Recent years have seen the rapid growth of aerobics in China. With such prospects of development, aerobics difficulty continues to increase, leading to increasing injuries year by year. Common injury in aerobics is at the joints of the upper and lower limbs, of which ankle joint injury is relatively common. Therefore, analysis of the causes of ankle joint injury in aerobics can provide some guidance for clinical treatment. In this paper, 2200 cases of patients with ankle joint injury after aerobics from August 2014 to December 2015 were analyzed, and the effect of applying RICE treatment was observed. Final study results show that ankle joint injury among aerobics athletes is mainly due to inattention, poor psychological attitude, landing instability, training with injury, etc. Application of RICE for patients can provide a significant treatment effect and promote recovery. Having certain clinical value, it is worth being popularized and applied in future clinical treatment.

Key words: Aerobics Exercise, Ankle Joint Injury, Cause; RICE Treatment Principle, Rehabilitation Effect.

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Introduction

Recent years have seen the rapid growth of aerobics in China. With such prospects of development, aerobics difficulty continues to increase, leading to increasing injuries year by year. Common injury in aerobics is at the joints of the upper and lower limbs, of which ankle joint injury is relatively common. Therefore, analysis of the causes of ankle joint injury in aerobics can provide some guidance for clinical treatment. In this paper, 2200 cases of patients with ankle joint injury due to aerobics were studied to analyze the causes of injury. Moreover, the therapeutic effect of RICE treatment was observed, with results as follows.

Ankle joint injury is a common phenomenon in aerobics exercise. Ankle joint is an important joint of feet (with section of structure as shown in Figure 1, the facies lateralis of the human foot ligament as shown in Figure 2).

For patients with ankle joint injury, disinfection and dressing at the first time after injury is needed. Also, stop exercise and raise the injured leg, so that patients’ injured tissue receives sufficient rest which alleviates patients’ swelling degree.
For patients with ankle joint injury, disinfection and dressing immediately after injury is needed, as well as stopping the exercise and raising the injured leg, so that injured tissue receives sufficient rest which alleviates the degree of swelling. 

Method

General information
The subjects selected in this study were 2200 patients with ankle joint injury due to aerobics treated in several hospitals from August 2014 to December 2015. There were 1670 cases of aerobics professional athletes, and the remaining 530 patients were students injured in physical education classes. The oldest of these patients was 31 years old, while the youngest was 12 years old, the average age was 18.3 ± 2.6 years, and all the patients are female.

Survey Method

Questionnaire survey
A questionnaire survey was conducted to investigate the athletes, and then causes of ankle joint injury were analyzed.

Consultation literature material
The author consulted the related literature material, organized and analyzed part of the data, so as to provide a sufficient basis in theory for the research content of the paper.

Treatment Method

RI CE treatment principle
The treatment principle followed by the patients in this study was RICE. The main steps of the principle of are: First, immobilize, stop bleeding and diminish swelling, and then relieve pain and provide anti-inflammatory therapy on this basis. R refers to rest. After patients suffer from ankle joint injury, partial braking can effectively reduce bleeding and edema; I refers to cold compress and ice therapy, this treatment measure can reduce exudation of patient’s blood, alleviate metabolism of patients’ local tissue, and then achieve the purpose of analgesia; C refers to pressurized bandaging of patients’ ankle joint, which will significantly reduce ankle joint swelling and bleeding; E refers to elevating the injured limb, which can improve blood circulation and help relieve swelling.

Early rehabilitation method
In the early stage of ankle joint injury, treatment must be very gentle, which can maximally relieve pain. During treatment, medical personnel should hold patient’s front foot tightly with left hand, and rub gradually with force using the right thumb, mainly on the ligament area around the affected area and lasting 2 to 3 minutes or so. Then roll patient foot inward, continue rubbing the injured part with thumb, and after rubbing for 2 to 3 minutes, maintain affected area in a neutral position, which can eliminate ankle swelling and bleeding as soon as possible.

Medium-term rehabilitation method
In the medium term, about 4 days after the injury, the cupoint massage should be done. Zusanli, Fuliu and Weiyang acupoints of the injured leg should be selected for Acupoint massage. During massage, medical personnel need pay attention so that the internal crus be rubbed with the thumb, about 20 times or so, and only in this way, can due effect be achieved. During acupoint massage, medical personnel should also pay attention to the acupoint massage technique, as medical personnel should exert using both hands in massage and effectively control massage number. One application of acupoint massage every day is the best approach.

