

Prevention and Treatment of Male Basketball Players' Patella Strain by Apparatus Fitness

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Abstract

So far, knee strain is the focus of research in many countries. Knee strain in fitness programs, at present, most of them are about the damage principle of some ligaments around the knee, and some problems of prevention and control. In this experiment, through the observation of the rehabilitation training of the equipment fitness system for the patella strain, the difference of the treatment effect of the patella strain was compared. Then we can find out a more factual and effective exercise method, and provide a new contrast with the rehabilitation treatment of patellar injury. We randomly divided some patients with knee injuries, such as patella, into two groups on average. The first observation group and the second control group were given rehabilitation training, and the athletes were given treatment and rehabilitation training for three months. During this period, all the athletes have undergone systematic exercises of equipment fitness, and have different rehabilitation training under the management of professional fitness coaches. Evaluating the balance and muscle strength of all athletes before and after the test in terms of pain activity, knee adduction and outward movement, calm state. The rehabilitation of knee injury was also evaluated and the data before and after the experiment were compared. The paired sample t was detected by $\pm s$ method, and the number of analysis was processed by analyzing. Conclusion before and after the experiment, tibial pain, joint movement, resting balance force, muscle tension and other indexes were analyzed and evaluated. There was no significant difference in the data before the experiment ($p > 0.05$). Compared with that before the experiment, it was improved greatly, with a significant difference ($P < 0.01$). There are also great improvements in the knee rehabilitation of basketball players. We also hope that the equipment fitness will be helpful to the patella injury after basketball.

Keywords

Equipment Fitness; Basketball Players; Patella Strain; Prevention and Treatment of Patella Strain.

1. Introduction

With the rapid development of spiritual civilization in the country, a healthy lifestyle has gradually become a new fashion. More people have joined the sports and fitness team. Incorrect movements can cause damage to certain parts of the body, such as the more common sacral strain, which has gradually become a common disease in sports trauma clinics. The quality of life of people. In particular, athletes engaged in sports such as basketball are more susceptible to sacral strains due to technical movements [1]. According to the medical research data, the tibial strain accounts for 40.15% of the total traumatic outpatient cases, and the highest prevalence among the basket athletes: the Sports Trauma Institute also pointed out in a sports injury survey that among the 185 basketball players participating in the survey 85 people suffered from different degrees of tibial strain, accounting for 46% of the total number; some

surveys also found that the knee bone injury in basketball players accounted for the first knee injury, and the incidence of basketball players is higher than basketball players 8 A similar conclusion of a percentage point [2].

