

## **The Importance of Vojta Therapy in the Rehabilitation Process of Patients with Lumbar Disc Herniation**

### **Importanța Terapiei Vojta în Recuperarea Pacienților cu Hernie de Disc Lombară**

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#### **Abstract**

There are many certified therapies even alternative therapies that can reduce or maintain the level of a herniated disc. The results of the tests depend on the clinical response of the patients, as well as on the chosen therapies. In the chosen study I compared the results of two groups of patients, in the first group the patients performed physiotherapy together with Vojta Therapy and in the second group, the patients performed only physiotherapy. I chose to use Vojta Therapy in the recovery of patients, because it acts on the Central Nervous System (CNS), and patients have involuntary muscle reactions, instead physiotherapy is based only on voluntary muscle contractions. The response of the patients to the treatment was a positive one regarding both groups, but with better scores within the group that also performed Vojta Therapy.

**Keywords:** *lumbar disc herniation, lower back pain, physiotherapy, Vojta Therapy*

#### **Rezumat**

Există numeroase terapii atestate chiar și terapii alternative care pot reduce sau menține nivelul herniei de disc. Rezultatele testelor depind de răspunsul clinic al pacienților, cât și de terapiile alese. În studiul ales am comparat rezultatele a două loturi de pacienți, în primul lot pacienții au efectuat kinetoterapie împreună cu Terapia Vojta și în al doilea lot, pacienții au efectuat doar kinetoterapie. Am ales să folosesc Terapia Vojta în recuperarea pacienților, pentru că ea acționează asupra Sistemului Nervos Central (SNC), iar pacienții au reacții musculare involuntare, în schimb kinetoterapia se bazează doar pe contactii musculare voluntare. Răspunsul pacienților la tratament a fost unul pozitiv privind ambele loturi, dar cu scoruri mai bune în cadrul lotului care a efectuat și Terapia Vojta.

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**Cuvinte cheie:** *hernie de disc lombară, durere lombară joasă, kinetoterapie, Terapie Vojta*

## **Introduction**

Lumbar disc herniation (HDL) is a common problem among the population, especially the professionally active [5, 7, 8, 9, 13]. Epidemiological studies have shown that about 80% of the population experience lower back pain in their lifetime [8, 10, 11, 13]. The herniated disc is a fissure in the fibrous ring of the disc, which allows the gradual movement of the nucleus pulposus to the spinal canal, causing compression on the nerve roots. The vertebral bodies and intervertebral discs are connected to each other anteriorly by the anterior longitudinal ligament (stronger) and posteriorly by the posterior longitudinal ligament (thinner, which explains the appearance of disc herniations at this level). The most common disc herniation occurs in the last two lumbar vertebral discs, where the pressure on the vertebral discs is greatest. The symptoms depend on where the hernia occurs. Depending on the level of the disc herniation and the degree of hernia, symptoms may occur in the lower back, buttocks, thighs, calves or toes, usually unilaterally. Due to the fact that the nerve roots lead both the motor impulse to a certain area of the foot and the sensations from the peripheral level to the spinal cord, numbness, feeling of weakness, tingling may occur. The aim of this study was to prove the benefits of Vojta therapy in decreasing low back pain, and increasing quality of life of the patients with herniated lumbar disc. [7, 11, 12, 13, 14]

## **Material and Methods**

A prospective 6-month comparative study was performed on 80 patients with lumbar disc herniation, of which: 40 patients underwent physiotherapy and Vojta exercises (study group) and 40 patients underwent physiotherapy (control group) between 2019 and 2020.

We used the method of observation and recording of data - which consisted of measuring the established parameters, obtained in the complete evaluation of patients, according to a known methodology [5, 6, 7, 9, 10, 11, 12, 14], which complied with international standards, applied in our country; the data were recorded over a period of 6 months for each case, the evaluation taking place at the beginning of the study - and at its conclusion.

