



PROTOCOL FOR THE EVALUATION AND FUNCTIONAL RE-EDUCATION OF THE LUMBAR-SACRAL PAIN SYNDROME WITH A MUSCULAR-LIGAMENT CAUSE

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Abstract.

The current paper aims to evaluate the lumbar-sacral algo-functional syndromes with a muscular-ligament cause and to establish a staged program for its functional recovery which would also prevent reoccurrences and/or complications, these being relatively frequent and with important functional implications [1]. These ailments, specific to patients who are at an active age have a particular social impact, important morbidity and can be easily mistaken for more serious lumbar-sacral ailments, thus leading to disproportionately serious, but inefficient for the real cause, treatments [4].

The study was made over a period of 6 months, on 18 patients with lumbar-sacral syndrome with a muscular-ligament cause, diagnosed as a result of clinical and paraclinic evaluation, an alternative etiology of the syndrome being excluded. The patients were integrated into a functional re-education programme which included drug therapy (anti-inflammatory +/- relaxant medication), physically-kinetically supported (thermal-kinetic-massage therapy), staged into 2 weeks, one and 3-6 months intervals, respectively. The results obtained emphasise the improvement in the clinical parameters from one stage to the other, in the third stage of the programme reaching a semi-complete (over 90%) recovery of the affected areas, compared to the initial stages.

Key words: lumbar pain, evaluation, staged recovery.

Introduction. Modern-life lifestyle leads to considerably lowered levels of physical effort, this effort being gradually replaced with intellectual effort. Under these circumstances, the muscular system is subjected to a gradual de-conditioning, which influences particularly the paravertebral and abdominal muscles, thus affecting the balance of the spine [4]. The lack of maintenance of a good functionality of this balance leads, in the initial stage, to over-work syndromes, which in time lead to vertebral positioning imbalances, which, when becoming chronic, emphasise the muscular imbalance [5]. The lack of daily physical exercise leads to a paravertebral muscular structure that cannot sustain even moderate demands, thus leading to clinical conditions manifested through lumbar-sacral syndromes, often mistaken for discogenic or vertebral, degenerative or traumatic conditions [3]. These ailments, initially neglected, particularly if they are not very intense, reoccur frequently, their clinical display is more emphasised and increasingly important functional consequences, their treatment is costly and lengthier, but without addressing the true cause of the pain [6].

The current paper aims to study dynamically the lumbar-sacral algo-functional syndromes with a muscular – ligamentar cause and their response to staged antiinflammatory therapy, assisted by adequate physical-lynesiological treatment.

This study has been applied following the rules of the Ethics Committee of the Research Centre and is compliant with the Helsinki Declaration principles. In this respect all the investigated subjects have been informed about the proceedings of the study.

Material and methods. The study took place over 6 months at the Sports Clinic in Craiova, on a group of 18 patients (12 females and 6 males), aged 23-44, who displayed lumbar-sacral pain with muscular-ligamentar cause which occurred as a result of physical effort; the diagnosis was established after ethio-patogenic, clinical, paraclinic and functional evaluations.

The clinical and ethiopatogenic evaluation comprised:

- anamnesis, to establish the parameters of the lumbar-sacral pain (intensity, localisation, spread, duration, deterioration and improvement factors); the studied patients have accused lumbar- sacral pain, crural and/or gluteal, generated by physical effort and accompanied by muscular contracture and functional impotence;

- general clinical exam on apparatus and systems;
- complete examination of the spine, pelvis, lower limbs (mobility in the lumbar-sacral segment has been measured with a Baseline digital inclinometer).

The paraclinical evaluation consisted in laboratory screening and lumbar radiological examinations in order to exclude other causes of the disease (discogenic, vertebrogenic or of any other nature).

The clinical and radiological exams have shown, however, the presence of static imbalances in the lumbar-sacral and/or dorsal segments, in the frontal or sagittal plan (figure 1):

- dorsal kyphosis + loss of the lumbar lordosis: 7 cases;
- loss of dorsal kyphosis + lumbar hyperlordosis: 4 cases
- lumbar hyperlordosis: 5 cases
- dorsal-lumbar kypho-scoliosis: 2 cases