Stallings, L. H. scholars believed that the problem of joint bone softening and development caused by dysplasia was the cause of articular cartilage degeneration. Including the occurrence of the bone strain; Lack proposed cartilage decomposition, which is said to be related to trauma theory. It is believed that the bone changes in the late stage of bone strain are usually due to the failure of recovery and the development of evil. It is generally believed that ella bone strain is a long-term decline in physiological function or degenerative changes caused by excessive knee weight [3]. Bajpai, proposed in that the congenital defect of was bone is the main cause of bone strain, usually due to the bending and stretching of the knee, and the internal and external pressure of the force or force caused the closure of the pa femur and the associated tendon. Soft tissue injury, failure to recover or repeatedly cause damage during long-term excessive exercise [4]. Investigations have shown that knee pain is a very common disease in the emergency department. In the United States, the proportion of patients who have knee pain in the emergency department is about 1.3 million per year. Although acute knee injuries are very common, knees are common. The fractures accounted for only 6% of the total. Bae studied statistics found that the local knee pain is related to the patient's age, and studies have shown that athletes who have had anterior cruciate ligament injury and reconstruction have much higher knee injury than anterior cruciate ligament injury. Although most patients with tibia strain can be cured by conservative treatment, there are still a few patients who continue to have pain, which seriously affects daily life and exercise. They have to help with surgery, which causes some athletes to lose their competitive ability. They have to withdraw from the competitive arena and end their sports career too early. It is regrettable [5]. Tibial strain not only affects athletes' sports career, but also affects ordinary people as cruel. Tibial strains bring a lot of pain to patients, seriously affecting their athletic ability, and also bring a lot of inconvenience to their daily life. In the regulation of basketball injury, the reconstruction of anterior cruciate ligament injury has been proved to be a major factor in knee pain. When the human body is in the semi-ankle position, the contribution of the medial and lateral collateral ligaments to the stability of the knee joint is mainly determined by the stock. Maintenance of the cephalic muscles and bones [6]. The femoral pat bone is more erect or squat than the articular surface under stress. When the body is in a semi-squatting position and suddenly exerts a force or twist, the surface of the joint will be greatly impacted or twisted. In an instant, the pa bone trajectory is abnormal (ie, the movement away from the groove), and the surface contact area of the pa-femoral articular cartilage is drastically reduced, and the large pressure due to extrusion, misreading, and friction easily exceeds the tolerance limit of the tissue cells. Causes local tissue damage and necrosis. If it can be treated in time and avoid excessive exercise, the tissue damage is still elastic; if the treatment is not timely or there is not enough time after treatment, the pa osteochondral will repeatedly lose the damage [7]. The collateral ligament and quadriceps tendon hemorrhage are difficult to dissipate, which will seriously affect local nutrition and metabolism. Finally, cartilage tissue swelling, fibrosis, rupture, dissection, ligament tissue degeneration, hyperplasia, calcification and other pathological changes. Relevant research data show that in many professional sports injuries of basketball players, the most vulnerable parts are mostly in the knee joint, and the nature of the injury is mostly joint capsule and ligament sprain, humeral strain and meniscus injury [8]. The incidence of tibia strain is higher than that of meniscus injury and lower than joint capsule and ligament injury. Tibial strain is a relatively serious injury and difficult to recover, which has a great impact on athletes' athletic ability and health [9]. Tibial strain is a general term for tibiofibular femoral chondrosis and end-stage disease of sputum. There are similarities between the mechanisms

and manifestations of the two conditions. For the occurrence of the bone strain, domestic and foreign scholars have a lot of controversy [10].

Using the follow-up survey method, the analysis of the control group and the observation group showed that 8 patients were equally divided into the observation group and the control group in 4 cases by random selection method. The basketball players in both groups were given 3 months of rehabilitation time. The athletes exercised through the equipment exercise, the control group did not exercise exercise, and the rehabilitation effects of the two groups were compared. Compared with the group data, the difference was statistically significant ($P < 0.05$). The comparison between the groups was significantly lower in the control group at 1 month after treatment ($P < 0.05$). The difference between the two groups was statistically significant in February and March. ($P < 0.05$) indicating that the observation group was superior to the control group in relieving pain after exercise.

2. Equipment Fitness and Sacral Strain Mechanism, Symptoms and Grading

2.1. Equipment Fitness

Fitness equipment is an indispensable part of the gym. It is an auxiliary fitness tool that people use in their fitness activities. Through the division of fitness purposes, it can be divided into two categories: anaerobic fitness equipment and aerobic fitness equipment. Anaerobic fitness equipment mainly refers to the installation of a single or combined weight of iron, which has a good effect on weight-loss shaping; on the other hand, aerobic fitness equipment can exercise the heart, lungs and large muscles. In the physical quality of college students, there are often two major physical quality errors, which can easily have a negative impact on the physical fitness of students: in college fitness, many people think of women's aerobics and men's fitness equipment. I think men can use exercise equipment to build muscle and enhance masculinity. On the other hand, women use aerobics to shape their bodies and gain the beauty of flexibility. This is actually a misunderstanding of fitness. Both men and women should take part in all forms of exercise, as each exercise has its own unique fitness and body shape. People need to form effective exercises through the body. Lack of concentration and willpower. In terms of equipment and sports, students are required not only to train in physical education, to achieve good fitness results, but also to actively exercise equipment outside the classroom to achieve a lasting fitness effect. However, many students in physical education class only use fitness equipment as a game and lack specificity. After class, due to fear of fatigue and other reasons, they will not exercise accordingly, which is also an important manifestation of weak will. Therefore, in actual training, most students can't get good exercise results. More students with arm muscle dysplasia and relatively healthy body can exercise their arm muscles through dumbbells and other equipment to eliminate excess fat and achieve good arm muscle exercise. Students with fat accumulation in the waist and abdomen can reach the thigh through aerobic exercise equipment. Practice to achieve the purpose of thin waist and thin legs, thus laying a good foundation for the entire body shape. Among them, basketball is more common: shooting is the most important offensive technique in basketball, and plays an indispensable role in improving athletes' physical and mental quality, intelligence and team awareness. Basketball is not only an active sport, but also a competitive sport. In basketball games, shooting techniques are a key factor in determining success or failure. Therefore, exploring common shooting techniques and formulating corresponding training plans is an important means to improve the level of shooting competition. The development of basketball has a history of more than 100 years, and it has gradually developed into an important sport from the beginning. With the advancement of society, the basketball method has put forward higher and higher technical standards for this sport. At the same time, basketball has become a comprehensive sports event

