

## PHYSICAL REHABILITATION IN OSTEOCHONDROSIS OF THE LUMBAR SPINE, COMPLICATED UNSTABLE SEGMENTS AND INTERVERTEBRAL DISC PROTRUSIONS

Sohib Bahjat Al Mahmoud Mavazhdeh

National University of Physical Education and Sport of Ukraine

**Annotation.** Shows the effect of physical rehabilitation to restore patients with lumbar osteochondrosis with instability segments and intervertebral disc protrusions. In eksperimente participated in 60 patients aged 24-70 years, divided into main and control groups of 30 people each. The survey was conducted on patients' clinical stage of rehabilitation in acute, sub-acute and remission for 20 days at admission (before treatment, on the 10th and 20th day of treatment). It is proved that the developed program of physical rehabilitation is effective recovery of patients is higher than the program of hospital where they were treated. It is noted that the rehabilitation program helps to reduce pain, restore mobility of the lumbar spine, improving the sustainability of elderly patients, reducing travel time distance 50m, raising confident sion in walking distance to the passage of an increase in the pain.

**Keywords:** rehabilitation, spine, low back pain, instability, protrusion, exercise.

### Introduction<sup>1</sup>

In modern human life different diseases and damages of backbone (BB) are progressing and take 1<sup>st</sup> place by its prevalence among population. Specific weight of clinical symptoms, connected with backbone pathologies, is 67-95% of all diseases of peripheral nervous system [1-3,5,11]. Affecting, mainly workable people, backbone pathology results in significant labor losses; in Ukraine 14.4-21.8% of population suffer from osteochondrosis (OC), while prevalence of pains in back reaches value up to 40-80 cases in USA and countries of Western Europe [3,5]. From all cases of backbone pathologies the most spread (60-90%) is pain in lumbar spine, from this value, 5% of people suffer from this disease every year; in USA this indicator is 2.3% of all population of the country [3]. By the age of 50 years old more than 80% of men and 60% of women suffer form backbone diseases. Damages of backbone, especially lumbar spine (LS) happen at work, in domestic conditions, during trainings of power and jump kinds of sports (power lifting, acrobatics, long jumps) and so on [2,5,6-9].

Analysis of literature and other information sources proved that in scientific researches, devoted to rehabilitation of patients with complex pathology – OC LS BB complicated by instability of backbone motion segments (BMS) and protrusion of inter-vertebral disks (IVD) special attention is paid to determination of morpho-functional disorders of supporting motor system (SMS) and muscular-ligament system, nervous and blood circulation systems [1-3,5,12-15]. Degree of these disorders' heaviness varies in wide range: weakness and asymmetric muscular tonus, contractions, posture abnormalities, deformations of limbs and etc.

With vertebrogenic diseases, owing to pathological processes in affected BMS there appear changes in bio-mechanically significant for formation of postural imbalance muscles. Owing to this fact there appear pathological deformations of BB (lumbar hyper curve, reflexive scoliosis, lumbar kyphosis and other). Considering the marked out, when composing programs, rehabilitation treatment, it is necessary to coup with pain syndrome and strengthen muscular corset, to correct BB reflexive deformation, especially incase of its complex disease. The problem of physical rehabilitation (PP) of patients, suffering from osteochondrosis of LS, complicated by BMS instability and IVD protrusion has not elucidated yet in scientific-methodic literature. Rehabilitation process is based on recommendations I respect to application of different means and methods of decreasing of clinical symptoms, without consideration of their interconnection; however these means and methods are often contradict each other [1-3].

In spite of application of different rehabilitation programs in medical practice, they do not sufficiently use up-to-date achievements of rehabilitation technologies, complex mutually-supplementing methods and technical means in rehabilitation of patients with such syndromes. Considering the above said it is necessary to further study and develop of new PP programs for patients with such complex diseases with application of mutually-supplementing traditional and up-to-date methods and technical means for correction of patho-bio-mechanical abnormalities of LS, for consolidation of motion stereotype and all these predetermined the topic of our research.

### Purpose, tasks of the work, material and methods

*The purpose of the work* is development of rehabilitation program, evaluation of peculiarities of complex, mutually-supplementing PP methods and means in conservative treatment of patients with LS osteochondrosis, complicated by BMS instability and IVD protrusions, and their prospects.

