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Research Article

Therapeutic Effect of Nanotitanium Oxide Combined with Exercise Rehabilitation Training on Wrist Joint Injury of Boxers

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The rapid development of society promotes the rapid improvement of science and technology. On this basis, the development of nanotechnology has also made great achievements and has been applied to all walks of life. Among them, nanotitanium oxide provides favorable conditions for the medical treatment of various joint injuries. And sports rehabilitation training also plays an irreplaceable role in the treatment of joint injury, promoting the rapid recovery of joint injury. Boxing is a sport in which boxing gloves are worn for fighting. It has both amateur and professional competitions. The purpose of this paper is to study the therapeutic effect of nanotitanium oxide combined with sports rehabilitation training on the wrist joint injury of boxers. According to the therapeutic effect of the research, it can provide useful treatment basis for clinical treatment and help boxers recover wrist joint injury, so as to carry out boxing training later. The method adopted in this paper is as follows: first, the subjects were randomly divided into nanotitanium oxide combined with sports rehabilitation training group, nanotitanium oxide treatment group, sports rehabilitation training treatment group, and control group. Then, the subjects were tested with the score table, and the score data were recorded. Finally, chi-square test was used to test the experimental results. In conclusion, through the research and comparison, it is found that nanotitanium oxide combined with sports rehabilitation training can reduce the pain of boxers' wrist joint injury; after the treatment of wrist joint injury of boxers by nanotitanium oxide combined with sports rehabilitation training, the pain score decreased, and the daily function was improved; the PT score before the experiment was 15%, and the peak torque score after the experiment was 26%. The Pt/BW score was 22% before the experiment and 37% after the experiment. This reflects the strength of wrist muscle contraction, judging that the stability of wrist joint is enhanced after the experiment; nanotitanium oxide combined with exercise rehabilitation training can increase the sensitivity of wrist joint after the treatment of boxer wrist joint injury.

1. Introduction

Boxing [1] is a competitive sport with strong antagonism. Boxing was introduced into China in the 19th century. However, due to various reasons, boxing was not carried out in China until 1986 and gradually embarked on the road of standardization. It is a contest between two athletes in terms of physical fitness, skills, psychology, and agility. It is also a sport to test the comprehensive ability of athletes. It can improve and cultivate people's agile, calm, brave, and indomitable spirit. Boxing in China is gradually developing. The goal of boxing is to win more points than the other party to win or knock the other party down. At the same time, the competitor should try to avoid the attack of the other party. Although China's boxing has made a breakthrough, there is still a considerable gap between the overall level and the high-level countries. Compared with boxing developed countries, China does not have its own boxing culture, and China's professional boxing has no echelon construction. One of the most important reasons is sports injury. To improve boxing level, not only from the boxing training process, but also from the recovery of the body after training, is a very important aspect. Through stretching training, the recovery after exercise and the causes of boxing

injury are comprehensively and systematically studied in order to reduce sports injury [2] and promote the vigorous development of boxing in China. Boxing started late in China, and from the development trend in recent years, the state pays attention to training methods and means and attaches importance to the physical training of athletes. How to maximize the performance of athletes has become the primary task, but the research on muscle recovery and injury prediction after training is not enough. Injury is an important factor that affects boxing performance. Body pulling training can improve the flexibility of the body, relieve the pain of skeletal muscle, increase the elasticity of skeletal muscle, reduce the hardness of foot, and prevent sports injury. The reason why rehabilitation training is necessary in training is that after high-intensity training, the energy reserve in the body will inevitably be consumed, leading to fatigue and functional decline. According to the principle of recovery and over recovery, it is necessary to recover and over recover the energy and material of the body after the exercise, so as to improve the functional level of the body and create material conditions for the improvement of sports performance.

