

KINETOTHERAPY AND MASSAGE IN LUMBAR DISCOPATHY

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Abstract

The importance of the topic approached: by definition, lumbosacralgia is a painfully localized symptom for which it is not always possible to establish a direct relationship between the importance the patient is giving to this suffering and the anatomic-pathological changes of the spine. Somatic manifestations depend on the etiopathogenicity of the disease as well as on the psychological interpretation of the nociceptive message. The participation of these psychosomatic components is not at all negligible and it explains the spectacular improvements made by means that at first sight have nothing in common with the supposed underlying etiopathogenic pain. Lumbosacral pain located or associated with a root syndrome accounts for more than 50% of the cases occurring in physical medicine services. In all countries, the same suffering represents a temporary incapacity to work and has very high social costs. Studies show that spine pain reaches about 80% of adults, but only 20% of the cases get true vertebral pathology. Its incidence increases with age, women between 40-60 years of age being more often affected than men. These patients are not only familiar with physiotherapy, but we also find them in the rheumatology, internal medicine, neurology, neurosurgery, orthopedics ward.

This dispersion between different specialist medical services can be explained to a certain extent by the diversity of the etiopathogenic factors involved in triggering the lumbosacral pain. On the other hand, there is a lack of proper health education in this area. Lumbar discopathy is characterized by back pain located in the lumbar region at some point in the patients' life. Current studies highlight the fact that vertebral discopathy occurs more and more in younger persons. Dorso-lumbar spondylosis (dorsolombarthrosis) is the localization of the degenerative process or a developmental abnormality in the dorsal and lumbar spine, both in the discosomatic and the interapophysis sector; there may be manifestations of diffuse osteophytosis at this level. It is frequently localized in the diarthrodial mobile articular joint, which presents the articular cartilage as an important element of the joint with evolution towards functional articular agenesis in the end.

Keywords: Discopathy, Spondylosis, Lumbar, Pain, Physical Therapy, Massage.

1. Introduction

Dorso-lumbar spondylosis is part of the degenerative chronic rheumatism, the patients affected by this disease will not heal, specialists just trying to stabilize their health. Dorso-lumbar inter-apophysearthrosis may have an important clinical echoe due to the proximity of important anatomical factor, nerve root, hence the frequent neuralgia caused by inter-apophysearthrosis. The presence of distressing symptoms in a patient with spondylosis can be related to another concomitant lesion or so called spinal decompensation: the failure of lumbar muscles to which greater or less level of osteoporosis can be added.

The causes of back pain are generally due to:

- incorrect postural attitudes adopted for a prolonged time
- body movements and exercises performed in an incorrect way
- excessive muscle tension resulting from physical and psychological stress
- decreased muscle tone (abdominal, lumbar and dorsal) due to a sedentary lifestyle
- increased body weight (obesity being seen today as the disease of our century, affecting an increasing number of people)

Intervertebral disc damage is called by some authors disc hernias, and by others discopathy. Broadly

speaking, the latter term, seems closer to the anatomical-clinical reality, since the disc does not suffer only through herniation, there is a whole disc disorder, different from the herniated disc, which causes lumbar spine suffering. On the other hand, the lumbar column should be regarded as a unitary one, which includes, besides the vertebro-discal segment, the adjacent soft tissues (muscles, ligaments, fascia), which can often be the place of suffering. Probably for this reason, the latest monographs talk about what the Anglo-Saxon authors call "low back pain."

This designation refers to lower back pain due to the mechanical cause, caused by the suffering of both soft lumbar tissues and vertebral structures (disc, intracanalicular ligaments, posterior vertebral joints, vertebral pedicles) affected by a degenerative process. Clinically, we include: isolated lumbosacral pain, lumbosacral pain with algae on the lower limb, and lumbosacral pain with radicular irradiated algae. In young patients, dorso-lumbar arthrosis occurs on a consecutive kyphosis of vertebral epiphyses (Scheuermann's disease), in women after menopause, it complicates kyphosis with lumbar hypertrophic syndrome (trophostatic syndrome), and in the elderly there is senile kyphosis through diffuse osteoporosis of the spine. The importance of these things is that at least once in our lifetime each of us feels a dorsal discomfort. In the adult, back pain is one of the main problems of the age, and can become a source of constant trouble for many of them.