Late rehabilitation method
Treatment after 5 days of ankle joint injury is referred to as late treatment. The main method of late treatment is to massage the foot, whose main purpose is to restore function to the ankle joint.
This requires that the massaged part should be the ankle joint or tendon. In the process of massage, medical personnel should repeatedly rub the tendon fiber in a vertical direction, 1 time per day and 2 minutes each time.

**Conventional therapy**

Conventional therapy for ankle joint injury in aerobics includes acupuncture, external therapy and drug treatment. These treatments boast significant therapeutic effects for patients with minor trauma, but is not effective for more serious injury or in patients deficient of Qi and blood. That is to say, patients with more serious injury should apply the above rehabilitation therapy to promote rehabilitation of the body.

![Figure 3: X-ray of normal ankle joint. (Picture Source: Jin Hao, Lv Faming, Dong Haojie, Fu Weiyan. Observation of Curative Effects of Plaster Immobilization Treatment and Traditional Outside Fixed Treatment in Curing Acute Ankle Joint Injury [J]. Chinese Journal of Traditional Medical Traumatology & Orthopedics, 2012, 05:46-47.)](image1)

![Figure 4: X-ray film half-hour after ankle joint injury of left leg of an aerobics athlete. (Picture Source: Kaiming CAI. Cause of injury of ankle joint movement and rapid recovery method [J]. Journal of Clinical Rehabilitative Tissue Engineering Research, 2009, 28: 5567-5570)](image2)

Medical personnel should also adopt treatment methods corresponding to injury severity. For minor injury, patients should stop all activity and take proper rest, normally a week. For more serious injury, a bandage should be applied and routine inspection in hospital should be received.

When there is ligament rupture or fracture, it should be fixed after reset treatment with gyspsum, which lasts 2 months or so. Figures 3 and Figure 4 show an X-ray of the normal ankle joint and an X-ray half-hour after ankle joint injury, respectively.

In the treatment of ankle joint injury due to aerobics exercise, the most important thing is to relieve swelling and pain. After the injury, immediate ice compress can make pain disappear, as ice compress makes blood vessels at the injury site contract, thereby reducing exudation of the injured part and achieving significant analgesic effect. Hot compress within 2 days after injury can reduce swelling and promote rehabilitation. Functional exercise in the recovery phase can promote functional recovery of ankle joint. There are two main stages in the functional recovery stage:

1. Exercise of ankle joint stability. This stage is to let the injured carry out dorsiflexion activities without weight bearing, and gradually increase the amount of exercise and training intensity. After this stage, pain will apparently disappear, and the second phase of training can start;

2. The training content of this stage is mainly to effectively exercise muscle strength and ankle joint. For instance, the injured can start exercise from weight-bearing walk, do “8”-shaped running, gradually jump and hop. In the process, medical personnel should follow the principle of “step by step”. During the exercise, ligament of the injured should be protected to avoid ligament damage.

**Results**

Of the 2200 patients in this study, 356 patients suffered from ankle joint injury due to equipment and clothing problems, 126 due to excessive physical exertion, 986 due to training, and 732 due to excessive movement. According to the severity of the patient’s condition, appropriate treatment was provided. In the course of aerobics training, the training load should be reasonably arranged, and reasonable, scientific arrangements should be made for preparation activities. Reasonable training content arrangements can promote the development of formal aerobics activities, and avoid serious injury.
to athletes. In the course of aerobics training, reasonable arrangements should be made by considering both the characteristics of training content and the physical condition of athletes, and quantity of training tasks should be appropriately increased. In particular, to avoid athlete fatigue the amount of exercise should not be blindly increased, since when body function declines, protective capability will be weakened, resulting in distraction and proneness to sports injuries.

As shown in Table 1, after treatment, patients in this study experienced significant remission. After a period of treatment, all patients were discharged and no adverse reactions were observed in the treatment process.

Discussion

In a word, ankle joint injury due to aerobics exercise is a very important subject. There are many causes leading to ankle joint injury, and the most important reason is external force. Application of the RICE treatment principle for the injured can effectively improve cure rate, promote recovery and effectively alleviate pain. In peacetime training process, the aerobics teacher should organize training contents reasonably, master the correct treatment method, and adopt corresponding emergency measures to ensure the normal process of aerobics training.

References


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<th>Item</th>
<th>Total cases</th>
<th>Score (P value)</th>
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<tr>
<td>Before treatment</td>
<td>2200</td>
<td>30.21±3.48</td>
<td>&lt;0.05</td>
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<tr>
<td>After treatment</td>
<td>2200</td>
<td>48.36±5.12</td>
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Table 1: Ankle joint pain score(s) in patients before and after treatment (x±s).