Nanoparticle is a kind of nanomaterial [3], also known as ultrafine particle, which refers to the size of 1-100 nm particles. Nanoparticles are located in the transition zone between atomic clusters and macroobjects and between microsystems and macrosystems. They are a group composed of a small number of atoms or molecules. Therefore, they are both atypical microsystems and atypical macrosystems. It has small size effect, surface effect, quantum size effect, and macroquantum tunneling effect, which makes it present the characteristics of magnetic, optical, and electrical sensitivity that traditional materials do not have. Therefore, it has different toxicological characteristics from micron and conventional particles. In the field of drug therapy and molecular imaging, nanoparticles have become potential new drug carriers due to their special chemical structure, surface properties, and small particle size [4], which provides new prospects for drug delivery and targeted therapy at specific sites. Among the nanomaterials, nanotitanium dioxide (TiO_2) [5] is the most widely used. Because of its small particle size, it has been industrialized and widely used in coatings, pigments, ceramics, sunscreen cosmetics, antiaging, air purification, sewage treatment, antibacterial detoxification, food packaging, antistatic, and other fields. Adding nano-TiO_2 powder to cosmetics in a certain proportion can effectively shield ultraviolet rays. At the same time, nanotitanium oxide has a certain role in promoting the treatment of boxer wrist joint injury [6].

In the process of human activities, the original components and energy materials of human tissues and cells need to be continuously decomposed to release energy to meet the needs of human activities. In the process of decomposition of energy materials, the synthesis of energy materials was also carried out. According to the principles of recovery and over recovery, restorative training can realize the recovery and storage of basic energy materials and create material conditions for improving the physical level of the body. After high load training, athletes will have the feeling of muscle "compression" and often feel heavy leg, even pain. If massage, bath, application of some drugs or jogging, and other means of recovery will speed up the blood circulation in the muscle, the muscle will return into a relaxed state as soon as possible. After high load training and competition, the nervous system remains normal in activity. Rehabilitation training [7] can affect this complex functional system, fixing the control path between the central nervous system and the surrounding organs dominated by random control. Long-term and systematic rehabilitation training can not only improve the interaction between vegetative organs and motor organs but also improve the interaction between organs around the central nervous system and central organs [8]. Rehabilitation training can adjust the long-term tension of the striated muscle to moderate relaxation, thus forming a strong connection and making the muscle work actively in the next step; it can also change the cross-section and tension of blood vessels, capillaries, arterioles, and venules. In relaxation training, the tension and contraction of blood vessels can be relaxed and the tension can be relieved. As a result, dilated blood vessels can contract and become normal medium tension. The human body's response to movement, especially the training of tissues and organs caused by the changes of morphological structure and function, is conducive to maintaining the relative stability of the internal environment, so as to achieve the purpose and function of protecting the human body from injury, and further expanding the production capacity, that is to say, human adaptability. When the body adapts to a certain level after training, the body is in a relatively stable state and needs to provide new stimulation, that is, a higher level of training. Break the original stable state and make the body adapt to the new training load.

An excellent athlete often works out a reasonable recovery method after training or before training, which can lay the foundation for athletes to maintain good competitive state for a long time and obtain the best sports results. Through literature retrieval and analysis, it is found that in China, the research on wrist joint injury of boxers [9] mainly focuses on the proportion of wrist joint injury, injury site, simple factors of injury, and some simple prevention and treatment measures. This paper mainly studies the therapeutic effect of nanotitanium oxide combined with sports rehabilitation training on boxer wrist joint injury. In this study, the subjects were randomly divided into nanotitanium oxide combined with sports rehabilitation training group, nanotitanium oxide treatment group, sports rehabilitation training treatment group, and control group. Then, the subjects were tested with the score table, and the data obtained from the score were recorded. Finally, the experimental results were tested by chi-square method. The innovation of this paper is to compare the treatment scores of nanotitanium oxide combined with sports rehabilitation training group, nanotitanium oxide treatment group, sports rehabilitation training treatment group, and control group without treatment. The experiment proves that nanotitanium oxide combined with sports rehabilitation training has a positive effect on the treatment effect of boxing athletes' wrist joint injury, which provides some useful for clinical treatment basis.