*The tasks of the work:*

1. Systemizing of up-to-date scientific-methodic knowledge and results of practical experience of specialists in PP of patients with lumbar OC, complicated by BMS instability and IVD protrusions.
2. Study specificities of SMS functional state of patients of this category.
3. Development of PP program for patients of this category on the base of traditional and up-to-date methods', technical means' with instable platform application.
4. Evaluate effectiveness of rehabilitation program for patients of this category.

For realization of the mentioned tasks the following methods were used: analysis and studying of recent scientific-methodic literature and other information sources; clinical methods of research (content-analysis of patients' records, medical examinations); pedagogic methods (questioning, testing); methods of LS functions' examination (rotations, forward-backward bents up to appearance of pain or discomfort, anthropometry); instrumentation methods (goniometry, stabilometry); methods of mathematical statistics.

### Results of the researches

When analyzing patients' records (n=60) we used the data of patients, who, in 2011-2013, were on conservative treatment at rehabilitation department of Institute of traumatology and orthopedic problems (ITO) of NAS of Ukraine and who suffered from complex disease: osteochondrosis of LS, BMS instability, IVD protrusions. From all group of patients of workable age 37% were men and 63% - women. Greater part of group (50%) consisted of patients of 2<sup>nd</sup> maturity, 38% - aged people and 12% - patients of 1<sup>st</sup> maturity. Average age of patients (n=60) was 52.9±1.52 years old. All patients were divided into 2 groups: main group (MG) and control one (CG), 30 persons in each group (19 women and 11 men). Average age of MG and CG patients was 52.5±2.17 and 53.4±2.13 years old accordingly. Mean age of MG women was 53.1±2.59 years old, and men - 51.5±2.59 years old. Mean age of CG women was 53.2 ± 2.79 years old, and men - 53.7±3.26 years old. In every group we marked out a subgroup of aged patients (MG and CG) 6 persons in each subgroup (3 men and 3 women) Mean age of aged patients (n=12) was 68.0±0.51 years old. Mean age of MG patients was 67.8±0.75 years old and CG - 68.2±0.75 years old. Mean age of MG women was 69.3±0.66 years old and men - 66.3±0.33 years old. Mean age of CG women was 68.0±1.15 years old and men - 68.3±1.20 years old. As on day of examination the patients, as a rule, had been ill for 2-12 years. 5% of patients had duration of disease not more than 2 years, 35% - were ill for 3-5 years, 48% had duration of disease 6-9 years and 12% - 10-12 years.

The character of pains' increasing in LS of patients: initial position - upright, forward bent, physical loads (MG-12, CG-9); long forward bent, physical loads (MG-9, CG - 13); physical loads (MG-8, CG-8); physical loads, forward bent (MG-1, CG-0). Type of body constitution of patients: asthenic (MG-6, CG-4); normosthenic (MG-24, CG-24); hypersthenic (MG-0, CG-2).

The following was diagnosed: lumbar OC, instability 1 BMS, 1 IVD protrusion - 20 patients (MG-9, CG-11) - 32%; lumbar OC, instability of 1 BMS, 2 IVD protrusions - 18 patients (MG-10, CG-8) - 32%; lumbar OC, instability of 1 BMS, 3 IVD protrusions - 4 patients (MG-2, CG-2) - 6%; lumbar OC, instability of 2 BMS, 1 IVD protrusions - 3 patients (MG-1, CG-2) - 5%; lumbar OC, instability of 2 BMS, protrusions of 2 IVD - 15 patients (MG-8, CG-7) - 24%.

Lumbar OC, complicated by BMS instability and IVD protrusions, is characterized by complex of clinical symptoms, felt as pains of different intensity and localization (change of habitual posture, reduction of motion function - decreasing of movements' amplitude, indicators of functional state of torso muscles, worsening of independent movement and other disorders of life activity). The obtained by us data permitted to register and evaluate initial state of patients of this category, to objectify dynamics in the process of treatment and test effectiveness of realized PP, comparing results of traditional program's application and improved rehabilitation program, developed by us.

