

ALGORITHM OF PHYSICAL REHABILITATION OF ATHLETES IN POLYCLINIC STAGE OF TREATMENT OF OSTEOCHONDROSIS

Makarova E. V., Vasylieva I. V.
Lviv State University of Physical Culture
Ukrainian Medical Center of Sport Medicine

Annotation. *Purpose:* develop an algorithm which improves the physical rehabilitation of athletes with osteochondrosis on polyclinic stage of treatment. *Material:* processed of scientific literature and Internet. *Results:* this research analyzes traditional recovery of athletes with spinal osteochondrosis on polyclinic stage of treatment. The practical and clinical study showed that etiopathogenesis injuries and diseases of the musculoskeletal system of athletes of different specialties have similar evidences. Therefore, a recovery of sports working capacity during medical rehabilitation treatment does not differ from ordinary patients. We propose an algorithm of physical rehabilitation, aimed for the fast recovery of health of athletes and return them to the athletic training, and conducting therapeutic exercises with specific objects such as balancing disk and preventive "Osan". *Conclusions:* established that the physical rehabilitation of athletes at polyclinic stage of treatment similar to the rehabilitation of patients non-athletes, and improved algorithm for the physical rehabilitation of athletes with osteochondrosis in the polyclinic stage of treatment.

Keywords: osteochondrosis, spine, physical, rehabilitation, athlete.

Introduction

Sportsmen also face the problem of backbone osteochondrosis and connected with it difficulties in improvement of sportsmanship in certain kind of sports. Intensive loads result in micro traumas and traumas of sportsmen's backbone tissues, which, further, create preconditions for backbone osteochondrosis. As on the present time there has appeared a question of quicker rehabilitation of sport workability of sportsmen of different qualification. That is why development of physical rehabilitation programs for sportsmen, who have pain in back, has become urgent. It is necessary for sportsmen's quicker coming back to sports after traumas or backbone diseases [2, 5, 10, 12, 13, 15, 16].

At modern stage of osteochondrosis and its complication's treatment, doctors take measures with the help of conservative methods, oriented on elimination of pain syndrome, disorders of sphenomegaly spines and on prevention from progressing of dystrophy in backbone structures [1, 6, 7, 8, 9, 10, 13, 16].

The task of sportsmen's rehabilitation is recreation of their psycho-somatic health, general and special workability after diseases and traumas. Having many common features with rehabilitation of patients-non sportsmen and disabled people, sportsmen's rehabilitation, at the same time, is rather specific, first of all by its aims: recreation of specific motion skills that require other forms of organization, means and methods of rehabilitation [2, 3, 8, 13]. Different authors characterize measure, applied in treatment of patients with osteochondrosis, rather in general form; besides, there are no publications with description of details of physical rehabilitation means for definite kinds of sports.

Purpose, tasks of the work, material and methods

The purpose: development of algorithm, which would improve process of physical rehabilitation of sportsmen, having backbone osteochondrosis at polyclinic stage of treatment.

The tasks: analysis of modern status of physical rehabilitation, oriented on recreation of workability of sportsmen with degenerative- dystrophic changes of backbone in polyclinic conditions with methods of medical rehabilitation.

The methods of the research: analysis of scientific-methodic literature and Internet data.

Results of the research

Our purpose was working out of physical rehabilitation program for sportsmen with backbone osteochondrosis, which would include therapeutic physical culture with application of non-traditional equipment, such as balance disk and prophylactor "Osan".

In special scientific-methodic literature many authors underline that exactly complex therapy and correctly selected physical rehabilitation means and methods condition the best and the steadiest therapeutic effect [1, 3, 4, 8].

For effective usage of rehabilitation methods it is necessary to know mechanism of their influence on functional systems and organism's tissues; concerning sportsmen – on functional state, kind of sports, age, sex, - but it is the most actual at the stage of sport rehabilitation. Practical and clinic researches showed that etiopathogenesis of traumas and diseases of supporting motor system of different specialties sportsmen is realized in similar way. That is why recreation of sport workability in period of medical rehabilitation does not differ from treatment of ordinary patients [13].

Researches also showed that earlier application of physical therapy, ointments, different massages, therapeutic physical culture in complex system of rehabilitation facilitate quicker re-generation of traumatized tissues, weakening or elimination of pain, sores, acceleration of tissues' metabolism, recreation of sportsmen's workability [1, 3, 8, 10].

But there is difference between rehabilitation of sportsmen and treatment of ordinary people. It implies that rehabilitation is divided in three stages: stages of medical and sport rehabilitation and stage of sport training. Every of these stages have appropriate clinic characteristics, specific means and methods of recreational treatment. Correlation of

means of medical, sport rehabilitation and sport training in process of sportsmen's complex rehabilitation was worked out by M.I. Gershuberg..

Medical rehabilitation starts from determination of exact diagnose. The task of diagnostic in case of traumas (injures) of supporting motor system of sportsmen has its peculiarities: diagnose shall rest not only on clinic-anatomical data, but also on analysis of bio-mechanical, physiological, bio-chemical disorders; it is necessary to have clear knowledge of phase of traumatic process, which is determined by clinic of reactive changes (traumatic swelling, expressed pain, destructive inflammation symptoms against the background of reflection and trophic changes and so on).

