

## PHYSICAL THERAPY IN THE RECOVERY OF YOUNG FIGHTERS WITH PRIMARY SHOULDER DISLOCATION

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### Abstract

The interest and desire to practice wrestling among adolescents and young people in our republic is quite high. The large number of those who practice sports activities increases the incidence of trauma suffered in practical lessons, training and sports competitions. In a number of sports, including wrestling and martial arts, upper limb injuries range from 26 to 46%, mostly associated with shoulder injuries. Fortunately, most traumas are of medium severity and orthopedic treatment and physical therapy are often used to recover them.

**Keywords:** recovery, physical therapy, sports trauma, shoulder dislocations, fighters.

### INTRODUCTION

According to the definition approved by the Council of Europe, sports injuries are injuries suffered during physical education classes, training and sports competitions, which result in a decrease in the volume or level of sports activity that requires medical care or treatment and may have unfavorable socio-economic damage. According to various sources, sports injuries represent from 2 to 5% of the total number of the habitual street, industrial, injuries, etc. [1, 4].

Most specialists indicate a close interdependence between the number of practitioners and the type of injuries suffered, being specific to each sporting event. It is important the type of effort, the biomechanical characteristics and the specifics of the sport test regulations, the equipment and machinery used, the environmental conditions and the forms of organization, are among the many causes that vary not only the percentage of sports injuries but also their type and location. The share of disability due to sports injuries in the structure of general disability is 14% [2, 7, 15].

Some authors (Tcaci and Cerepoc) consider that all causes of trauma to athletes can be divided into two groups:

the first group - all causes that can be associated with deficiencies in the medical care of athletes (deficiencies in medical selection, early admission of athletes to training and competitions after trauma or illness, non-qualifying medical supervision, medical and pedagogical control and assessment of athletes' functional condition it is irregular or absent, etc.);

the second group - includes errors related to the lack of qualification of the coach-teacher (non-compliance with the teaching method in the organization and methodology of the training process, violation of technical-material rules for training, ignoring the use of special protective equipment and measures to prevent trauma and adverse weather factors are not taken into account during training and competitions, the use by athletes of dangerous and harsh fighting techniques against the "opponent" which are prohibited by regulation).

Research on the epidemiology of sports trauma is often difficult to compare, as the definition of sports trauma varies by study. However, most of the definition of sports trauma includes one or more of the following descriptors that characterize the consequences of a sports

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trauma: withdrawal from training and competitions, decreased level of physical activity and the need for medical care [9, 19].

In recent decades, there has been an increase in early practice and specialization in various sporting events for children and adolescents. This trend partially contributes to the increase in the incidence of musculoskeletal injuries in young athletes, previously observed in adult athletes [6, 10].

The shoulder, due to its anatomical structure, large range of motion and the fact that it is the most in demand during movement, has become one of the most traumatized joints in acrobats, canoe gymnasts and fighters. Shoulder pain is the most common complaint of athletes who practice handball - 61.8%, basketball - 48.7% and judo - 46.3% [9, 10, 13].

Research by Bogdanov and Gurevich [3] has shown that the risk of injury to adolescents is four times higher than that of senior athletes. Also, in pubertal fighters (10 - 13 years old) and in post pubertal fighters (14-15 years old), the traumas of the upper limbs are more frequently attested, mainly at the level of the scapular belt, and vary between 28.7% and 46.25% and decrease with advancing age and gaining professional experience [13, 16].

Severe trauma to the shoulder joint includes damage to the rotator cuff, fracture of the acromioclavicular joint, and dislocation of the shoulder with loss of the normal ratio between the scapula and the humerus, which often leads to shoulder instability. The mechanism of shoulder trauma differs, but most of them occur from the orthostatic position (83%), of which 28% occur during the fight to capture the opponent and the rest occur during the execution of a throw (for the performer - 25%, for the one thrown - 23%). These injuries can be direct (falling on the shoulder, blows) or indirect (falling on the hand or elbow). Symptoms of a traumatized shoulder include visible deformation of the shoulder, severe pain and edema [17].

Untreated dislocations can lead to shoulder instability and recurrent dislocations in 48% of cases. Dislocation of the shoulder represents 2.88% of the pathology of the musculoskeletal system and is more often observed in highly qualified athletes, among whom those who practice judo are in first place with (10.3%), followed by representatives of classic wrestling (7.5%). and wrestling (6.5%) [13].

The nature of sports injuries is quite heterogeneous and depends primarily on the sport practiced and secondly on a number of intrinsic and extrinsic factors. And the recovery of injuries in athletes has multiple features compared to the recovery of similar injuries in non-athletes, which require substantial adaptations of the recovery management and methodology used. Very important is the methodical sequencing of training and planning of sports activities, the gradual change of the task, an individual approach and succession in mastering the technique, etc. [4, 6].

