



Research Article

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## Study on treatment of sport injury of taekwondo athlete based on pharmaceutical oblique insertion

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### ABSTRACT

*Treatment of sport injury for taekwondo athlete is important for recovering the function of all injured joints, and the pharmaceutical oblique insertion is an effective method for treating it. Firstly, the main reasons of sports injure of taekwondo athlete are analyzed; Secondly, the clinical materials including analyzing objects and methods, mathematical statistics method and Treat effect judgment are chosen. Finally, the comparing tests are carried out, results show that the pharmaceutical oblique insertion is an effective method for treating the sports injure of taekwondo athletes, which can be popularized in further.*

**Key words:** Sport Injury; Taekwondo Athlete; Pharmaceutical Oblique Insertion

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### INTRODUCTION

Since the taekwondo has been listed as Olympic sports, the overall level of China's athletes has increased significantly, especially the level of women's taekwondo rank among the world's leading countries. The taekwondo belongs to antagonism project in the same field, which is a highly competitive sport. The ratio of sports injure is higher than other sport item. Therefore it is necessary to reduce the occurrence of injure events of taekwondo, and improve scientific of taekwondo training. The sports injure will not only affect the athletic ability of the taekwondo athlete, but also affect the feeling and psychology of taekwondo athlete, therefore it is necessary to find out an effective method for treating the sports injure of the taekwondo athlete.

The oblique insertion is that the needle is inserted into the arm skin surface with the angle of 45 degree. It is suit for the shallow place of muscle and the acupressure that is not easy to be punctured deeply. It is benefit for promoting blood circulation and regulating the qi flowing in the channels. Therefore the oblique insertion with pharmacy can be applied in the treatment of sport injure.

In recent years, some achievements relating the treatment of sports injure have been obtained. NJ Osborne and IT Gatt described the short-term benefits of dry needling in shoulder injuries in four international female volleyball athletes during a month-long intense competitive phase, using both replicable subjective and objective measures. Dry needling of muscles was carried out. Range of movement, strength and pain were assessed before and after treatment, with a functional assessment of pain immediately after playing and overhead activity, using the short form McGill Pain Questionnaire. Results show the use of dry needling in elite athletes during a competitive phase with short-term pain relief and improved function in shoulder injuries. It may help maintain rotator cuff balance and strength, reducing further pain and injury<sup>[1]</sup>. JL Dragoo et al. compare clinical outcomes in patellar tendinopathy after a single ultrasound-guided, leukocyte-rich PRP injection versus DN. A total of 23 patients with patellar tendinopathy on examination and MRI who had failed nonoperative treatment were enrolled and randomized to receive ultrasound-guided DN alone or with injection of leukocyte-rich PRP, along with standardized eccentric exercises. Results show that a therapeutic regimen of standardized eccentric exercise and ultrasound-guided leukocyte-rich PRP injection with DN accelerates the recovery from patellar tendinopathy relative to exercise and

ultrasound-guided DN alone, but the apparent benefit of PRP dissipates over time [2]. L Creaney et al. put the hypothesis that the growth factor administration improves tissue regeneration in patients who have failed to respond to conservative therapy. They designed a prospective, double-blind, random trial. Elbow tendinopathy patients who had failed conservative physical therapy were divided into two patient groups: PRP injection (N=80) and autologous blood injection (ABI) (N=70). Results show that in patients who are resistant to first-line physical therapy such as eccentric loading, ABI or PRP injections are useful second-line therapies to improve clinical outcomes.

### Main reason of sports injure of taekwondo athlete

#### (1) Poor basic force and insufficient strength of lower limb

Some taekwondo athletes usually only focus on technology training, but they do not value training of basic strength and specific strength. Therefore it is necessary to strengthen the leg strength exercise, because the main technical movement of taekwondo is leg movement.

#### (2) Nonstandard technical movement

Some taekwondo trainers and athletes only focus on the aggression, and do not pay attention to the detailed rules and causality between the technical movements, then the sports injure occurs frequently.