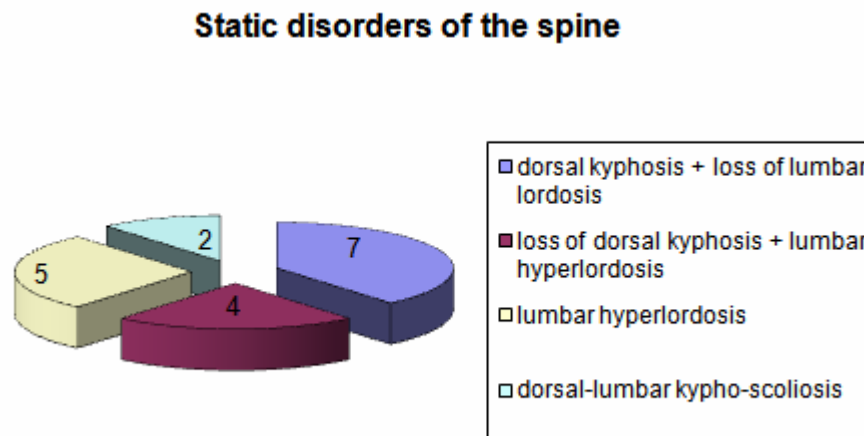


Figure 1. Static imbalances of the lumbar-sacral/ dorsal spine in the frontal / sagittal plan

The evaluation of the patients was made using a general clinical score [2,8], related to the intensity of the clinical manifestations, such as:

- lumbar-sacral pain that: forbids activity (3 points); limits activity (2 points); normal activity (1 point);
- crural/ gluteal pain; Present (1 point); absent (0 points);
- painful limitation of mobility for the following types of movement:
 - flexion: present (1 point); absent (0 points);
 - extension: present (1 point); absent (0 points);
 - side bend: present (1 point); absent (0 points);
 - rotation: present (1 point); absent (0 points);
- pain on palpation: present (1 point); absent (0 points);
- muscular contracture: present (1 point); absent (0 points);

The general clinical score, tracked dynamically (initial – T0, at 2 weeks – T1, one month – T2 and at 3-6 months - T3) resulted from the sum of the quantified parameters and ranges between 0 and 10 points.

The studied patients benefited from complex medical assistance: medication, electrotherapy, psychotherapy and from a strictly individualised kinetic programme.

The objectives of the medical assistance were:

- the improvement in painful areas within patient relaxation;
- lumbar increase in flexibility;
- toning of the hypotonic musculature;
- combating static and vertebral dynamics imbalances;
- lumbar stability;
- improving the patient's quality of life;
- Reintegration of the patient in social and professional life.

The therapeutic means were complex and based on:

- educational measures to gain a “lumbar behaviour” that would prevent potential future painful lumbar episodes, in order to acknowledge the correct functional position of the lumbar area of the spine and of the pelvis, ‘locking’ the lumbar spine;

- antalgic, relaxant, anti-inflammatory, gastric protection, sedative medication;

- physical means: thermotherapy (ice massage or paraffin packaging, according to patient tolerance), for the patients with paravertebral muscular contraction and electrotherapy (low and medium frequency current), with a painkilling, relaxing, trophic role for the soft tissues;

- kinetic therapy adjusted for the clinical-functional evolution stage of the patient.

The initial treatment consisted in combined administration of non-steroidian anti-inflammatory and relaxant drugs for a week. The medication was supported by a further 2 weeks of physical therapy, consisting in dorsal-lumbar sedative massage, thermal therapy followed by antalgic therapy (CDD, interferential currents), kinetic therapy aimed at increasing paravertebral suppleness and abdominal tonus [7].

After a month (T2) the patients were re-tested on the same evaluation grid and they were started on phase II of the treatment, which consisted in non-steroidal anti-inflammatory medication for another week, together with a thermal – kinetic – massage therapy.

In order to appreciate the efficiency of the treatment applied to this type of ailment, the patients were re-evaluated 3 and 6 months respectively from the start of the recovery treatment or when a new worsening of the symptoms occurred (T3). After the third evaluation we applied, for two weeks, only physical therapy (thermal – kinetic – massage), without medication.

For every treatment stage (initial, phase 2: after a month and in the third phase: at 3-6 months) the patients were subjected to an initial and final evaluation, using the same evaluation grid, taking into account the same clinical parameters, the sum of which constituted the general clinical score.

The severity of the ailment was appreciated taking into account the general clinical score, as follows:

- mild clinical forms: clinical score: 0-3 points
- moderate clinical forms: clinical score: 4-6 points
- severe clinical forms: clinical score: 7-10 points

The distribution of the cases according to patient severity and status was made using this score before and after each treatment stage.

