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The Efficacy in the Treatment of Acute Closed Soft Tissue Injury by Using Acupuncture and Diclofenac in Football Players

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Abstract: *This study was aim to investigate the clinical treatment of acupuncture combined with diclofenac in the treatment of acute soft tissue injury in football players. This paperdivided100 patients with acute closed soft tissue injury caused by football into control group and treatment group randomly, 50 cases in each group. The control group was usually treated with PRICE, and the treatment group use PRICE combined with acupuncture and diclofenac to cure. One course for two weeks, treatment requires two courses. Before and after the patient was included in the study, record the scores of dynamic pain intensity, static pain intensity, local pain intensity and local sensitivity, and local swelling assessment. Improve clinical outcomes and record the treatment results after 3 days, 8 days, and 15 days. The results showed that there was a significant difference in the degree of symptomatic relief between the control group and the treatment group on days 3, 8 and 15 after treatment ($P < 0.05$). The difference between the two groups has statistically significant. The good rate and effective indicators of the treatment group were 65.6% and 92.1%, which was better than the control group ($P <0.05$) significantly. The results showed that acupuncture combined with diclofenac treatment can improve the pain symptoms of patients with soft tissue injury significantly, and its clinical superiority and overall efficacy are better than conventional PRICE treatment.*

Keywords: *Soft Tissue Injury, Combined Diclofenac Treatment, Clinical Efficacy*

1. Introduction

Soft tissue contusion refers to damage to the human motor system and peripheral nerves, as well as extravascular skin, ligaments, fascia, tendons, synovium, fat, joint capsules and other tissues [1]. These tissues are affected by a variety of internal and external traumatic factors, leading to tissue damage and its physiological damage [2]. Soft tissue damage usually depends on external body pressure, which can cause damage when a certain intensity is reached, leading to symptoms [3]. As a rule, it can be divided into acute injury and chronic cumulative injury. When soft tissue is destroyed by blunt or sudden violence, it can cause soft tissue (including skin, subcutaneous tissue, muscles containing nerves, blood vessels, and lymphoid tissue) or other local contusions [4]. Damage to human soft tissue is a common and common disease in the human motor system. Injury to soft tissue can cause the neck, back, back, legs, legs and limbs to accumulate due to various acute and chronic injuries. In recent decades, most diseases have been found to come from the muscles and ligaments of soft tissues, fascia, fat, joint capsules, nerves, blood vessels, and the like. They directly cause damage, which is very harmful [5].

Soft tissue contusion determines the existence of closed soft tissue injury mainly based on medical history and clinical manifestations: history of injury: the patient has a history of injury, the degree of injury is mild or severe, and can be divided into falls, bruises, sprains, bruises, etc. depending on the degree of injury: Usually injured after injury, the degree and nature of pain varies from person to person, from injury to pain, if affected by external force, the degree of injury will be more serious, affecting local lymphatic outflow, blood return, increased exudate. The nerve is compressed or injured, directly damages the local nerve, and the pain is very strong. Even if the damage is very mild, if the patient is very sensitive to pain, he will show significant pain. Local edema and hemorrhage: As a result of traumatic injury to the local blood vessels and lymphatic system, increased exudate causing localized edema in the wounded. If the location of the damaged vessel is superficial, bleeding can exacerbate local edema and the skin can also have significant bleeding points. Intradermal and

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subcutaneous hemorrhage can be observed in ecchymoses, such as subcutaneous tissue, and hematomas may occur in the case of local bleeding. Due to occlusive trauma, local vascular rupture usually stops on its own. Disruption of activity: When muscles, tendons, ligaments, joints or nerves are damaged by local pain and swelling, some degree of destruction of joint movement is more or less manifested. If the patient's joint is dislocated, in addition to the movement disorder, the shape of the damaged part will also change, such as local joint protrusion and deformity. On-site treatment: Specific on-site treatments vary depending on limitations and degree of injury, but the general principle is to alleviate pain in patients unless joint dislocation, severe activity disorder, and severe damage are observed, and this rule is not used. Most of the treatments in the hospital can be improved after treatment. Treatment can usually be treated by analgesia, physiotherapy and inhibition. Within 24 hours after the injury, topical application of cold compresses can cause skin blood vessels to narrow, weaken tissue swelling, and play a role in stopping bleeding and relieving pain. For the treatment of soft tissue contusion early use of drugs, has a good effect, is one of the characteristics of Chinese medicine treatment [6]. The patient experienced swelling and pain relief immediately after administration. Fixing the dressing while waiting for treatment not only supports the joints in the damaged ligament, temporarily restricts the movement of the limb, but also helps to restore the damaged ligament, greatly reducing the treatment time [7]. Many patients have been treated with this method for a long time and the effect is good.

Dong and other scholars tried to find out the mechanism of action of Qing Analgesic Spray (XQAS) on acute soft tissue injury (STIS). An acute STI model was established by hitting the muscles of the hind paw of the rat [8]. After modeling, topical administration was repeated every 2 hours for 8 hours, with or without spray XQAS, P or IH ethanol extract (CPS and IHS), and then monitored for muscle swelling rate and inflammation-related biochemical parameters to monitor muscle, histology and Expression of mRNA and protein. Their study found that XQAS inhibits muscle swelling, pro-inflammatory mediators and oxidative stress, as well as severe pathological changes in damaged muscle tissue in a dose-dependent manner [9]. In addition, CPS primarily transduces p38 activation, which transfers cytoplasmic IBNF-B p65 to the nucleus primarily by blocking AKT activation. There is a synergy between the CP and IH components in XQAS to prevent acute STI and inhibit IβBβ. Degradation, translocation and subsequent inflammation of NF-B p65 and abnormalities associated with oxidative stress. The results showed that XQAS had a significant effect on the treatment of acute STIS with strong anti-inflammatory and anti-oxidative effects, and the reasonable combination of active ingredient CP was associated with blocking the activation and active components of the p38-NF-κB pathway. IH blocks AKT-NF-αB pathway activation. Soares compared how different age groups and the presence of these lesions affect the healing of soft tissue. The study included medical records for patients aged 0 to 15 who were treated at the Dental Trauma Monitoring Center at the Federal University of Dental Engineering, Rio de Janeiro, 2015-2017. Incomplete data records and requests for patient records that were more than 2 weeks old were excluded, and the data collected included the patient's age and gender, the frequency, type and location of the injury, and immediate treatment (56.2% of the 543 patients who met the acceptance criteria) With STI, males (65.6%), 0-3 age group (39%, 7%) were the most affected [10]. This paper selects acute closed soft tissue injury caused by football between January 2017 and December 2018. In 100 cases, the above patients were randomly divided into the control group and the treatment group by random number table method, 50 cases in each group, including 28 males and 22 females, aged 15 to 30 years old, with an average of (23.2 ± 1.21) years old. The course of disease was 1~3 days, with an average of (1.9 ± 0.66) d. There were 26 males and 24 females in the treatment group, aged from 15 to 27 years old. The course of disease was 1-3 days, with an average of 1.97 ± 0.71.d, the difference in age, gender, and duration of disease between the two groups was not statistically significant ($P > 0.05$). The control group was treated with PRICE routinely, and the injured part was stopped immediately after the injury, and the affected limb was raised and elasticized. The bandage is pressure-wrapped, the ice pack is cold, and the rest is every 20 min 10 rain, 24 hours later changed to hot compress, each time 20 rain, after a hot compress once a day, the limbs will be pressure bandaged, raised and rested. The above method is 8 days for a course of treatment, a total of 2 courses of treatment, The treatment group was treated with acupuncture combined with diclofenac diethylamine salt emulsion on the basis of the treatment of the same control group. The treatment times of acupuncture therapy were determined according to the injury, location and other factors. The acute muscle injury was treated once or twice after injury. 1 course of treatment, acute injury of ligaments and tendons is treated 5-7 times after injury for 1 course.

