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Research Article

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Research on football player knee-joint injury cause and rehabilitation

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ABSTRACT

Objective: To analyze the causes of knee injuries football players to explore the effect of the system of rehabilitation measures applied in these patients functional recovery of the knee. Methods: June 2012 June 2013 knee injury 70 cases occurred football player, according to the principles of randomized into experimental group and control group, the control group received conventional treatment regimens, on the basis of conventional therapy group system rehabilitation, compared two groups of patients recover knee condition, knee function was. Results: The effective treatment of patients in the experimental group was 97.14%, significantly higher than 82.86%, knee functional status of patients in the experimental group than the control group, P <0.05, statistically significant results. Conclusion: The combination of injuries in football player's rehabilitation treatment system can significantly improve the therapeutic effect, enhance knee function is recommended in the clinical application.

Key words: Football player, knee injury, system rehabilitation, Injury

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INTRODUCTION

Football, as a type of intense sport, is widely favored by people for its competitiveness, entertainment and interestingness. However, due to the improper movement as well as the special physiological anatomy of human beings, it is very easy to get injured in a football game, and especially the knee-joint injury occupies 40% of all different kinds of injuries. It gives patients negative effects on their life quality because it causes limited action capability. Thus, it has become a highly-concerned issue as to how to give timely and effective treatment to the injured knee-joint [1-4].

The purpose of sports is to enhance health and resistance, if incurred during the process of sports injury that is caused by the opposite effect. In daily movement, it is worth to redouble our attention and prevention. Sports injury, just as its name implies is to participate in sports, the damage to the body. Sports injury and industrial injury or damage is different in everyday life, it happened with sports, training arrangement, movement environment, movement of their own conditions and technical movement has a close relationship. Young students in the physical and psychological is not yet mature, is more easily in the process of sports injury. This experiment has obtained remarkable curative effect by combining basic conventional treatment with systematic rehabilitation training. Presently it is reported as follows [5-9].

With the improvement of our country economy level, exercise, physical exercise has become an important part of people's life. And sports injury refers to what happens in sports injury, often occur in everyday life and sports, and many can be found in athletes and young people, they actively participate in various sports activities, but there is no systematic protection for sports concept, so easy to appear in sports injury, produce some such as "never mind, no, not great things, such as" wrong ideas, so as to delay treatment time or not to take active prevention and treatment, eventually leading to joint performance is not stable, intra-particular other important structure of secondary injury, serious cause irreparable and lifelong regret [10, 11]. Visible, because of the lack of necessary knowledge of sports injuries and the damage has become a problem that knots allow to ignore. Therefore, this paper probes into the symptoms of several common sports injury, and put forward the corresponding processing and treatment, aims to

make people realize and understand sports injury, familiar with common sports injury treatment, as well as when dealing with sports injury, reduce the damage from the sports injury.

SPORTS INJURY CAUSES

The causes of sports injury is a complex and multifaceted. First of all, the causes of sports injuries have thought seriously enough. In the sports teaching, sports training and competition not actively take various effective measures. Don't do exercises or inadequate preparation, so that the function of the nervous system and internal organs has not been fully mobilized, poor ability to stretch muscles, joints, flexible enough, not coordinated enough, it is easy to lead to the occurrence of sports injury. And after sports injuries, also not careful analysis reason, lessons learned injury accident to happen [10].

Second, students' physical quality, poor technique, skilled is another important factor which causes injury. Student movement technical master is bad, there are two reasons: one is the difference in students' physical quality, the more rest bad or injury in the early stage and fatigue muscle power, body coordination the case of significant decline to participate in strenuous exercise or difficult moves, the injury is likely to occur. Especially the strength, agility, flexibility, quality is poorer, stiff, uncoordinated, more complex and difficult encounter some technology in teaching sports or in the case of physiological load of exercise, strength increase would be easy to damage. Second, according to the law of movement technology form, the generalization of motor skill formation stage and differentiation stage, because the student of sports technical concepts understanding is not deep, after practicing in redundant technology to master is not stable, this kind of circumstance also vulnerable. And exercise fatigue, mental too excited or nervous is the important cause of sports injury. Sports fatigue injury is mainly in the process of practice, doing the same movements over and over again, local caused by excessive burden of the body. Students learn new content or the game will show that the excessive excitement, prone to injury. Students in practice more difficult moves, because of the psychological fear, do actions hesitate, also prone to injury [14].