## **METHODOLOGY**

Shoulder dislocations account for 50-60% of all dislocations and are more common in men. Pathology of the shoulder is frequently associated with injuries to the periarticular structures, especially the capsule, the articular ligaments and the rotator cuff muscles, which are manifested by local pain, decreased muscle strength and range of motion. According to the studies of Rowe [12], as well as many other researchers, on average up to 70% of those who had a primary dislocation within 2 years can expect a recurrence, and the development of chronic shoulder instability is directly dependent on age, and in people under 20, the probability of recurrence reaches 100%.

The primary goal of physical therapy is the anatomical and functional recovery of the main damaged structures in sports practice, preventing deconditioning and restoring the maximum functional capacity of the athlete in the shortest time.

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Given the above, it is relevant to develop an algorithm for a comprehensive physiotherapy program for the rehabilitation of athletes with primary dislocation of the shoulder and the prevention of these injuries in the future.

**The purpose of the paper** – Presentation of an algorithm of the physical therapy programme for recovery after primary dislocation of the shoulder in athletes who practice wrestling.

**Research results.** Presentation of the optimal rehabilitation program after a dislocated shoulder that involves the gradual restoration of mobility and functionality of the shoulder.

After a primary dislocation of the shoulder, it is to be recovered in two ways - orthopedic or surgical, depending on the severity of the case. Subsequently, a physical therapy programme for the complete rehabilitation of the lost functions of the post-traumatic shoulder is resorted to, which can last from 6 to 12 months and includes the following 5 phases according to the Ruelle and Sohler scheme [11, 12].

**Phase I** - Period of immobilization - the arm is kept immobilized in slight abduction and internal rotation with the forearm glued to the body with the help of an orthosis or an elastic bandage, including during sleep, for a period of 10-30 days. The purpose of this period is to relieve pain and combat local muscle atrophy. To reduce pain and swelling, ice packs should be applied. The bag is applied for 15-20 minutes, every three or four hours after the trauma. Light massage of the neck can have a good local relaxing and general sedative effect. In the first days after the trauma, active exercises are performed with the healthy limb. Imaginary exercises with traumatized shoulder and active exercises with fingers, fist and elbow glued to the torso.



**Complex model of exercises performed in phase II recovery (after Popov S.):**

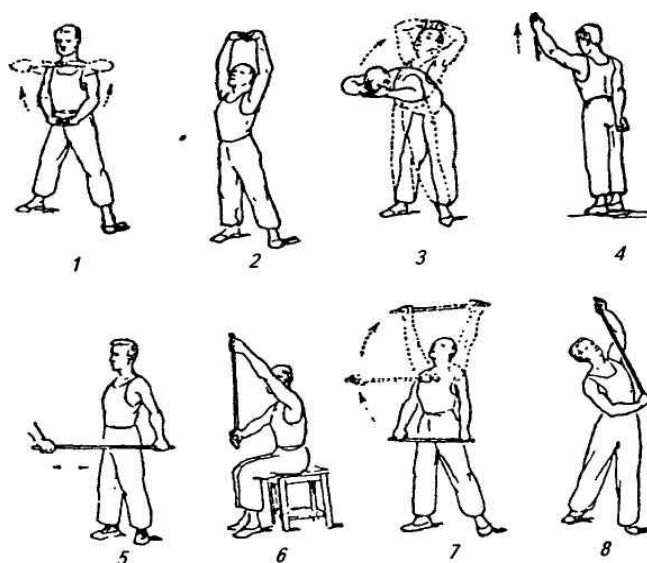
**Fig. 1 Complex model of exercises performed in phase II recovery (after Popov S.)**

**Phase II** - The immediate period of suspension of immobilization (approximately over 3 weeks), lasts up to 1.5 months after trauma. The purpose of physical-kinetic treatment is to restore the stability of the humeral head and regain joint mobility, mechanical harmonization and muscle synchronism (Fig. 1). For this, curative gymnastics, massage (manual and underwater), training of daily activities, hydrokinetotherapy are used.

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At this stage, at the same time as the general and respiratory development exercises, special exercises are performed from the "Codman" unloading position with the affected upper limb, active and passive-active mobilizations are performed (with the help of the healthy limb).

Stretching exercises are excluded during the second recovery period. The external rotation of the shoulder is performed with extreme care because this movement is stressful for the glenoid. Weak and untrained muscles are a risk factor for recurrent dislocation of the shoulder, which is why, it is very important to use exercises to increase muscle strength, which helps to stabilize the humeral head.



**Fig. 2 Complex model of exercises performed in phase III recovery (after Popov S.)**

Phase III - Late post-immobilization period that can last 2.5 - 3 months. The goal of this period is to regain normal muscle mobility and strength. Free and object active exercises are performed.

The main attention is paid to the training and fortification of the rotator cuff: supraspinatus, infraspinatus, deltoid, small round including the brachial biceps. The duration of training for each muscle is about 5 minutes - until the first signs of fatigue.

***Phase III recovery exercise complex (after Popov S.):***

Exercises 1, 2, 3 - The initial position (I. p.) Sitting with your hands in the padlock at the level of the pelvis.

