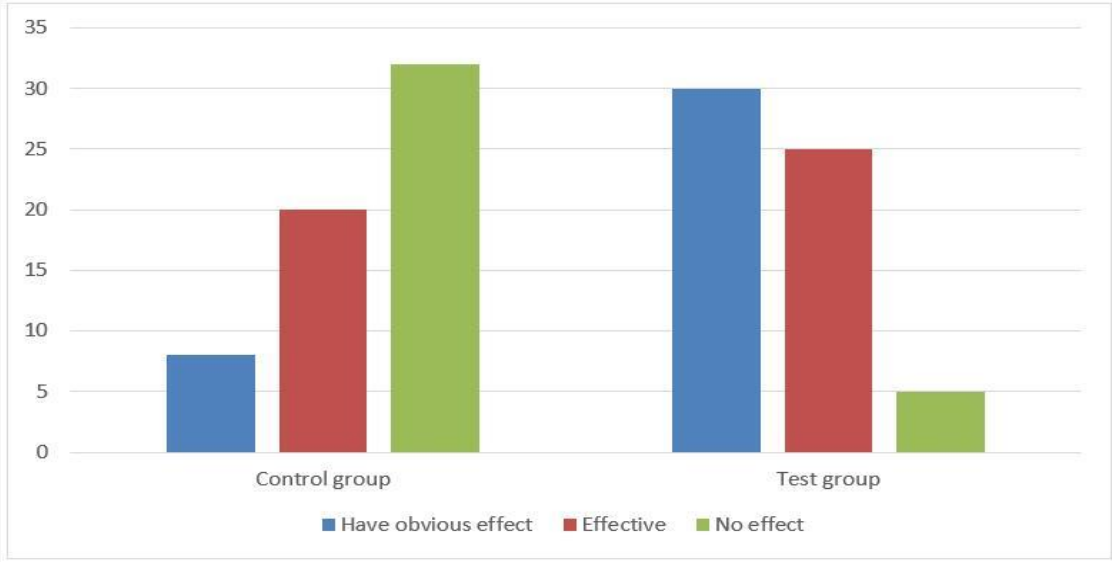

Figure 2. Comparison of the effect of the control group and the experimental group

4.2. Shoulder Joint Activity Amplitude

After 7 weeks of exercise, the amplitude of shoulder joint movements in both groups increased. In the experimental group, 71.2% of patients had a recovery of shoulder joint activity to a completely healthy level. 86.3% of patients with shoulder joint activity recovered to be able to carry out daily labor, significantly higher than the control group, $P < 0.05$, the experimental group and the control group had a very significant difference. The scoring results are shown in Table 5 and Figure 3.

Table 5. Shoulder joint activity amplitude score

Group	n	Level 1	Level 2	Level 3	Level 4	Efficient (%)	Significantly efficient (100)
Test group	60	1	10	12	37	86.3	71.2
Control group	60	5	20	24	11	60.1	36.5