Results. The initial evaluation (T0) showed the occurrence of a clinical score of 7,53 points (figure 2), which correlates with an increased intensity of the investigated parameters; as far as the distribution according to severity stages, 14 patients (77,7%) presented with severe symptoms and the rest, 4 patients (22,3%), with moderate symptoms.

The initial anti-inflammatory and relaxant treatment was applied daily for a week and was accompanied by thermal-electric-kinetic-massage treatment along 2 weeks, the evolution of the investigated parameters being as follows (evaluation at T1 moment):

- complete disappearance of pain under palpation and muscular contracture
- disappearance of the lumbar-sacral and reference pain in 72,2% of the cases (13 patients)
- improvement of joint mobility on all axes in 66,6% of the cases (12 patients)
- decrease of the functional clinical score to 1,35 (figure 2)

The distribution of the patients according to severity cases shows a complete functional recovery in 12 (66,6 %) patients and mild clinical forms in 6 (33,4 %) patients.

The evaluation of the patients at T2 (a month after the initial evaluation) showed the occurrence of recidivisms in most cases, but of lower intensity, with an average clinical score of 4,62 points (figure 2); the distribution on severity categories showed that 10 (55.5 %) subjects presented moderate clinical forms and only 3 (16 %) patients presented severe clinical forms.

For these reasons we considered it necessary to apply stage two of the treatment, consisting in single antalgic-antiinflammatory medication, supported by thermal-kinetic-massage therapy, applied daily for two weeks.

The results obtained were superior to the first stage of the treatment.

- complete disappearance of pain under palpation and muscular contracture
- disappearance of the lumbar-sacral pain in 85,3 % of cases
- disappearance of the irradiated / referenced pain in 94,4% of cases
- 88 % improvement of joint mobility on all axes
- decrease of the functional clinical score to 0,62 points

The distribution of the patients according to severity cases shows a complete functional recovery in 15 (83,3 %) patients and mild clinical forms in 3 (16,7 %) patients.

The re-evaluation of the patients at T3 (variable interval between 3 and 6 months), showed the occurrence of recidivisms in most cases, but with moderate intensity, with an average clinical score of 5,44 points; the distribution according to gravity categories, showed the presence of a mild or moderate condition in 16 (88,8%) patients.

In the third stage the patients benefited from the same thermal-kinetic-massage therapy applied for two weeks, which led to the improvement of all clinical parameters in 90-100% of the cases, with an average clinical score of 0,41 points (figure 2).

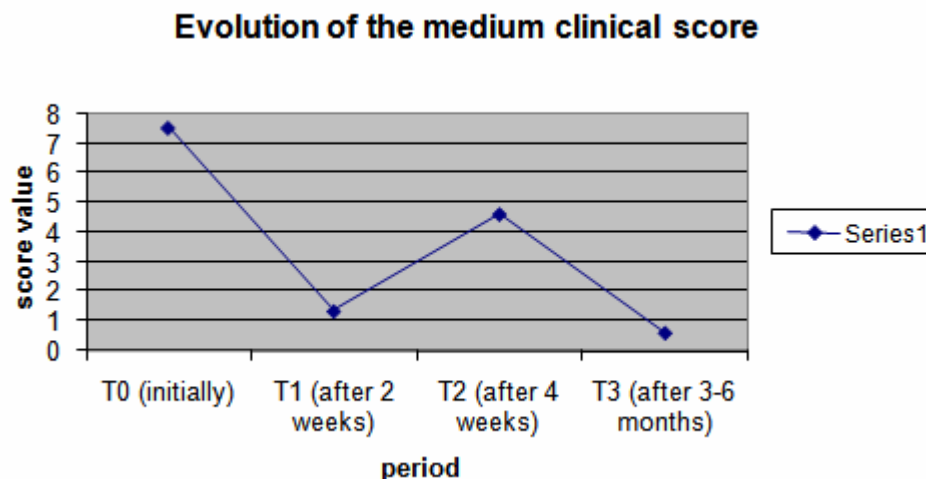


Figure 2. Evolution of the medium clinical score

Complete recovery was recorded in 17 subjects (94,4%), only one patient still presenting with a mild form of the condition.

The evolution of the clinical parameters shows the gradual improvement in the symptoms and the persistence of the therapeutic effects in the third treatment stage.

As a result of the applied treatment, from one stage to the other, the lumbar-sacral pain disappeared in an increasing proportion, from 72,2% (T1) to 85,3% (T2) and then in 94.4% of the cases (T3) (figure 3).