In this paper, the control group was divided into traditional treatment group and acupuncture combined with diclofenac plus traditional treatment. The experimental data and experimental results were recorded. It was found that the symptoms such as pain and swelling after treatment and the evaluation of physical signs decreased by > 90%. Joint activities are normal. Significant efficacy:

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symptoms such as pain and swelling after treatment, as well as signs of reduction > 70% compared with pre-treatment. Joint activities are not restricted. Effective: symptoms such as pain and swelling after treatment, the number of symptoms before treatment decreased by > 35%. Unacceptable: symptoms such as pain and swelling, signs less than 35%, no change in joint activity. A good indicator = (number of treatments + significant number of people) / overall effect, overall effect = (number of drugs + effective amount).

2. Proposed Method

2.1. Soft tissue Contusion

(1) Soft tissue composition

1) Skin: thicker, less moving, richer hair follicles and fatty glands.

2) Small fascia: dense and thick, contains more fat, and many connective tissue bundles are associated with deep fascia. The upper superficial fascia is particularly stiff and the lumbar fascia contains more fat.

3) cutaneous nerve: part of the phrenic nerve comes from the posterior branch of the cervical nerve, and the thicker skin branch has the occipital nerve and the third occipital nerve. Occipital nerve: This is a branch of the posterior branch of the second cervical nerve that is shallow below the line of the trapezius muscle, and the occipital artery branches and spreads to the occipital skin. Third occipital nerve: This is the branch of the posterior branch of the third cervical nerve that passes through the trapezius muscle and spreads to the upper part of the area. The thoracic and lumbar spine branches from the thoracic vertebrae and the posterior branch of the lumbar nerve. Each branch is small on either side of the spinous process, the upper branch is oriented almost horizontally outward, and the lower branch is obliquely outward and downward, distributed over the skin of the chest and back regions and the waist region. The branch of the posterior branch of the 12th thoracic nerve can reach the gluteal region. The anterior branches of the posterior branches of the first lumbar nerve and the third lumbar nerve form the upper nerve of the arm, pass through the waist region, and wear the thoracic fascia and extend to the upper part of the buttock region. The nerves are concentrated in the upper part of the ankle, 2 cm from the lateral edge and side of the erector spinae. When the waist is severely distorted, the nerves in the above parts are easily pulled out, which is one of the common causes of back pain. There is also a worm-like branch from the posterior branch of the phrenic and caudal nerves. The different heights from the supraorbital spine to the tip of the tailbone are shallow layers at the beginning of the gluteus maximus and are distributed on the skin of the worm-like process. The gluteal nerve is formed from the first to the third posterior branch of the phrenic nerve.

4) The superficial artery in the superficial vascular region is mainly composed of the occipital artery branch, the superficial cervical artery and the dorsal scapular artery. The chest area is from the posterior intercostal artery, the dorsal scapular artery and the thoracodorsal artery, the lumbar region is from the lumbar artery branch, and the appendix is from the superior and inferior arteries.

(2) Soft tissue damage is usually affected by external body pressure, which can cause damage and cause symptoms when a certain intensity is reached. As a rule, it can be divided into acute injury and chronic cumulative injury. When soft tissue is destroyed by blunt or sudden violence, it can cause contusion or/and rupture of local soft tissue, including skin, subcutaneous tissue, muscles containing nerves, blood vessels, and lymphoid tissues. Damage to human soft tissue is a common and common disease in the human motor system. Soft tissue damage can be caused by the accumulation of acute and chronic injuries, resulting in various conditions of the neck, shoulders, back and legs and limbs, as well as varying degrees of symptomatic cold compresses. Cold heading is based on the principle of thermal expansion and contraction. Under the action of cold stimulation, the capillaries in the damaged area are compressed, and the blood circulation is slowed down, which plays a role in stopping bleeding and relieving pain. In physical education classes, first aid kits are usually not ready. In this case, a frozen portion of the freezer, such as ice cream, can be used to cool the damaged portion. When the temperature of the tap water is much lower than the body temperature, the damaged part can be soaked or washed with tap water. The cold application process should be applied every 1-2 hours, 20 hours after injury, and about 20 minutes per application to avoid frostbite.Pressure dressings are an effective method of capillary bleeding in tissues. If the dressing cannot be performed under pressure in the early stages of injury, it will inevitably affect recovery time after hematoma formation. When dressing under pressure, it should be noted that the dressing should be tight and appropriate, and the dressing should

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not be loose to stop bleeding. Excessive tightening will seriously affect blood circulation, leading to organization lack of blood, and even necrosis of the distal limbs. Avoid prolonged bandage with elastic bandages. Restrict activities. Prohibition of activities means rest in the damaged area to avoid secondary injuries. In the case of an ankle sprain, the peripheral blood circulation is not smooth due to ligament rupture and capillary rupture. In the acute inflammation stage, in addition to cold compresses and pressure dressings, try to stay in bed as much as possible. Lift the injured limb and exert an analgesic effect. Gypsum can be used for fixed protection if necessary. Seek medical help at any time. Soft tissue injury may be associated with joint dislocation, joint effusion, fracture fracture, ligament rupture, tendon rupture, and muscle fiber adhesion. After necessary treatment, you should seek medical advice promptly to prevent injury.

(3) Assessment of the presence of closed soft tissue injury is mainly based on disease history and clinical manifestations: history of injury: the patient has a history of injury, the degree of injury is mild or severe, and the degree of injury is not high, for example, falls, bruises, sprains, strains. Injury, bruises, etc. Pain: Pain usually in the pain area after injury. The extent and nature of the pain varies from person to person, from injury to injury. If it is affected by external force, the degree of injury will be more serious, affecting local lymphatic outflow, blood return, increased exudate, local nerve compression or injury, directly damage local nerves, and the pain will be very strong. Even if the damage is very mild, if the patient is very sensitive to pain, he will show significant pain. Local edema and hemorrhage: As a result of traumatic injury to the local blood vessels and lymphatic system, exudate increases, causing localized edema in the wounded. If the location of the damaged vessel is superficial, bleeding can exacerbate local edema and the skin can also have significant bleeding points. Intradermal and subcutaneous hemorrhage can be observed in ecchymoses, such as subcutaneous tissue, and hematomas may occur in the case of local bleeding. Due to occlusive trauma, local vascular rupture usually stops on its own. Disruption of activity: When muscles, tendons, ligaments, joints or nerves are damaged by local pain and swelling, some degree of destruction of joint movement is more or less manifested. If the patient's joint is dislocated or dislocated, in addition to the movement disorder, the shape of the damaged part may also change, such as local joint protrusion and deformity. It is well known that when the joint is subjected to excessive rotational force or exceeds the normal range of motion. Muscle fibers cause local muscles, fascia or ligaments to rupture or tear.

