

Restoring Players' Performance at the End of Their Rehabilitation

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Article Information

Received: February 05, 2022

Accepted: March 06, 2023

Published: April 07, 2023

Keywords: *athletes' recovery, stages of physical rehabilitation, knee joint, trauma, anterior cruciate ligament (ACL), speed and strength qualities, physical loads, motor tests.*

ABSTRACT

The paper outlines the methodological peculiarities of training and rehabilitation exercises in injured football players after arthroscopic intervention on the knee joint.

Introduction. The final stage of rehabilitation of injured athletes has its own characteristics due to the following circumstances (Valeev N.M. 2009)

1. Achieved in the previous stages of rehabilitation the results of morphofunctional recovery of injured link of musculoskeletal system of football players on the average up to 85-90% of the initial level gives the athlete confidence and hope for a quick conclusion of the whole rehabilitation process and his return to the team.
2. As a result of such a psychological attitude an athlete may strive to force his training, using physical loads, still exceeding the capacities of his organism during this period, which is fraught with repeated injuries, and as a result it may delay rather than accelerate the time of return to full-fledged training.

This stage, unlike the previous ones, is characterized by a different construction of training sessions, increasing both the volume and intensity of the work performed, which puts higher demands on the energy supplying systems of the organism, and the level of their functional abilities is often still insufficient. Therefore, there is an increasing role of warming up, which should raise the level of vegetative functions of the organism.

1. Perhaps most importantly, in a number of cases, an athlete at this final stage, suddenly realises that he is floating, that is, supervision and control of his activities suddenly disappear, because medics and teachers have ceased to engage him, the team, in which he returns, no one competent to train him, because the coach is fully busy preparing for matches of healthy athletes, and the proper knowledge he has, even when there is time, also does not exist.

Perhaps some of the groundwork done at this stage will help the injured athlete and those who

look after him/her to determine the direction to go in order to achieve the intended goal of getting back into the sport.

Objectives of the final phase.

The objectives of this phase are as follows:

- Restoration of combined physical qualities - for football players these are speed and power qualities and speed endurance;
- Restoration of motor abilities and skills inherent in sports specialization, in this case - football;
- Further restoration of general endurance and game endurance on its basis;
- Inclusion of injured athletes in the training process.

We further developed a scheme of training sessions in terms of timing and direction of physical activity (Table 1).

Training scheme: timing and focus of physical activities

Focus of training sessions	Total daysней	Number of training	Number of training sessions тренировочных занятий
Restoration of physical qualities	20	17	32
Development of mobility in affected joints	8	7	12
Restoration and development of movement coordination	10	8	10
Restoration of motor skills	18	16	28

Soft tissue mobilisation should be carried out prior to the session. First of all, we paid attention to complete restoration of mobility in the knee joint, in particular, we were engaged in restoration of passive flexibility in flexion of the knee joint, it is necessary because this quality is shown when performing such a technique as a tackle in the "undercarriage". Deficient passive flexion at the beginning of training carries the risk of serious damage to the core. In order to achieve passive flexion you must perform static and dynamic stretching of the quadriceps and squatting in a mixed wall position with a gradual increase in amplitude (up to full range). This result is usually achieved not earlier than 4-5 months after surgery. Various types of lunges and stances were also used. Deputyches were performed in different planes then switched to rubber cushioning. Exercises aimed at developing strength of muscles, which surround the joint, also played an important role.

Power exercises are performed with gradual increase of amplitude (up to full) and magnitude of the load (up to 8-10 PM). Priority is given to training maximum "hamstring" strength. During this period of time there is a rapid increase in thigh muscle mass. Therefore, especially for football and basketball players plyometric training, which restores the speed and strength and teaches players techniques of landing, as well as fast running, is necessary.

The most effective is an alternate use of exercises for strength and flexibility (strength + flexibility + strength + ...) this allows a change in the mobility of the working links of the OA, to accelerate the recovery process between approaches, and avoid tightening of individual movements in the restored links of the athlete's OA.

Great attention is paid to strengthening and development of weak muscle groups. For this

purpose, in the warm-up the athletes perform lateral walking with straight legs and a rubber band on the hips for 3 to 7 minutes. One foot jumps forward and to the side by 15 cm - with good cushioning at the start and landing - performed until fatigue.

Recovery and development of speed skills

A significant place in the sportsperson's activity is occupied by speed-force ability and its development level [1, 4, 7].

There are a number of methodological approaches to the training of speed and strength qualities in athletes: the method of coupled effect, variation method, impact method. The leading place in sports games training should be directed to the development of "explosive power" and reactive ability of neuromuscular apparatus which is reached by means of shock exercises (Matveev L.P., 4).

