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*The evaluation of the results of the pain treatment of the spine  
lumbar section using the McKenzie's method*

According to the definition of the Taxonomy Committee of the International Company of the Pain Examination, the pain "is the unpleasant, sensorial and emotional feeling that goes with the existing or threatening damage of the issue" (1). The lumbosacral region of the spine is the part of the body in which the pain often occurs, and it is the most frequent cause that makes a lot of people go to the orthopaedic, neurological, neurosurgical and rehabilitation clinics (2). The pain of the lumbar region is not only the social problem but also economic.

Stability and endurance of the spine depend on the muscles and ligaments which make up "the stabilising corset". Their weakness might be a cause of the incorrect burden of the intervertebral discs and the handicap of the spine stability so that they can also be the factor beginning a number of changes that can cause the posture defects, discopathies or the spondyloarthritis (3). The cramp of the back muscles accompanies the low-back pain and it is the defensive response of the organism that aims at the stabilization of the pain habitat and its vastness shows the seriousness of the intervertebral disc damage. Sick persons try to bear such posture of the body that will not enlarge the pressure in the disc and they also avoid movements which can intensify the pain. The most widespread form of the therapy is the conservative treatment whose aim is the alleviation of pain and the maximum shortening of the recovery time (4). The realization of the essence of the problem and the change of motor habits is the way to achieve the durable improvement. Among many methods of the treatment of the low-back pain, the McKenzie's method seems to be the most effective and it is the new way of perceiving the cause of formation of disc disease and the possibility of its treatment. In its assumption, this is a method that has a mechanistic approach to the problem of spine pain and it shows that the mechanical dysfunction requires similar therapy that is antagonistic in relation to the factor that triggers off this dysfunction. To simplify the matter, one can say that this method is based on the use of movements that can turn the mechanism which causes the pain (5). It means creating such conditions to the return migration of the nucleus pulposus (in the central direction), that usually contributes to spatial withdrawing (6).

The method also possesses a large diagnostic value which makes possible the precise calculation of the degree of the damage of the intervertebral disc, which allows to make a suitable selection of exercises that depend on the degree of the pathology of the disc (7). The prophylaxis, which means teaching the patient the proper executing of motive action, correct maintenance of the body posture during sitting or standing, and how to cope with a sudden pain of the spine, is very important as well (6, 8, 9).

The aim of this work is the evaluation of the results of the low-back pain treatment using the McKenzie's method.

#### MATERIAL AND METHODS

Fifty out-patients with the pain of the bottom section of the spine were examined. The patients' age was about 52 years, the height of the body – 163.8 cm and the mass of the body – 70.5 kg. Within the examination, an interview with the patient was carried out, from which the information about location, kind of pain, the beginning of the pain symptoms and factors causing reduction or increase of pain was obtained. Patients filled questionnaires whose aim was to estimate everyday life activity (the quality of life) during the pain of the bottom part of the spine – ODI (Oswestry Disability Index) before and after the therapy (10, 11). However, in the objective examination, the movability of the lumbar region checked with the Schober's test, the degree of the pressure on the nervous root checked with the Laseque's test and the opinion of the body posture according to McKenzie, were taken into consideration. Examination with the Schober's test consisted in the marking the acantha S1 and the point 10 cm cephaladly. Then patients tried to execute forward and backward bend during which measurements were made. The Laseque's symptom let us estimate the degree of root nerves' irritation and the degree of translocation of pain symptoms (12). Sitting and standing posture was also examined. McKenzie's therapy (5), which lasted three weeks, was applied in all patients. Test examinations were conducted before and after the treatment. The programme of rehabilitation was chosen for each patient depending on the kind of pathology in the lumbosacral region and on the vastness of the pain. The essence of the therapy was to produce the phenomenon of centralization during the treatment. It means that such exercises were made that could bring gradual centripetal withdrawing of the pain symptoms. The patients' education within the prophylaxis of the low-back pains, teaching and then producing the correct habits by patients was very important as they contributed to the quicker return to health. Patients considered the use of the McKenzie's method as favourable.