The method of statistical-mathematical processing of the obtained data was used, which consisted of: processing of the obtained results, of the mathematical values, of the physiological parameters measured, according to the calculation methods, determination of the scales used, interpretation of all results based on existing standard norms.

In both groups (table 1), women predominated (65.00% vs. 62.50%,  $p = 0.817$ ), the ratio of women / men being 1.9: 1, respectively 1.7: 1.

Table 1: Gender distribution

GENDER	Study group		Group control	
	Nr.	%	Nr.	%
Women	26	65,00	25	62,50
Man	14	35,00	15	37,50
<b>Total</b>	<b>40</b>	<b>100,00</b>	<b>40</b>	<b>100,00</b>

Most patients in both groups were active (45.00% vs 50.00%,  $p = 0.656$ ), sedentary lifestyle being declared by 22.50%, respectively 25.00% of patients ( $p = 0.786$ ). (table 2)

The most frequently adopted position during the day was both sitting and orthostatism (45.00% vs 70.00%,  $p = 0.025$ ).

Table 2: Distribution according to activity and position

	Study group		Group control	
	Nr.	%	Nr.	%
<b>Activity</b>				
Very activ	13	32,50	10	25,00
Activ	18	45,00	20	50,00
Sedentary	9	22,50	10	25,00
<b>Pozition</b>				
Sitting	8	20,00	7	17,50
Standing	14	35,00	5	12,50
Both	18	45,00	28	70,00

Over 60% of the patients in the two groups (table 3) had a disease of less than 10 years (62.50% vs. 67.50%,  $p = 0.641$ ). The mean age was significantly higher in the study group compared to the control group (11.08 years vs. 10.38 years,  $p = 0.758$ ).

Table 3: The age of the disease

	Study group		Group control	
	Nr.	%	Nr.	%
<5 years	15	37,50	16	40,00
6-10 years	10	25,00	11	27,50
11-15 years	6	15,00	2	5,00
> 15 years	9	22,50	11	27,50
<b>Average age (years)</b>	11,08±10,99		10,38±9,14	

In over 80% of the patients in the two groups (table 4), the pain was subacute or chronic (42.0% vs 40.00%,  $p = 0.821$ ).

Table 4: The type of pain

	Study group		Group control	
	Nr.	%	Nr.	%
Acute	6	15,00	8	20,00
Subacute	17	42,50	16	40,00
Chronic	17	42,50	16	40,00

Table 5: The moment of the onset of pain

	Study group		Group control	
	Nr.	%	Nr.	%
Sleep	0	0,00	2	5,00
Sleep + awakening	2	5,00	1	2,50
Sleep + activity	6	15,00	1	2,50
Awakening	2	5,00	4	10,00
Awakening + activity	6	15,00	2	5,00
Activity	22	55,00	27	67,50
Sleep + awakening + activity	2	5,00	3	7,50

Most of the patients in the two groups (table 5), pain occurs during activity (90.00% vs. 82.50%,  $p = 0.333$ ). Upon awakening, the pain appears in 25.00%, respectively 17.50% of the patients ( $p = 0.415$ ), and during sleep at 25.00%, respectively 25.00% ( $p = 0.619$ ).

## Results

At the initial evaluation (table 6), the average value of the FPS-R score was insignificantly lower in the study group compared to the control group, and at the evaluation at 6 months it was insignificantly higher (6.45 vs. 6.78,  $p = 0.507$ , respectively 3.85 vs. 3.33,  $p = 0.280$ ). The mean value of the FPS-R score decreased significantly in both groups (from 6.45 to 3.85,  $p < 0.001$ , respectively from 6.78 to 3.33,  $p < 0.001$ ). The effect of treatment on the FPS-R score was major in both groups (ES = 1.07 and ES = 1.83, respectively).