Exercise 1 - bring the elbows sideways to 90° - hands in the padlock in front of the chest and return to the starting position. It is executed 6 - 12 times.

Exercise 2 - raising the arms forward - up above the head with the hands in the padlock, looking at the hands and returning to the starting position. It is executed 6 - 12 times.

Exercise 3 - to 1 - tilting the anterior torso, 2 - raising the arms forward with the hands in the padlock and positioning the hands on the head, 3 - lifting the torso with the hands in the padlock on the head and 4 - returning to the initial position. It is executed 6 - 12 times.

Exercise 4 - Initial position facing the wall, arms next to the body: 1 - raising the arm forward - up with the hand sliding on the wall and keeping the arm at the highest point and 2 - returning to the initial. It is executed 6 - 12 times.

Exercise 5 - Sitting, holding one end of a gymnastic stick in your hand, the other end being held by the physiotherapist. Carry the arm back upwards and return to the starting position. It is performed 6 to 12 times.

Exercise 6, 7, 8 - The initial position sitting and holding a gymnastic stick in front of you. Alternately raise the arm forward - up and return to the starting position. Concomitant pain in the arms in the anterior - up and return to the initial position. It is performed 6 to 12 times.

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**Phase IV** - is the period of proper functional recovery of the shoulder, the objective being to restore the range of motion, regain flexibility and muscle strength. The following exercises are performed:

- pulley self-passive - different assemblies, resistance exercises using pulleys with weights, elastic cords and dumbbells;
- Proprioceptive facilitation: Kabat contraction-relaxation method;
- coordination exercises;

**Phase V** - the last phase of the recovery program where, in addition to the exercises from phase IV, there are exercises to stimulate proprioception and coordination. It is based on exercises that mimic specific movements, thus being the period of regaining professionalism with technical elements specific to the sport practiced by the patient.

Sensorimotor control is the basis of the athlete's performance because it requires extremely good agility, coordination and balance. They are usually neglected in rehabilitation programs, mistakenly assuming that the patient is ready to return to sports if he has regained his range of motion and muscle strength. But if muscle balance, proprioception and coordination are not completely restored, the risk of recurrence increases considerably. Thus, within the recovery program, the therapeutic exercises for the development of balance, coordination and agility follow after exercises to restore joint mobility and muscle strength.

Neuromuscular facilitation exercises that use manual resistance or adjuvant equipment help to regain strength and proprioception including using your own body resistance (e.g., push-ups) or medicine balls and fitball.

**Phase V recovery exercise complex:**

- I. P. (initial position) - in a prone position with the pelvis on the chair and support on the ground in the hands, the patient moves the torso leaning on the hands forward / backward/sideways (fig. 3)

- I. P. lying on his stomach with his lower limbs resting on a table and his hands resting on a fitball. The ball is pushed forward holding this position for 30 sec. and return to starting position (fig. 4)

- lying on his stomach with the legs raised from the floor. The patient begins the exercise with both arms on the floor, then raises the unaffected limb trying to maintain balance for 30 sec. (fig. 5)

- I. P. supine position, the fitball being maintained between the lower limbs in triple flexion and the hands. The patient pushes the ball simultaneously with both hands, then alternately with one right hand and then left for 30 sec (Fig. 6).

- I. P. lying on the fitball with support on the knees and the healthy limb, with the hand of the affected limb moves by circular movements (after and against the hands of the clock) a small ball (fig. 7).

- I. P. standing on a flat balancing platform with a semi-cylindrical base or rocking balloon with the arms sideways bent at the elbow joint. The physiotherapist throws a small ball at the patient and the patient must catch it with one hand. The exercise is performed for 2 minutes (fig. 8).

**Complex of exercises for stabilizing the shoulder joint [22]**

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**Fig. 3**



**Fig. 4**



**Fig. 5**



**Fig. 6**



**Fig. 7**



**Fig. 8**

### ***Criteria for the admission of an athlete at the stage of initiating training:***

- Lack of clinical symptoms at rest and during the execution of special exercises;
- Restoring the entire range of shoulder movements in all plans;
- Absence of shoulder belt muscle atrophy;
- A period of at least 5-6 months after trauma for athletes under the age of 25 who practice sports with stressful tasks for the scapular belt (martial arts, tennis, volleyball, handball, badminton, etc.).

## **CONCLUSIONS**

1. Each sport achieves unique kinesiological and biomechanical stresses on the kinetic chain involved in performing specific movements, so there are multiple cases when injuries in certain sports may recur and negative evolutionary potential limits the athlete's chance for performance.
2. Trauma for high-performance athletes is a much more serious fact than for other individuals, because their body is the "tool" for practicing the activity, and any injury, no matter how minor, can influence the result of the sports.
3. Rehabilitation after a primary dislocation of the shoulder requires adequate attention to each of its stages, and a well-structured physiotherapy program allows the early recovery of the athlete and the prevention of future recurrences.

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