



Research Article

ISSN : 0975-7384  
CODEN(USA) : JCPRC5

## Study on treatment of basketball sports injury based on pharmaceutical method

Bao-yuan Hua<sup>1</sup> and Min-jie Hua<sup>2</sup>

<sup>1</sup>Wuxi Institute of Technology, Wuxi, People's Republic of China

<sup>2</sup>Wuxi Higher Health Vocational Technology School, Wuxi, People's Republic of China

### ABSTRACT

*The sports injury is difficult to avoid for the basketball player, therefore the proper pharmaceutical treatment should be found out to deal with it. Firstly, the main pharmaceutical treatment methods of sports injury are discussed. Secondly, the causes of sports injury for the basketball player are analyzed. Thirdly, the clinical effect analysis of pharmaceutical treatment on the sports injure of basketball player is carried out, results show that this kind of Chinese pharmaceutical treatment can get better treatment effect.*

**Key words:** basketball sports injure; pharmaceutical method; treatment

### INTRODUCTION

The basketball is a physical culture that is well-liked by people. The basketball sport has some characteristics, such as strong antagonism, much physical contact, and big exercise quantity and so on. The main technical movements of the basketball sport have throw, jump, and run and so on. All technical movements can be completed during the fierce confrontation, offense and defense. It is a rapidly changing sport. Therefore the sport injury is difficult to avoid. The main parts that are vulnerable to be wounded conclude elbow and shoulder joint of upper limbs, waist of torso, knee joint, of lower limbs, the sport hurt happening in these parts is related to the characteristics of basketball sports. On the whole, the kinds of sport hurt conclude old injury, sprain, contusion, pull, dislocation and fracture. Because the sports injure has its particularity comparing with the general trauma, therefore it is necessary to discuss the pharmaceutical treatment<sup>[1]</sup>.

#### 2 Main pharmaceutical treatment method of sports injury

##### (1) Non-steroidal anti-inflammatory drug

The main pharmaceutical functions of the non-steroidal anti-inflammatory drug have anti- inflammation, methadone, and fever. This medicine is non-steroidal. And it can be benefit for basketball players to avoid the suspicion of using stimulant. It can be used safely by the basketball players

The main combined action mechanism of the non-steroidal anti-inflammatory drug can restrain the synthesis of Cyclooxygenas, and prevent the production of production of prostaglandin that is a main media participating in inflammatory reaction, it can play a role in reducing inflammation, stopping pain and relieving fever. The anti-inflammatory effect of the non-steroidal anti-inflammatory drug can be achieved through restraining the activity of the COX-2, the cause of adverse reaction is that the activity of the COX-1 is also be retrained. The acetaminophen is a commonly used non selective cyclooxygenase inhibitor, however the non selective cyclooxygenase inhibitor can retrain the COX-1 and COX-2 at the same time, then the adverse reactions that conclude impairment of renal function, gastrointestinal hemorrhageb and gastrointestinal tract reactions are obvious, and the clinical application of this kind of pharmaceutical is prevented. The selective cyclooxygenase inhibitor can only retrain COX-2, and has no effects on COX-1, therefore the side effects mentioned above are less. Celecoxib and rofecoxib are main kinds<sup>[2]</sup>.

The retraining effect of celecoxib on COX-2 is higher 375 times than COX-1, is a selective COX-2 inhibitor. Therapeutic dose has no obvious effects on COX-2 in basketball players, and can not affect the synthesis of thromboxane A<sub>2</sub>, and restrain the synthesis of prostacyclin. Oral is easy to be abstracted, it can be applied in analgesia of the basketball sports injure. The occurrence rate of adverse gastrointestinal reactions, bleeding and ulcer is lower than non selective non-steroidal anti-inflammatory drug.

The rofecoxi is the derivative of fructopyranose, which has high selective retraining effect on COX-2, and has the effect of reducing inflammation and stopping pain, and has a good oral absorption, the adverse reactions of the gastrointestinal tract is light, it can also be applied in the Anti inflammation and analgesia of sports injure for the basketball player.