2. Nanotitanium Oxide and Wrist Joint Injury of Boxers

2.1. Nanotitanium Oxide. A nanometer is a unit of length, one billionth of a meter. When the size of the material reaches the nanometer level, the material will have many different characteristics, thus showing its unique effect and function. Nanomaterials refer to materials with one or more components and at least one dimension in the range of 1-100 nanometers, including nanoparticles, nanofibers, nanotubes, and nanosynthetic materials. Nanoparticle is a kind of nanomaterial, which means that the single particle size is less than 100 nm. The physical properties of nanomaterials [10] mainly depend on the size, composition, and surface properties of nanomaterials, while the biological effects of nanomaterials are closely related to the physical and chemical properties of nanomaterials. Due to their unique small size effect, surface effect, quantum size effect, and macroscopic quantum tunneling effect, nanomaterials have electrical, optical, mechanical, and magnetic properties different from ordinary materials [11, 12].

Nanotitanium oxide (TiO_2) is a new inorganic chemical material. In recent years, due to its special performance, wide application, and broad market prospect, it has become a research hotspot. Nano-TiO_2 has large specific surface area and surface atomic number; the surface energy and surface tension increase rapidly with the decrease of particle size; the thermal, magnetic, optical, and sensitive properties and surface stability of nanoparticles are different from those of traditional particles due to small size effect, surface effect, quantum size effect, and macroscopic quantum tunneling effect. As a new photocatalyst [13], UV-resistant agent, and photoelectric effect agent, it is widely used in coatings, pigments, ceramics, sunscreen cosmetics, antiaging, air purification, sewage treatment, antibacterial detoxification, food packaging, antistatic, and other fields. Different orders of nano-TiO_2 enter some specific parts of the human body in different ways and produce inherent toxic effects. At present, the research of nano-TiO_2 is mainly focused on animal experiments, such as tissue effect, cytotoxicity [14], effect on the molecular structure and expression of genetic material DNA, and the influence on other biological macromolecules.

2.2. Boxing. Boxing is a highly confrontational sport, which belongs to the skill type combat project. The project is characterized by technology led. Physical fitness and tactics play a decisive role in this project. The characteristic of boxing match is that under the same rules, both players wear protective gloves and hit each other's effective scoring position with their fists. The confrontation between the two sides is the external performance of the project, and obtaining effective scores is the ultimate goal. The two players in the designated area competition hit each other but also need to be prepared for defense and counterattack this high-intensity confrontation; the athletes' physical requirements are very high but also determine the core role of health in this project. There are four rounds in each round of women's boxing, and each round is 2 minutes, with an interval of 60 seconds. The uniqueness of boxing lies in people's different views on boxing. Boxing is a person-to-person competitive event. Therefore, the beating and being beaten in the competition, as well as the injury consequences, especially the scene of being knocked down and unable to stand up in professional boxing, have great objections in many people's thoughts.

2.3. Wrist Joint Injury. Wrist joint, also known as radial wrist joint, is an important part of hand joint. The wrist is the connection between the hand and the forearm. It is an important part of the upper limb and bears a large load in the support and thrust of the upper limb. In addition to the distal radius [15] and ulna, there are eight carpal bones of different shapes. Due to the complex structure of wrist joint, more joints, and ligaments, it has higher flexibility. The anatomical features of the wrist allow it to move in two planes: radial ulnar deviation in the frontal plane (abduction adduction) and sagittal flexion and extension (palmar flexion and dorsiflexion). As far as wrist joint is concerned, it should include radial and ulnar joints. Intercarpal joint consists of adjacent carpal bones. The bone and bone are intertwined, and they are connected by complex ligaments and tendons in varying degrees of motion.

Wrist injury has great influence on fine motion of hand and upper limb. It is necessary to define the types of wrist joint disorders and take effective rehabilitation guidance in time. Wrist rehabilitation medicine involves many aspects; rehabilitation evaluation and rehabilitation treatment are the core. Correct rehabilitation assessment is the premise of effective rehabilitation treatment, and the functional recovery under ideal state depends on effective rehabilitation treatment [16].

