Features of the use of rehabilitation and recovery measures in the training process of qualified gymnasts

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Abstract

Objective of the study was to evaluate the effect and effectiveness of the use of the non-steroidal anti-inflammatory drug Amelotex, the chondroprotector Chondrogard, the synovial fluid replacement drug Rusvisk in the complex rehabilitation treatment of qualified gymnasts with post-traumatic prearthrosis of the knee joints.

Methods and structure of the study. The scientific experiment involved eight qualified gymnasts who underwent a course of complex rehabilitation treatment from 2018 to 2020, including physiotherapy, exercise therapy, and massage. As part of this study, they were prescribed to take the non-steroidal anti-inflammatory drug Amelotex, the chondroprotector Chondrogard, and the hyaluronic acid preparation Rusvisk.

Results and conclusions. As the study showed, the use of Amelotex, Chondrogard and Rusvisk in complex therapy contributes to the regression of pain in athletes, improves the static-dynamic function of the joints, increases sports activity and improves the quality of life.

Keywords: *hyaluronic acid preparations, prearthrosis, sports injury, synovial joints, NSAIDs, Rusvisk, Amelotex, Chondrogard, gymnastics.*

Introduction. According to some scientific publications, the level of injuries in Russia is quite high. It is about 12% per year of the total population of our country [3]. The risk group includes most athletes, especially in contact sports.

Artistic gymnastics is not a contact sport, however, the complexity of the performed motor actions, extreme loads affecting gymnasts put this sport in the category of the most traumatic [8, 9].

Traumatic injuries of the knee joints and their consequences are an urgent problem for athletes and specialists. They have a negative impact on the training process as a whole, reduce exercise tolerance and the quality of life of athletes, and lead to a reduction in the period of a sports career [1, 4]. Trauma of the knee joint, as one of the most common, is one of the causes of the development of post-traumatic prearthrosis. In the etiology of this disease in gymnasts, high dynamic loads on the joints of the lower extremities and repeated microtraumatization of the knee joints play an important role [5, 10].

Medical support for athletes should be multicomponent and include both non-drug and medication. The selective non-steroidal anti-inflammatory drug Amelotex, the chondroprotector Chondrogard and the hyaluronic acid preparation Rusvisk were used as medications. These are effective drugs in the line of medical treatment of arthrosis, which are recommended for the treatment of knee, hip and other synovial joints of traumatic or degenerative-dystrophic origin.

Numerous clinical studies have confirmed the symptom-modifying property and structural-modifying effect of chondroprotectors [8, 11]. A positive result is more pronounced when used in the early stages

of the development of degenerative-dystrophic processes in the joint.

The advantage of Amelotex, Chondrogard and Rusvisk is that they are not included in the list of prohibited drugs (WADA) and their treatment is possible without prejudice to the training and competitive process.

Objective of the study was to evaluate the effect and effectiveness of the use of the non-steroidal anti-inflammatory drug Amelotex, the chondroprotector Chondrogard, the synovial fluid replacement drug Rusvisk in the complex rehabilitation treatment of qualified gymnasts with post-traumatic prearthrosis of the knee joints.

Methods and structure of the study. A comprehensive examination of athletes included: clinical examination, radiography of the knee joints in two standard projections, MRI of the knee joints, visual analog scale VAS, filling out the KOOS (Knee injury and osteoarthritis outcome score) questionnaire.

Athletes underwent a course of complex rehabilitation and rehabilitation treatment from 2018 to 2020, including physiotherapy, exercise therapy, and massage. Additionally, it was prescribed: Amelotex 1 tablet (dosage 15 mg) once a day for up to 7 days in the presence of pain 4 points on the VAS scale. In addition, athletes applied Amelotex gel topically twice a day for one to two weeks. If the pain syndrome did not exceed 3 points according to VAS, then local forms of NSAIDs were used without their systemic use. Chondrogard was administered intramuscularly at 100 mg every other day, starting from the fourth injection, with good tolerance, at 200 mg intramuscularly every other day. The course consisted of 25-35 injections according to the instructions, at least once every six months. The course of treatment with Rusvisk is three to five injections, with a week interval between each.