#### (2) Amidocyanogen glucose

The superinduction in proinflammatory gene and its products during the developing procession of the amidocyanogen glucose can lead to the degradation of the mesochondrium, and destroy the structure of osteoarthritis. The interleukin IL-1B just is an important kind of the proinflammatory cytokines, the level of IL-1B in synovial fluid for the amidocyanogen glucose patient improves obviously, and amidocyanogen glucose can restrain the activity of IL-1B<sup>[3]</sup>.

#### (3) Pharmacy in the joint cavity

Sodium hyaluronate is a linear mucopolysaccharide substance, which is released by B cell synovium is an important component of joint fluid and mesochondrium, which plays role in arthritis joint lubrication, basibranchial bone protection, elastic maintaining of synovia and basibranchial bone, it can restrain the pain. Sodium Hyaluronate that is covered on the surface of the arthrodial cartilage has also the function of molecular sieve and protective tissue, it can offer soluble protein as the nutrient source to the cartilaginous tissue, then the attack and activity of the virulence factors to cartilaginous tissue can be avoided, then the cartilage surface can be prevented from wearing further.

Sodium hyaluronate with sufficient concentration and high molecular weight has the lubrication action, and the contracture of joint can be improved. It plays a part in barrier between the tendon and ganglion, and then the adhesion of the tendons can be prevented. Because this product is used to the intra-articular injection, the sterilization should be done strictly. This agent is a disposable pharmacy, it must be used after unsealing, and it is scrapped after application, which is not stored.

#### (4) Protein-free calf blood extracts injection

The protein-free calf blood extracts injection is bioactive substance promoting cell metabolism which can be extracted from calf serum, it can improve the intake and use of Oxygen and glucose by tissue cells, the energy metabolism of cell be in good status. It also can promote the migration and proliferation of endothelial cells of fibroblasts. The protein-free calf blood extracts injection with local anesthetic carries out the intra-articular injection, the injection amount of every part can add and subtract appropriately according to injury degree, location size, of muscle fat degree and injury time, then the satisfactory effect can be obtained<sup>[4-5]</sup>.

#### (5) Treatment of Chinese medicine

The acute soft tissue injury belongs to injury category, which concludes muscle and vein injury and blood overflow pulse for the strenuous exercise of basketball player. The onset and process of these kinds of illness concludes qi retardance and blood ilts, context. The main therapeutic methods conclude the promoting blood circulation for removing blood stasis, reduce the swelling, vein relaxing, promoting qi circulation to relieve pain. Blood coagulation that does not flow for blood barrier, the main therapies have of promoting blood circulation and removing blood stasis, dispersing swelling and relieving pain.

### 3 Cause of sports injury

#### (1) Poor accuracy of technical movement

During the teaching procession of basketball, the basketball player study the new technical movement based on the demonstration of the basketball coach. The basketball does not understand the behavioral essentials of the technical movement; they can not control their neuronal excitability well. In addition, the basketball can not grasp the optimum moment of movement, and can not comply with the movement principle, and then the movement rhythm is confused. The mistake movement is easy to trigger sport injury. For example, the mistake hand form can lead to sprain and dampen of fingers<sup>[6-8]</sup>.

#### (2) Inadequate preparations

The preparations can improve the strength and elastic of muscle, and improve the excitability of the nerve centre, and increase the activity levels of joints, and the strengthen the activities of cardiovascular system and respiratory

system, the organism can preparedly transit from quiet status to tension. If the warm-up is inadequate before the basketball match, the prophylactic function of the preparations on sport injury will be ignored dramatically. The basketball player engage in strenuous basketball exercise after simple preparations, because the body of the basketball player is not in the ideal state, the coordination of the body is poor, the muscle is stiff, the sport injury will be caused.