For wrist rehabilitation assessment, the clinical is mainly evaluated by the pain, motion dysfunction and other subjective assessment indicators of the wrist [17]. ROM, also known as ROM, refers to the maximum motion curve of the joint, that is, the normal range of motion from the beginning to the end of the joint, usually expressed in degrees. It is one of the important indexes to evaluate the range and degree of joint motor function injury. First of all, it is the preferred evaluation method for physical dysfunction diseases with limited joint activity such as fracture and arthritis. It is suitable for joint movement disorders caused by various reasons, such as joint fixation, trauma, and surgery. The range of motion can be divided into active range and passive range. Active range of motion (AROM) refers to the arc of joint movement when muscles contract actively; passive range of motion (PROM) refers to the arc movement of joints without muscle contraction under the action of external force. It can be seen that the range of motion of the joint is the activity behavior of patients, which can be used to evaluate the influence of muscle contraction force on joint range of motion. The range of passive joint motion refers to the passive behavior under the action of external force, which can evaluate the limited degree of joint activity of examiners. Due to the different anatomical structure and physiological mechanics of each joint, the active and passive range of motion of the same joint is also different. The range of motion of the joint is also affected by race, gender, age, and examination position. Taking the normal range of

ROM in rehabilitation medicine as reference value, the differences of rehabilitation goals were analyzed and compared.

3. Exercise Rehabilitation Training

3.1. Rehabilitation. The World Health Organization defines rehabilitation as through various measures to reduce the impact of disability and to reintegrate the disabled into society. These include the use of training to promote the adaptation of persons with disabilities to their surroundings and the adjustment of their surroundings and social conditions to facilitate their social integration. Therefore, rehabilitation refers to the comprehensive and coordinated use of various measures to reduce the mental, social, and physical barriers of the disabled, so as to make them play their full potential and return to society.

Rehabilitation medicine [18] is a medical application subject with independent theoretical basis and functional evaluation method, with large application scale and high treatment technology. Its purpose is to speed up the rehabilitation process of human injury, prevent and reduce the degree of disability, and help the disabled return to society. Rehabilitation treatment is a variety of measures taken by people to reduce the disability of the disabled, train the disabled to acquire knowledge and skills, and improve their ability of self-care and social participation. Rehabilitation treatment can be generally divided into the following categories: (1) physical therapy (PT); (2) occupational therapy (0t); (3) speech therapy; (4) psychotherapy; (5) recreational therapy; and (6) traditional Chinese medicine. Physical therapy includes exercise therapy and physical factor therapy: physical factor therapy, also known as "physical therapy," is a method to prevent and treat diseases by using physical factors such as electricity, light, sound, magnetism, water, cold, and heat; occupational therapy is a process of applying purposeful and selected occupational activities to evaluate, treat, and train patients who have lost their ability to take care of themselves and work in varying degrees due to physical, mental, and developmental dysfunction or disability. It is a rehabilitation treatment method. Exercise therapy refers to active or passive movement of patients with bare hands or with the aid of instruments and improves functions and promotes rehabilitation through the effect of force, which is a widely used treatment. Entertainment therapy is a psychotherapy method to cultivate temperament and improve physical and mental health through various entertainment activities (such as listening to music, learning singing, watching movies, watching TV, watching drama performances, dancing, games, playing chess, and visiting the garden).

3.2. Exercise Rehabilitation Training. In the rehabilitation of wrist injury, early and correct exercise is very important. For professional athletes, once the injury occurs, it will directly affect the play of skills and tactics and sports life in the competition. Therefore, it is very important to protect the wrist. Through muscle movement, promote blood circulation, accelerate metabolism, prevent muscle atrophy, and enhance muscle strength. It is necessary to make short-term functional rehabilitation plan and long-term ADL rehabilitation plan according to the course of disease and the severity of the disease.

Common rehabilitation methods are as follows: physical therapy such as external application (external application of drugs can promote good blood circulation and prevent inflammation), acupuncture, and moxibustion (which can improve local pain valve and gradually improve mechanical balance of muscles), by promoting blood circulation, improving the nutrition of local tissues, improving the vitality of cell tissues, accelerating the absorption or elimination of pathology and metabolites, promoting wound healing and eliminating inflammation, and injection therapy (which can promote local blood circulation and prevent joint adhesion). Exercise therapy, also known as therapeutic exercise [19, 20], is one of the basic treatment methods of rehabilitation medicine, according to the characteristics of patients' life to improve the function of patients.

