

INTEGRATED APPROACH TO TREATMENT OF MUSCULOSKELETAL DISORDERS IN ATHLETES

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Key words: sports injury, complex treatment, adaptation, parasynovitis, injury prevention.

Introduction. Physical load provokes significant morphofunctional changes in the respiratory, cardiovascular and nervous and musculoskeletal systems. Athlete's health status and fitness are determined by the speed of adaptation and its duration. On the one hand, the body adapts to retain vital constants of internal environment, and on the other - since often shifts in homeostasis cannot be prevented, the body adapts to perform specialized activities or to the influencing factors in the changed homeostasis conditions by involving the functional reserves of adaptation [1]. However, athletes' adaptabilities are limited, they cannot always and fully adapt to specific physical loads, environmental conditions, etc., which can be a reason of diseases. The stage of body deadaptation develops due to strenuous training loads and the lack of proper rest between them [8]. The ability to identify the deadaptation stage will help to eliminate prenosological states in athletes.

The pathological phenomena, provoked by overload of tissues of the musculoskeletal system, can be seen in hypoxia and hypoxemia, muscle hypersthenia, microcirculatory disorders and other abnormalities [2].

Patients, seeking medical advice, tend to present problems in some specific area only (shoulder joint, lumbar, cervical or thoracic spine, knee or ankle joint, etc.). However, as seen from the monitoring, hidden disorders can be detected in other units of the integral musculoskeletal system, which needs to be considered during treatment.

The purpose of the work was to develop and justify the comprehensive approach to treatment and prevention of exacerbations of musculoskeletal disorders in athletes.

Materials and methods. 48 patients (29 women, 19 men) aged 15-45 years under out-patient treatment in the "Advanced Health Technologies" clinic in 2011-2013 were involved in our studies. Comprehensive assessment of the state of MSS of the athletes receiving medical treatment in clinic included neurological examination with evaluation of the pain syndrome intensity on the 10-point

visual analogue scale (VAS), assessment of the muscle tonus; assessment of the spinal contours and determination of zones of risk (flattening of physiologic bowings, fallen arches).

Results and discussion. Pathological input of an injured spinal motion segment and secondly involved muscle fascia formations causes a dystrophin production process, which is called myofascial trigger points and which, due to muscle tension, myoedema and swelling of the fascia-fibrous structures, can compress nerve stems or blood vessels within intermuscular and musculoskeletal-fibrous areas [3].

In our work we made a point of the significance of using manual therapy methods when working with the whole spine, emphasizing the integrity of the whole musculoskeletal system. Etiopathogenetic orientation of the conducted therapy is due to the neuroprotective agents (Cortexin), metabolic agents (Actovegin), cartilage protectors (Alflutop, Theraflex, Piascledine 300), adaptogen with a pronounced immunostimulatory effect (Trekrezan).

To evaluate the conducted therapy and objectivate the obtained data we developed the rating scale for the state of MSS with the use of the criteria of the Khabirov questionnaire aimed at the determination of the index of the muscular tonic syndrome [4]:

1) injured joint movement - **JM** (1 point - movement is full, 2 - movement is moderately constrained, 3 - movement is limited);

2) muscle hypotrophy - **MH** (1 point - no hypotrophy of the paraarticular muscles, 2 - moderate hypertrophy of the paraarticular muscles, 3 - high-grade hypertrophy of the paraarticular muscles);

3) acoustical phenomena during the joint movement (crepitus) - **ACJ** (1 point - no acoustical phenomena, 2 - moderate, 3 - pronounced);

4) movement at the injured region of the spine - **SM** (1 point - full movement, 2 - movement is moderately constrained, 3 - movement is significantly limited);

5) muscle tonus - **T** (1 point - a finger sinks into the muscle easily, 2 - sinking requires some effort, 3 - the muscle is of stone-like density);

6) acoustical phenomena when applying the traction methods towards the injured region of the spine - **APIRS** (1 point - absent, 2 - surface (occasional), 3 - deep (multiple));

7) acoustical phenomena applying the traction methods towards the uninjured regions of the spine - **APURS** (1 point - absent, 2 - surface (occasional), 3 - deep (multiple));

8) intensity of the idiopathic pain - **IIP** (1 point - no pain at rest, only in motion, 2 - slight pain at rest, intensifying in motion, 3 - pain at rest, sleep disorder, constrained posture).

Index of MSS state = LM+MH+ACJ+SM+T+ APIRS+ APURS+IIP

The index of MSS state of the patients, when visiting a doctor, was as follows: 15 points – 11 (23%), 16 – 10 (21%), 17 – 8(17%), 18 – 6(13%), 19 – 3(6%), 20 – 3(6%), 21 – 1(2%), 22 – 5(12%), 17.5 ± 0.33 on the average.

The index of MSS state in the control group one year after the beginning of the research equaled 14 ± 0.31 points. Comparison of the control and study groups revealed the statistically significant differences of MSS state ($p < 0.05$), $t=12.7$, which proves the necessity of the dynamic control of MSS state of individuals involved in sport.

On the 10-point visual analogue scale, the intensity of the pain syndrome in all the individuals from the given group, who were seeking medical advice, did not differ significantly before the therapy, the mean values were equal to: 7.7 ± 0.3 and 7.9 ± 0.4 accordingly ($p > 0,05$). However, the therapy lasted 6.5 day on the average (4 patients who were under the dynamic observation), 8.5 days - those who sought for medical advice for the first time.

Conclusion. The integrated approach to treatment of musculoskeletal disorders in athletes contributes to the most effective delivery of knowledgeable medical care. This is due to the complex of symptomatic and etiopathogenetic therapy affecting the musculoskeletal system. Regular control over the state of the spine, reversal of the functional blocking in all its regions, periodic course of administration of cartilage protectors against the background of training loads, enable a higher level of functioning of the musculoskeletal system, which is proved by the index of MSS state obtained in the control and experimental groups. It is worth mentioning that the athletes, who were under the dynamic observation (periodic manual therapy sessions (once in 2-3 months), courses of administration of trekrezan and cartilage protectors), had pain syndrome only during gross unapproved motor activity, however, it was reserved much faster. Compulsory use of orthopedic products not only allowed an athlete to start appropriate training earlier, but also to avoid psychological traumas resulting from the restrict activity. Dynamic control over the state of the musculoskeletal system of athletes is nothing but the secondary injury prevention. It is prevention that is cheaper than treatment in the medical, social and economic context.

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