

Dynamics of indicators of empirical research and biogeometric profile in wrestlers – veterans of sports with osteochondrosis of the lumbosacral spine

Oleksii Honcharov

Kharkiv State Academy of Physical Culture, Kharkiv, Ukraine

Purpose: to evaluate the effectiveness of the program of physical rehabilitation on the basis of studying the dynamics of indicators of empirical research, vertebro-neurological symptoms and biogeometric profile in wrestlers – veterans of sports with osteochondrosis of the lumbosacral spine.

Material & Methods: theoretical analysis and generalization of literature data; use of diagnostic scales (visual analogue pain scale (VAS), scale of five-point evaluation of vertebro-neurological symptoms), determination of mobility of the lumbosacral spine, Schober's test, Tommyer test – fingers-floor test; methods of mathematical statistics.

Results: based on the results of the study, a statistically significant dynamics of the parameters of the empirical study, the parameters of the biogeometric profile in the wrestlers – the veterans of the main group sport, was found in the course of physical rehabilitation according to the developed program with the application of therapeutic gymnastics, exercises in post-isometric relaxation.

Conclusion: the results of the study confirmed the effectiveness of the comprehensive physical rehabilitation program developed by us, showed that a positive effect on the index of pain, vertebro-neurological symptoms, an increase in the amplitude of the spinal motion in both the sagittal and frontal planes.

Keywords: veterans of sports, physical rehabilitation, VAS scale, biogeometric profile.

Introduction

Among all diseases of the spine, the most frequent (60–90%) is pain in the lumbar spine. Numerous statistics indicate a high incidence of spinal diseases, the absence of a tendency to decrease it, a variety of clinical forms of the disease, a variety of methods of recovery, as well as methods of treatment and prevention. Hitting people mainly of working age, spinal pathology leads to significant labor costs (F. Sh. Favvaz, 2012, O. B. Lazareva, 2012, Sohob Bahjat, 2014) [1; 2; 3].

According to statistics, among the diseases in athletes, osteochondrosis of the spine is one of the leading places. So, according to V. F. Bashkirov (1987), about one tenth of the entire pathology of the musculoskeletal system accounts for osteochondrosis of the thoracic and lumbar spine [4]. After the cessation of active sports, there is a progress of degenerative-dystrophic processes of the spine and joints, due to the motor stereotype, which acquired changes, a sharp decrease in physical activity, adverse social factors after the athletes left the sport. In sports, an improper exercise regime during training can lead to spastic states in the spinal muscular system, causing both a decrease in athlete mobility and additional energy loss, and a number of neurological syndromes in the future. In this regard, the problem of timely and effective rehabilitation treatment of veteran athletes with the aim of preserving their work and social activity, improving health, improving their quality of life is of particular relevance [5–7].

Many scientific data indicate the presence of various functional disorders of the musculoskeletal system in representatives of various sports. As a rule, these disorders occur due to excessively traumatic effects on a part of the body, which is subjected to the greatest load in a particular sport. When leav-

ing the sport, athletes have impaired adaptation processes, maladaptation syndrome develops, and as a result, the development of pathology and exacerbation of the disease [8].

Over the course of 20 years, various methods of physical rehabilitation have been developed and tested for osteochondrosis of the spine, but all of them are aimed either at restoring the functions of only a certain part of the spine, or for use during an exacerbation, or for patients of a limited age category. Analysis of the patent search showed that the majority of the proposed methods belong to medicine, and a variety of different means and methods of physical rehabilitation are presented for persons with osteochondrosis of the spine. Many authors (A. M. Aksyonova, 2009; S. Byuon, H. Son, 2012; O. B. Lazareva, 2012, I. V. Vasilyeva, 2013, V. V. Kormiltsev, 2014) support the view of the positive effect physical exercises, massage, post-isometric relaxation in the treatment of patients with this pathology [10–14].

The use of physical rehabilitation is an integral part of the recovery of athletes who have stopped active sports training, and its further application in practice will help reduce pain and alleviate the symptoms of this disease, improve the quality of life of wrestlers – veterans of sports [7].

Relationship of research with scientific programs, plans, themes. The work was carried out in accordance with the priority thematic direction No. 76.35 "Medical and biological substantiation of carrying out of restoration measures and appointment of means of physical rehabilitation for persons of a young age of different degrees of training". State registration number – 0116U004081.

Purpose of the study: to evaluate the effectiveness of the

program of physical rehabilitation on the basis of studying the dynamics of indicators of empirical research, vertebro-neurological symptoms and biogeometric profile in wrestlers – veterans of sports with osteochondrosis of the lumbosacral spine.