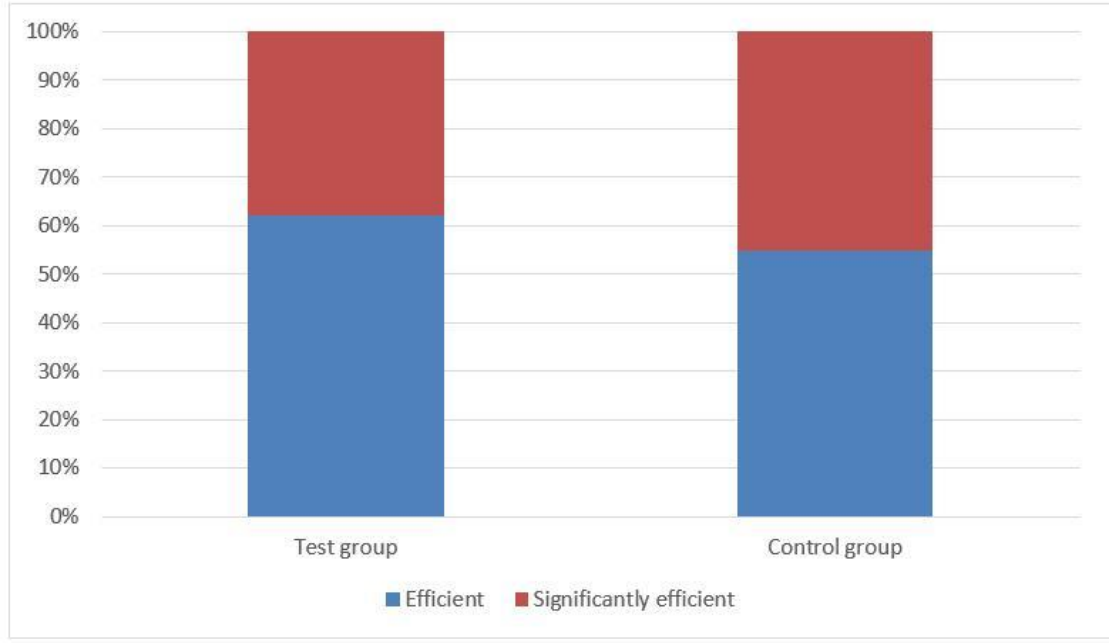

Figure 3. Comparison of effective and significant effective results between the control group and the experimental group

4.3. VAS Score Before and After Treatment in Both Groups

In the experiment, the two groups were scored for the treatment effect, and the results are shown in Table 6. From Table 6, we can clearly see that the effect of the experimental group is significantly better than that of the control group. Experiments have shown that Taichi softball combined with infrared light therapy can improve the intervention of periarthritis of the shoulder.

Table 6. Comparison of VAS scores before and after treatment in both groups (Scores, $x \pm s$)

Group	Number of cases	Before treatment	After treatment	t	p
Control group	60	6.89±1.56	5.76±1.56	4.623	0.005
Test group	60	6.75±1.43	3.26±1.36	14.125	0.005
t	-	0.189	8.458	-	-
p	-	0.846	0.005	-	-

4.4. Comparison of Patient Satisfaction between the Two Groups

The total satisfaction of the experimental group was 88.3%, which was significantly higher than that of the control group (50.0%). The difference was statistically significant ($p<0.05$). The

comparison results are shown in Figure 4.