(4)In the tissue small blood vessels rupture and hemorrhage, tissue fluid secretion local damage, tissue redness and swelling due to bleeding, local tension increased rapidly, release the pain caused by the substance, spread severe pain, causing local muscle spasm, tissue hematoma and pressure edema. Inevitably, the body's blood supply is insufficient, and the substance causing pain is further increased, which in turn increases pain and dysfunction. Increase the pathological changes in muscles, fascia and ligaments. Motherland Medicine believes: "If this is due to trauma, internal muscle movement, loss of blood and blood, overflow of meridians or meridians, air stagnation and blood stasis, no pain anywhere. Remove new meridians. "The blood of tissues damaged meridians cannot be eliminated in time. Or spread out, it will accumulate in the interstitial space and become blood stagnant, blood stagnant obstructs the meridians, forces the meridians to pass, blocks the blood and blood, and thus, the method of cold compression and compression dressing during treatment is reduced in the early stage of injury. Therefore, the production of hematoma is suppressed: the purpose of the massage method is to correct the disorder. Muscles, ligament fibers, cut off the meridians, and reconcile the blood to achieve the "complete passage" of blood and blood, using triangular acupuncture to produce cups, improve local blood circulation, and reduce target tissue repair. The purpose of topical application of Chinese herbal medicine is to achieve cooling of the blood, to reduce the effects of swelling and relief by pain and airborne transmission caused by attraction. Practice has proved that the above methods work together and the sample is taken care of, so the treatment effect is satisfactory. In recent years, due to the active reform of college physical education, the number of students actively participating in extracurricular sports activities has been increasing, and various small sports events have occurred frequently. The corresponding acute injury is also gradually increasing.

2.2. Image Segmentation Recognition and Magnetic Resonance Imaging

(1) Threshold-based segmentation method

(2) By setting the gray threshold, the pixels in the image are classified according to the gray level, so as to realize the segmentation of the cell image. If the original image is $f(x, y)$ and the threshold is set to T , the segmentation decision rule can be expressed as:

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$$g(x,y)=\begin{cases}1, f(x,y)\geq T\\ 0, f(x,y)<T\end{cases} \tag{1}$$

The OTSU algorithm is a method of automatically determining the threshold using the largest change between categories. Its basic principle is: assuming that the total number of pixels with gray value i is n_i, then the probability p_i of gray value i is:

$$p_i=\frac{n_i}{N} \tag{2}$$

Introduce the gray threshold value T, and divide the image pixels into two categories C_0 and C_1 according to the gray value of each pixel. According to the corresponding relationship, C_0 corresponds to the set of pixels with gray value between $[0,T-1]$, then C_1 corresponds to the set of pixels with gray values between $[T,L-1]$ [4-5], if the pixel is in the set C_0, the probability is:

$$\omega_0=\sum_{i=0}^{T-1}p_i \tag{3}$$

The probability within C_1 is:

$$\omega_1=\sum_{i=T}^{L-1}p_i=1-\omega_0 \tag{4}$$

Mean C_0 is:

$$u_0=\sum_{i=0}^{T-1}ip_i/w_0 \tag{5}$$

Mean C_1 is:

$$u_1=\sum_{i=T}^{L-1}ip_i/w_1 \tag{6}$$

Then the average gray value of the entire image is:

$$u=w_0u_0+w_1u_1 \tag{7}$$

Thus, the variance between classes C_0 and C_1 is defined as:

$$\sigma^2=w_0(u_0-u)^2+w_1(u_1-u)^2=w_0w_1(u_0-u_1)^2 \tag{8}$$

When σ^2 takes the maximum value, the corresponding threshold T is the optimal threshold.

Eliminate trend items

Assuming that the sampling data received by the structural health monitoring cloud is a digital signal after calibration and conversion, the least square method is used to eliminate the trend item is a more common method:

$$Y(t)=X(t)-Z(t) \tag{9}$$

In the formula, $X(t)$ is to read the sampled data, the polynomial function fits $X(t)$ to obtain the polynomial coefficient vector a of the trend term.The frequency of the hydrogen nucleus precession can be derived from the Lamo equation:

$$\omega=\gamma B \tag{10}$$

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In formula 10, ω represents the angular frequency of the atomic nucleus precession, γ represents the magneto-rotation ratio, and B represents the field strength of the external magnetic field. For the same kind of particles, the gyromagnetic ratio γ is a constant, which is determined by the characteristics of each particle.

$$\theta = \gamma B_1 \tau \tag{11}$$

Among them, τ represents the action time of the radio frequency pulse, B_1 represents the intensity of the radio frequency pulse, and γ refers to the gyromagnetic ratio.

$$M_z(t) = M_0(1-e^{-t/T1}) \tag{12}$$

$$M_{xy}(t) = M_0 e^{-t/T2} \tag{13}$$

It is worth mentioning that the $T1$ and $T2$ times are not the same, and the time $T1$ required for recovery is 5 to 10 times longer than the decay time $T2$. Therefore, although the recovery and attenuation start at the same time after the RF pulse is removed, the two processes are independent of each other.

(3) Smoothing

The vibration signals collected by the health monitoring system are generally mixed with noise components, and are affected by high-frequency component noise:

$$P(y_i | X_i) = \pi(X_i)^{y_i}[1-\pi(X_i)]^{1-y_i} \tag{14}$$

Here $X_i = [x_{i1}, x_{i2}, \cdots, x_{in}]$ $i = 1,2,\cdots,n$, the maximum likelihood function of n sample observations is:

$$L(\beta | X, y) = \prod_{i=1}^{n}[\pi(X_i)]^{y_i}[1-\pi(X_i)]^{1-y_i} \tag{15}$$

The log likelihood function is:

$$l(\beta) = \sum_{i=1}^{n}\{y_i \ln[\pi(X_i)] + (1-y_i)[1-\pi(X_i)]\} \tag{16}$$

Too many smoothing times will significantly reduce the peak value of the spectrum curve, make the body shape wider, and even lead to larger recognition errors.

(4)Time-frequency domain processing of vibration signals

1) Time domain processing

The random vibration signal has no obvious regularity. Let $\{x(k)\}$ be the discrete data sequence of the random vibration signal, the length is N, and the sampling time step is Δt. The mean value of the random vibration signal is estimated as:

$$\mu_x = \frac{1}{N}\sum_{k=1}^{N} x(k) \tag{17}$$

$$\psi_x^2 = \frac{1}{N}\sum_{k=1}^{N} x^2(k) \tag{18}$$

The calculation process is the same as the mean estimation. Variance estimation:

$$\sigma_x^2 = \frac{1}{N}\sum_{k=1}^{N}[x(k)-\mu_x]^2 = \psi_x^2 - \mu_x^2 \tag{19}$$

The calculation process can be decomposed into two unrelated subtasks to calculate the mean and

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mean square estimation. The parallelism of its task is embodied in that it can be decomposed into subtasks that can be executed in parallel, and its expression is:

$$R_{xx}(k)=\frac{1}{N}\sum_{i=1}^{N-k}x(i)x(i+k) \tag{20}$$

$$R_{xy}(k)=\frac{1}{N-k}\sum_{i=1}^{N-k}x(i)y(i+k) \tag{21}$$

In the structural health monitoring system, some physical quantities sometimes need to be acquired by transforming other physical quantities. The calculation and evaluation formula is:

$$y(k)=\Delta t\sum_{i=1}^{k}\frac{x(i-1)+x(i)}{2} \tag{22}$$

The calculation of the value of each discrete point of the signal after integration is not related to each other and can be calculated in parallel.