When creating PP program we considered the following criteria: degree of expressiveness of nervous-muscular and SMS systems' disorders, of functional disorders in LS; kind of deviation from static stereotype; process of every stage of conservative treatment; social activity, general state of organism, age, sex and patient's tolerance to different physical loads.

The developed by us PP program is based on the following principles:

1. Rational combination of methods and means, considering specificities of the course of complex disease on all stages of medical measures with rational motion regime and orthozining.
2. Complex application of methods and means, including technical ones, considering mechanisms of their influence and patho-genetic orientation, which actively supports sano-genetic responses.
3. Differentiated application of rehabilitation means, considering each peculiarities of period of conservative treatment and character of static-dynamic disorders.
4. Successive correction of functional disorders with rehabilitation methods and means according to tasks of every treatment period.
5. Continuous restoration considering: location of affection and mechanisms of pathological state's progressing, resulting in vertebra- neurological syndromes, functional state of all organism and its different systems, selection of procedures and manipulations, influencing on different mechanisms of BB pathology's progressing and vertebra-neurological syndromes' appearance, individual selection of procedures as per indications and counter-indications, which can change in the process of PP, depending on its effectiveness and on adapting responses of organism, continuity of treatment not only in period of exacerbation, but during preventing measures in the remission period.

Rehabilitation program included the following measures:

1. Physical exercises for trophic's restoration, as well as restoration of sensitivity, motion functions and separate LS muscles, depending on affected BMS and protrusion of IVD.
2. Restoration and consolidation of correct posture's habit, strengthening of muscular corset, development of muscular-joint sense, correction of LS deformations at therapeutic gymnastics (TG) trainings.

3. Observation of orthopedic regime for elimination of asymmetric muscular drive and uneven load on LS, for ensuring of even pressure on vertebra edges. For this purpose we used regime of BB unloading: lying in bed with hard surface, without pillow, control of correct body position during all day.

4. Application of laser therapy with the help of scanner “Medic – 2K” in treatment of patients with lumbar OC for releasing pins with muscular-tonus manifestations of reflexive syndrome – lumbar-sciatica.

5. Application of TG and morning hygienic exercises (MHE) of special orientation, body and lower limbs’ massage, post-isometric relaxation (PIR) of muscles, which are in hyper tonus.

6. Application of vibration therapy with the help of vibrating platform – stimulator ViaGym, influence of which is based on horizontally moving vibration, simulating human movement in walk and stimulating all body tissues.

7. Application of special devices with unstable support – balancing disk, platform, treadmill, stimulator BOSU and fit-ball, as well as apparatus for fulfillment of traditional therapy.

8. Application of PP program, developed for independent using in domestic conditions.

Means and forms of PP were used for solution of the following tasks: maximal restoration of disordered functions of patient’s organism, strengthening LS muscles and prevention from traumas; restoration of professional skills on the base of maximal restoration of functional abilities of patient’s organism; development of compensatory (adapting to everyday life and production activity’s conditions) abilities.

Before treatment, in the process of rehabilitation measures and after them there were *determined*: LS functions (rotations to the left – to the right, forward-backward bents, bents to the left – to the right, forward bent – distance between fingers and floor); stabilography ( deviation of body mass center, functional abilities of abdomen and back muscles to develop long term effort and intensive strain by the time of keeping of body in certain position (sec.), body balance, depth of lumbar curve, pain syndrome (in points as per VAS), time of 50 meters distance walking (sec.). quantity of meters before pain appeared, self-assertion in walking (10 points) [11].

Coming from periods of complex disease’s process, specificities of treatment of such patients, we marked out the following rehabilitation periods for using in hospital conditions: acute period (1-5 days); sub-acute period (5-7 days); remission period (8-20 days); training period (1-12 months out of hospital).

After leaving hospital, patients continued rehabilitation course in domestic conditions (early training period) for up to 3 months. If required, patients consulted with doctor for diagnosis of LS state, for correcting of PP program, for knowing new movements and exercises. After such consultations, patients continued rehabilitation course by developed for them individual program in domestic conditions.