Table 6: Scale FPS-R

Scale FPS-R	Study group	Group control	p
Initially	6,45±2,44	6,78±1,89	0,507
At 6 months	3,85±2,25	3,33±2,07	0,280
p	<0,001	<0,001	
ES	1,07	1,83	

The Seze sign was initially present in 65.00% of the patients in the study group and in 62.50% of those in the control group ( $p = 0.817$ ). (table 7)

At the evaluation from 6 months, the presence of the Seze sign decreased significantly in both groups (from 65.00% to 32.50%,  $p = 0.004$ , respectively from 62.50% to 27.50%,  $p = 0.002$ ).

Table 7: The Seze sign

Semnul Seze	Study group		Group control		p
	Nr	%	Nr.	%	
Initially	26	65,00	25	62,50	0,817
At 6 months	13	32,50	11	27,50	0,628
p	0,004		0,002		

The Bragard sign was initially present in 95.00% of the patients in the study group and in 87.50% of those in the control group ( $p = 0.238$ ). (table 8)

At the 6-month assessment, the presence of the Bragard sign decreased significantly in the study group (with associated Vojta therapy) (from 95.00% to 72.50%,  $p = 0.007$ ) and decreased insignificantly in the control group (from 87.50% to 72.50%,  $p = 0.096$ ).

*Table 8: The Bragard sign*

Bragard sign	Study group		Group control		p
	Nr.	%	Nr.	%	
Initially	38	95,00	35	87,50	0,238
At 6 months	29	72,50	29	72,50	-
P	0,007		0,096		

At the initial evaluation, the Bonnet sign was present in 72.50% of the patients in the study group and in 62.50% of those in the control group ( $p = 0.343$ ). (table 9)

At the evaluation at 6 months, the presence of the Bonnet sign decreased significantly in both groups (from 72.50% to 30.00%,  $<0.001$ , respectively from 62.50% to 27.50%,  $p = 0.002$ ).

*Table 9: The Bonnet sign*

Bonnet sign	Study group		Group control		p
	Nr.	%	Nr.	%	
	29	72,50	25	62,50	0,343
	12	30,00	11	27,50	0,807
Initially	<0,001		0,002		

In the study group (table 10), at the initial evaluation cruralgy was present at 20.00% (at 5.00% in association with sciatalgy and at 7.50% in association with sciatalgy), and at 6 months the percentage was significantly reduced to 5, 00% (at 2.50% in association with sciatalgy) ( $p = 0.044$ ). In the control group, at the initial evaluation, cruralgy was present at 7.50%, and at 6 months the percentage decreased insignificantly to 5.00% ( $p = 0.646$ ). Both initially and at 6 months, there are no significant differences between the two groups in terms of prevalence of cruralgy ( $p = 0.107$ ).

*Table 10: Lassegue test*

Lassegue test	Study group		Group control		p
	Nr.	%	Nr.	%	
Initially					
Cruralgy	8	20,00	3	7,50	0,107
Ischialgy	19	47,50	24	60,00	0,265
Scialgy	17	42,50	9	22,50	0,058
At 6 months					
Cruralgy	2	5,00	2	5,00	-
Ischialgy	21	52,50	22	55,00	0,824
Sciatalgy	12	30,00	7	17,50	0,192
p	0,044		0,646		
	0,657		0,653		
	0,248		0,579		

In the study group, ischialgia was present at the initial assessment at 47.50% (at 5.00% in association with cruralgia), and at 6 months the percentage increased insignificantly to 52.50% ( $p = 0.657$ ). In the control group, at the initial evaluation, the sciatica was present at 60.00%, and at 6 months the percentage decreased insignificantly to 55.00% ( $p = 0.653$ ). Both initially and at 6 months, there are no significant differences between the two groups in terms of the prevalence of ischialgia ( $p = 0.264$ , respectively  $p = 0.824$ ). At the initial evaluation, the prevalence of sciatalgia in the study group was 42.50% (at 7.50% in association with cruralgia), and at 6 months the percentage decreased insignificantly to 30.00% ( $p = 0.248$ ). In the control group, at the initial assessment, sciatalgia was present at 22.50%, and at 6 months the percentage decreased insignificantly to 17.50% ( $p = 0.579$ ). Initially, the prevalence of sciatalgia was slightly higher in the study group (42.50% vs 22.50%,  $p = 0.058$ ), and at 6 months, the difference is insignificant between the two groups (30.00% vs 17, 50%,  $p = 0.192$ ).