integrating entertainment, education and competition. Its role has also been maximized. Players will continually optimize shooting techniques, creative shooting areas, and ultimately form a form of game between skill and tactics. Therefore, improving personal skills and overall coordination has become a key factor in determining the success or failure of a basketball game. Team height, speed, balance performance, psychological motivation. Today, basketball has evolved into a group sport. The world basketball system mainly includes two types: the International Basketball Federation and the American Professional Basketball League. Both are among the most influential sports organizations in the world. The highest level of basketball is usually from the United States, where a high level of player configuration, resistance, experienced coaches and a good basketball atmosphere are formed, forming a scientific concept and training content. The rules of the game are largely open and even constantly updated. In short, the 21st century basketball game is developing towards optimization in height, speed, strength, physical strength, psychology and tactics. Basketball has entered a new era.

2.2. Humeral Injury

(1) Patella injury mechanism: knee half squat position, repeated bending, stretching and twisting, resulting in pat bone and femur joint surface is caused by abnormal dislocation, collision and friction. After 1350 years of knee joint wear was the most serious. Because not only quadriceps femoris contraction, medial femoral muscle, lateral femoral muscle, biceps femoris and semitendinosus muscle, Semimembranosus muscle and gastrocnemius muscle are also involved in activities. Several groups of muscles at the same time strong contraction will produce net force on net bone, squeeze femoral pulley and close the plane of muscle node to bear strong pressure. Under this pressure, the surface of Pat bone and femoral joint must lead to abnormal abrasions many times, leading to pathological changes and degenerative changes on the surface of one cartilage bone. On the contrary, because the frequency of movement is lower than that of half squatting, excessive load makes make the surface of articular cartilage bear super-strong physiological load caused by friction or slight damage; unscientific sports training arrangements, unreasonable, excessive concentration of knee joint half squatting posture, systematic exercise, jumping, taxiing and other special technical training, sudden increase of knee load or special training is the most common subject. The causes of injury are: weak quadriceps femoris, poor knee stability and inadequate preparation, not paying attention to the warmth and wetness of joints after exercise, and so on.

(2) Injury symptoms: In early or mild injury patients, there are few symptoms of knee soft and knee pain in daily life. Only after a large amount of exercise training, the pain and weakness of knee joint will be felt, and it will disappear after a period of rest. With the increase of the weight and strength of the knee joint, knee pain is gradually aggravated. Knee joint pain or knee joint instability and movement are closely concerned, mainly reflected in the half squat movement, especially when a knee half squat pain is the most obvious knee joint. When used as a half-squat force or action, such as walking up and down stairs in daily life, there will be pain, soft legs can not make strength or even sit down. Compression bone compression pain, convulsive pain, finger Ella bone edge tenderness, should knee straight leg relaxation quadriceps muscle, from the vertical direction or lateral downward compression, up and down misplacement compression, play a role in improving and alleviating pain.