Material and Methods of the research

The selection and examination of the subjects was carried out in the conditions of the problem laboratory of the Kharkov State Academy of Physical Culture and Physical Rehabilitation in the sports complex KSAPC and the CSCYSSOR water sports pool of Yana Klochkova. We observed 34 veteran wrestlers aged 36–45 years, the type of wrestling – judo and sambo. Sports qualification of athletes: MS – 10 people, CMS – 24 people. After the primary examination, they were divided into two groups – the main group (MG) was 19 people, in the control group (CG) was assigned 15 people. Both groups were homogeneous in terms of sex, age, and clinical manifestations of the disease. The formation of the groups was carried out by careful examination and examination of patients, the study of their clinical and anamnestic data, the general condition of the patient's tissues, the biomechanical profile of the lumbar spine, with their inclusion criteria and design. All participants in the study received complete information on the plan for physical examination and physical rehabilitation, and agreed to participate in the study.

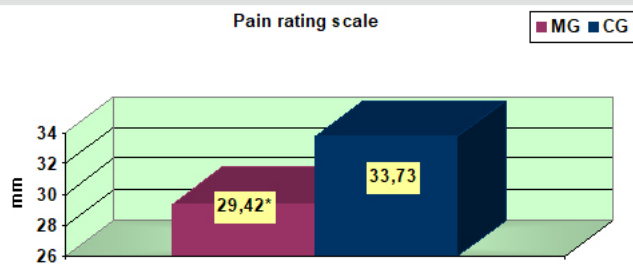
Observation of this cohort of patients was carried out for 1 month. In the morning, patients of the MG and CG performed a set of therapeutic exercises (15–20 minutes), which ended with exercises in post-isometric relaxation (10 minutes). The first week of classes were held by a rehabilitation therapist in the hall, then independently at home. In the second half of the day, every other day, with the MG wrestlers, classes were held in the pool (15–20 minutes), then the contingent of subjects independently conducted traction effects in the water (10–15 minutes) or performed a massage according to the method of P. B. Efimenko (20–30 minutes). Hydrokinase therapy was carried out in the pool of the CSCYSSOR water sports pool of Yana Klochkova at the KSAPC sports base. Athletes-veterans of the CG in the second half of the day went through a course of treatment in a polyclinic at the place of residence, which included classes in therapeutic gymnastics according to the classical scheme, therapeutic massage, ultraphonophoresis with hydrocortisone.

Research methods: theoretical analysis and synthesis of literature data; use of diagnostic scales; visual analogue pain scale; VAS; five-point scale for assessing vertebro-neurological symptoms; determination of the mobility of the lumbosacral spine, Schober's sample, Tomayer's test – fingers-to-floor test; methods of mathematical statistics.

Results of the research

When comparing the dynamics of the magnitude of pain on a visual analogue scale of VAS, the wrestling veterans of the MG observed a statistically significant decrease in complaints compared to the subjects of the CG ($t=-3,26$; $p<0,05$) (Figure 1).

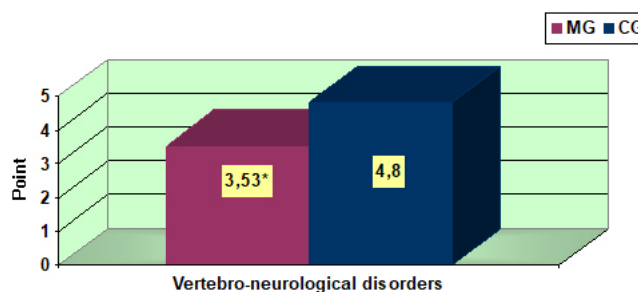
The comparative dynamics of the test results on the scale of the five-point evaluation of vertebro-neurological symptoms



Remark: * statistical significant difference between MG and CG.

Figure 1. Comparative dynamics of the results of the determination of pain on a visual analogue scale VAS in wrestling veterans of the MG and CG

in the wrestlers veterans of sports MG revealed statistically significant differences. In wrestlers veterans of sports of MG 1,36 times statistically significant below there were violations of vertebro-neurological symptoms, than in fighters of CG ($t=-3,33$; $p<0,05$) (Figure 2).

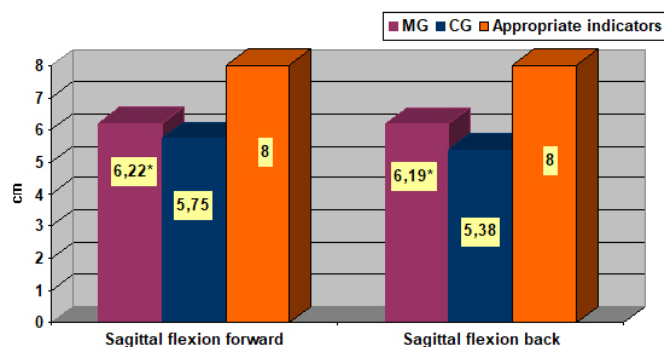


Remark: * statistical significant difference between MG and CG.