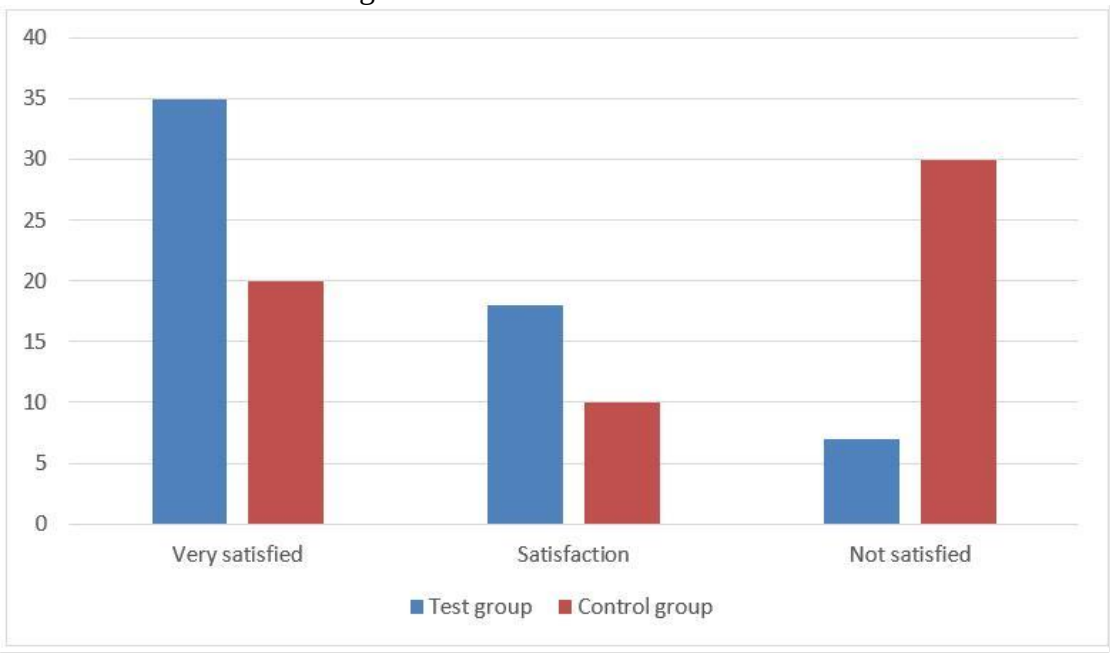

Figure 4. Comparison of satisfaction between the two groups of patients

4.5. Analysis of Joint Function and NRS Pain Grade Score Before and After Treatment in Two Groups of Patients

In the functional scores of the shoulder joints, the scores of the control group and the experimental group after treatment were significantly higher than those before the treatment ($P<0.05$). At the same time, there was no significant difference between the control group and the experimental group before treatment ($P>0.05$). The score of the experimental group after treatment was significantly higher than that of the control group ($P<0.05$). In the NRS pain score, the pain scores of the control group and the experimental group after treatment were significantly lower than those before treatment ($P<0.05$). There was no significant difference between the control and experimental groups before treatment ($P>0.05$). The NRS pain score of the experimental group was significantly lower than that of the control group after treatment ($P<0.05$). The specific results are shown in Table 7. At the same time, the intervention effect of Taichi softball combined with infrared therapy on Manchurian shoulder inflammation is shown in Figure 5.

Table 7. Joint function and NRS pain score in two groups of patients [n=60]

Group	Joint function score		NRS pain score	
	Before treatment	After treatment	Before treatment	After treatment
Control group	23.58±9.23	35.02±8.23	6.84±1.43	3.28±0.86
Test group	23.46±9.61	40.29±8.56	6.82±1.32	1.60±0.91

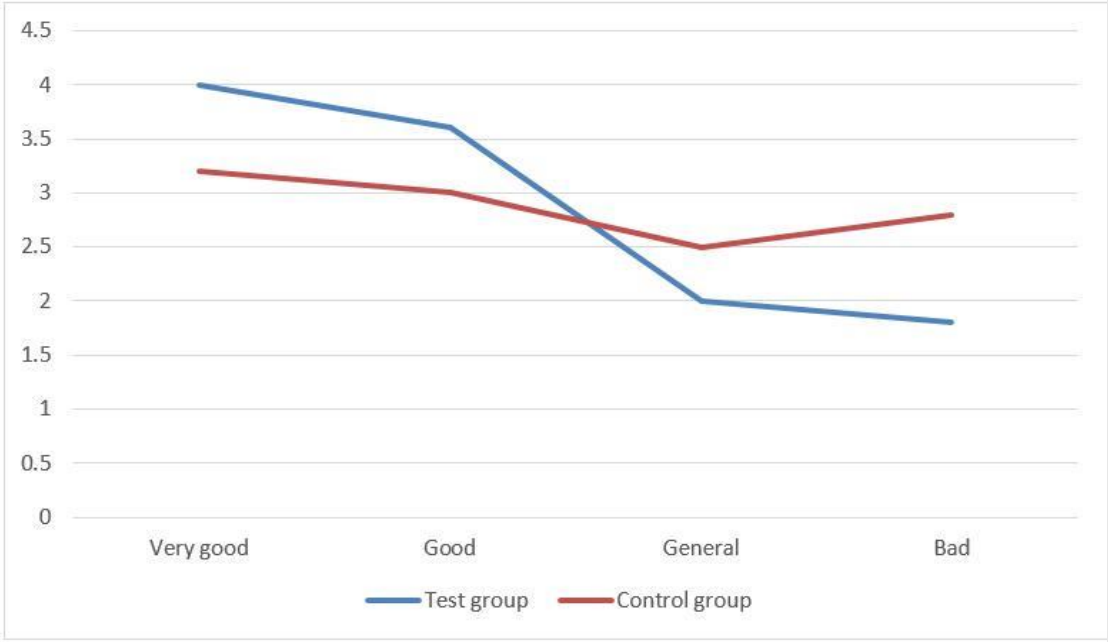

Figure 5. Taichi softball combined with infrared therapy for the intervention of chronic shoulder inflammation