### (3) Unreasonable training arrangement

The training arrangement of basketball player is unreasonable, the training equipment can not be chosen properly, and the training content is not scientific. During the basketball training, the physical status and physical fitness of the basketball players can not be grasped sufficiently, the sports load, the number of exercises and exercise intensity is not be mastered, the maximum sustainable physiological load and physiological characteristics of the basketball players can not be considered, especially too much local load can lead to the sport injury.

### (4) Bad mentality

Because the basketball players have great competition pressure, they will do a large amount of exercise. If the protective measures are unsuitable, the sport injury is easy to exist. At the same time the basketball players can be affected by many outside factors, then some adverse reactions will exist, such as, anxiety, bad mood, poor willpower, these mentality can affect the effect of the basketball training, then the movement injure is inevitable<sup>[9-10]</sup>.

### (5) Intense basketball competition

The basketball player may break the rules of the basketball match. The other team members may take unreasonable, illegal means to make other players bear the physical injury, such as blocking, pulling, pushing, colliding and stumbling. All kinds of sports injures can exist when the other team members break the rules, and injure can not be predicted, it is necessary to strengthen the moral meaning of the basketball players. During the basketball match, some tactics must be achieved at a certain speed, when the speed is quick, the blocking, colliding or falling will lead to injure, which is main acute and concludes chafing, cataclasis, sprain and contusion. Basketball sport should fight for height, the falling injure can be easy to be caused during the procession of challenging. If the basketball player contacts other members after falling, then the injure of body can exist. The falling and spraining injures are common.

## 4 Clinical effect analysis of pharmaceutical treatment on the sports injure of basketball player

In order to obtain good treatment effect, the traditional Chinese medicine ShuJiaJiangu soup is used in clinic.

### (1) Materials and methods

General materials: there are 70 group cases, which conclude 30 male basketball players and 40 female basketball players, the ages of the patients change from 18 years old to 30 years old, the causes of the injure are shown in table 1. The kinds of sports injure are shown in table 2.

**Table 1 Causes of injure for basketball players**

Cause	Number
Poor accuracy of technical movement	21
Inadequate preparations	18
Unreasonable training arrangement	9
Bad mentality	12
Intense basketball competition	10

**Table 2 Kinds of sports injure for basketball players**

Kinds of sports injure	Number
old injure	16
sprain sprain	12
contusion	8
pull	11
dislocation	9
fracture	14

The random digital table method is used to be divided cases into observation group and control group, which has 35 cases respectively. The sex structure, age, complication of two groups are no obvious difference ( $p > 0.05$ ), which are comparable.

### (2) Methods

#### (a) The observation group

The observation group use general reconditioning methods, such as muscle training, and isometric training, the time of continue training is 30 days.

(b) The control group,

The control group uses fumigation treatment through Chinese medicine ShuJiaJiangu soup. The Chinese medicine ShuJiaJiangu soup is made up of the remedium cardinals: tuberculate speranskia herb, angelica, papaya, chuan xiong, safflower, five skin, red shao, jingjie, herb, frankincense, anti wind, wood, incense, myrrh, angelica, angelica, caowu, clematis root, chuanwu and cyathula, each 20 grams. All Chinese medicines are wrapped by gauzes, then are put in the 1650mL water, and are decocted for 1 hour. The ready medicine juice is used to smoke the injured part of the basketball players. After the temperature decreases to 20-30℃, the gauze dipping in the medicine juice is used to scrub the injured part repeatedly. When the skin's redness and slight pain exists the operation is over. The injured part is fumigated and washed two times a day, 30 minutes per time, and the treatment course is 30 days.

(3) Judgment of curative effect

The activity, pain, stability and of the joints are used in judgment of curative effect, the final result standard is shown in table 3.

Table 3 Judgment standard of curative effect

Grade	Score
Excellent	>90
Good	89-70
Medium	69-60
Poor	<59

(4) Statistical method

The software SPSS13.0 is used to process the data, *t* inspection,  $\chi^2$  inspection,  $p < 0.05$  can denote that the difference has statistical meaning.