**Statistical methods.** The results of the testing of the spine and the examination of the body posture in the patients before and after 3 weeks' rehabilitation with the McKenzie's method were subjected to the basic statistical analysis. The differences between examinations within the chosen parameters were counted with t-student test for dependent groups.

#### RESULTS

Taking into consideration the vastness of pain, it was affirmed in the first investigation that in 14% of patients the pain radiated to the foot, in 56% to the atanchion, in 22% to the thigh and in 14% the pain was situated in the back. After 3 weeks' therapy (2<sup>nd</sup> examination), in 4% of patients the pain goes down to the foot, in 22% the pain is situated in atanchion and in 38% it is situated in the thigh as well as in the back.

Unpleasant pain depends on the position and the posture which patient takes. From the first examination it results that 100% of patients have the nagging pain of the back during long-lasting sitting, 26% – during walking, 70% suffer during the long standing in one place and 90% of patients feel the pain while bending forward. After the therapy, the low-back pain appears in 30% of people during standing, 24% of patients complain about the pain during long-lasting sitting, 58% feel the pain during bending forward and only 8% while walking.

In patients whose pain goes down to the bottom limb we observe the saving walk, which means that patients try, to the highest degree, to disburden the ill leg. Additionally, patients hold on to the buttock of the aching limb, which testifies to the fact that the pain begins in the back. In the first examination, it was affirmed that in 62% of patients the pain caused the pathology of the walk. In the second examination, it reduced to 40%.

The movability of the spine forward that was checked by the Schober's test in the first examination amounts to about 2.73 cm. In the second examination, it increased to 3.36 cm. The result of the test in back reached the level 2.31 cm before the therapy and 2.62 cm after the therapy. The result of the Laseque's symptom amounts to 36.3 and 53.7 respectively.

Differences within all parameters between the first and second examination showed the statistical significance on the level  $p < 0.001$  (Table 1).

Table 1. The results of the Schober and Laseque's tests (n=50) before (1<sup>st</sup> examination) and after the therapy (2<sup>nd</sup> examination)

Tests	1 <sup>st</sup> examination	2 <sup>nd</sup> examination	$\Delta \bar{x}$
	$\bar{x} \pm SD$	$\bar{x} \pm SD$	Difference (%)
Schober's test forward (cm)	2.73±0.68	3.36±0.72	23.1***
Schober's test in the back (cm)	2.31±0.38	2.62±0.47	13.4***
Laseque's symptom (°)	36.3±11.68	53.7±17.28	47.9***

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

Studying the movability of the spine measured with the Schober's test in the second examination, one can affirm that the applied therapy brings the improvement (Table 2). The decrease of pain in the Laseque's symptom and the improvement of the body posture in the majority of patients, was also observed after finishing the therapy (Table 4).

Table 2. The evaluation of the spine movability measured with the Laseque's test before the therapy (1<sup>st</sup> examination) and after the therapy (2<sup>nd</sup> examination)

Kind of movement	Evaluation		1 <sup>st</sup> examination (% of patients)	2 <sup>nd</sup> examination (% of patients)
	Spine movability in forward bend (cm)	correct	4 and more cm	4
small		3–3.5 cm	38	64
very small		2–2.5 cm	58	16
Spine movability in backward bend (cm)	correct	3 and more cm	22	48
	small	2–2.5 cm	68	50
	very small	1–1.5 cm	10	2

Table 3. Comparison of the Laseque's symptom in the 1<sup>st</sup> examination (before the therapy) and in the 2<sup>nd</sup> examination (after the therapy)

Range of movement	1 <sup>st</sup> examination (% of patients)	2 <sup>nd</sup> examination (% of patients)
0–25°	18	4
30–45°	74	42
50–70° and more	8	54

Table 4. Evaluation of body posture according to McKenzie before the rehabilitation (1<sup>st</sup> examination) and after it (2<sup>nd</sup> examination)