2) Frequency domain processing

The auto-power spectral density function is the fourier transform of the auto-correlation function, namely:

$$S_{xx}(k)=\frac{1}{N}\sum_{n=0}^{N-1}R_{xx}(n)e^{-i2\pi kn/N} \tag{23}$$

$$S_{xy}(k)=\frac{1}{N}\sum_{n=0}^{N-1}R_{xy}(n)e^{-i2\pi kn/N} \tag{24}$$

The power spectral density function can be used as the input data of some specific modal parameter identification methods, namely:

$$H(k)=\frac{S_{xy}(k)}{S_{xx}(k)} \tag{25}$$

$$C_{xy}(k)=\frac{\left|S_{xy}(k)\right|^2}{S_{xx}(k)S_{yy}(k)} \tag{26}$$

In the formula, $S_{xx}(k)$ means self-power spectrum estimation of random vibration excitation signal; $S_{xy}(k)$ means cross-power spectrum estimation of random vibration excitation and response signal.

3. Experiments

3.1. Experimental Settings

(1) Research object

Table 1: General information about the subject

	Sex		Age	Course of Disease	Height	Weight
	Male	Female				
Therapy Group	25	25	23.5 ± 1.5	1.6 ± 0.33	183.54±6.34	78.90±7.44
Control Group	24	26	20.3 ± 1.22	1.86 ± 0.73	177.45±4.37	70.12±5.39

100 cases of acute closed soft tissue injury caused by football between January 2017 and December 2018 were selected. The above patients were randomly divided into control group and treatment group by random number table, 50 cases in each group, including control group male. 25 cases, 25 females, aged 15 to 30 years old, mean (23.5±1.5) years old, duration of l~7 days, mean (1.6±0.33) d, 24 males

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and 26 females, aged 15 to 25 years old , average (20.3±1.22) years, duration of l~7 d, average (1.86±0.73) d. There were no statistical differences in the age, sex, and duration of the two groups (P>0.05). The basic situation of the subjects is shown in Table 1.

(2) Research methods and processes

1) Treatment method: The control group was treated with standard PRICE. "Protection", "rest", requires the victim to immediately stop the movement of the damaged part; compression, the protective part is applied to the damaged part; E, height, "lift up, lift the wound. After the injury immediately stop the activity of the damaged part. Lift the affected limb and put on the elastic bandage. Ice cold, rest 10 times within 20 meters. After 24 hours, replace it with hot compress for 20 minutes each time, the limbs are still fixed under pressure, once a day Fix after hot pressing. Get up and rest. The method is used for 7 days of treatment, 1 course of treatment, only 2 courses. After 48 hours of platelet coagulation at the injury site, there is no bleeding or leakage of tissue fluid, when tissue damage when heavier, the late treatment lasts for 3 to 8 weeks. During this period, the congestion and edema of the injury site mostly disappear. Due to dysfunction and limited action during recovery, the new tissue grows to adhere to the surrounding tissue, especially the joint movement. Limit, muscle atrophy, immobility and weakness. Therefore, after treatment, the focus is on functional rehabilitation exercise. Exercise should pay attention to control the volume and intensity of exercise, step by step, avoid new organization Secondary injury. For example, treatment of medial collateral ligament injury in the knee. In order to protect the cruciate ligament and the fixed joint, the plaster is fixed early for about 45 days. Due to long-term limited behavior, the knee joint may have temporary flexion and extension after the patch is removed. Dysfunction and muscle atrophy of the leg muscles, after improving the basic functions, gradually recovering the strength of the movement, and finally recovering completely. In order to accelerate the recovery and regeneration of the damaged parts of the body, in addition to oral blood circulation and sputum, in physical therapy It is especially important to improve the blood circulation in the damaged area. Common physical therapies include hot compress, massage, etc. Hot compress and massage therapy also use the principle of thermal expansion and contraction to increase the temperature of the damaged part and expand the capillaries in the damaged tissue. Accelerate local blood circulation and promote functional recovery.

2) Treatment group treatment

On the basis of treatment, the external acupuncture of the control group was combined with the diclofenac salt emulsion of diclofenac. The number of acupuncture treatments depends on factors such as trauma and location. Acute muscle injury is treated once or twice in one course of treatment, and acute injury to the ligaments and tendons is treated 4-6 times in one course of injury.

3) Treatment process

The first acupuncture and bloodletting: no obvious swelling and bruising in the case of muscle damage. According to the meridian of the damaged area, the vascular reaction point is used to pierce the blood with a triangular needle. For subcutaneous tissue such as ligaments and joints, the subcutaneous tissue is significantly swollen and the affected area is treated with a flowering plum blossom needle. Then find the acupuncture points in the injury site, and transfer the acupuncture needle to the acupuncture points and acupuncture points of the meridians belonging to the damaged area without leaving needles. The giant spike method is used for acupuncture on the opposite side of the Jindu point of the same name, and the needle is kept for 20 minutes. During the needle retention process, the contralateral iliac crest is inserted and the sputum is transferred, and the sputum patient actively moves the damaged site 20-30 times. Attention should be paid to the maximum slow movement range of the dysfunction direction to avoid causing pain or increased pain. After acupuncture, diclofenac diclofenac cream (trade name Futalin cream, lot No. 08085, Beijing Novartis Pharmaceutical Co., Ltd.) was used, and 2 g was applied at 40° 80 cm depending on the size of the diseased area. Wipe it gently in the affected area. 4 times a day, but the total should not exceed 10 S / d, a course of 2 weeks. After the end of treatment, the affected limb should not be strenuously exercised. If necessary, use an elastic bandage to press around for exercise.

3.2 Results and Assessment

The pain intensity, static pain intensity, local tenderness intensity, local tenderness intensity and estimated degree of local edema assessment were recorded before the patient was enrolled, 3, 8, and 15 days after treatment. 15 days after treatment. The intensity of pain and the intensity of local sensitivity at rest were assessed using a visual analog scale (VAS) of pain levels. The score was recorded by the

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patient, with 0 being painless, 1-3 being mild pain, and 4-6 being moderately severe. Pain from 7 to 10 is severe pain. According to changes in skin texture, local edema was defined as edema, mild edema (skin is light, but clearly discernible) 2 points; swelling is obvious (particles are blurred) 3 points; severe edema (skin disappears) 4 points; before and after treatment Conduct an assessment and then calculate the improvement index. Improvement index = (before treatment score - one point after treatment) / point before treatment. At the same time, vital signs, blood, urine, liver, kidney, electrocardiogram and adverse reactions were observed.

4. Discussion

4.1. Comparison of the Degree of Symptom Relief between the Two Groups before and after Treatment

At 3, 8 and 15 days after treatment, there was a statistically significant difference in the degree of symptom relief between the control group and the experimental group ($P<0.05$), and the difference in remission between the two groups was statistically significant ($P <0.05$) as shown in Table 2.