In addition to weather, in violation of the rules, the improper protection measures, unqualified venues, equipment, sports clothing and footwear do not conform to the requirements of the physical health may be the cause of the injury. For sports injury prevention effective measures should be taken, should not be careless.

The impact of sports injury to athletes is serious, not only affects normal training and competition, hinder performance increase, reduce the sporting life, serious still can cause disability, or death. For sports fitness participants, will also affect their health, study and work, also cause adverse psychological impact of physical fitness, and interfere with the normal conduct of sports fitness. Thus, in the sports fitness, our understanding of sports injury prevention should be sufficient, need a good grasp of the occurrence of sports injury, helps us to strengthen the prevention measures to improve the movement condition, improve the sports teaching and training method, more effectively play sports effect on enhanced physique, to minimize or avoid sports injury.

Bear the brunt of the sports injury prevention measures is to strengthen safety education, to improve students' awareness of prevention of sports injuries; Prepare seriously; Reasonable arrangement of teaching activities; Strengthen the sports facilities maintenance; Timely processing sports injury and so on. In conclusion, we should understand the fitness movement of the common causes of the sports injury, to grasp the method of prevention and treatment, so that the sports fitness health and safety and productive.

DATA AND METHOD

Clinical data:

70 football players with knee-joint injuries from June 2012 to June 2013 were selected as the research objects, of which there were 43 male players and 27 female players. The age of the players ranged from 19 to 32 and the average age was 26.7±1.8. Among them, 36 players had ligament us injury (inside and outside accessory ligaments and curiae ligaments), 21 players had meniscus injury, and 13 players had patella injury (chondropathy and patella strain). They were divided into experimental group and control group randomly. Experimental group included 22 male players and 13 female players with an average age of 25.9±2.4; control group included 21 male players and 14 female players with an average age of 27.3±1.5. There was no obvious difference in age, sex or injury type between two groups ($P > 0.05$) and they were compatible [2].

Research Method:

Control group received conventional treatment: including drug therapy and operative treatment, etc.

Experimental group received systematic rehabilitation training on the basis of conventional treatment [3].

(1) Massage therapy treatment: carry out immobilization and local cold compress within 48 hours after injury;

provide infrared ray, intermediate frequency, short-wave physiotherapy coordinated with local massage after 48 hours in order to improve surrounding blood circulation; patients who need to receive operative treatment shall work out a rehabilitation plan in cooperation with the surgeon after surgery [4].

(2) Functional rehabilitation training.
① work out a training plan according to the recovery phase: Carry out functional recovery training in early phase; carry out strength training with auxiliary endurance training in medium phase; carry out endurance training with auxiliary balance training in later phase [5].

②Training content: quadriceps femora's strength training: ankle joint slowly makes strenuous effort in full-scope, bends and stretches for 3 times with 20s for each time, then take straight leg training; the key point is to slowly raise the leg for 12cm, pause for 5s, go on raising it for another 12cm, and pause for 5s, then let down the leg slowly; the leg shall always be straight in the whole process. Knee-joint stretching training: choose a stretching angle according to the bearing capacity of the patients and carry out active and passive stretching for 3 sets in total, 1 min for each set, and take ice compress after training [6]. Dynamic training: steps training, training of climbing stairs, gradually raise the height, 20s for each time and 3 times in total. Aerial cycling training can also be carried out; 20min for each time, 3 times in total, keep right posture after training, and ensure the training resistance. Walking and standing training: gradually transform from walking to climbing stairs, to jogging, and then to running or even jumping, set the time and intensity according to your own condition [7].

Therapeutic evaluation:
Make an evaluation by comparing the treatment outcomes of 2 groups 4 weeks after the implementation of the plan. And divide them into recovery, effectiveness and ineffectiveness. Recovery: pain and swell in injured part completely disappear, muscle strength returns to normal, and patients are able to participate in labor production. Effectiveness: physical sign and symptom ease, joints can make an active flexion and extension of 60o, functional activities are still affected. Ineffectiveness: symptom does not ease and dysfunction still exists, flexion and extension degree is less than 60o. Total effective rate=recovery rate + effective rate [8].