The general principles of wrist rehabilitation training are as follows:

(1) Early principle: the structure of wrist joint is complex; the recovery time is long after injury. When wrist ligament injury or fracture occurs, early medical treatment can seize the best treatment opportunity to prevent cartilage wear and tear, ligament aging and joint pain, joint relaxation, and instability caused by improper movement during the injury; when wrist joint dysfunction caused by stroke, timely and effective treatment can avoid the occurrence of joint deformity, so as to ensure the normal range of motion of the joint. At the same time, by stimulating the activity of brain cells, it can promote the occurrence of compensatory function of brain tissue in corresponding regions, so as to reduce the degree and rate of disability

(2) Moderate principle: although increasing the number and frequency of rehabilitation training is helpful to the recovery of motor function, blind pursuit of progress may lead to secondary injury of injured joints. If the swelling and pain of the affected joint is aggravated, it should be stopped immediately, and the treatment should be evaluated after the tissue pain disappears

(3) Sufficiency principle: on the premise of following the moderate principle, the range of motion of each joint should reach or be as close as possible to the normal range of motion of each joint

(4) Progressive principle: in rehabilitation training, it should be carried out step by step, and the training form and exercise amount should be adjusted according to the special pathological conditions of joints in each rehabilitation stage

(5) Gentle principle: in passive exercise training, we should pay attention to observe the expression changes and reactions of patients and try to avoid the pain of patients and the soft tissue injury of affected limbs and joints

Table 1: Pain scale sheet.

Pain grading	No pain									The most painful
At rest	1	2	3	4	5	6	7	8	9	10
Repetitive wrist movement	1	2	3	4	5	6	7	8	9	10
When lifting weights	1	2	3	4	5	6	7	8	9	10
Frequency of pain	1	2	3	4	5	6	7	8	9	10
The most painful time		2	3	4	5	6	7	8	9	10

Table 2: Functional difficulty scale.

Pain grading	No pain									The most painful
Daily life	1	2	3	4	5	6	7	8	9	10
Housework	1	2	3	4	5	6	7	8	9	10
Work	1	2	3	4	5	6	7	8	9	10
Recreational activities	1	2	3	4	5	6	7	8	9	10

(6) Self-help principle: many patients cannot fully recover after discharge, and most patients need long-term rehabilitation training after discharge. Therefore, it is necessary to have a kind of portable and convenient rehabilitation training assistant device anytime and anywhere

(7) Rehabilitation training needs the principle of individual treatment. According to different age, condition and functional state, exercise means, preparation posture, and amount of exercise are selected to develop and improve muscle function (strength, speed, and endurance) and joint activity

4. Therapeutic Effect of Nanotitanium Oxide Combined with Exercise Rehabilitation Training on Wrist Joint Injury of Boxers

4.1. Experimental Materials. The total number of patients in this study was 80, aged 16-47 years, with an average of 25.6. They were randomly divided into four groups: nanotitanium oxide treatment group, rehabilitation exercise training treatment group, nanotitanium oxide combined with rehabilitation exercise training treatment group as the experimental group, and wrist joint injury natural healing as the control group, with 20 cases in each group, 11 males and 9 females. The injury treatment study lasted from 1 to 30 days. All patients were provided by the department of orthopedics and traumatology, the first hospital of D province.

4.2. Experimental Methods. Random grouping method: random number method was used in this experiment. Nanotitanium oxide treatment group, rehabilitation exercise training group, and nanotitanium oxide combined with rehabilitation exercise training group were the experimental group, and the wrist joint injury natural healing was the control group

Case shedding and treatment: automatic use of other methods during the treatment process or accidental death (except for complication death) cases decreased. Treatment: follow-up, registration, and analysis

Case exclusion criteria: the clinical data records were found to be wrong, incomplete, or completely missing before statistical analysis, which affected the statistical analysis

Efficacy criteria: pain and function: the pain and function during the 5-week treatment were scored by PRWE score standard, and the score results were recorded

Safety assessment criteria: level 1: safety, no adverse reactions. Level 2: relatively safe. If adverse reactions occur and no treatment is needed, the trial can continue. Grade 3: safety problems, moderate adverse reactions, can continue to test after treatment. Grade 4: the test was stopped due to adverse reactions

4.3. Data Processing. Observation time and index record: the observation records were made before and after treatment at three time points (the first day, the seventh day, and the 35th day).