## **Discussions**

Significant improvements were noted after both treatments in indices for pain, disability, and flexibility according to the Roland-Morris test ( $p = 0.066$ ). Improvements in radiculopathy (Làsegue sign) were only observed with Vojta ( $p = 0.031$ ). An overall decrease in scores obtained after Vojta was observed with respect to those obtained after TENS (difference V-T): pain according to the Visual Analog Scale (V-T = 2.84;  $p = 0.033$ ) or Oswestry back pain (V-T = 2.67;  $p = 0.030$ ) and leg pain tests (V-T = 3.25;  $p = 0.063$ ); disability according to Oswestry (V-T = 28.33;  $p = 0.005$ ) and Roland-Morris (V-T = 5.67;  $p = 0.044$ ); flexibility according to Schöber (average gain V-T = 0.43;  $p = 0.292$ ) and the fingertips to floor distance test (V-T = 7.5;  $p = 0.016$ ). [2]

The active stimulation was perceived as more unpleasant than the control stimulation. Heart rate variability parameters demonstrated almost identical autonomic responses after both stimulation types, showing either modest increase in parasympathetic activity, or increased heart rate variability with similar contribution of parasympathetic and sympathetic activity. [3]

Pain intensity was reduced to 0 over 3-12 days. The angle of lordosis increased by  $7.6^\circ$ . The lateral spinal curvature was reduced by 8.92 mm. There was a reduction of  $4.64^\circ$  in trunk torsion. Surface rotation was reduced by  $1.61^\circ$  and pelvic obliquity was reduced by  $3.78^\circ$ . [4]

First, the analysis of the demographic data showed that, in both groups, the majority of patients were women, with an average age of 48-49 years. Sedentary lifestyle was registered in approximately 25% of patients (23-25%), and the most frequently adopted position during the day was both sitting and orthostatism (45-70%). Obesity had a prevalence of 25.00% and 32.50%, respectively, without cases of morbid obesity. Over 60% of the patients in the two groups had a disease of less than 10 years (62.50% vs. 67.50%). The pain was subacute or chronic (40-43%), bilateral (48, -53%), manifested locally (40-48%), in the form of a stab (33-48%), and its occurrence was in especially during the activity (83-90%).

The Seze sign was initially present in 63-65% of patients, the percentage decreasing significantly at 6 months (28-33%). The Bragard sign was initially present in 88-95% of patients, the percentage decreasing significantly in the study group and insignificantly in the control group. At the initial evaluation, the Bonnet sign was present in 63-73% of patients, the percentage decreasing significantly at 6 months (28-30%). The Lassegue test reveals that at the initial assessment ischialgia was the most common form (48-60%), percentages that increased and decreased insignificantly at 6 months (53-55%).

## **Conclusions**

Therefore a good prognosis for improvement and rehabilitation can be given in a large number of disorders, irrespective of age [1]. Vojta Therapy led to significantly greater improvements in pain, disability, flexibility, and radiculopathy. [2]

The results demonstrate changes of cardiac autonomic control in both active and control stimulation, without evidence for a significant difference between the two. [3]

In discopathic patients, postural parameters comprising angle of lumbar lordosis, lateral deviation, trunk torsion, vertebral rotation and pelvic obliquity fail to reach Hartzmann's physiological reference ranges. A therapeutic intervention based on the Vojta therapy may normalize the posture to physiological reference ranges and is effective in the treatment of patients with back pain. [4]

The patients that had as a therapy Vojta therapy had a direct impact on the elimination of the back pain, on the rate of results obtained after having carried out the study, being directly proportional to the Vojta Therapy.

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