Table 2: Comparison of the degree of symptom the two groups before and after treatment

Index	Group	Degree of Relief		
		3d	8d	15d
Pain Intensity	Control Group	1.45±0.01	2.45±0.01	4.30±0.02
	Test Group	1.54±0.01	3.24±0.01	4.80±0.01
Pain Intensity Level	Control Group	0.54±0.02	0.93±0.01	1.83±0.01
	Test Group	0.42±0.01	0.63±0.01	1.12±0.01
Local Tenderness	Control Group	1.32±0.01	2.50±0.02	3.92±0.02
	Test Group	1.65±0.01	2.79±0.01	5.02±0.01
Local Tenderness Level	Control Group	0.53±0.02	0.96±0.02	1.83±0.02
	Test Group	0.42±0.01	0.84±0.01	1.45±0.01
Swelling Evaluation Level	Control Group	0.33±0.02	0.78±0.01	1.38±0.04
	Test Group	0.30±0.01	0.83±0.01	1.13±0.05

4.2. Comparison of the Efficacy of Each Group of Patients

After treatment, the excellent rate and total effective rate were better in the treatment group than in the control group ($P < 0.05$), as shown in Table 3.

Table 3: Comparison of the two groups (10-2)

Group	Number of Cases	Cure	Significant Effect	Effective	Invalid	Excellent Rate	Total Efficiency
Therapy Group	50	6	28	13	3	65.3	92.4
Control Group	50	4	22	20	4	45.3	78.7

Table 4: Patient Adverse Reaction Information Form

Adverse Reactions	Moderate Gastrointestinal Reaction	Mild Gastrointestinal Reaction	Mild Dizziness	Total
Number of Cases	4	2	1	7

It can be seen from Table 4 that there were 7 cases of adverse reactions in the experimental group, including 4 cases of moderate gastrointestinal reactions, 2 cases of mild gastrointestinal reactions, and 1 case of mild dizziness. All patients are able to tolerate the medications needed to complete the required course of treatment.

4.3. Type of Injury

There were 50 cases in total, all of which were athletes of a certain university, including 38 male students and 16 female students, aged 18-22 years old. The damage category is shown in Figure 1, and the cause of the motion damage is shown in Figure 2.

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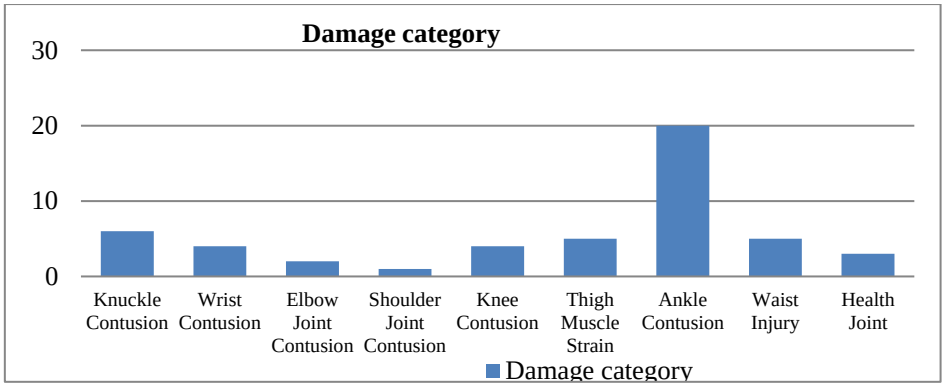

Figure 1: Damage category

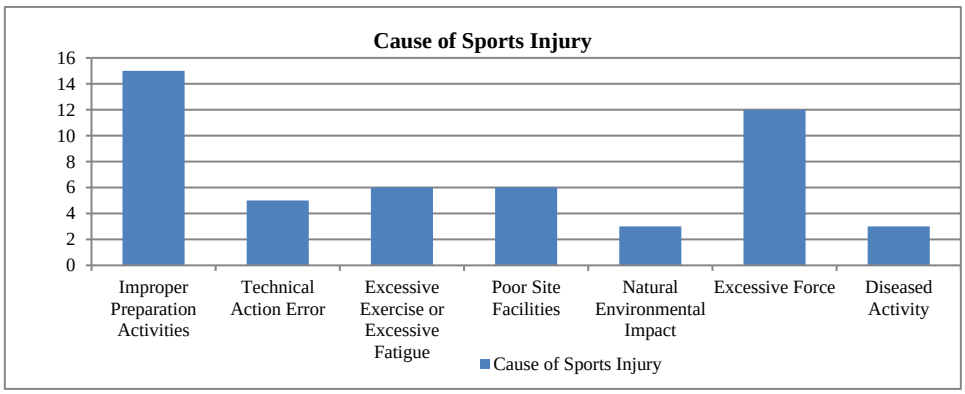

Figure 2: Shows the cause of the damage movement

4.4. Recovery of The two Treatment Methods

Twenty people in each group were selected for knuckle contusion, knuckle contusion, wrist contusion, elbow contusion, shoulder joint contusion, knee contusion, thigh muscle strain, ankle contusion, lumbar injury, and joint injury. The number of people who recovered with acupuncture combined with diclofenac and traditional methods recovered in two weeks is shown in Figure 3.

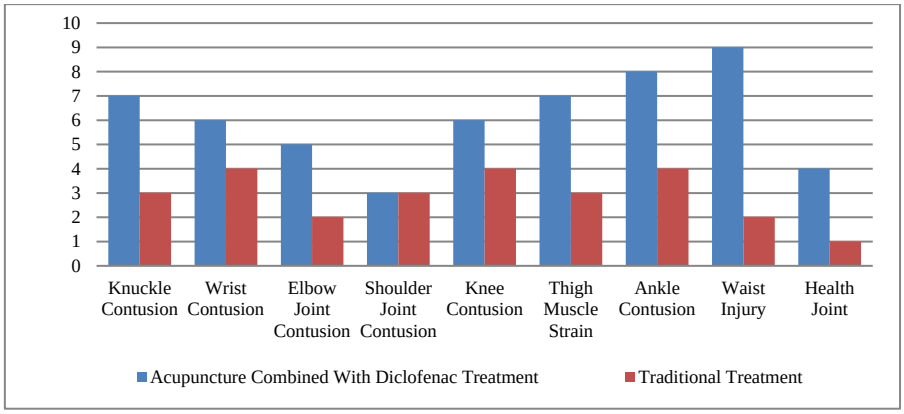

Figure 3: Number of acupuncture combined methods to recover in two weeks

4.5. Bad Influence

Due to the cruelty of competitive games, the physical confrontation of football players is cruel. There are many direct encounters during the game. Acute closed soft tissue injuries are common in football, such as ligaments and muscles. The damage rate reached 72.9%. Sharp soft tissue damage, however damaged skin will not be damaged. Pathological changes in the damaged area are sometimes difficult to observe due to internal bleeding and swelling of soft tissue under the skin, which may result in poor treatment and adverse reactions. When the injury is minor, the training athlete does not feel

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uncomfortable in a short time, and inappropriate treatment usually becomes a chronic disease.

This paper investigates 200 athletes and amateurs from different universities and different regions, and the attitude of athletes in the treatment of soft tissue contusion is shown in Figure 4.