(3) Classification of injury: Mild bone strain may cause knee weakness or knee pain during finger compression. After the exercise, the pain gradually disappeared and normal exercise could be carried out, but the exercise of knee joint bearing weight should be adjusted appropriately. The bone is moderately strained on the steps or aching while squatting. After adequate preparation, the symptoms were alleviated, but the knee was weak and painful when the knee exercised. It has a certain impact on the choice of exercise and training intensity. After exercise, the pain will increase, and after a day or two of rest, the pain will ease. During the

examination, the pressure on the finger was markedly painful. When the bone is unstable, it will feel knee joint pain, walking pain or even walking. When the function is obviously decreased, it also has a certain effect on sports. The relationship between Ella bone tension and basketball: knee joint is the most important joint in the body, especially the two fibrous cartilage plates between femur and tibia, namely meniscus, which plays a stable and flexible role in basketball, such as slides, quick start and landing buffer zone. The basketball bone is wrapped around the quadriceps tendon to maintain knee stability during basketball. When the stability of the knee joint is relatively decreased, the tension of the bone and ligament wrapped by quadriceps femoris and the stress on the surface of by bone and femoral joint are very large. Discartilage is damaged by friction of articular grooves caused by dislocation and extrusion. The technical characteristics of sports are the potential causes of sports injury. In basketball, the defense and attack of sliding steps from different angles and the sudden rise of stops require the knee joint to squat and produce strength or action at the same time. When the knee joint is in a "tired" state, the thighs and legs are 90 degrees, the thighs are parallel to the ground, and the collateral ligaments on both sides of the knee are relaxed, which reduces the stability of the knee joint. At this time, the stability of the knee joint depends basically on the bone and quadriceps. If the squat is accompanied by force or torsion, the peripheral tendons and the ligaments will bear greater tension, and the surface of the femoral joint will inevitably produce seam movement, compression, distortion and friction. If these forces exceed the physiological load of tissues, they will affect local metabolism and lead to knee injury. The rehabilitation of bone tension in basketball training should be strengthened by instrumental sports, including the strength of muscles around the knee joint, the symmetry of muscles, the imbalance of muscle strength and the imbalance between flexors and extensors, which are considered as one of the important factors of potential knee injury. Machine exercises not only balance the strength of flexor and extensor muscles, but also increase the strength of the corresponding joint muscles, thus reducing the strength of the tightening parts in the exercise process. Instrumental exercise can effectively accelerate the recovery process. Shortening the course of disease can not only alleviate the pain of athletes, but also enhance their muscular strength and athletic ability through systematic exercises with instruments.

3. Experiments

3.1. Experimental Object

(1) In this study, 8 people with moderate sacral strains of a special basketball school in a sports college were selected as subjects of the national second-level athletes, The natural conditions of the test subjects are shown in Table 1.

Table 1. Natural Conditions of The Experimental Object

Numbering	gender	age	Sport level	Tibial strain level
1	Man	24	National second-level athlete	Moderate
2	Man	23	National second-level athlete	Moderate
3	Man	21	National second-level athlete	Severe
4	Man	24	National second-level athlete	Moderate
5	Man	22	National second-level athlete	Moderate
6	Man	20	National level athlete	Severe
7	Man	19	National second-level athlete	Mild
8	Man	20	National second-level athlete	Moderate

(2) Test method Eight subjects were randomly divided into four groups. The first group was set up as an experimental group and they were scheduled to use the target system equipment for fitness training for a period of 3 months. They do not receive other rehabilitation or medications, usually attend general training courses and are unable to participate in intensive training or competitions. Specific training methods include the following. 1) Weight loss. Standing upright, feet and shoulders wide, with toes facing the knees. Hold the dumbbell and slowly lower your knees. Keeping your knees at $90^{\circ}\sim 120^{\circ}$ for half a mile. 2) Half a squat, heel weight. Stand upright and balance the barbell on your shoulders. Keep your head straight, bend your knees until the thighs are parallel to the ground, pause, pull yourself up to the upright position, lift the heel to lift the heel, pause and return to the original position. 3) Sit and bend your legs. Sitting on the leg stretcher, holding the handle with both hands, bending the knee and sagging the calf, hooking the feet on the barbell and curling the toes. Stretch the calf firmly to contract the quadriceps until the legs are fully extended, stop for a while, and then resume with the tension of the quadriceps. 4) Sprint with heavy objects. Stand and put the barbell on your shoulders. When you get firm support, straighten your back and look straight ahead. Take a big step forward and inhale. His legs exhaled at the same time. When standing up, the right leg was pulled back and the center of gravity was moved back. The legs are repeated continuously. Self-evaluation and recording are scheduled after each training session. The second group of 4 people was set as the control group. During the 3 months, they were not allowed to participate in any rehabilitation training and medication. They took a rest and rest, only basic life activities and general training courses, and could not participate in intensive training or competition.