Chi-square test was used for counting data, and t test was used for measurement data. Take $p > 0.05$ as no statistical significance, no difference; take $0.01 < p < 0.05$ as the difference has statistical significance; $p < 0.01$ as the significant statistical significance, the difference is significant.

4.4. Scoring Table. Pain score table:

As shown in Table 1, please evaluate your average wrist pain in the past week on a 0-10 scale. 0 means that there is no pain at all, (0-10) indicates that the pain is increased once, and 10 means that the pain has never stopped, or dare not move because of the pain.

Function score table:

As shown in Table 2, please circle the most difficult movements in the past week on a scale of 0-10. 0 means there is no difficulty, (0-10) indicates that the activity difficulty increases in turn, and 10 means that the activity is very difficult and cannot do these daily activities.

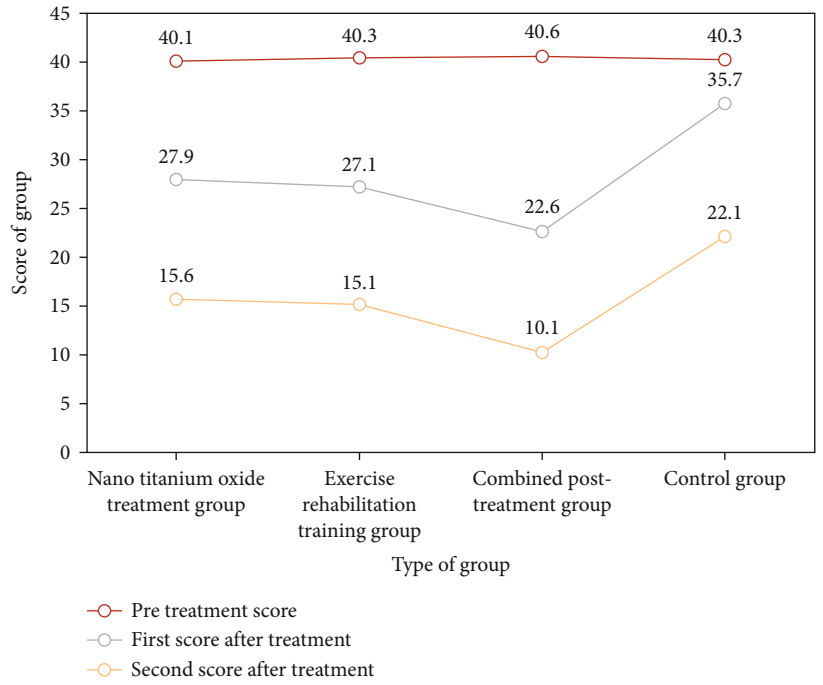

Figure 1: Comparison of pain between the four groups.