Most authors distinguish acute, sub-acute and chronic phases of primary trauma and the phase of aggravation of chronic traumatic process (when sportsman consult with traumas specialist and neurologist after repeated traumas or with failures of achieved compensation); as well as stages of compensation, sub-compensation and de-compensation with transition to steady structural changes of de-generative character, when, sometimes, full recreation of sportsman's supporting motor system's function is complicated. Dozed physical exercises are necessary in acute or sub-acute period of disease. Physical exercises influence on elasticity of vertebral disks and all cartilage, which depends on organism's general tonus and, that is why, to some extent, can be improved with training in the form of therapeutic gymnastics.

At polyclinic stage of treatment of patients with osteochondrosis in acute and sub-acute periods commonly accepted schema of physical rehabilitation has such measures as medical therapy, reflex therapy, physical therapy, massage, in-bed motion regime (3-5 days on flat board in optimal unloading position) as well as application of immobilizing braces for several days [2, 8]. Such schema of rehabilitation can prolong the time of sportsman's coming back to sports; that is why working out of new approaches, considering physiological process during disease, is necessary for specification of applied means of rehabilitation process.

It is known that therapeutic physical culture is one of the most important and effective methods, which take special place in treatment and prophylaxis of backbone osteochondrosis. It is connected not only with ability to strengthen muscles and improve blood and lymph circulation but also with production of compensatory-adaptive mechanisms, oriented on recreation of physical balance in backbone. This effect of therapeutic physical culture permits to refer it to main methods of treatment of clinic symptoms of backbone osteochondrosis.

Table 1

List of procedures by motion regimes of sportsmen with osteochondrosis in period of medical rehabilitation

No/No	Description of procedure		Gentle regime	Gentle-training regime
1.	Physical therapy	Dia-dynamic therapy	1-5	5-10
		Darsonvalization	1-5	5-10
		Laser therapy	1-5	5-10
2.	Massage	Therapeutic massage	1-5	5-10
3.	Therapeutic physical culture	TG with CorDisk	1-5	5-10
		Prophylactor "Osan"	1-3	3-10

We have worked out the following schema of physical rehabilitation at polyclinic stage of treatment of sportsmen with backbone osteochondrosis in period of medical rehabilitation, which included the following procedures: physical therapy, therapeutic physical culture in the form of therapeutic gymnastic (TG) with application of balance disk and prophylactor "Osan" (see table 1).

Every procedure is rendered in sequence, which is presented in table 1. Exactly such sequence of procedure renders the best therapeutic effect on sportsman's organism. It is explained by the following:

1. Physical therapeutic procedures are oriented, mainly, on removal of pain and improvement of local micro-circulation of blood that removes swelling in motion segment of backbone, where inflammation and pain take place.
2. Therapeutic massage improves blood and lymph circulation, relax contracted muscles and removes pain.
3. Therapeutic gymnastic shall be trained only by previously prepared with earlier procedures organism; the main of these procedures were reduction of pain, improvement of blood circulation, elimination of swelling. Main task of TG is fixing of correct position of backbone, improvement of blood circulation, training of new motion stereotype and improvement of sportsman's general condition. Besides, practicing of TG with special equipment, such as balance disk, prophylactor "Osan" that facilitate unload backbone, renew backbone mobility and relax contracted muscles.

In polyclinic conditions of treatment it is rational to use gentle and gentle-training motion regimes for dozing of loads in TG. Therapeutic gymnastic, in first two motion regimes, ensures stretching and mobilization of backbone, as well as relaxation of contracted muscles. With selection of physical exercises we considered that they would facilitate not only improvement of blood and lymph circulation in backbone-motion segment but also reduce psycho-emotional tension of sick sportsmen.

Methodic peculiarities and recommendations for therapeutic physical culture's practicing in case of backbone osteochondrosis were the following. Gentle regime is prescribed in period of aggravation of disease. Its main specificity is combining of full rest and relaxation of muscles in zone of affected backbone segment with moderate tension of muscles and gentle movements of separate, often proximal segments of limbs and some torso muscles, which do not result in unpleasant sensations. In first three days main therapeutic factor is therapeutic gymnastic and orthopedic requirements, oriented on unloading of backbone. They are used as a mean, which weaken pain and negative vegetative vessels' symptoms. TG complex is recommended to be started from initial position "lying on back", then, on abdomen, then, gradually, come in kneel position "hands on floor" and "elbows on floor" and, finally, from standing initial position. Orthopedic procedures implied initial position "lying on back" with prophylactor "Osan" under back.

In gentle-training regime we prescribed exercises, oriented on relaxation of back muscles' contraction; besides, patients fulfill exercises for stretching and relaxation of backbone. Gradually, therapeutic gymnastic is completed with exercises for strengthening of back and abdomen muscles. Complex of therapeutic gymnastic was fulfilled on balance disk. Orthopedic position on prophylactor "Osan" shall be continued, but patients start to fulfill active movements of backbone in this position.