3.2. Experimental Indicators

Pain Behavior Record: This assessment is a method of providing quantitative information about a system of disability by observing the pain behavior of the assessee. In this study, Wang Yulong's six-point behavioral score in the evaluation of rehabilitation function was used to assess the pain index of the knee joint before and after the experiment. Brs.6 divides the pain into 6 levels, each level is 1, ranging from 0 (no pain) to 5 (severe pain, unable to work or live), as follows: There is pain but easy to ignore; There is pain that cannot be ignored, but does not interfere with daily life ; pain can not be ignored, interfere with attention ,pain can not be ignored, all daily activities are affected, but basic can be completed Physiological needs, such as eating and defecation ; severe pain can not be ignored, rest or bed rest . Measure the range of motion of the knee. Measuring the knee: The normal range of motion of the knee is $0\sim 135$. The functional status of the knee is detected by measuring the active motion of the affected joint before and after the test. Position: Protractor position: The shaft is located on the small head of the knee joint, the fixed arm is parallel to the long axis of the femur, and the movable arm is parallel to the long axis of the tibia.

3.3. Analysis of Experimental Results

(1) Research on the Experimental Group after Training

1) As can be seen from Table 2, 8 patients in the experimental group were all patients with moderate pa bone tension 3 months ago. After 3 months of systemic exercise and rehabilitation using equipment, 4 of them recovered mildly and the remaining 4 recovered completely. The number of exercises increased significantly, indicating that after a period of weight training, the strength of the leg muscles, especially the muscles around the knee joint, was enhanced and the stability of the knee joint was improved. The control group did not participate in any fitness rehabilitation training or medication, and the rest and rest methods were used to conduct only basic living activities and general training courses. The recovery of the posterior bone strain is shown in Table 2.

Table 2. Recovery of Tibia after 3 months of system fitness training in the experimental group

Numbering	Sport level	Tibial strain level
1	Moderate	Rehabilitation
2	Moderate	Rehabilitation
3	Severe	Mild
4	Moderate	Rehabilitation

2)As can be seen from Table 3, 8 patients in the control group were also patients with moderate pa bone tension 3 months ago. They did not receive any fitness and rehabilitation training or medication for three months, rested only and took general training courses. After 3 months, only 2 cases recovered to mild, and the remaining 4 cases failed to recover. Two of them were aggravated by severe aggravation of pa bone. It indicates that the bone should be treated actively, otherwise it will easily aggravate the condition. After three months of equipment fitness training, there is a significant difference between the recovery rate of basketball players with bone strain and those who do not have equipment fitness training, and the health of the equipment is beneficial to the rehabilitation of bone fractures. Equipment health is beneficial to the rehabilitation of bone fractures as shown in Table 3.

Table 3. Recovery of tibia strain after 3 months in the control group

Numbering	Tibial strain level 3 months ago	Tibial strain level after 3 months
1	Severe	Mild
2	Moderate	Mild
3	Severe	Severe
4	Mild	Rehabilitation

3.4. Prevention and Treatment

(1) Prevention

1) Strengthen ideological education, strengthen the usual safety education, overcome the shackles in physical education, sports training and competition, conscientiously implement prevention policies, and carry forward a good sportsmanship.