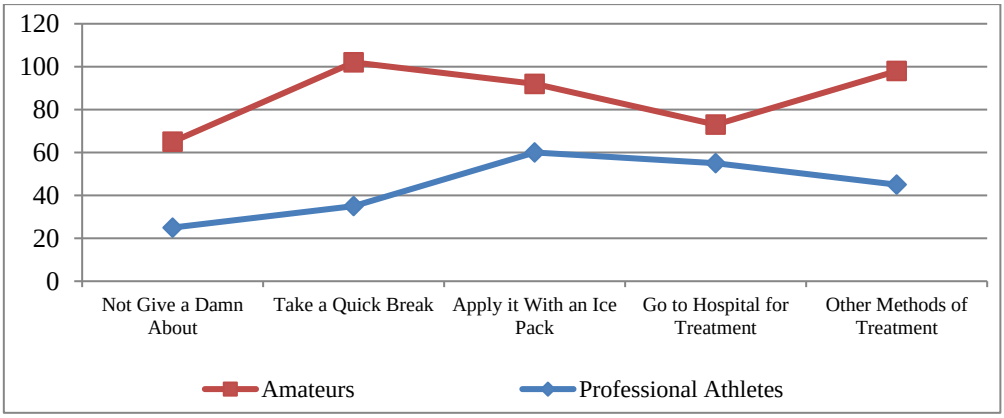

Figure 4: Post-contusion treatment of athletes' soft tissue

4.6. Comparison of the Scores of Various Clinical Symptoms and Signs

(1)Ecchymosis

Here, the soft tissue injury and ecchymosis of the two groups of subjects during the treatment are analyzed, and the soft tissue damage and ecchymosis before the treatment, the second day, the fourth day, the sixth day, and the eighth day are taken for comparative analysis. , The result is shown in Figure 5.

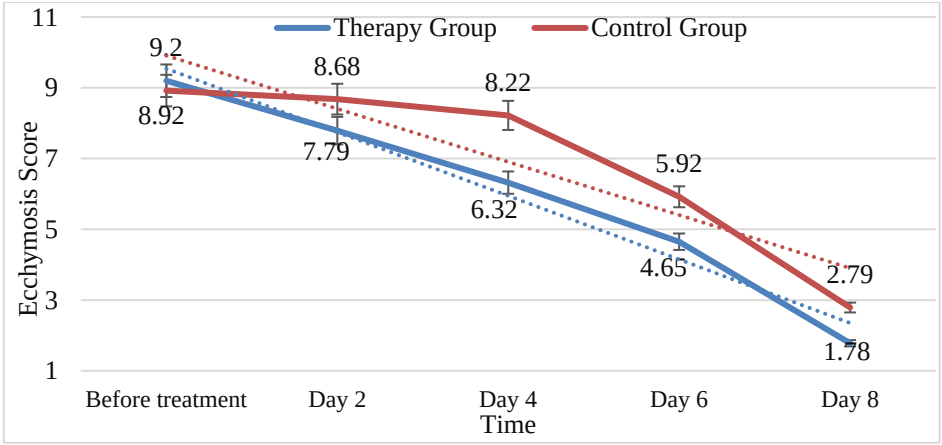

Figure 5: Comparison chart of the scores of scars during the treatment of the two groups

It can be seen from Figure 5 that the score of ecchymosis before treatment in the treatment group was 7.7±1.50, and the score of ecchymosis after 8 days of treatment was 0.6±1.18; while the score of ecchymosis in the control group was 7.4±1.52, and the score of ecchymosis after 8 days of treatment It is 1.2±1.59. Before treatment, there was no statistically significant difference in the scores of ecchymosis symptoms between the two groups ($P>0.05$), and the two groups were balanced and comparable; after treatment, the difference in scores of ecchymosis symptoms between the two groups was statistically significant ($P<0.05$). It shows that acupuncture combined with diclofenac treatment is better than traditional treatments in treating ecchymosis symptoms.

(2) Tenderness

Here, the soft tissue injury and tenderness of the two groups of subjects during the treatment process were analyzed. The soft tissue injury and tenderness before the treatment, the second day, the fourth day, the sixth day, and the eighth day were taken for comparative analysis. The result is shown in Figure 6.

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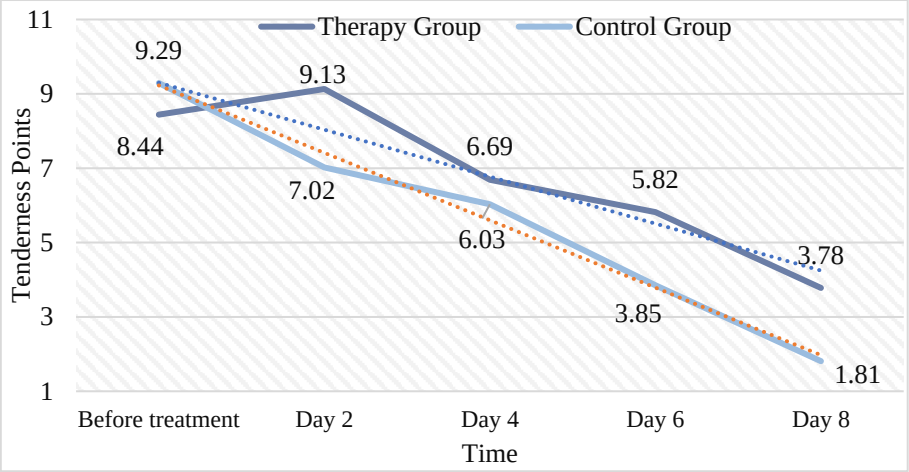

Figure 6: Analysis chart of tenderness score during the treatment of the two groups

It can be seen from Figure 6 that the tenderness score before treatment in the treatment group was 8.0±1.44, and the tenderness score after 8 days of treatment was 2.2±1.58; while the tenderness score of the control group was 7.8±1.49, and the tenderness score was 0.6±1.21 after 8 days of treatment. . Before treatment, there was no statistically significant difference in tenderness symptom scores between the two groups (P>0.05), and the two groups were balanced and comparable; on the second day after treatment, there was no statistically significant difference in tenderness symptom scores between the two groups (P>0.05)), on the 4th, 6th, and 8th day after treatment, the difference in tenderness symptom scores between the two groups was statistically significant (P<0.05), and the acupuncture combined with diclofenac treatment method increased the tenderness symptom scores within a short period of time after treatment In this regard, traditional treatment methods are far superior to acupuncture combined with diclofenac treatment, which shows that traditional treatment methods are more effective in treating tenderness symptoms.

(3) Swelling

Here, the soft tissue injury and swelling of the subjects during the two groups of treatment are analyzed respectively, and the soft tissue injury and swelling conditions before the treatment, the second day, the fourth day, the sixth day, and the eighth day are respectively compared and analyzed. The result is shown in Figure 7.