Trainings were carried out with compulsory individual registration of rehabilitation potential of every patient, as well as his physical conditions, with medical control of cardio vascular system’s (CVS) response to load (standard test of Ruffiet, ortho-static test, registration of HBF for 10 seconds and BP before training and after training at 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> minutes of recreation).

Prescription of motion regime was determined by period of complex disease’s process (OC, complicated by BMS instability and IVD protrusions) by state of CVS as per table.1.

Table 1

*Prescription of motion regime*

Period of disease			Ruffiet’s index			Regime of load
acute	sub-acute	remission	> 15	6-10	0-5	
X			X			Weak load
	X			X		Weak-training load
		X			X	Training load

For physical rehabilitation of patients with lumbar OC, complicated by BMS instability and IVD protrusions, therapeutic gymnastic (TG) is very important; it plays main role in correction of motion and neurologic abnormalities, in improvement of trophic, regeneration, general tonic influence on patient’s organism, in treatment of after-effects of long-term movements’ limitation and prevention from them. We used ideomotion and passive exercises. *Passive* exercises were fulfilled with maximal possible amplitude of movement in joint, in one direction and strictly in one plane with equal speed, 6 times a day, 30 repetitions every time. They were fulfilled under control of rehabilitation specialist, starting from big joints and gradually passing to small ones. *Ideomotion* exercises were used for restoration of defective tracts of nervous impulses’ transmitting from center to periphery; they were widely used in case of steady pain syndrome.

In case of muscular weakness we prescribed active isometric exercises, to be executed without overstrain and breathing pauses, with keeping muscular tension during 3 seconds, then – 5-8 seconds; 4-6 and 8-10 repetitions every time; these exercises stimulated blood circulation in tensed muscles, prevented from muscular hypotrophy, recreated tracts of nervous impulses’ transmitting. With increasing of muscular strength we started to use active dynamic exercises from simplified initial positions (IP), in which we tried to locate the points of fastening of antagonist muscles as close as possible, while points of fastening of trained muscle would be maximally parted.

The main in our methodic were IP: lying on abdomen, on back, on side. With reduction of pains progressing we added IP “on all fours”, as the most physiological, excluding overload of backbone and ensuring quicker consolidation of new compensatory muscular dynamic stereotype. With it we considered that “knee-hand” IP (supporting on hands) involves in work lower-thorax and upper-lumbar segments, while “knee-wrist” (supporting on arms) ensures functioning of LS segments. We executed special exercises for coordination of limbs’ movement and strengthening of pelvis. *Relaxation exercises* were used for muscles, which were in hyper tonus. First, patient was taught to relax muscles on healthy limb (side) and then he did it on weakened one; among exercises, stretching exercises, reducing muscular tonus, were used.

Important role was played by *static and dynamic breathing exercises*. Dynamic exercises were combined with arms’, shoulders’ and torso’s movements; static exercises involved movements of diaphragm and inter-costal muscle. The basis of such exercises is strengthening of exhale. In cases, if patient was inactive, we fulfilled passive breathing exercises; by vibrating movements, instructor pressed patient’s chest during exhaling and activated, by this, inhale cycle; he started from minimal force and increased it with every exhale. Significant role was played by postural exercises or *treatment by position* – special positioning of limbs in correcting position with the help of splint. Adequate physical load influences positively on backbone state and the terms of LS rehabilitation.

In spite of application of different PP technologies in traumatology practice, in cases of diseases or damages of LS application of physical rehabilitation has not been studied sufficiently yet, videlicet: specificities of application of special stimulators with unstable support (spheres, fit-balls, stimulator BOSU, balancing disk, platform and treadmill, which could supplement PP technologies for effective recreation of LS functions and vestibular apparatus, for movement coordination’s improvement and prevention from fallings down, especially of aged people. For LS strengthening (sub-acute period, period of remission) patients fulfilled exercises on fit-ball, the main of which were: hyper-extension, unbending on ball with following stretching, strengthening of LS muscles, lying on floor and then, lying on fit ball [7,8].