2) Reasonable arrangement of teaching, training and competition, teachers must carefully study the materials according to the students' age, gender, health and sports techniques, estimate which actions are difficult to master, which are prone to damage, to understand, and to take appropriate precautions Measures to strengthen comprehensive training and basic technology teaching. In the school sports work, various forms of physical exercise methods must be adopted. Improve the physical quality of students in an all-round way, strengthen the teaching of basic skills, and enable students to correctly grasp key points such as running, jumping, and throwing balls, and develop students' athletic ability. Reasonable arrangement of exercise load, especially attention to the local load of the sports organs and the arrangement of sports activities after the injury, avoiding the use of a single -U11 training method to prevent local load. For lively children and adolescents, even if they are tired, they still have strong desires and strong interest in physical exercise, which need to be appropriately adjusted or suppressed to comply with progressive, individualized treatment and other teaching and training principles. The exercise load is gradually increasing. When learning new movements, pay attention to the correct demonstration from simple to difficult, from simple to complex, from decomposition to complete motion teaching. In physical education classes, difficult and arduous exercise exercises should be placed in the front or middle of the basic part, and the

intensity and repetition of the exercise should be treated differently depending on the student's situation.

3) Be prepared before strenuous exercise. The content of the preparation activities should be determined according to the training and competition content, including general preparation activities and special preparation activities, so that the second half of the preparation activities are similar to the class content. For large and fragile parts of the negative movement of the exercise, special attention should be paid to the preparation activities, and appropriate strength and stretching exercises should be made. The number of preparation activities should be determined according to the characteristics of the students, meteorological conditions and teaching training or competition conditions. In general, when the excitability is low, the training level is high, the exercise time is short, or the weather is cold, the intensity of the preparation activity may be slightly higher. On the contrary, for younger, under-basic athletes, the intensity should be small and the time is short during long periods of exercise or hot weather. The preparation of the injured part should be cautious 4uL, the whole preparation should be carried out step by step, the amount of preparation should be based on the degree of sweating and sweating. The time from the end of the preparation activity to the formal practice should not be too long, 1 to 4 minutes is appropriate, if the interval is too long or the teaching training is transferred during the exercise to make up for the preparation activities or special preparation activities.

4) Strengthen the training of vulnerable parts, strengthen the training of vulnerable parts or relatively vulnerable parts, and improve their functions, which is a positive means to prevent sports injuries. Can be used to prevent the bone strain, such as the "standing" method to strengthen the function of the quadriceps and pa bone: in order to prevent the waist injury, in addition to strengthening the exercise of the lower back muscles, it should also strengthen the abdominal muscle strength training, help To prevent excessive stretching of the spine and cause waist injury: In order to prevent muscle strain after the femoral muscle, it is necessary to strengthen the muscle strength and stretching exercise.

(2) Treatment

1) Physical therapy: mainly using ultrasonic and infrared radiation. Ultrasonic once a day, about 7 minutes each time, once a week, a course of treatment; once a day, infrared radiation, 20 minutes each time. External use of internal medicine or Chinese herbal medicine plus DC penetration.

2) Quiet weight: the barbell of the shoulder, about 1/3 of the maximum weight, and the knee angle of 130. Between 1500, the torso is straight, and the creatine rises to the quadriceps, rests for 3 minutes, and then relaxes. If the pull is very serious, you can practice without load. The goal is to enhance the absolute force of the quadriceps muscle, strengthen the bone control during exercise, and reduce excessive wear on the articular surface and femoral articular surface.

4. Discussion

4.1. Imaging Findings of Humeral Injury

(1) CT examination: tangential scanning of the knee from 300 to 600 can clearly diagnose the bone tension at various stages, and has certain reference value for the diagnosis of the bone tilt and femoral dysplasia. The CT scan of the humeral strain is shown in Figure 1.