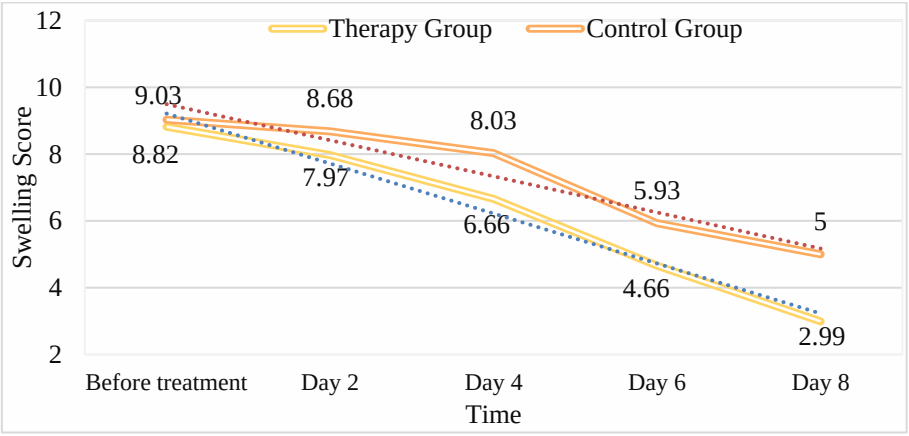

Figure 7: Analysis chart of swelling score during the treatment of the two groups

It can be seen from Figure 7 that the swelling score of the treatment group before treatment was 7.3±1.52, and the swelling score after 8 days of treatment was 1.1±1.89; while the swelling score of the control group was 7.5±1.53, and the swelling score was 2.5±2.50 after 8 days of treatment. . Before treatment, there was no statistically significant difference in the scores of swelling symptoms between the two groups (P>0.05), and the two groups were balanced and comparable; on the second day after treatment, there was no statistically significant difference in the scores of swelling symptoms between the two groups (P>0.05). On the 4th, 6th, and 8th days after treatment, the swelling symptom scores of the two groups were compared, and the difference was statistically significant (P<0.05), indicating that

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acupuncture combined with diclofenac treatment is better than traditional treatments in treating swelling symptoms.

(4) Pain

Here we analyze the soft tissue injury and pain of the two groups of subjects during the treatment. The soft tissue injury and pain before the treatment, the second day, the fourth day, the sixth day, and the eighth day are taken for comparative analysis. The result is shown in Figure 8.

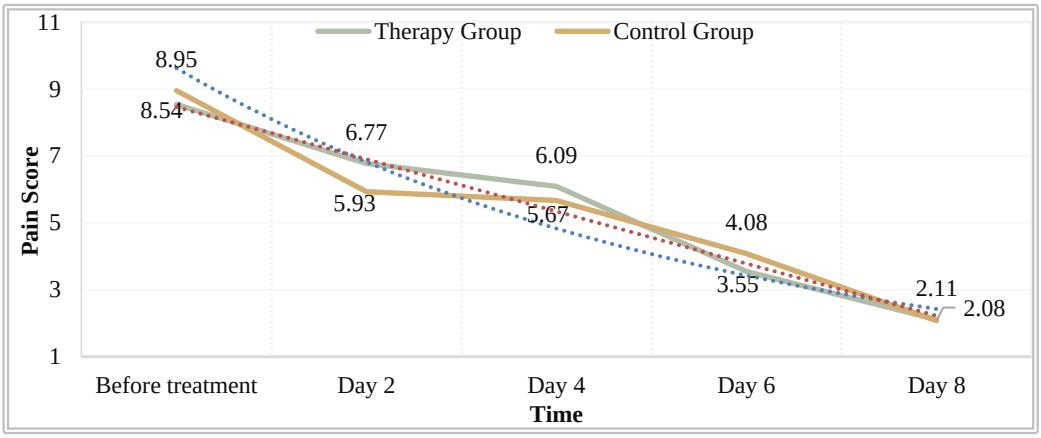

Figure 8: Pain score analysis diagram during the treatment of the two groups

It can be seen from Figure 8 that the pain score of the treatment group before treatment was 7.3±1.24, and the pain score after 8 days of treatment was 1.3±0.81; while the pain score of the control group was 7.5±1.45, and the pain score after 8 days of treatment was 1.2±0.88 . The scores of the two groups on the second, fourth, sixth, and eighth day of treatment were compared with the scores measured at the previous time point. The differences were statistically significant (P<0.05), indicating that the two treatment methods have the effect of improving pain. There was no statistically significant difference in the pain symptom score between the first two groups (P>0.05), and the two groups were balanced and comparable; the pain symptom score comparison between the two groups after treatment was not statistically significant (P>0.05), indicating that acupuncture Acupuncture combined with diclofenac treatment is equivalent to the traditional treatment in the treatment of pain symptoms.

(5) Activity function

Here we analyze the activity function of the subjects during the treatment process of the two groups respectively, and compare and analyze the activity disorders before the treatment, the second day, the fourth day, the sixth day, and the eighth day. The results are as follows: Shown in Figure 9.

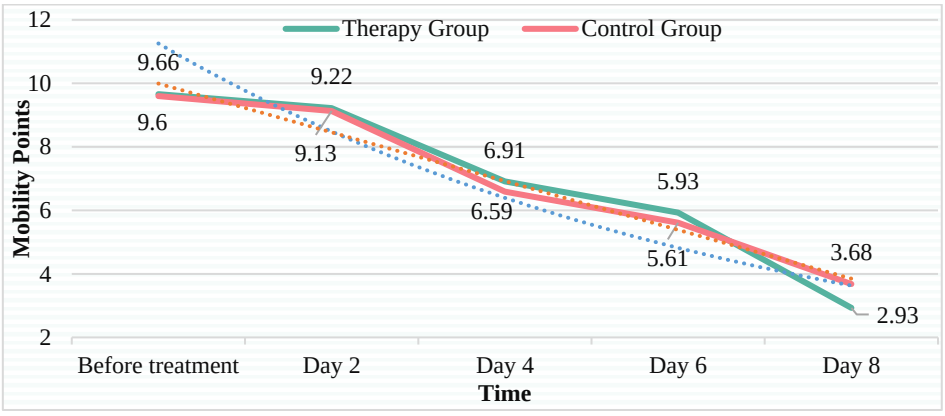

Figure 9: Analysis chart of the scores of movement disorders in the two groups during treatment

It can be seen from Figure 9 that the activity disorder score of the treatment group before treatment was 8.7±0.96, and the activity disorder score after 8 days of treatment was 1.4±1.53; while the control group's activity disorder score was 8.5±1.10, and the activity disorder score after 8 days of treatment It is 2.0±1.68. The scores of the two groups on the second, fourth, sixth, and eighth day of treatment were compared with the scores measured at the previous time point, and the differences were statistically significant (P<0.05), suggesting that the two treatment methods have the effect of improving activity

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functions. Before treatment, there was no statistically significant difference between the two groups of activity disorder symptom scores (P>0.05), and the two groups were balanced and comparable; after treatment, the two groups' activity disorder symptom scores were compared, and the difference was not statistically significant (P>0.05). It shows that acupuncture combined with diclofenac treatment is equivalent to the traditional treatment in the treatment of symptoms of activity function.

(6) General symptoms and signs

Here we analyze the overall symptoms and signs of soft tissue injury in the two groups of subjects during the treatment process, and compare and analyze the overall symptoms and signs before treatment, the second day, the fourth day, the sixth day, and the eighth day. , And the result is shown in Figure 10.