*Exercises on unstable surface* are more effective than power trainings, because in such exercises patient has to keep balance, involving small muscles-stabilizers. Stimulator BOSU ensures multi-functional training, preparing patient for everyday life. The trainings improve vestibular apparatus, develop strength and dexterity, flexibility and coordination, as well as posture. We used such exercises as [11]: hyper-extension, exercises for abdomen muscles, for core muscles. Basic exercises for core muscles: bridge, bar on one leg (the other moved aside); side bar with additional weight. Examples of some of these exercises with the help of fit-ball and BOSU stimulator are presented in Fig.1.



Fig. 1. Exercises on fit-ball (a) and on BOSY (b)

For training of movements’ coordination and vestibular apparatus, for prevention from fallings down (especially of aged patients) we used balancing disk, platform and treadmill (Fig. 1 a, b, c).

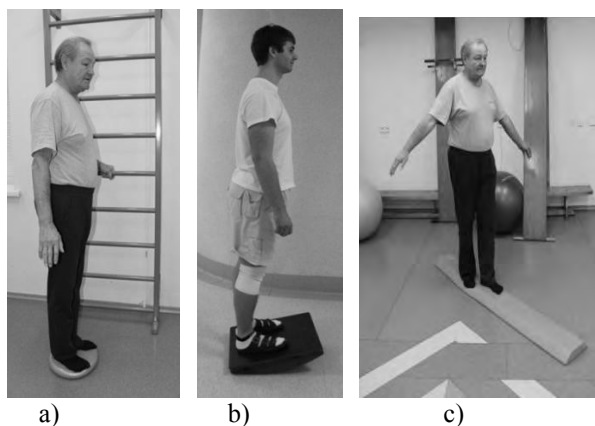


Fig.1. Exercises on balancing disk (a), platform (b), treadmill (c).

For effective recreation of walking skills we used TG exercises in parallel bars: IP – standing between bars, holding them with hands. Alternative standing on right, then on left legs. Squatting. Walking forward-backward. Waling with side forward.

In *massage* we used techniques of classic massage (in combination with pro-prio-receptive releasing) and nerve-point massage. The area of influence were limbs, chest. Nerve-point massage was used in tonic variant. We gradually increased finger-tip's pressure on elected acupuncture point with a little pause in peak of pressure, the gradual reducing of pressure force until complete stopping. With tonic variant of nerve-point massage we used deep stroking, intensive rubbing with load, kneading, alternate vibration (pushing, "drilling"). We used methodic ПИР and ППП.

Complex of PP means, against the background of general measures, which were fulfilled at rehabilitation department of ITO we carried out (together with instructors of the department) laser therapy with the help of scanner "Medic – 2K" for releasing pains in cases of muscular hyper tonus of reflexive syndrome – lumbar-sciatica. 10-15 every day procedures were prescribed for the course of treatment with irradiation of 4 fields. Total time of irradiation was 20 minutes (5 minutes for every field).

At *remission stage* we used *vibration therapy* with the help of vibration stimulator ViaGym (see fig.2). Its action is based on horizontally spread vibration, which *simulates movements while walking and stimulates* all tissues of body. This training involves most of muscular groups, which contract and relax with frequency of 15-30 Hz and muscles, not loaded in usual trainings. Vibration training increases isometric and isotonic strength of muscles, improve flexibility, mobility and coordination, balance of human body. Vibration training can be practiced by young and aged people up to 75 years old age. Apparatus is designed so that aged people can stimulate muscles simply and safely, without overstraining of joints and ligaments [9,11].

We used 3 modes (P1,P2,P3), accordingly frequencies of platform's vibrations were: 16 Hz –professional, 10 Hz – training, 6 Hz – warming up. For patients of our category we used modes P2 and P3.