Make an evaluation according to joint activity status, the evaluation index is:
Joint pain degree, muscle strength, and knee-joint functional status. The measurement of pain degree is graded by VAS pain scale. Full mark is 100: the higher the mark, the deeper the pain degree; the measurement of muscle strength is carried out by stretching and bending muscle group through constant speed test system (made in Australia); knee-joint function is measured according to the SAS activity scale. Full mark is 100: the higher the mark, the better the joint activity function.

Statistical processing method:
Use statistical software SPSS13.0 to process the data; measurement data shall be represented as x±s; the comparison of the two geometric means shall be t-tested; the comparison of enumeration data shall be $\chi 2$-tested.

RESULTS

The efficiency of clinical treatment for the patients in experimental group and control group were respectively 97.14% and 82.86%.

The efficiency of experimental group was obviously higher than that of control group, with $P<0.05$, so the difference was of statistical significance.

Table 1: Comparison of Treatment Outcomes between Two Groups of Patients (%)

Group	Cases of patients	Recovery rate	Effective rate	Ineffective rate	Total effective rate
Experimental group	35	15(42.86)	20(57.14)	1(2.86)	97.14（34/35）
Control group	35	11(31.43)	18(51.43)	6(17.14)	82.86（29/35）
X2	-	0.97	0.23	3.96	3.96
P	-	0.322	0.63	0.046	0.046

*Note: compared to control group, *P <0.05*

Joint pain degree evaluation index of patients in experimental group:
Joint pain degree was obviously lower than that of control group; muscle strength and knee-joint function were obviously better than that of control group, with $P<0.05$, so the difference was of statistical significance. See Table 2:

Table 2: Comparison of Joint Functions between Two Groups of Patients

Group	Cases of patients	Pain grade	Muscle strength measurement	Knee-joint function
Experimental group	35	27.1±7.9	83.2±3.2	86.9±2.5
Control group	35	39.6±8.4	76.4±1.8	77.3±3.1
X2	-	6.413	10.957	14.261
P	-	0.012	0.013	0.012

*Note: compared to control group, *P <0.05*

CONCLUSION

Football is a type of multi-ability sport with intense competitiveness and opposability, which involves kicking, butting, stopping, tackling, goalkeeping and so on. Because the direct strength generating part is knee-joint, it is the part most easily to get injured for football players. Knee-joint mainly consists of patella, tibia and inside and outside lateral patellar of thighbone, condoyle, ligament connecting bone tissues (inside and outside accessory ligaments and cruciate ligaments), soft tissues such as meniscus, and so on. Although the particular surface is relatively broad, the position is relatively superficial. It generates power mainly based on lever principle so it is burdened with heavy weight and easy to get injured. It can be injured by a sudden internal rotation or adduction or fixation of the shank, or a sudden translocation of the thigh. The injury types are mainly: ligament injury, meniscus injury in joint. After the injury occurs, as the bone tissues and soft issues are damaged, and due to the strong inflammatory response, there will be pain, swell activity limitation and other manifestations. The injury causes can be mainly divided into the following types：

- Special knee-joint anatomical structure.
- Pre-ready fault of players.
- Accident caused by the nonstandard movement in the sport.
- Weak self-protection awareness of players and non-fully-prepared jump and run. Thus, it is very important to take preventive measurements well for reducing injury.

After injury, conventional treatment method is symptomatic treatment including anti-inflammation, detumescence, and surgical operation therapy, etc. In this research, by combining the systematic rehabilitation training, the total effective rate of the treatment has been raised to 97.14% (34/35) and the joint movement ability has been obviously improved which is in accordance with the research of Han Shangfu, Liu Dongmei, Xu Henglong et al. It is mainly related to infrared ray and ultrasonic as well as the fact that ultra-short wave treatment is able to promote blood circulation and the elimination of inflammatory substances, increase abilities of neuromuscular, and prompt the restoration and regeneration of body tissue. By means of premeditated periodical functional training, tissue adhesion and muscle atrophy can be prevented; moreover, the joint stiffness can be lowered.

In conclusion, by combining the injury treatment for football players with systematic rehabilitation training, the therapeutic effect can be significantly improved and the joint function can also be enhanced. Thus it is recommended for clinical popularization and application.

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