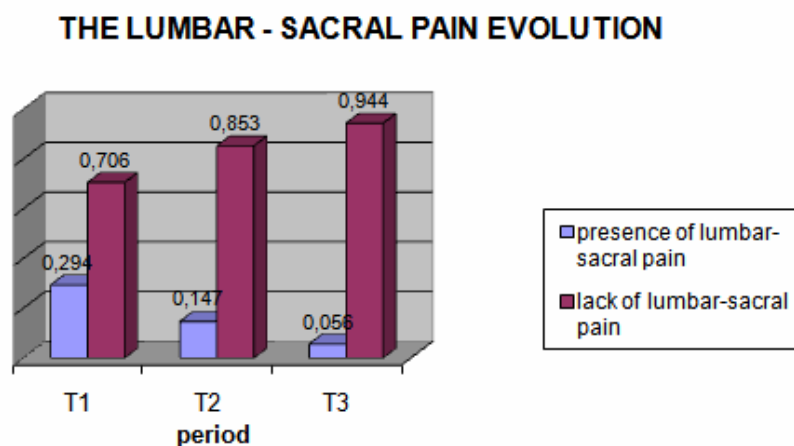


Figure 3. The lumbar - sacral pain evolution

The referenced pain disappears initially in 70,6% of the cases and, finally, almost completely (in 94,4 % of the cases). This parameter, when present, evolves rapidly, alongside the evolution of the "lumbar-sacral pain", its improvement being frequently more rapid and superior to the 'lumbar-sacral pain', which has been noted in our study.

Pain on palpation, which disappears completely at every therapeutic stage, as a result of the applied treatment, is in fact the direct expression of muscular- ligament stress, while its improvement from one stage to the other translates the efficiency of the therapeutic programme applied to the muscular-ligament component: The anti-inflammatory medication combined initially with the relaxant one in order to ensure an effective potency of the effects of both drugs and subsequently administered as mono-therapy, thus determining the improvement of the symptoms; the additional physical treatment to the medical therapy is the most active on this parameter, the kinetic programme influencing the muscular-ligamentar symptoms.

The limited mobility of the spine due to pain has an increasingly positive evolution in all movements:

- flexion – improvement from 67 % (initial) to 88 % (T2) and to over 90 % (T3) (figure 4)

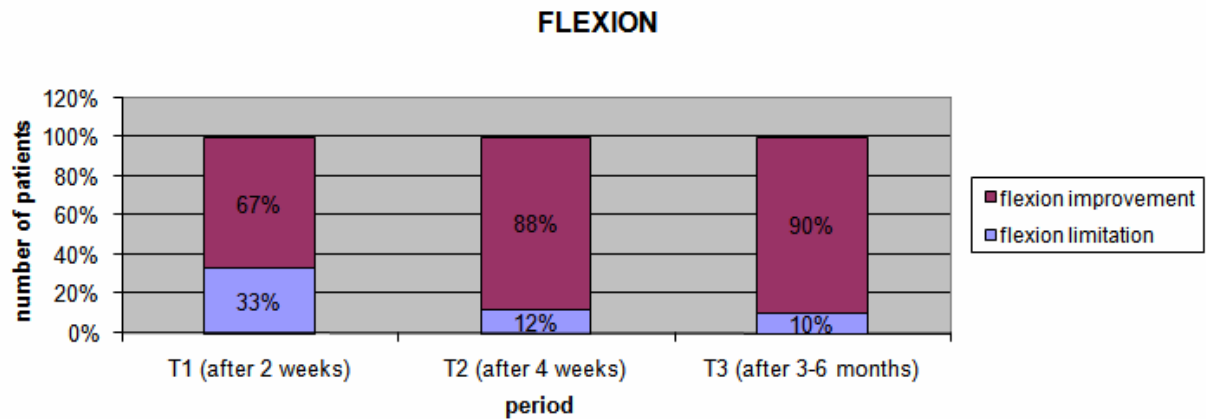


Figure 4. Joint mobility improvement for spine flexion

- extension – improvement from 76 % (initial) to 85 % (T2) and to over 94 % (T3) (figure 5)