Treatment of lumbar disc herniation should be complex but still unitary in terms of conception, despite the preference to opt for one of the means at hand, in relation to the various specialties that have begun to claim independence. Although not everyone agrees, physical-kinetic treatment is the most judicious treatment of lumbosacralgias when they are not contraindicated and are not at a stage requiring neuro-surgical treatment. In this category the following lumbosacralities occur: Vertebral discopathy, Lumboscia Syndrome, Lumbar disc herniation / Operated Lumbar disc herniation, Rheumatism Pelvispondilite. The correctness of the therapeutic conduct depends first of all on the correctness of the indication, and this will be related to the patient's age, his profession, the etiology of the disorder, the sports activities he practices, the moment of the accident, as well as the type and severity of the clinical manifestations.

Taking into account these therapeutic indications and the particularities of each case, conservative or surgical treatment can be adopted. The purpose of this treatment is to maintain the function of the trunk, the affected inferior limb and the individual's independence. Evolution and prognosis are benign; however, the symptoms require therapeutic measures that help to improve the condition of the patient and prevent his psychological depression. The progression of lumbar spondylosis is slow, degenerative lesions of the spine are accentuated with age. Prognosis is generally favorable. One of the complications of the spine-lumbar spondylosis is also the medullary compression syndrome, which translates to the lower limb by a decrease in the deep sensitivity and at the level of the upper limb through an amyotrophic or sensitive-motor picture.

Evolution is dependent on: - risk factors control, orthostatic posture control, avoiding physical strains, adverse weather conditions, diagnosis and correct treatment in acute attacks, maintenance therapy in chronic periods, secondary prophylaxis of recurrences, periodic medical supervision obeying conservative or surgical therapeutic indications.

Problems occur only in forms with a high neuromotor deficiency and temporary incapacity for increased work and vary from case to case. The approach of patients with *chronic lombalgia* is complex and can not yet be subject to a simple algorithm. A clear understanding of the spine anatomy, a pertinent presentation of anamnesis and examination, relevant laboratory studies, the discovery of the causes of dorsolumbar pain and the therapeutic approach to improve the patient's care. The recovery methods we have dealt with throughout this work are the recovery through kinesitherapy and massage, starting from the consideration that the stability of the spine is not due to the conformation of the extremities of bone joints nor to the capsulo-ligamentations, which are insufficient passive elements of support, but to the periarticular muscle groups. On the other hand, it has been found that early mobilization is superior in results to prolonged immobilization that resolves with muscle atrophy.



Figure 1. The vicious circle of lumbar pain

Lombalgie=back pain

Miscari dureroase = painful moves

Frica de miscare (kineziofobie) = fear of movement (kinesiophobia)

Inactivitate fizica = physical inactivity

Pierderea obiceiului de a se misca = losing the habit of moving

Usoara redoare = slight stiffness

Massage as a technical medium depends on the clinical condition of the patient and the existence of contraindications regarding the application of other therapeutic techniques.

This paper highlights the objectivity of the favorable evolution of patients with lumbar disc herniation through the complex recuperatory approach, and especially with the classic massage techniques and applied differentiated kinetotherapy depending on the etiopathogenic implications.

2. Purpose and objectives of the research

The paper aims to demonstrate whether the proposed operational model contributes to the improvement of the functional capacity and the quality of life in the patients with lumbar pathology, starting from the importance of social recovery and social reintegration of people with lumbar disc herniation - phases, operated or not. Kinetotherapy and massage apply the means of medical kinetology for the purpose of somato-functional, motor and psychic recovery or reeducation of secondary compensatory functions, in case of partially reversible or irreversible diseases. Clinical-functional examination must be carried out carefully and early to any patient, to capture all the existing changes. The entire medical care of this type of pathology of the locomotor apparatus has as the ultimate physical purpose physical independence in the context of observing lack of pain, stability and mobility, after the correct and complete evaluation (etiopathogenic, clinical and functional) before the therapeutic program and throughout its course.