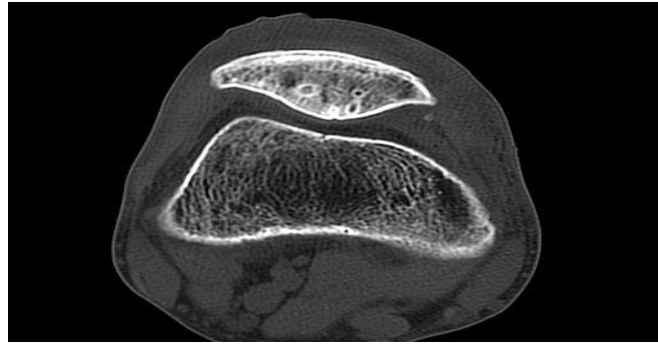


Figure 1. CT scan of the tibia injury

(2)X-ray and MRI examination: X-ray examination showed no abnormality in the early stage of find bone strain, and had no reference value for early clinical diagnosis of for bone strain; however, the epiphysis around can bone can be seen later. The surface of the ello femoral joint is not smooth or the space is small. This method is more reliable for the late diagnosis of the bone strain. MRI: This test method is used for 300 to 600 MRI examination of the knee. This method of diagnosis can not only make a definitive diagnosis, but also directly show whether the why bone is inclined to develop the bone and the extent and extent of the osteochondral lesion, The tibial strain was X-ray and MRI as shown in Figure 2.



Figure 2. X-ray and MRI tibia injury as shown

4.2. Analysis and Comparison of the Effects of Knee Joint Flexor and Extensor Muscles in the Two Groups of Athletes

The balance of muscle strength between the active muscle of the knee joint and the antagonist muscle. If the value deviates too much from the normal value, it means a significant imbalance of the flexor and extensor muscle strength. At this time, the stability of the knee joint is decreased, and the probability of knee joint damage is greatly increased. In the study of the knee joint, the knee joint flexor and extensor peak force ratio ratio is mainly measured as a ratio of the hamstring muscle to the quadriceps muscle strength, which can be used as an important index to evaluate the knee joint flexor and extensor muscle strength balance, and It is of great value and significance to evaluate the stability of the knee joint. The effect of the two groups of rehabilitation methods on total work in this study is shown in Figure 4. There was no significant difference in the total flexor and extensor muscles between the study subjects before the start of the experiment ($P>0.05$). After the experiment, at the time of the 701/s experiment.

(1) In group A, the total open muscle function increased by 36.4J, and the open muscle increased by 37.2J. In group B, the muscle function recovered was 26.9J, and the muscle function recovered was 34.2J. In group C, the total muscle recovery was increased by 44.5 J and the total open muscle function was increased by 48.6 J. There was a significant increase and significant difference between the two groups compared with before treatment. The total energy comparison between groups A, B and C showed that the two rehabilitation methods had the greatest impact on the total energy of the subjects during the treatment, followed by groups A and B. In the 2513 / s test, as shown in Figure 3, the recovery muscle workload of group A increased by 37.20J, and the total workload of open muscle increased by 36.30J, as shown in Figure 3.

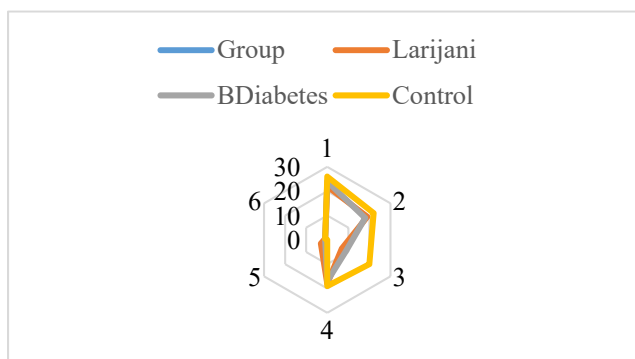


Figure 3. Group A flexor total work ratio

(2) In group B, total muscle recovery increased by 24.01J, and open muscle function increased by 27.06J. In group A, overall recovery of muscle function increased by 45.03J, and total open muscle function increased by 47.54J. The total work index of open extensor muscles in the two groups was significantly higher than before treatment. The overall energy comparison between groups A and B showed that the two groups of rehabilitation methods had the greatest impact on the total energy of the subjects, followed by group A and group B. For these three rehabilitation methods, the average increase in total power during the 600/s test period and the average increase in total power during the 2400/s test period were compared. The average increase in total power during the 600 / s test period is relatively large. The total work value of the extensor muscle is increased more than the total work value of the flexor muscle. As shown in Figure 4.