Conclusions:

1. It was determined that at polyclinic stage of treatment physical rehabilitation of sportsmen has similar features with rehabilitation of ordinary people. But the purpose of sportsmen's physical rehabilitation is the quickest possible return to sport trainings, improvement of physical skills, which are specific for different kinds of sports.
2. We have determined and improved algorithm of physical rehabilitation for sportsmen with backbone osteochondrosis at polyclinic stage of treatment with application of auxiliary equipment – balance disk and prophylactor "Osan".

The prospects of further researches in this direction imply testing of effectiveness of offered in this article algorithm of physical rehabilitation for sportsmen with backbone osteochondrosis in polyclinic conditions.

References

1. Belaia N. A. *Lechebnaia fizkul'tura i massazh* [Physical therapy and massage], Moscow, Soviet sport, 2001, 272 p.
2. Bonchuk I. I. *Sportivnyj travmatizm oporno-dvigatel'nogo apparata* [Sports injuries of the musculoskeletal system], Vinnitsa, Nova Book, 2012, 200 p.
3. Dubrovskij V. I. *Reabilitaciia v sporte* [Rehabilitation in sports], Moscow, Physical Culture and Sport, 1991, 206 p.
4. Epifanov V. A., Epifanov. A. V. *Reabilitaciia v travmatologii* [Rehabilitation in traumatology], Moscow, GEOTAR Media, 2010, 336 p.
5. Makarova G. A. *Sportivnaia medicina* [Sports medicine], Moscow, Soviet sport, 2003, 480 p.
6. Margazin V. A. *Rukovodstvo po sportivnoj medicine* [Guide to sports medicine], Moscow, SpetsLit, 2012, 487 p.
7. Poliakova O. N. *Teoriia i praktika fizicheskoi kul'tury* [Theory and practice of physical culture], 2012, vol.3, pp. 43-47.
8. Pshetakovskij I.L., Vladimirov A.A. *Osteokhondrozy pozvonochnika* [Spinal osteochondrosis], Kiev, 2008, 223 p.
9. Razumov A. N., El'chinov N. V., Bobrovnickij I. P. *Voprosy kurortologii, fizioterapii i lechebnoj fizkul'tury* [Questions balneology, physiotherapy and physical therapy], 2008, vol.3, pp. 3-5.
10. Khodarev S. V., Molchanovskij V. V., Iermakova L. V. *Voprosy kurortologii, fizioterapii i lechebnoj fizkul'tury* [Questions balneology, physiotherapy and physical therapy], 2010, vol.5, pp. 10-13.

11. Brummitt J. The Role of Massage in Sports Performance and Rehabilitation. *Sports Physical Therapy*. 2008, vol.3, pp. 7–21. PMID: PMC2953308
12. Keller A., Hayden J., Bombardier C., Tulder van M. Effect sizes of non-surgical treatments of non-specific low-back pain. *European Spine Journal*. 2007, vol.16 (11), pp. 1776–1788. doi: 10.1007/s00586-007-0379-x.
13. Steiger F., Wirth B., Mannion A. F. Is a positive clinical outcome after exercise therapy for chronic non-specific low back pain contingent upon a corresponding improvement in the targeted aspect(s) of performance? *European Spine Journal*. 2012, vol.21(4), pp. 575 – 598. doi: 10.1007/s00586-011-2045-6.
14. Laura Purcell, Lyle Micheli. Low Back Pain in Young Athletes. *Sports Health*. 2009, vol.1 (3), pp. 212–222. doi: 10.1177/1941738109334212.
15. T. Shah, D. Cloke, S. Rushton etc. Lower back symptoms in adolescent soccer players: predictors of functional recovery. *Orthopaedic Journal of Sports Medicine*. 2014, vol.2, pp. 1–9. doi: 10.1177/2325967114529703.
16. Ryan C. Petering, Charles Webb. Treatment Options for Low Back Pain in Athletes. *Sports Health*. 2011, vol.3 (6), pp. 550–555. doi: 10.1177/1941738111416446.

Information about the authors:

Makarova E. V.: ORCID: 0000-0003-3133-7581; elina.makarova.2014@mail.ru ; Lviv State University of Physical Culture; Kostyushko Str. 11, Lviv, 79000, Ukraine.

Vasylieva I. V.: ORCID: 0000-0002-0588-9828; v.ira@meta.ua; Ukrainian Medical Center of Sport Medicine; Tarasivska Str. 6, Kyiv, 01033, Ukraine.

Cite this article as: Makarova E. V., Vasylieva I. V. Algorithm of physical rehabilitation of athletes in polyclinic stage of treatment of osteochondrosis. *Pedagogics, psychology, medical-biological problems of physical training and sports*, 2014, vol.12, pp. 49-53. doi:10.15561/18189172.2014.1209

The electronic version of this article is the complete one and can be found online at: <http://www.sportpedagogy.org.ua/html/arhive-e.html>

This is an Open Access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited (<http://creativecommons.org/licenses/by/3.0/deed.en>).

Received: 30.05.2014
Published: 15.06.2014