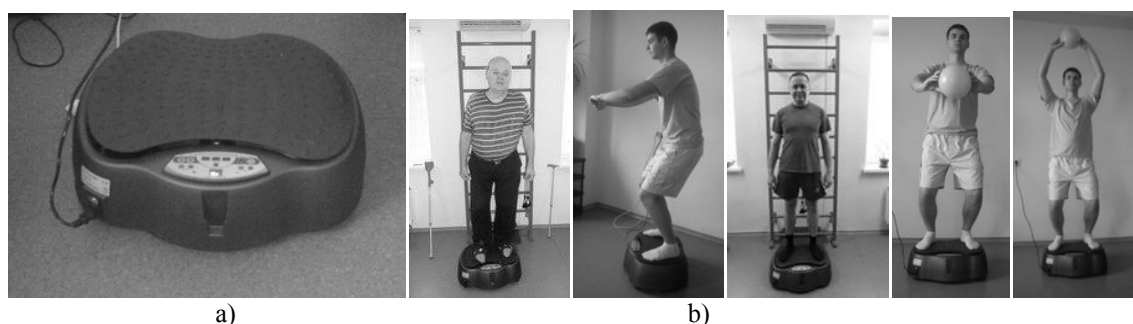


Fig.2. Vibration platform –stimulator ViaGym (a) and exercises, fulfilled on it (b)

Traction therapy is widely used in rehabilitation of patients of orthopedic and traumatologic profile for reducing of IVD protrusions in cases of disk shifting of backbone curvature. Its functions with traumas and backbone diseases are as follows: BB unloading, owing to increasing of inter vertebrae distance, decreasing of pathological strain of muscles and pressure inside IVD (protrusion decreases), increasing of vertical diameter of inter-vertebrae hole that results in decompression of nerve root, reduction of edema, elimination of sub-dislocation in inter-vertebrae joints with decompression effect.

As per methodic of ITO for patients with expressed changes of IVD, traction therapy measures were based on application of little weights (up to 15 kg). Special attention should be paid to gravitational stretching of LS on inclined surface by weight of own body. This method is simple and accessible; it does not require any additional expenditure from ITO side, where rehabilitation of MG and CG patients was carried out and where the methodology of this procedure had been developed. On remission stage for rehabilitation of patients of our category (MG and CG) we used mechanical therapy – stimulators of ITO; at training stage (out of hospital) different equipment of training and fitness centers was applied.

Effectiveness of developed by us PP program is as follows. General characteristics of MG and CG patients showed their uniformity and representativeness that permitted to objectively compare results of treatment in two studied groups and judge about effectiveness of the offered by us PP program. Initial (pre-treatment) indicators of the studied parameters had no statistically significant difference between two groups ( $p < 0.05$ ). Analysis of the obtained results, their comparing with initial data (received before conservative treatment) and evaluation fulfilled three times: before treatment; in the 10<sup>th</sup> day of treatment and in the 20<sup>th</sup> day, before patient's leaving hospital.

*Results of clinical examinations.* For evaluation of pain syndrome we used visual analogue scale (VAS) of pain, which permits to characterize the range of patient's subjective sense of pain in the process of disease. Patients, who trained by developed by us PP program felt reduction of pain syndrome in 10<sup>th</sup> day of treatment (in MG more intensively than in CG). Results of examinations, carried out in 20<sup>th</sup> day of treatment, showed positive dynamics of pain syndrome's decreasing of MG patients. We registered statistically significant ( $p < 0.01$ ) decreasing of pain level in respect to the level, registered in 10<sup>th</sup> day and before treatment. In the same way, by all four scales pain level of MG patients was statistically significantly ( $p < 0.01$ ) lower than indicators of CG patients. Dynamics of pain syndrome decreasing of both groups' patients is given in table 2 (where:  $\bar{x}$  - is mean arithmetic, S- standard deviation and m – mean error of mean arithmetic).

Table 2

*Dynamics of pain syndrome's reduction*

Groups	Statistical indicators	Dynamics of pain syndrome's reduction as per VAS, points		
		Before treatment	10 <sup>th</sup> day of treatment	20 <sup>th</sup> day of treatment
MG (n=30)	$\bar{x}$	6	2	1
	S	0.8	0.5	0.6
	m	0.1	0.1	0.1
CG (n=30)	$\bar{x}$	5	4	2
	S	0.8	0.6	0.7
	m	0.1	0.1	0.1

In treatment of patients of this category it is very important to rehabilitate functional abilities of back and abdomen muscles to manifest long-term tension, as well as mobility of LS. Dynamics of functional abilities of back and abdomen muscles to manifest long-term tension in the process of rehabilitation is presented in table 3 and 4.