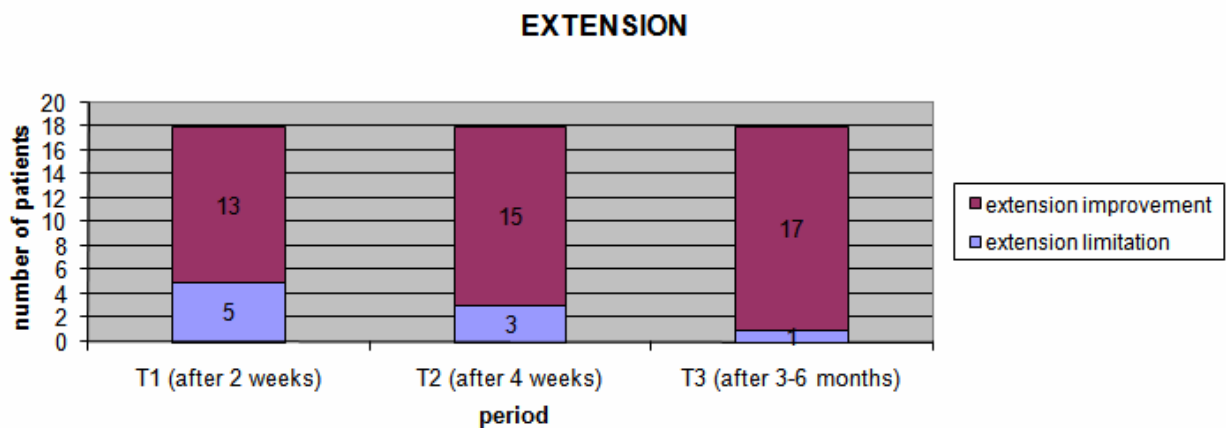


Figure 5. Joint mobility improvement for spine extension

- side bend – improvement of over 94 %, starting from the second treatment phase and continuing into the third phase
- rotation – increasing improvement to over 90%.

The mobility restriction due to pain is the clinical-functional expression of pain and of the reflex paravertebral contraction, and its evolution follows the evolution of these clinical parameters, with which it is correlated. The impact of the medication is significant and strongly supported by the physical treatment, particularly by kinetic therapy, which acts directly upon the muscular-ligament component actively involved in this mobility. When the kinetic programme becomes a constant daily activity, this parameters only occurs infrequently and can be easily compensated without medication.

The paravertebral muscular contraction disappears after each treatment series, responding well to anti-inflammatory and physical therapy; it appears as a reflex to pain, its evolution is convergent to the pain limitation of mobility, which it conditions in its turn, and will improve when the pain improves.

If the initial level of the pain symptoms is high, the reflex paravertebral contracture will also reach significant levels of intensity and duration; as the applied treatment improves the subjective symptoms, the muscular contracture will react in a similar way, towards lower levels of intensity, and in declining number of patients.

The distribution according to severity groups shows a significant decrease in the occurrence of severe cases from one evaluation to the other (from 79 % initial, to 17 % at T2 and 11 % at T3) and an increase, after each therapeutic stage, of the percentage of cases with complete clinical-functional recovery within the studied group (from 66,6 % initial, to 83,3 % at T2 and 94,4 % at T3). This aspect corresponds with the evolution of the average clinical score, the decrease of which is obvious from one stage to the other, and which shows the efficiency of the chosen therapeutic programme, in which the anti-inflammatory treatment has shown its clinical-functional efficiency, being enhanced by an adequate kinetic treatment supported by thermal and massage therapy.

Conclusions

The lumbar-sacral muscular-ligamentar algo-functional syndromes are frequently reoccurring syndromes, which is why we consider it necessary to evaluate and compensate them regularly through physical-kinetic means, before reoccurrences or potential complications appear [1].

The evaluation of the patients is particularly important throughout the recovery programme, in order to appreciate the evolution of the pain condition and the status of the spine and lower limbs. The current study uses a simple scale for the evaluation and monitoring of the staged therapeutic programme, applied to patients with lumbar-sacral ailments with muscle-ligament cause [2,8].

This programme comprises a more complex initial therapeutic phase, with myorelaxant and anti-inflammatory therapy, supported by electro-thermal-kinetic-massage therapy, followed after a month (T2) by a consolidation treatment aimed at preventing the relatively significant risk of immediate recidivisms. After these two phases the maintenance treatments follow, at intervals of approximately 3 months (T3), which prevents re-accutisations, increases the effort ability of the patients and introduces gradually the aerobic physical exercise, 'back school', essential for an adequate quality of life [3].

We must not forget that neglecting these ailments, apparently mundane, can lead, over time, to the apparition of vertebral or discogenic complications, which are harder to compensate, involve extended recovery times, have a limited efficiency and persistence on the functionality of the lumbar-sacral functionality.

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