To study the subjective assessment of the functional state of damaged knee joints, we used the KOOS (Knee injury and osteoarthritis outcome score) scale for assessing the outcomes of injuries and diseases of the knee joint, developed by E. Roos (Department of Ortopedics, Lund University Hospital, Sweden) [7]. The scale consists of five subsections: "Pain", "Symptoms", "Difficulty in performing daily household activities", "Sports, leisure activities", "Quality of life". In accordance with the numerical value from 0 to 4, the number of points received was calculated. Then, using formulas, the indicators were normalized, taking into account the maximum values for each subscale separately, and the final index was calculated as a whole. Evaluation of the indicator: the best situation (no sign) value → (strive) to 100, the worst (maximum severity of the sign) - value → to 0.

Eight qualified gymnasts participated in the study. For an objective assessment of the level of pain in athletes, we used the VAS visual analog scale. During the whole period of the study, athletes filled out the COOS and VAS questionnaire four times: the first survey - before the start of the course of treatment, the second survey - one month after the start of complex treatment, the third - at the end of the course of rehabilitation measures, the fourth - three months after the completion of the course of rehabilitation measures . The training regimen was adjusted based on the subjective assessment of the athletes.

In our study, we used the classification of G.P. Kotelnikov, in which prearthrosis or zero stage of arthrosis (when there are no radiographic signs) is separately identified, this is necessary for the prevention of the disease and the appointment of adequate treatment at each stage of the disease [2]. As objective research methods, the patient underwent radiography of the knee joints in two standard projections and magnetic resonance imaging before the start of treatment and one year after the start of treatment.

Results of the study and their discussion. A survey of eight qualified gymnasts with a history of knee joint injuries of varying severity showed that there are symptoms of post-traumatic prearthrosis. In the study, we revealed a decrease in the functional mobility of the joints. According to the results of self-assessment of gymnasts using the KOOS questionnaire: in athletes with post-traumatic prearthrosis of the knee joints, the values of functional assessment both in general for the final index and for individual subscales were significantly lower.

Subjective assessment of pain intensity, using VAS, before treatment averaged 3 points, with an increase at the peak of training up to 4 points. Thus, the symptoms of post-traumatic prearthrosis identified by us and its impact on the functional state of athletes showed the need for early implementation of a complex of therapeutic and rehabilitation measures. One month after the start of treatment, the pain intensity decreased to 2 points, and after the completion of the course of treatment, the pain syndrome completely regressed. Three months after the completion of the course of treatment, the pain syndrome in the area of the joints also did not bother and was estimated at 0 points according to the VAS.

After the course of complex rehabilitation treatment, there was a regression of pain syndrome and other symptoms of prearthrosis (crunching in the knee joints during movement, clicks, limitation of mobility), as well as an increase in sports activity and quality of life. The results of x-ray studies showed that no signs of osteoarthritis were detected. The above activities contributed to the recovery of the gymnasts, which allowed them to continue the training process and participate in competitions at various levels in full.

Conclusions. The use of Amelotex, Chondrogard and Rusvisk in the complex therapy contributes to the regression of pain in athletes, improvement of the static-dynamic function of the joints, increase in sports activity and improvement of the quality of life, which is confirmed by significant differences in the indicators of the subscales "Pain", "Symptoms", "Sports activity" and " Quality of life", VAS indicators.

Based on the data obtained during the study, we believe that the complex rehabilitation treatment of an athlete with post-traumatic prearthrosis using Amelotex, Chondrogard and Rusvisk is an effective conservative method. Its use does not limit the ability of an athlete to train and participate in competitions, which is an important factor in his professional sports activities.

Therapy with Amelotex, Chondrogard and Rusvisk in the complex treatment of post-traumatic prearthrosis significantly reduces the risk of developing post-traumatic osteoarthritis, which allows athletes to continue their careers.

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