#### (3) Inadequate preparations and injury awareness

Some taekwondo athletes start to confrontation training without preparations, or they did not do enough preparations before the match and training, and do not do enough relaxation activities after the match and training, then some chronic sports injure will happen, such as strain of waist.

#### (4) Poor prevention awareness of trainer to sports injure

Some trainer lacks the ability of observing the movement status of taekwondo athletes, therefore the serious injure will be caused. Other trainers are eager to quick success and instant benefits, they are eager to get good achievement in match, and make the athletes enter match with injure, therefore the best period of treatment is missed, the new injure will change to the stale injure, the recovery time of the injure will extend during the procession of treatment.

#### (5) Sport facilities do not satisfy with requirement

Some sports injure of taekwondo athletes is caused because the athletic ground, clothes and facilities are not satisfied with the requirement of training. For example, the athletic ground is damaged, and it uneven, training devices are failure to be inspected and maintained, and the sports clothes and shields are not satisfied with the requirement, and the habit of arranging the clothes and shields according to the rules of match and training is not be formed.

There are about six kinds of reasons that can cause the sports injure of taekwondo athletes, which are shown in table 1. May several reasons can cause the injure of athletes together.

**Table 1 Six kinds of reasons of sports injure of taekwondo athletes**

Order	Reason	Proportion
1	Inadequate preparation	28.8
2	lack of concentration	25.1
3	Injure without	17.4
4	Fatigue	14.2
5	Unresponsive treatment	10.0
6	Too excited	4.5

Top of the list is that the preparations are insufficient before training and match, the proportion is 28.8%, the second reason is that the attention is not concentrated, which occupy 25.1%. Most sports injure is caused during the procession of attack, and a few reasons are caused during the procession of defense.

One-third of excellent taekwondo athletes are injured because they do not make preparations before the match and training. This results show that the taekwondo athletes in China has strong dependence on trainer, and can not grasp physical state themselves, in addition many matches carry out continually, and the rest time is uncertain, therefore the difficulty in grasping time and quantity of making preparations are improved. This pheromone shows that the self management training ability of taekwondo athletes in China is not optimistic. Trainer should make the training meticulous, have strict requirements on their athletes, and bring up the independent ability of athletes. Because the taekwondo athletes is lacking in common sense about sports injure, then some sports injure can be ignored by trainers, therefore some not serious mild injures will initiate exacerbation for the treatment is unresponsive. It is necessary to improve the level of the pharmaceutical treatment, and prevent the occurrence of sports injure of athletes.

### Clinical materials

In this research, the treatment situations of sports injure of taekwondo athletes from 2010-2013 are collected, the pharmaceutical treatment methods conclude oblique needling ashi point with new vulnerary (Method 1), sports injure pharmacy (new vulnerary, old vulnerary, strong loose muscle injection), exercise prescription (Method 2), the treatment and comparative observation (Method 3) are carried out for 420 cases.

#### (1) Analyzing objects

420 taekwondo athletes with sports injure from 2010-2013 are used as the researching object. There are 240 male athletes, and there are 180 female athletes. The ages of objects change from 18 to 24 years, and the sports injure of object last 1 day to 5 day, the oblique needling ashi point method is used to treat 180 cases, the sports injure pharmacy is used to treat 120 cases, and the exercise prescription is used to treat 140 cases.

The injured parts of taekwondo athletes are shown in table 2.

Table 2 Injured parts of taekwondo athletes

Injured part	Number of people	Proportion
Ankle joint	101	24.0%
Knee joint	84	20.1%
Foot	62	14.8%
Thigh	39	9.3%
Calf.	57	13.6%
Elbow	42	10.0%
Hand	35	8.2%

