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

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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, Tommeyer 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. Favaz, 2012, O. B. Lazareva, 2012, Sohib 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. Bashikirov (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 leaving 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. Kormil'tsev, 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.

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logical symptoms and biogeometric profile in wrestlers –
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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 CSYSSOR water 
sports pool of Yana Klochkova. We observed 34 veteran wres-
tlers 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 
to 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 manifesta-
tions of the disease. The formation of the groups was car-
ried 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 
individually 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 CSYSSOR 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 lit-
erature data; use of diagnostic scales; visual analogue pain 
scale; VAS; five-point scale for assessing vertebro-neuro-
logical symptoms; determination of the mobility of the lum-
bosacral 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) (Fig-
ure 1).

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

Comparison of dynamics of biogeometric profile showed that 
the parameters of the amplitude of motion of the spine for-
tward (t=2,07, p<0,05) and back (t=4,91, p<0,05) in the sag-
ital 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 amplitu-
de of the spinal motion to the right (t=4,70, p<0,05) and left
(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.

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.

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.

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