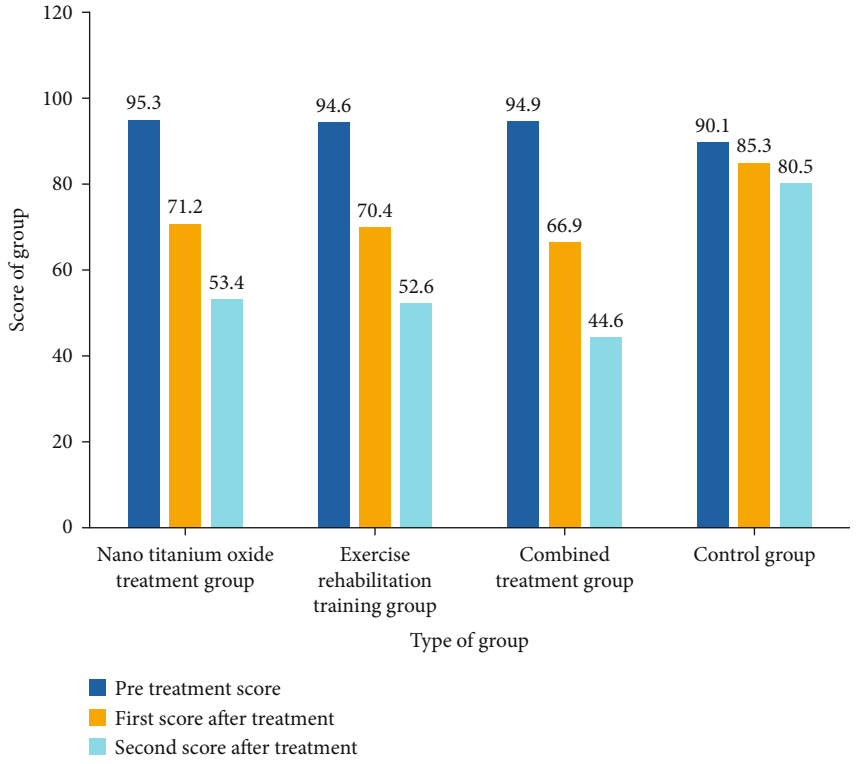

Figure 2: Functional comparison between the four groups.

5. Results and Discussion

5.1. Comparative Analysis of Pain. As shown in Figure 1, before treatment, the scores of nanotitanium oxide treatment group, rehabilitation exercise training treatment group, nanotitanium oxide combined with rehabilitation exercise training treatment group, and control group were 40.1, 40.3, 40.6, and 40.3, respectively. Pain comparison was made for the first time after treatment in nanotitanium oxide treatment group, rehabilitation exercise training treatment group,

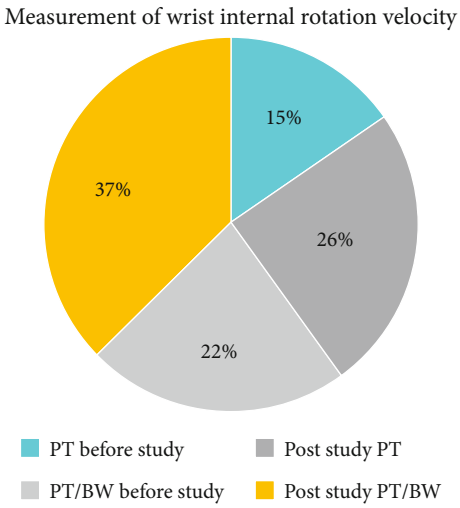

Figure 3: Measurement of wrist internal rotation velocity.

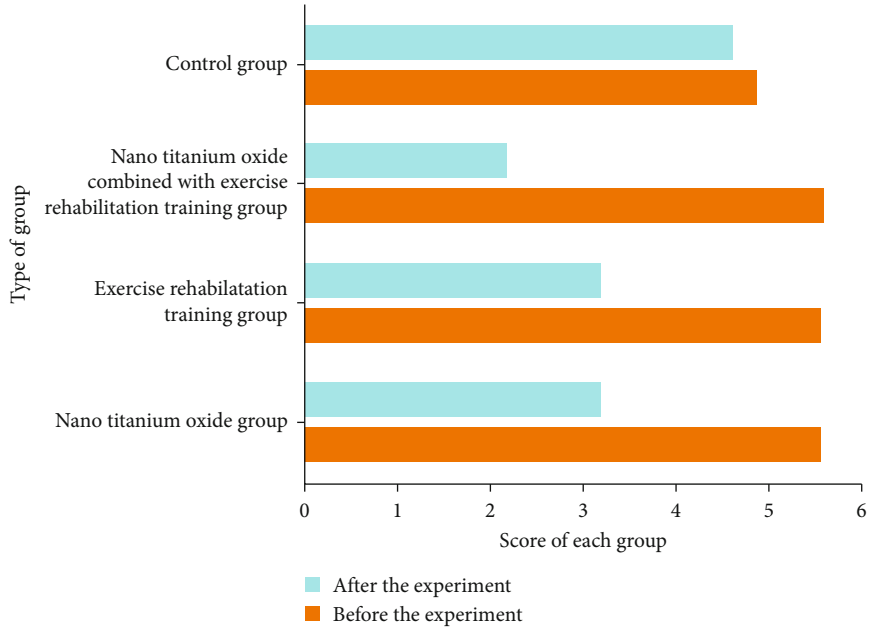

Figure 4: Treatment effect of three groups of treatment on boxer wrist joint.

nanotitanium oxide combined with rehabilitation exercise training treatment group, and control group. The scores were 27.9, 27.1, 22.6, and 35.7, respectively; the scores of nanotitanium oxide treatment group, rehabilitation training group, nanotitanium oxide combined with rehabilitation exercise training group, and control group were 15.6, 15.1, 10.1, and 22.1, respectively, after the second treatment; through comparison, it was found that nanotitanium oxide combined with rehabilitation exercise training could reduce the pain of wrist joint injury of boxers.