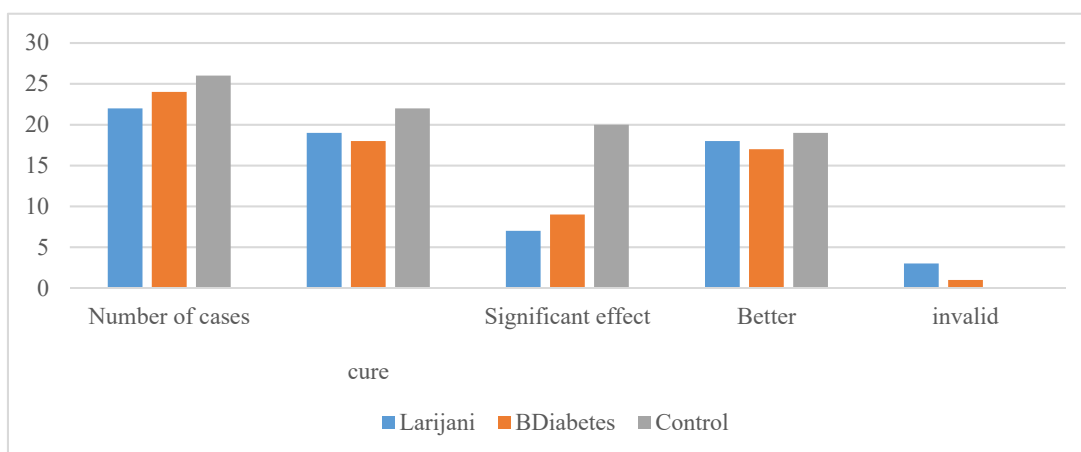


Figure 4. Value of total flexor gain in group B

(3) The efficacy of the three groups was examined by X2: the efficacy of group A and group B was compared, and there was no significant difference or statistical significance ($P > 0.05$).

There was no significant difference or statistical significance between the treatment groups A and C ($P > 0.05$). The therapeutic effect of group B was significantly different from that of group C ($P < 0.05$). Comparison of the efficacy between the three groups showed that group C had the best therapeutic effect, group A had the second best therapeutic effect, and group B had the worst therapeutic effect. The coaches of the two sports have different plans for the preparations for the National Games, which indicates that the competition may be related to the coach's training plan and the athlete's injury. The low frequency of knee injuries near the game may be one of the important factors for athletes to get a good ranking in the game. Therefore, when the coach is arranging the training plan, it is necessary to continuously adjust according to the actual situation of the athlete. In the case of minimizing the simultaneous injury, the athlete and the training plan are completed on time, which is more beneficial in some sense. The skill level and performance of the athletes can inspire the fighting spirit inadvertently and stimulate the confidence of the athletes.

5. Conclusions

(1) Athletes who have received training in system equipment recover from the strain of bone, and those who are severely become mild. Compared with the control group, athletes who were not trained in system equipment changed from intermediate to mild, from severe to moderate, and only from mild to basic. The experimental results show that it is not difficult to find the recovery and fitness effect of pa bone injury on exercise. It is obvious that the adaptability of the instrument has a certain effect on the recovery of pa bone injury.

(2) In basketball training, the strength of the muscles around the knee joint, as well as the symmetry of the muscles, the imbalance of muscle strength, and the imbalance of strength between the flexors and extensors should be considered as important factors for potential knee injury. One. The exercise of the device not only balances the strength of the flexor and extensor muscles, but also increases the joint muscle strength of the corresponding parts, thereby reducing the force on the strained parts during exercise.

(3) Equipment fitness can effectively speed up the recovery process. The shortening of the disease course can not only reduce the athlete's pain, but most importantly, after the system fitness training, the athlete's own muscle strength is strengthened, the exercise ability is obviously improved, and the equipment fitness is improved. It not only targets athletes with strains, but also has a very positive effect in other places. It can enhance physical fitness, shape good postures, and exercise athletes' will. It can be seen that equipment fitness has great disadvantages for the body.

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