Physical therapy has a fundamental role in achieving the objectives set in complex medical care after the complete examination of the patient, namely:

- maintaining or promoting joint mobility;
- restoring strength and muscle strength;
- restoring coordination of movements;
- promoting arterio-venolymphatic circulation;
- regaining engine control and functionality of the affected region.

3. The research objectives are:

- to determine which are the optimal exercises in the kinetic program applied according to the patient's state (evolutionary, etiopathogenic context);
- to establish the indications and contraindications of the application of the kinetic program within the complex medical care of the patient (medical, physical, kinetic);
- to determine the optimal number of recuperation program sessions;
- to determine the optimal period of application of therapy resulting in improvement of clinical symptomatology in these patients;
- to make up the kinetic program that the patient will have to follow at home under the conditions of a relatively normal life and work regime.

4. The hypotheses of the research, outlined above, are:

- the complete clinical and functional evaluation of the trunk, spine and lower limb in the context of assessing the patient's overall clinical and functional status contributes to the more efficient recovery of the patient;
- the precocity and fairness of complex medical care significantly improves the rehabilitation process;
- the choice and mode of application of kinetic methods are tailored to the individual type and severity of the disk hernia;
- the analytical and global re-education of the trunk is essential for the re-education of global functionality;
- demonstrating the efficiency of kinetic means and joint protection techniques associated with other methods of recovery in algic and functional syndrome of lumbar disc herniation. The importance of cervical and dorsomolar pain in our society is underlined by the following:
 1. the annual social cost of dorsolumbar pain (in the United States is estimated between 20 and 50 billion dollars);
 2. dorsolumbar pain is the most common cause of disability in patients under 45;
 3. in one study, 50% of working adults acknowledge that they have had a traumatic injury at the back;
 4. approximately 1% of the population is permanently incapacitated due to dorsolumbar pain.

There is enormous economic pressure to ensure effective and rational care for patients with dorsolumbar pain. As a result, Clinical Practice Guidelines (GPC) for patients with dorsolumbar pain change rapidly. GPCs are defined as evaluation or treatment algorithms based on investigation or treatment indications in a sequence of steps taken into patient's care. GPC for acute dorsolumbar pain is based on incomplete evaluation, but reflects current medical practice. Approaching patients with chronic lumbar malformation (LC) is complex and can not yet be subject to a simple algorithm.

Discopathy / lumbar spondylosis is very common and in this case, vertebral pain is the main symptom of the disease. It can be localized (lumbago) or can irradiate on the path of various interested nerve roots (lombosciatica), depending on the irradiation territory and on the affecting the osteotonic reflexes (rotulian and achilean).

Phase I is the phase of small instability with light laxity of the pulp nucleus in the fibrous ring, causing intermittent, postural, chronic lumbar pain. Most times, at the end of the effort and at rest, these pains disappear, in order to reappear under various conditions of stress of the lumbar segment.

Phase II is the lesion of the disc phase, with the break of the fibrous ring and the postero-central protrusion of the pulpos nucleus, causing an acute or overactive lumbago of discogenic type, whose clinical manifestation is as follows:

Subjective: sudden onset, unilateral or bilateral lumbosacral pain, the pain is mechanical, it does not fall on the lower limbs, or if it does, it does not pass on the knee.

Objective: Lumbar deformation with diminished physiological lordosis, often without scoliosis, painful limitation of trunk flexion (small Schöber index), bilateral positive Lassegue sign.

Phase III is also called the root phase and occurs through the posterolateral protrusion of the herniated disc, which will intercept a nervous root in its path. For this reason, the symptomatology will occur unilaterally. This phase has three stages:

Stage 1 - irritable - The herniated disc reaches the root without compressing it or leaking it in any way, only touching it. This is why at this stage the patients accuse pain along the root, but without any neurological signs.

Subjective: unilateral lumbo sacral pain, irradiation in the lower limb along a dermatoma (L5, S1, L4, L3, L2), mechanical pain, which is usually calm during resting time.