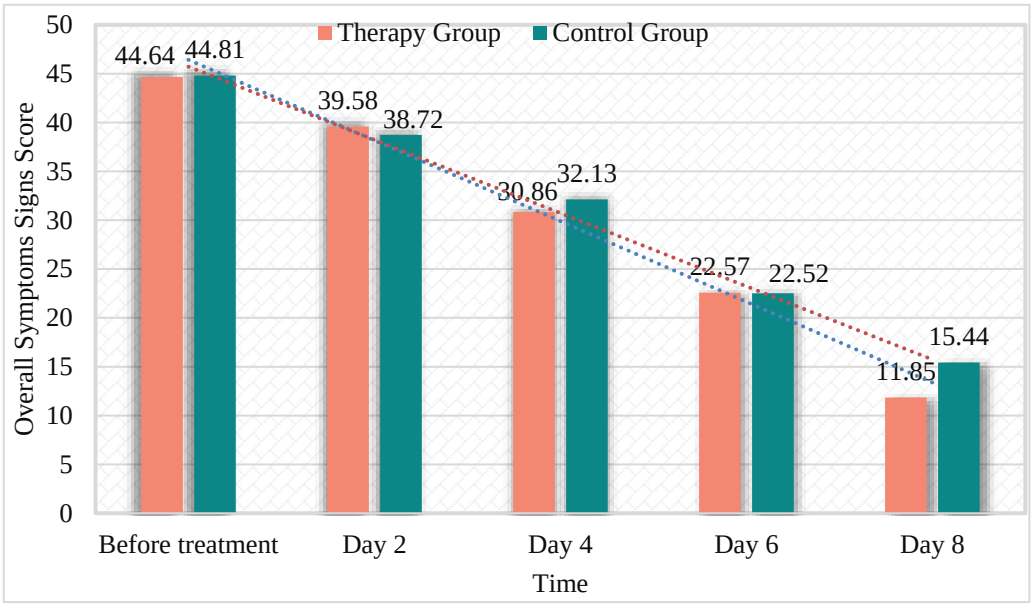

Figure 10: Analysis of the overall symptoms and signs scores of the two groups during the treatment process

As can be seen from Figure 10, the overall symptom and sign score of the treatment group before treatment was 39.1±5.54, and the overall symptom and sign score after 8 days of treatment was 6.6±5.25; while the control group's overall symptom and sign score was 38.8±6.01, after 8 days of treatment The overall symptom and sign score was 8.9±6.54. The scores of the two groups on the second, fourth, sixth, and eighth day of treatment were compared with the scores measured at the previous time points, and the differences were statistically significant (P<0.05), suggesting that the two treatment methods have the effect of improving overall symptoms and signs Before treatment, there was no statistically significant difference in the overall symptoms, signs and symptom scores between the two groups (P>0.05), and the two groups were balanced and comparable; after treatment, the differences in the overall symptoms, signs and symptoms scores of the two groups were not statistically significant (P> 0.05), indicating that acupuncture combined with diclofenac treatment is equivalent to the traditional treatment in the treatment of overall symptoms and signs.

4.7. Comparison of Vas Scores between and within Groups before and After Treatment

Table 5: Comparison of VAS scores before and after treatment

Group	Number of Cases	Before Treatment	2d	4d	6d	8d
Therapy Group	50	7.03±0.92	2.56±1.81	1.93±1.38	1.36±1.40	0.81±0.97
Control Group	50	6.70±0.83	3.96±1.82	2.96±1.69	2.26±1.61	1.93±1.31

The two groups of patients passed the t test and found that both P<0.05 had differences in the VAS scores before and after treatment, which was statistically significant, indicating that the symptoms of the two groups were improved after treatment. The two groups of patients were compared with the VAS scores between the groups. According to statistical analysis, P<0.01, there was a significant difference and statistical significance, indicating that the improvement of the treatment group was significantly

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higher than that of the control group. The specific conditions are shown in Table 5.

Table 6: Comparison of VAS scores before and after treatment

Group	Number of Cases	Before Treatment	2d	4d	6d	8d
Therapy Group	50	3.40±0.56	1.36±1.03	1.13±0.81	0.76±0.72	0.31±0.57
Control Group	50	3.23±0.50	1.96±0.88	1.60±0.77	1.20±0.88	0.93±0.76

After treatment, the two groups were compared with the ROM scores within and between groups. Through t-test, the difference within the group was significant, $P<0.01$; the comparison between the groups was significant and the difference was $P<0.05$. It shows that acupuncture combined with diclofenac therapy and traditional therapy can improve the acute closed soft tissue injury of patients, and the treatment group is better than the control group. The specific conditions are shown in Table 6.

4.8. Comparison of Clinical Efficacy

Table 7: Comparison after the first treatment

Group	Number of Cases	Cure	Significantly Effective	Get Better	Invalid	Efficient
Therapy Group	50	11	19	12	8	90%
Control Group	50	7	12	18	13	74%

After the first treatment, the one-time cure rate in the treatment group was 22%, and the total effective rate was 84%; the one-time cure rate in the control group was 14%, and the total effective rate was 74%. After rank sum test analysis, $P=0.005<0.01$, the difference is significant, indicating that after the first treatment, the treatment group relieved the soft tissue damage of the patients better than the control group and improved the patient's activity function. The specific conditions are shown in Table 7.

Table 8: Overall clinical efficacy comparison

Group	Number of Cases	Cure	Significantly Effective	Get Better	Invalid	Efficient
Therapy Group	50	18	20	10	2	90%
Control Group	50	13	18	13	6	74%

According to the efficacy criteria, combined with the patient's VAS scores before and after treatment, the total clinical efficacy after treatment is evaluated. The total effective rate in the treatment group was 96%; the total effective rate in the control group was 88%. After rank sum test, $P=0.036<0.05$, there is a difference, but the difference is not obvious. Both methods can improve the symptoms of patients. The total effective rate of the treatment group is higher than that of the treatment group. The specific conditions are shown in Table 8.

5. Conclusions

(1) Diclofenac is a non-steroidal anti-inflammatory drug. Its pharmacological action mainly consists in inhibiting cyclooxygenase and preventing the conversion of arachidonic acid to prostaglandins. It has an inhibitory effect on the two isomers of cyclooxygenase (CO X-1 and CO X-2). The external preparation is a widely used dosage form for the treatment of acute closed soft tissue damage. This clinical observation shows that topical drugs are effective. Time is clearly early and avoids gastrointestinal side effects caused by oral non-steroidal anti-inflammatory drugs. The patient is easy to accept, safe and easy to use, and is worthy of clinical promotion. Chinese medicine can play its unique role in trauma. Acupuncture is a traditional Chinese medicine treatment method widely used in clinical practice. At present, scientists at home and abroad have studied the clinical efficacy of acupuncture in the treatment of acute closed soft tissue injury.

(2) Studies have shown that acupuncture can relieve muscle spasm, reduce sympathetic tone and

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vascular reflex expansion in trauma, help restore the vascular network in the region, restore the elastic function of the blood vessel wall, make the tissue metabolically strong, and increase blood flow. . Improve local tissue blood supply. Since the injury site is red, swollen and painful, the use of giant spikes to obtain lateral lesions can be used to excavate the meridians, air and activate blood. Stimulate the deep blood of the meridians and collect blood to regulate the blood. This helps to relieve pain. In addition, acupoints can also produce blood. It helps the football player's work and plays a role in acute injuries. Appropriate disease, accurate blood loss, blood stasis, strong thorn, rapid, so that the evil with the blood, sputum, clear the veins, so that the gas is smooth, so as to achieve evil diarrhea, phlegm and new, blood circulation, soothe the nerves and other comprehensive effects.

The results of this study suggest that a combination of acupuncture and diclofenac based on traditional treatment of PRICE can significantly alleviate the pain symptoms in patients with soft tissue injury. Acupuncture plus diclofenac treatment was significantly better than conventional PRICE. Acupuncture combined with diclofenac treatment can help relieve pain. The evaluation of clinical efficacy results also shows that the clinical superiority rate and overall effectiveness of acupuncture and diclofenac treatment are significantly higher than traditional PRICE.

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