The following methodological rules should be taken into account [1, 2]:

- shock training should be necessarily preceded by a good warm-up with "working through" all the working muscle groups and more thoroughly the muscles of the injured limb;
- the magnitude of shock load is determined by the weight of the load and the free fall height;
- The shock path should be as minimal as possible, but sufficient to create an impact stress on the muscle;
- The dosage of the load is individual, but should not exceed 5-8 movements in one series.

In our trainings on restoration and development of explosive force in a overcoming mode the exercise with burdening 20-30 % from the maximum was used, in the 1st period 2-3 reps in a series (2 series). In the process of power increase during the periods II and III the number of repetitions was increased up to 3-5 in a series (3 series in total). According to physiologists' recommendations, training work on the development of speed and strength qualities was planned immediately after the rest.

Besides exercises with loads other types of exercises were also widely used: starts and accelerations, jumping acceleration, running up and down the stairs. It should be noted that the real expression of speed and strength is only manifested in relation to specific motor skills (2).

Recovery and development of endurance

General endurance is needed in games to develop and maintain general fitness. Walking, running, cycling, ergometer and treadmill work were used to restore and develop it. The most important and necessary for basketball and football players is speed and jumping endurance.

For recovery and development of speed endurance we selected exercises on speed, performed repeatedly and for a longer time compared with exercises, aimed only at development of speed.

Leaping exercises from the arsenal of athletics were used for recovery and development of jumping endurance, then small weighted equipment (belts with load) was added. Finally, jumping exercises were combined with technical tricks of sports specialization: basketball: jumping catch, jump shots, rebounding the ball from the backboard; football: playing with the head in a jump (rebounding and passing the ball to a partner). There is another type of endurance in sports games: game endurance. This is an athlete's ability to play the entire game at a high tempo without losing efficiency.

Restoration of motor skills and abilities

Restoration of specific motor skills for the injured athlete in essence - technical preparedness - is a very important link in the restoration of sport performance [1, 5].

It is considered optimal to start training for the restoration of motor skills 3-4 weeks after ACL surgery, because the restoration of technique is closely connected with the level of recovery of physical qualities. Given the more rapid fading of the later acquired motor skills, it is necessary to start targeted work on their recovery as early as possible.

In this case ideomotor exercises proved to be very useful, they are followed by imitation exercises and the most successful is the repeated method of training which allows one to restore and develop motor skills and physical qualities at the same time. Special attention should be paid to coordination and agility training.

We use imitation and special preparation exercises in our lessons: juggling with a ball, first on a flat surface and then as the skill develops on the balance-platform, as well as throwing, passing, dribbling and jumping exercises.

RESEARCH RESULTS

In order to assess the recovery of the motor capabilities of the athletes under study, their special training was tested.

A. The following tests were chosen for the injured football players: 30 m running, sec. Slalom running 20 m, sec, long jump, cm, dribbling the ball at 10 m, sec. The received data testifies to successive improvement of results of performance of the tests as a whole characterizing movement qualities of football players. Comparing with some test results of healthy athletes, we can note a steady increase in indicators, so if at the beginning of the stage was -56.8% of the results of healthy football players, by the end of the stage it was - 82.4% - a visible increase in the recovery of special fitness of injured football players.

Table 3. Results of motor testing of football players at stage III (final) of rehabilitation

Motor tests	Beginning of the stage	Completion of the stage
30 m run, sec.	4,5±0,4	3,8±0,3
Slalom Run 20m, sec.	4,3±0,2	3,6±0,1
Long jump from a place, cm	248±36,2	305±48,7
Dribbling the ball at 10m, sec.	10,3±1,4	7,6±0,9

B. The following tests were chosen for the basketball players: running for 30 m, sec, vertical jump, cm and dribbling the ball for 20 m, sec.

Table 4. Results of motor testing in injured basketball players

Motor tests	Start of phase	Completion of the stage
30 m run, sec.	4,2±0,8	3,6±0,7
Vertical jump, sec.	34,8±7,5	48,2±9,4
Dribbling at 20m, cm	6,8±1,2	5,6±1,7

The table shows the same consistent increase of positive results, which, as well as with injured players, indicates an improvement in special preparation.

Conclusions: Thus, the final stage of athletes' performance rehabilitation differs significantly from the previous stages as the direction of action as well as the complex of means and methods used. The main purpose of this stage is to restore the special abilities of the injured football player and on the skillful and rational combination of training measures and methods specific to football player training with therapeutic and rehabilitation methods, which is a set of special exercises and strict compliance with the doses of the planned effects.

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