Objective: a) Static vertebral syndrome with: lumbar scoliosis, diminished lumbar lordosis, paralombar muscle contracture, b) Dynamic vertebral syndrome with: high toe-ground index, small Schöber index, positive Lassçgue sign on the affected part.

Stage 2 - Compressive

The herniated material reaches the nervous root, which it compresses. Now paresthesias are added to the symptomatology on the pain path. In the objective exam, hypoesthesia will appear on the path of the root, the diminution or disappearance of osteotonic reflexes: the rotulian reflex in the L4 root damage and the Achilles reflex in the S1 root.

Stage 3 - interruption: At this stage, along with the signs and symptoms present in stage 1 and 2, the signs resulting from the division of axons from the root or of the whole root through the conflict with the herniated disc manifest themselves. The paresis, the paralysis that is installed respectively, is attributed to the presence of the motor deficit in the neuromiotomy. We will find that the patient can not stand on his toes in the paralysis of the S1 root, or that he can not stand on the heels in the paralysis of the L5 root.

Phase IV it is the phase of degenerative changes with the occurrence of discartosis and interapophoresis arthrosis

after the age of 40. With age, the pulp nucleus dehydrates and becomes brittle. At the same time, the fibrous ring also undergoes important changes following the repeated mechanical stresses it has undergone. This phase fits the generic term of lumbar discopathy. At this stage we will be able to meet the following clinical aspects:

- without subjective complaints; 60-70% of the subjects are carriers of asymptomatic lumbar discoloration;
- Sciatica by gripping the root in the degenerative process at the level of the foramen. It is the so-called "sciatica of the old ones", with a negative Lassčgue sign;
- acute lumbago after 40 years, lumbago of musculo-ligament type, with pseudo-sciatica (diffuse pain in the lower limb, without dermatomal character). Symptomatology usually occurs suddenly after a weight-lifting exercise, accompanied by the limitation of lumbar motion, especially on lateral inclinations, which are severely painful;
- Chronic back pain, with myogelosis nodules and paralombar and parasacrate trigger points, whose activation has a definite psychoemotional and meteorotropic character;
- Vertebral canal stenosis, much less diagnosed, can have a polymorphic manifestation, from simple back pain with scialgia to horse tail syndrome.

The root on which compression is exerted can be appreciated.

The objectives of kinotherapy are different depending on the stage of suffering: acute, subacute, chronic or complete remission. In the acute stage, general relaxation and relaxation methods of the lumbar muscles are applied. In the subacute stage, the real kinotherapy program begins, the most famous one being the Williams program. In addition to the relaxation techniques, we will now apply techniques in order to help the lower trunk be more mobile. At the chronic stage we can begin to tonify the weak muscles. We continue to briefly describe the exercises that make up the Williams program, exercises that are performed in three phases, depending on the evolution of the condition.

WILLIAMS PHASE I PROGRAM

Exercise 1 - Dorsal decubitus: knees are bent and extended.

Exercise 2 - Dorsal Decubitus: draw a knee to the chest with both hands, trying to touch it with your forehead; then proceed the same with the other knee.

Exercise 3 - As with Exercise 2, but with both knees concomitantly.

Exercise 4 - Dorsal decubitus, with your hands under your head: pull a knee to your chest as much as you can, then the other one, then both.

Exercise 5 - Dorsal decubitus with raised arms up, knees bent at 90 degrees, soles on the bed: push the lumbar part to the bed, abdominals are contracted, the sacrum is gently raised on the bed; return, then repeat.

Exercise 6 - Seated on the chair, with the knees wide away: lean forward long enough to touch the ground under the chair; keep this position for 4-5 seconds, return, then repeat.

Each exercise of phase I is performed 3-5 times, repeating it 2-3 times a day.

After two weeks, these exercises are added to those in Phase II.

WILLIAMS PHASE II PROGRAM

Exercise 7 - Dorsal decubitus with knees bent, feet on the bed: both knees are bent to the right, then to the left until they reach the bed.

Exercise 8 - Dorsal decubitus: the right heel is placed on the left knee; an inner abduction of the right hip is performed, until the right knee touches the plane of the bed, then reverses.