Evaluation in grades	Sitting posture		Standing posture	
	1 <sup>st</sup> examination (% of patients)	2 <sup>nd</sup> examination (% of patients)	1 <sup>st</sup> examination (% of patients)	2 <sup>nd</sup> examination (% of patients)
1° – bad posture	60	4	50	2
2° – satisfactory posture	38	18	48	18
3° – correct posture	2	78	2	80

## DISCUSSION

The saying “moving is healthy” is instilled in people’s minds since childhood but now in the time of cars, electronics and pursuit of money we have less and less time for a motor activity. We often choose passive rest in the comfortable armchair, which later may be a cause of unpleasant pain of the lower part of the spine. Therefore, prophylaxis of backaches is very important. Among others, it is assuming the correct silhouette while sitting or standing and competent and prudent raising heavy objects. If you do not apply to these recommendations, it can result in strain illness of the spine and escalation of pathological changes in the intervertebral disc and in the intervertebral articulations (13). Strengthening of the torso muscles is also very important in the prevention as it can cause the reduction of pain in the lumbar region (14). You can conclude from the examinations that if we experience backaches, using the McKenzie’s method seems to be the most favourable.

In order to confirm this speculation, Nwuga and Nwuga (15) examined 62 women with sharp backache and they divided them into two groups. The first group underwent treatment according to the McKenzie’s approach but the second group was being treated with the Williams’ method. McKenzie recommended exercises and taking such posture that increases the lumbar lordosis. However, Williams proposed exercises reducing the lumbar lordosis. In Nwuga and Nwuga’s examinations, they stated that patients treated with the McKenzie’s method had shown better improvement in increasing the movability of the spine and reducing pain than those doing the exercises proposed by Williams.

Skikic and Suad carried out the examination whose aim was to find out whether the McKenzie’s method has an influence on reducing pain in patients with the low-back pain together with the phenomenon of centralization (16). Thirty-four patients were examined and an individual exercise programme was selected for each of them. The time of treatment was fifteen days. Patients exercised every day, individually at home and under the supervision of a physiotherapist. They were examined before and after the treatment with the Schober’s test to evaluate the spine movability and the VAS scale was also used to evaluate the pain. Examinations showed that a significant reduction of the pain and improvement of the spine movability had been noticed in all patients, which confirmed the effectiveness of treating low-back pain with the McKenzie’s method.

Thanks to the data above it can be stated that appropriately conducted rehabilitation with the McKenzie’s method, which is based on individually selected exercises, leads to the creation of centralization effect and can turn out to be a very good therapy for treating the low-back pain. However, one has to remember that some patients could have more serious diseases like patients “with permanent, serious sciatica with neurological losses” and then they are not suitable for a conservative treatment (15).

## CONCLUSIONS

1. The programme of the rehabilitation based on the McKenzie's method has an influence on reducing pain, the improvement of the spine movability and quality of patients' life with low-back pain.

2. The appropriate prophylaxis, physical activity and strengthening of the torso muscles reduce the risk of low-back pain.

3. Patients with more serious, neurological diseases of the spine should not be classified for therapy with the McKenzie's method.

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## SUMMARY

Fifty patients with the low-back pain, aged about 52, were examined. The evaluation of progress of illness was made before (1<sup>st</sup> examination) and after 3 weeks' therapy with the McKenzie's method (2<sup>nd</sup> examination). A considerable remission of illness was observed, as well as the improvement of the lumbar spine movability and quality of life.

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Ocena wyników terapii bólów w odcinku lędźwiowo-krzyżowym za pomocą metody McKenzie'go

Zbadano pięćdziesięcioro pacjentów w wieku ok. 52 lat z objawami bólu w odcinku lędźwiowo-krzyżowym. Oceny postępów choroby dokonano przed (badanie pierwsze) i po (badanie drugie) trzytygodniowym leczeniu za pomocą metody McKenzie'go. Zaobserwowano znaczną remisję choroby oraz poprawę zdolności ruchowej kręgosłupa w odcinku lędźwiowym i polepszenie jakości życia.