Taichi Soft Ball Sports is a systemic exercise that provides a balanced and comprehensive development of the neck, shoulders, waist and legs. In particular, due to the complexity of the circular movements, random and diverse, it has a good effect on the training of the central nervous system and the development of multi-directional thinking. The correct arc-shaped action requires the shoulder as the axis, the shoulder, elbow, and wrist to maintain an arc shape, and the pulling effect on the motion system is limited to avoid secondary damage. Taichi soft ball movement is mainly based on dynamic pulling action, which has certain promoting effect on local blood circulation of shoulder joint, promotes accelerated blood circulation of local soft tissue, mechanical tissue clearance of inflammatory tissue, and tissue hyperplasia subsides. At the same time, proper load stimulation enhances the strength and stretch of the muscles and tendons around the shoulders, effectively relieving muscle contracture and tension in the shoulder muscles. Infrared light produces intense light stinging and warming moxibustion effects with its own optical properties. The body's nervous system, circulatory system, cardiovascular and cerebrovascular, digestive system, endocrine system and immune system are adjusted to change the pathophysiological process of the body. It restores physiological balance and maintains internal environment stability for therapeutic purposes. The experiment found that after infrared light irradiation, it cannot only effectively promote the elimination of periarthritis inflammation, localized recanalization, tissue circulation function recovery, but also promote local damage tissue repair, new capillary formation to separate the adhesion of the sputum fiber, and make it Restore the normal order and restore the normal function of the Achilles tendon. Infrared rays can pass through the skin and directly cause thermal effects in muscles, subcutaneous tissues, and the like. It accelerates blood circulation, increases metabolism, reduces pain, increases muscle relaxation, and produces a massage effect. In particular, interleukins, alpha-5 HT and free radical scavenging reduce the negative effects of exercise factors on the body.

5. Conclusion

In the functional scores of the patients' shoulders, all patients after treatment were significantly

higher than those before treatment. It shows that whether it is routine treatment or the use of Tai Chi softball combined with infrared therapy for patients with periarthritis of shoulder have a certain effect. Patients undergoing routine care and using Tai Chi softball combined with infrared therapy were generally at a flat level before the treatment. After treatment, the shoulder joint function scores of patients treated with Tai Chi softball combined with infrared therapy were significantly higher than those of patients undergoing conventional physiotherapy. It clearly shows that Taichi softball combined with infrared therapy can restore the patient's shoulder function more quickly in the treatment of patients with periarthritis of the shoulder, and has better postoperative recovery effect. In the NRS pain score, the pain scores of all patients after treatment were significantly lower than those before treatment. It shows that both treatments have a certain effect on relieving shoulder pain in patients with frozen shoulder. Patients who underwent routine diagnosis and treatment with Taichi softball combined with infrared therapy had no significant difference in pain levels before treatment, and NRS pain in patients treated with Taichi softball combined with infrared therapy after treatment. The score is significantly lower than that of patients undergoing conventional physiotherapy, indicating that conventional physiotherapy has a role in relieving shoulder pain in patients. However, its utility is obviously not as good as the implementation of Tai Chi softball combined with infrared therapy. This method not only can restore the joint function of the patient as soon as possible, but also can significantly reduce the pain. In summary, the use of Tai Chi softball combined with infrared therapy for the treatment of patients with frozen shoulder has a very good effect. Accelerating the clinical application of Taichi softball combined with infrared therapy in the treatment of frozen shoulder and other joint diseases has considerable value and significance.

Strengthen the research on the influence of Taichi softball combined with infrared light therapy on body function, and work hard on the breadth and depth of research. Breaking the bottleneck of the aging of the research object, taking the broader social group as the research object, on this basis, the Taichi softball combined with infrared light therapy scientific research. Excavate Taichi softball combined with infrared light therapy for more active fitness and preventive and auxiliary treatment of chronic shoulder inflammation. On this basis, it strengthens the in-depth study of its mechanism of action, and forms a systematic theoretical research system of Taichi softball and infrared light therapy. And the research results can be published in the form of popular science books to promote the popularization of Tai Chi softball combined with infrared light therapy in mass fitness. The development of Taichi soft ball combined with infrared light therapy requires constant innovation of its own theory and technology, and the innovative breakthrough of relevant scientific research theory is the key to the development of Taichi soft ball combined with infrared light therapy. Systematic and in-depth research on the theory of Taichi softball combined with infrared light therapy should continue to be strengthened. Enrich the method of Tai Chi soft ball in the theory of infrared light therapy, enhance the level of Taichi soft ball theory combined with infrared light therapy research, to promote the theoretical development of the combination of Tai Chi soft ball and infrared light therapy, better guide Taichi soft The practice of the ball. Promote the development of Taichi Softball combined with infrared light therapy for better and sustainable development. Tai Chi softball has a good physical fitness, promote physical fitness and prevent chronic diseases. It should exert its advantages in various aspects to enhance the function of the body and apply it to the physical exercise practice of the national fitness.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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