Figure 2. Comparative dynamics of the results of the evaluation of vertebro-neurological symptoms on a five-point scale for wrestling veterans of the MG and CG

Comparison of dynamics of biogeometric profile showed that the parameters of the amplitude of motion of the spine forward ($t=2,07$, $p<0,05$) and back ($t=4,91$, $p<0,05$) in the sagittal plane in the test subjects were statistically significant in compared with the same parameters of veterans wrestlers of CG (Figure 3).

The comparative dynamics of the parameters of the amplitude of the spinal motion to the right ($t=4,70$, $p<0,05$) and left

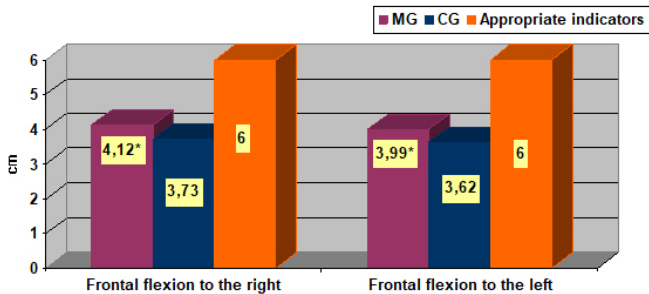


Remark: * statistical significant difference between MG and CG.

Figure 3. Comparative dynamics of the amplitude of the movement of the spine forward and back in the sagittal plane in wrestling veterans of the MG and CG

($t=2,74$, $p<0,05$) in the front plane showed similar changes, that is, statistically significant improvements in the test subjects were observed results than the veterans wrestlers CG.

Figure 4 shows the comparative dynamics of the amplitude of the spine movement forward and backward in the front plane of the veterans of the main and control groups.

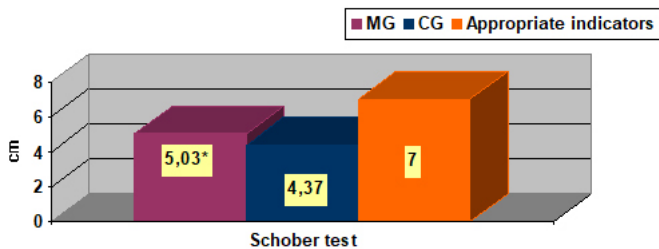


Remark: * statistical significant difference between MG and CG.

Figure 4. Comparative dynamics of the amplitude of the movement of the spine back and forth in the frontal plane in wrestling veterans of the MG and CG

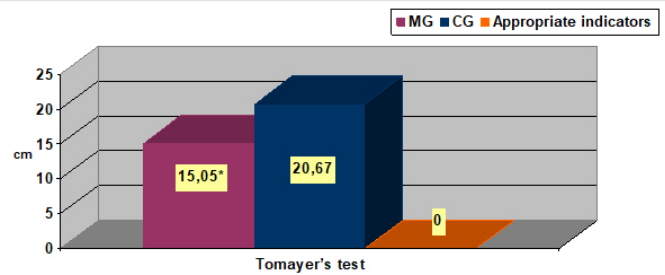
Comparison of the indicator of the Schober test showed a statistically significant change in the studied MG ($t=2,96$, $p<0,05$) compared with that of CG veterans (Figure 5).

More pronounced changes were noticed in the analysis of



Remark: * statistical significant difference between MG and CG.

Figure 5. Comparative dynamics of the sample of Schober in wrestling veterans of the MG and CG



Remark: * statistical significant difference between MG and CG.

Figure 6. Comparative dynamics of Tomayer test at wrestling veterans of MG and CG

the parameters of the Tomier's sample. In the veterans wrestlers of the MG, the parameter of the Tomayer test ($t=-7,65$, $p<0,05$) was statistically significant in comparison with the test subjects CG ($p<0,05$) (Figure 6).

Conclusions / Discussion

The positive effect of the developed program of physical rehabilitation using therapeutic gymnastics, post-isometric relaxation exercises, Traction influence in water has been proved by statistically significant positive dynamics of an empirical study on the VAS scale, by the degree of infestation of vertebro-neurological disorders, by diagnostic indicators of the biogeometric profile in the main group of subjects compared to with changes in the veterans wrestlers of CG.

The results of the study confirmed the effectiveness of the comprehensive physical rehabilitation program developed by us, and showed that a positive effect on the pain indicator, vertebro-neurological symptoms, and an increase in the amplitude of spinal movement both in the sagittal and in the frontal plane.

Prospects for further research are related to the assessment of the dynamics of physical performance in wrestlers – sports veterans with osteochondrosis of the lumbosacral spine after the application of a comprehensive physical rehabilitation program on the training motor mode.

Conflict of interests. The author declares that no conflict of interest.

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Information about the Authors

Oleksii Honcharov: *Kharkiv State Academy of Physical Culture: Klochkivska Street 99, Kharkov, 61058, Ukraine.*

ORCID.ORG/0000-0002-2012-6298

E-mail: aionaskr89@gmail.com