## RESULTS AND DISCUSSION

(1) Comparison of the scores of joint function between two groups

The score of joint function of observation group and control group is shown in table 4.

Table 4 Score of joint function of observation and control group

Grade	Observation group	control group
Excellent	21	19
Good	11	12
Medium	2	3
Poor	1	1

(2) Comparison of the recovery time of joint function between two groups

The comparison of recovery time of observation and control group is shown in table 5. The recovery time of observation and control group has obvious difference ( $p < 0.05$ ).

Table 5 Comparison of recovery time of observation and control group(day)

Grade	Observation group	control group
Recovery time	$22 \pm 2.1$	$26 \pm 2.5$

(3) Comparison of the treatment effect of two groups

The comparison results of the treatment effect of two groups are shown in table 6. the difference between two groups has obvious difference, therefore it has statistically significant ( $p < 0.05$ ).

Table 6 Comparison of treatment effect of two groups(%)

Treatment	Observation group	control group
Recovery	55.18	26.43
Excellent	28.42	29.41
Effective	11.94	16.98
Invalid	4.46	27.18

As seen from the statistical analysis results, the treatment method based on Chinese medicine can carry out recovery of sports injure for the basketball players, and the treatment effect is good comparing with the traditional treatment method. The steaming and washing method of Chinese medicine, the medicine juice can stimulate the natural fiber

line of muscle to open, and make pathogenic factor flow out with sweat. The washout of medicine can be combined to make the pesticide effect be abstracted by skin, opening, and acupoint, and distributes all the body.

The tuberculate speranskia herb has the function that stimulates the circulation of the blood and causes the muscles and joints to relax. The angelica has the function of nourishing the blood and promoting blood circulation. Ligusticum chuanxiong, safflower, red peony, frankincense, no medicine, cyathula have the function of promoting blood circulation. Atractylodes, angelica, Radix Aucklandiae, radix Clematidis have the function of activating meridians to stop pain. Aconitum and monkshood have function of scattering cold and relieving pain. Angelica dahurica has the function of Expelling wind and removing dampness, relieving pain, apocatastasis and apocenosus. The whole function of this prescription has the function of relaxing muscle and tendons and removing obstruction, strengthening the muscles and bones, and penetrating the body, dispelling wet analgetic. The treatment effect of ShuJiaJiangu soup is better than that of traditional methods for basketball sports injure, the function of joint of basketball player can be recovered, and this kind of pharmaceutical treatment can be spread in the clinic application.

In order to treatment effect, the diet recuperation should be applied according to the development of the disease, the different food is used. The diet and pharmacy can be combined to improve the effect of the basketball sports injure. At the early stage of injure, the injured part occurs the swelling and congestion and channels blockage, blood block, therefore the pharmaceutical treatment should be focus on promoting blood circulation for removing blood stasis. The diet should be light, the injured basketball player can eat bean products, eggs, fruit, fish soup, lean meat, the injured basketball player can not eat the acid, spicy, hot and dry, and oily food, such as bone soup, chicken, stewed water fish. Or else the blood stasis stagnation will be kept, it is difficult to disperse, and will delay the course, the callus grow retardation, which influence on joint function recovery later. In the medium period of injure of basketball players, the silt swollen can be absorbed mostly, therefore the pharmaceutical treatment should be focus on relieving pain, Removing blood stasis, setting a broken bone and continuing reinforcement. The main points of diet, which should be nourishing liver and kidney, Nourishing blood, then the effect of strong bones can be obtained. The diet should conclude the food rich in nutrition, the vitamin, calcium and protein should be supplied mostly, the requirement of callus growth, the pharmaceutical food concludes siwu duck soup, composition of tsaiya and siwu (10g angelica, 10g radix paeoniae, 10g alba, and 10g radix rehmanniae).

### CONCLUSION

There are many kinds of sport injures which may exist in many joints of the basketball player. Therefore the pharmaceutical treatment of the sport injure is important for basketball player, the proper pharmacy of injure can be benefit for the rehabilitation of the injured basketball players.

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