5.2. Function Comparison Analysis. As shown in Figure 2, before treatment, the functional scores of nanotitanium oxide treatment group, rehabilitation exercise training treatment group, nanotitanium oxide combined with rehabilitation exercise training treatment group, and control group were 95.3, 94.6, 94.9, and 90.1, respectively. The first functional scores of nanotitanium oxide group, rehabilitation training group, nanotitanium oxide combined with rehabilitation exercise training group, and control group were 53.4, 52.6, 44.6, and 80.5, respectively. Before treatment, there was no significant difference among the groups. After treatment, the score of nanotitanium oxide combined with exercise rehabilitation training decreased significantly. Through comparison, it was found that after the treatment of wrist joint injury by nanotitanium oxide combined with sports rehabilitation training, the functional score decreased, and the daily function was improved.

5.3. Analysis of Peak Torque Comparison. As shown in Figure 3, the peak torque (PT) reflects the maximum muscle strength produced by muscle contraction. The maximum

torque output produced by muscle contraction, namely, peak torque to body weight ratio (Pt/BW), refers to the peak torque value per unit weight. The relative muscle strength reflecting muscle contraction can be used for the peak torque ratio between active muscle and antagonistic muscle of individuals or people of different weights. It can reflect the balance of muscle strength and judge the stability of joints in a certain sense. In Figure 3, the PT score before and after the experiment was 15%, 26%, 22%, and 37%, respectively. Therefore, nanotitanium oxide combined with sports rehabilitation training has a great role in promoting the treatment of boxing wrist joint injury.

5.4. Sensitivity Comparison Analysis. As shown in Figure 4, the sensitivity score of nanotitanium oxide treatment group before treatment was 5.59 and after treatment was 3.22; the sensitivity score of exercise rehabilitation training treatment group before treatment was 5.61 and after treatment was 3.21; the sensitivity score of nanotitanium oxide combined with exercise rehabilitation training before treatment was 5.63 and after treatment was 2.19; the sensitivity score of control group before treatment was 4.91 and after treatment was 4.65. It can be seen that there is no significant difference between the two groups. The scores of nanotitanium oxide treatment group and exercise rehabilitation training treatment group were significantly reduced by 2.37 and 2.40, respectively, but the effect of nanotitanium oxide combined with exercise rehabilitation training treatment group was more obvious. It shows that nanotitanium oxide combined with exercise rehabilitation training has a great role in promoting the sensitivity of wrist joint injury treatment of boxers.

6. Conclusion

China's boxing is gradually developing. Compared with developed countries, there is a big gap between China and developed countries. One of the most important reasons is sports injury. Wrist injury is a very common kind in life; especially when exercising, it is easy to cause wrist injury. To improve boxing level, not only from the boxing training process, but also from the recovery of the body after training, is a very important aspect. This paper mainly studies the therapeutic effect of nanotitanium oxide combined with exercise rehabilitation training on wrist joint injury in boxing, which provides some beneficial basis for clinical treatment. By studying the therapeutic effect of nanotitanium oxide combined with sports rehabilitation training on Boxers' wrist joint injury, it is found that nanotitanium oxide combined with sports rehabilitation training can reduce the pain of boxers' wrist joint injury; after the treatment of wrist joint injury of boxers by nanotitanium oxide combined with exercise rehabilitation training, the pain score decreased and daily work decreased. The Pt/BW score before and after the experiment was 15% and 26% and 22% and 37%, respectively. The relative muscle strength reflecting muscle contraction can be used for the peak torque ratio between active muscle and antagonistic muscle of individuals with different weights. It can reflect the balance of muscle strength in a certain sense and judge the stability of wrist joint after nanotitanium oxide combined with exercise rehabilitation training.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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