#### (2) Method

The oblique needling ashi point method, this method mainly concludes ashi point, stitch applies oblique needling and warm acupuncture method, retaining the needle can be confirmed according to the disappearance of needling sensation for athletes, the plus and minus points can be used to treat the sports injure combining with regulating bodily functions, the oblique needling is carried out 13 times for ashi point. The needling instrument used is thicker, and the needle body has good elastic, and the needle tip is sharper, the diameter of needle is equal to 0.52mm. The entry point chosen is along the long axis of muscle, according to the position and depth of most painful point, the entry point is chosen as the point that has proper distance from the most painful point. inserting needle has a certain slope, the needle tip contact the dense fascia after it passes through the skin, the needle handle should raise, the angle between the needle body and fascia will increase, and the needle tip can inserting into the fascia easily, the needle body incline after it passes the fascia and inserts into the muscle, the it can be inserted into the most painful point correctly, then the needle is retained. The needle doses not lift and insert and twirl, and the time is decided by the disappearance speed of needle sense. When the needle inserts into the muscle, the muscle can shrink quickly, the needling sensation disappears, the trabs will soften, and the tenderness will disappear, and the function can recover, in this cases the needle need not be retained. When the needle is inserted into the muscle, the needling sensation will weaken gradually with time, under this circumstance, the needle is not retained until the needling sensation disappears. When the needling sensation disappears completely the needle can be withdrawn.

Sports injure pharmacy should be chosen to treat the injured taekwondo athletes according to the different symptom. For early age of closed soft tissue injure, moderate new vulnerary is taken to be reconciled with water, which is spread out on the gauze, and put them on injure, and is replaced every day. In the medium term promoting blood circulation and promoting new agent is used, and the old vulnerary is used in the later stage, at the same time the injured taekwondo athletes can orally take yunnan baiyao, dieda wan, and other drugs. For arthromeningitis, muscle strain, chronic injure arthritis the corticoid drugs are used.

All kinds of the exercise prescription can be made according to the injure mechanism, injure location, range and degree. The exercise prescription concludes movement content and method, proper movement strength, lasting time per time, movement frequency.

Ligament injure: the injured taekwondo athletes begin to exercise under the protection of paste one to two times per day after injure, the ligament part is fixed for three weeks, and the complete fracture part is fixed for 3 to 6 weeks. For example, in the early age of the ligament of knee side fractures, the muscoli quadriceps femoris exercise is carried out two times per day, and 25 to 35 exercises are carried out per time to avoid shrink of the muscle, after several days the exercise of stretching and lifting the legs is carried out, and the hip muscle are strengthened, and the circulation of limbs are active. After the fixation is taken out, the exercises of stretching and lifting the legs, pedaling bicycle, flexing knee flexion actively and passively, then the function of the muscoli quadriceps femoris can be improved and the joint motion can be amended. Healing time of tendon rupture needs 3 to 6 weeks after repairing.

The repair of hand tendon should exercise passively without tension under the control of stand and active exercise one to two times per day, these exercises can be benefit for prevention of adhesion. After three weeks the active movement can be carried out, and activities of injured fingers should exercise positively. The exercise of complete rupture of muscle is similar with that of tendon, the rupture of muscle is different, firstly the injured limb should be put on the location that the muscle lengthens, and the plaster fixation and posture treatment are used to treat it. The aim is to avoid the strengthen of fibrin of injured limb for the contracture of scar, which can prevent it from stress stretch during the procession of movement, then the function of fibrin of the natural muscle can be embodied.

### (3) Mathematical statistics method

The experiment results are denoted by  $\bar{x} \pm s$ , the statistical software SPSS13.0 is used in this research. And the single factor variance analysis is used for analyzing the data, and the inspection level  $\alpha$  is equal to 0.05.

### (4) Treat effect judgment

The efficacy standard is shown in table 3.

**Table 3 Efficacy standard of sports injure**

Effect	Description
Heal	Symptoms disappear, and the part has no discomfort after movement.
Excellence	Symptoms are almost invisible, and the part has sense of soreness after movement.
Improvement	Symptoms alleviate obviously, the part has still malaise after movement.
Invalid	Symptoms are somewhat better, but the effect is not obvious.

The statics results of treatment effect for sports injure of taekwondo athletes with three different treatment methods are shown in table 4.