Exercise 9 - Dorsal decubitus: alternatively, an extended inferior member rises as high as possible.

Exercise 10 - In Orthostatism: Genuflexes with hands against the back of the chair, the back is perfectly straight, the heels remaining on the ground.

Exercise 11 - The position of a "servant knight", with the body bent over the thigh which is up to 90 degrees, also leaning against the ground with the hands: the support knee is stretched, executing a balancing that must extend the psoas-iliac.

During this period, hanging exercises are also performed: with the face or back to the treadmill, raising the knees to the chest, left-right knee rotation, lower limb swinging, lumbar flexion with legs on a bar.

WILLIAMS PHASE III PROGRAM

Exercise 12 - Dorsal decubitus, knees bent at 90 degrees, soles on the bed: push the lumbar region to bed, contract the abdominals, gently lift the sacrum off the bed; the same lumbar and pelvic movements are gradually performed, but with less bent knees until they are fully stretched.

Exercise 13 - In the orthostatism position, against the wall, the heels at 25-30 cm from it: the sacrum and

lumbar region against the wall; the heels are gradually approaching the wall, keeping contact of the lumbar region with the wall.

Exercise 14 - Dorsal decubitus: ride the bicycle with the tilted basin.

Within the complete remission stage, the kinesiology program aims to prevent relapses, aiming at an awareness of the correct position of the lumbar spine and pelvis, as well as appropriation of some "caging" lumbar spine methods during exercise, especially by weight lifting.

The research we performed included a group of 16 patients diagnosed with low back pain, aged 25-60 years. The study was conducted at the Center for Physical Therapy of the FEFS Galati, during December 2016 - May 2017 and we followed for six months the effects of applied therapy. The complex evaluation occurred at the start of the rehabilitation treatment, at the end of the physical-kinetic therapy (on average about 4 weeks, 1 month) and at 6 month post-recovery period for each case. We followed the therapeutic effects generated by the massage, kinetotherapy and hydrokinetotherapy program for the 16 patients.

5. Case selection

Patients diagnosed with clinical and imaging lumbar discopathy, were included in the study; patients for whom and from whom we were able to obtain complete clinical and functional data according to the study objectives at the time of the study; patients who underwent the complex evaluation and recovery program over a 6-month period;

The distribution by gender, age and background of the patients under study is shown in the following tables.

Table1. Distribution of cases by gender.

Gender	No. of cases
Male	7
Female	9
Total	16

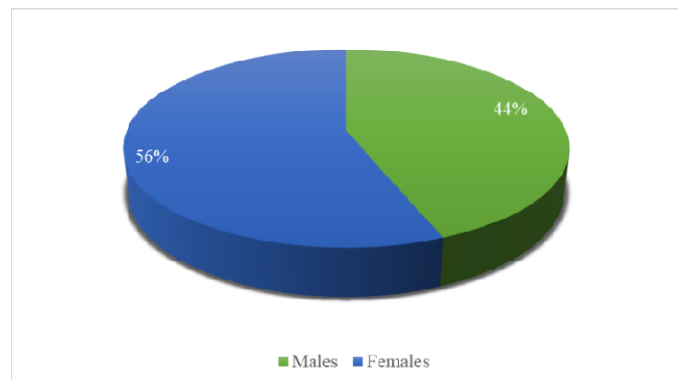


Figure 2. The gender component of the studied lot

Table2. Patients home environment

	Urban	Rural
Male	5	2
Female	7	2
Total	12	4

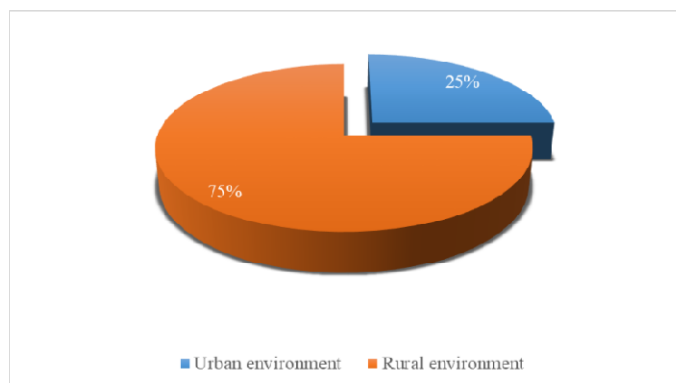


Fig. 3- The component on the origin of the studied lot

The distribution of patients according to the home environment denotes, in our case, a higher incidence of lumbar discopathy in urban areas and among women.