Table 3

*Dynamics of back muscles functional abilities to manifest long-term tension*

Groups	Statistical indicators	Muscles of back, minutes		
		Before treatment	10 <sup>th</sup> day of treatment	20 <sup>th</sup> day of treatment
MG (n=30)	$\bar{x}$	1.1	1.7	2.4
	S	0.57	0.54	0.57
	m	0.11	0.1	0.1
CG (n=30)	$\bar{x}$	1.1	1.5	2.2
	S	0.76	0.55	0.32
	m	0.14	0.1	0.06

As it can be seen in tables 3 and 4 functional abilities of back and abdomen muscles to manifest long-term tension in the process of rehabilitation by developed by us program was higher at MG than at CG. In the same way, by the end of treatment MG patients had better results than Cg ones by the following indicators: rotation of LS to the right-to the left; bents in LS forward-backward, to the right-to the left; mobility in LS (forward bent); speed of 50 meters distance walking; walking distance up to pain in LS; self assertion in walking; stability indicators (data of stabilography). Only one indicator "depth of lumbar curvature" was higher at CG than at MG (4.1 cm to 4.0 cm). Considering limited volume of article tables of these data and diagrams of results are not presented.

Table 4

*Dynamics of abdomen muscles functional abilities to manifest long-term tension*

Groups	Statistical indicators	Muscles of back, minutes		
		Before treatment	10 <sup>th</sup> day of treatment	20 <sup>th</sup> day of treatment
MG (n=30)	$\bar{x}$	0.8	1.3	2.2
	S	0.5	0.41	0.71
	m	0.12	0.08	0.13
CG (n=30)	$\bar{x}$	0.8	1.2	1.7
	S	0.46	0.49	0.49
	m	0.09	0.09	0.09

**Conclusions:**

We have attempted to systemize up-to-date scientific-methodic knowledge and results of practical experience of specialists in PP of patients with OC, complicated by BMS instability and IVD protrusions. We have studied specificities of SMS functional state of patients of this category.

In the present work there has been offered rehabilitation program for patients of this category on the base of application of traditional and up-to-date methods, technical means with unstable support. Experimental researches were carried out on the base of rehabilitation department of ITO, in which 60 patients with complex diagnosis “lumbar OC, instability of BMS, protrusions of IVD” took part.

All patients were divided into two groups: MG and CG, 30 persons in each group (19 women and 11 men). From total quantity 37% of patients were men and 63% - women. All patients were of workable age. Majority of group (50%) was presented by people of 2<sup>nd</sup> maturity, 38% - aged patients and 12% - people of 1<sup>st</sup> maturity. Mean age of patients (n=60) was 52.9±1.52 years old. Mean age of MG and CG patients was, accordingly, 52.5±2.17 and 53.4±2.13 years old. Mean age of MG women was 53.1±2.59 years old and men – 51.5±2.59 years old. Mean age of CG women - 53.2±2.79 years old and men - 53.7±3.26 years old. In every group we marked out sub-group of aged patients (MG and CG), 6 persons in each group (3 men and 3 women). Mean age of aged patients (n=12) was 68.0±0.51 years old. Mean age of MG patients was 67.8±0.75 years old and CG – 68.2±0.75 years old. Mean age of aged MG women – 69.3±0.66 years old and men - 66.3±0.33 years old. Mean age of CG women – 68.0±1.15 years old and men - 68.3±1.20 years. As on the date of examination patients had different periods of disease’s progressing (from 2 to 12 years). 5% of patients were ill for 2 years, 35% - 3-5 years, 48% of patients had been ill for 6-9 years and 12% - for 10-12 years.

We evaluated effectiveness of the developed PP program for the patients of the mentioned category. Main group trained in accordance with the developed program and control one – by the program of hospital. By the most of controlled indicators: LS rotation to the right-to the left; bents in LS forward-backward, to the right – to the left; LS mobility (forward bent). Speed of 50meters distance walking; walking until pain appears in LS; self-assertion in walking; stability indicators (data of stabilography) the developed by us and offered program is more effective than standard program of hospital.

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**Information about the author:**

**Sohib Bahjat Al Mahmoud Mavazhdeh:** Sohib\_bagt@yahoo.com; National University of Physical Education and Sport of Ukraine; Fizkultury str. 1, Kiev, 03680, Ukraine.

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