**Table 4 Statics results of treatment effect for sports injure of taekwondo athletes**

Injured part	Treatment method	Number of cases	Heal	Excellence	Improvement	Invalid	P
			%	%	%	%	
Ankle joint	Method 1	40	74.2	27.6	1.8		P<0.01
	Method 2	40	55.3	35.2	9.5		
	Method 3	21	11.4	11.5	39.5	37.6	
Knee joint	Method 1	35	65.9	33.9	0.2		P<0.05
	Method 2	25	53.8	33.2	13.0		
	Method 3	24	12.5	20.5	32.2	34.8	
Foot	Method 1	22	66.3	32.9	0.8		P<0.01
	Method 2	20	53.2	32.6	14.2		
	Method 3	20	12.9	17.5	30.5	39.1	
Thigh	Method 1	14	58.3	32.6	9.1		P<0.05
	Method 2	14	54.2	33.1	5.3	7.4	
	Method 3	11	9.5	21.5	25.6	43.4	
Calf	Method 1	20	53.5	42.6	3.9		P<0.05
	Method 2	20	42.6	34.7	11.6	11.1	
	Method 3	14	9.6	19.5	28.6	43.4	
Elbow	Method 1	15	72.4	27.6			P<0.05
	Method 2	15	66.3	21.5	5.4	6.8	
	Method 3	12	10.6	18.5	42.3	28.6	
Hand	Method 1	15	74.6	25.4			P<0.01
	Method 2	10	62.5	21.6	7.4	8.5	
	Method 3	10	10.5	18.2	39.5	31.8	

420 cases of sports injure concludes the treatment of ankle joint, knee joint, foot, thigh, calf, elbow and hand, through two-two inspection, the method 1 obtains very significant difference for treating the ankle joint, foot, and hand, and obtains the significant difference for treating the knee joint, thigh, calf and elbow, the rate of heal for different joint is highest with oblique needling ashi point, and there is not a invalid case for the oblique needling ashi point. The treating effect of method takes second place, the treating effect of method 3 is poorest.

## DISCUSSION

Results show that the oblique needling ashi point has highest treating effect for the sports injure of injured taekwondo athletes, the times of treatment is little, and the operation is easy, and there is no side effect, the following points should be focused during the procession clinic application.

(1) The effect of needling is decided by the correctness of needle inserting into the muscle of injured taekwondo

athletes after the correct diagnosis. Therefore it is necessary to ensure the direction of inserting needle, and the injured taekwondo athletes should keep proper gesture, and the muscle of them will relax, and when the inserting needle is carried out the direction of inserting needle should be inspected and kept. The thicker needle should be chosen, then the direction of needle can be controlled easily, the length of the needle should be confirmed according to the location of inserting needle and real situation of the injured taekwondo athletes, which ranged from 3 to 7 inch.

(2) During the procession of treatment, the pain of the original painful point disappears through needling, and the closed location will exist stronger painful points, the main reasons is that the injure is related with many parts, and the strong and weak of the pain is different, the strong painful location has stronger masking effect than other parts with weak pain. When the stronger painful point recoveries, and the pain will disappear. the weaker painful point will become the main painful point. Therefore the oblique needling ashi point treatment should be carried out for other painful points through palpation, observing the recovery of the injured athletes, and the complaints of the injured athletes after needling.

(3) Although the oblique needling ashi point treatment can obtain obvious treatment effect for some cases, the symptoms can not disappear completely. After a period, the self-healing of the injure without other treatments is achieved. Therefore the cases that need several times of treatment, interval of 1 -2 days between two treatments is taken, then the treatment effect can be improved.

(4) During the procession of needling treatment, except for taboos the injured taekwondo athletes should pay attention to rest, and protect the injured limbs, then the injure again can be avoided, the injure can not be aggravated.

The pharmaceutical oblique insertion is an effective treatment method for the sports injure of injured taekwondo athletes, which be benefit for recovery function of the injured taekwondo athletes, and help them get good achievement in all kinds of matches. At the same time, the taekwondo athletes should improve the ability of self management and training skill, and grasp some common senses of pharmacy, and avoid the occurrence of the sports injure.

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