Table 3. Age groups

	No of cases	25-30	31-40	41-50	51-60
Male	7	0	3	2	2
Female	9	2	4	2	1
Total	16	2	7	4	3

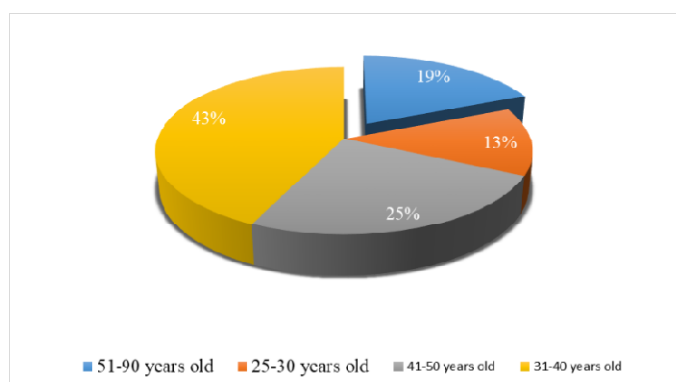


Figure 4. Age groups

Initially, we performed a complete (etiopathogenic, clinic, paraclinic and functional) assessment of the patients under study with the multidisciplinary recovery team.

Throughout the clinical evaluation, we assessed the general physical state (apparatus and systems, especially cardiovascular function - blood pressure, cardiac frequency, peripheral pulse, peripheral vascular, respiratory, digestive, neurological condition).

6. Conclusions

Approaching patients with low back pain / lumbar pain / lumbar disc herniation is complex and it can not yet be subject to a generalized algorithm.

A clear understanding of the spine anatomy, a pertinent presentation of the history and examination, relevant laboratory studies, the detection of the causes of dorsolumbar pain, and the therapeutic approach to improve patients care.

The recovery methods which we have highlighted throughout this work are the recovery, by kinetherapy and massage, which start from the consideration that the stability of the spine is due neither to the conformation of the bone extremities nor to the capsulo-ligamentations formations, which are insufficiently passive supportive elements, but to peri-articular muscle groups. On the other hand, it has been found that early mobilization is superior to prolonged immobilization in terms of results, that resolves with muscle atrophy.

Correct and complete evaluation of the spine, pain and functional status due to consecutive disability in the patient with lumbar discopathy / lumbar disc hernia is an important component within the recovery program, emphasizing the need to use standardized scales through which recorded progress can be quantified and compared.

The therapeutic approach to recovering HDL patients should be complex, it should address all pathophysiological links and require associated recovery means: medication, physical kinetics and hygiene-

education.

The functional evaluation of disc hernia disability by calculating the Wanddell and Main chronic disability index and the Roland-Morris questionnaire score showed a significant increase in its value, comparing the assessment stages, while a significant drop in the score produced after 4 weeks of rehabilitation. It can be noted that 10 patients experienced almost complete functional recovery after the physical-kinetic program with a score smaller or equal to 3 at the end of the assessment period (Roland-Morris).

Through the therapeutic means used, a pain reduction occurred in all patients at all times, with the indication that the reduction in the pain parameter was significant regardless of the sex and age group of the patients.

Any kinetic treatment at the level of the lumbar region involves restoring the functionality of this segment, under the conditions of a muscular force, stability and controlled movements at this level, preventing neurological complications and increasing the quality of life.

Through the obtained results we managed to emphasize the role of the physical therapist in the evaluation and functional recovery of the consequences due to the lumbar suffering in order to substantiate the objectives, methods and means of kinetics within the complex functional recovery program

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