Journal of Bodywork & Movement Therapies xxx (xxxx) xxx

Contents lists available at ScienceDirect

Journal of Bodywork & Movement Therapies

journal homepage: www.elsevier.com/jbmt

PREVENTION & REHABILITATION: **plus provided doc head**

Vojta Therapy versus transcutaneous electrical nerve stimulation for lumbosciatica syndrome: A quasi-experimental pilot study

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ARTICLE INFO

Article history:
Received 12 May 2019
Accepted 12 May 2019

ABSTRACT

Background: Lumbosciatica is a common condition that affects patients' quality of life.
Objective: To determine the efficacy of Vojta Therapy and transcutaneous electrical nerve stimulation (TENS) in the treatment of lumbosciatica.
Methods: A "pre-post" quasi-experimental pilot study was carried out on 12 patients between 31 and 74 years of age who had been diagnosed with lumbosciatica and referred to the Physiotherapy Unit of the Quintanar de la Orden Health Center. Subjects were prescribed either TENS or Vojta, assigned alternately (6:6). All patients received one session of 30 min per day for 15 days. Tests to evaluate pain, disability, functionality, and radiculopathy were performed.
Results: The differences between pre-post measures and improvement after both treatments were analyzed with nonparametric tests. Significant improvements were noted after both treatments in indices for pain, disability, and flexibility, with the exception of disability after TENS, 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; $p = 0.016$).
Conclusions: Vojta Therapy led to significantly greater improvements in pain, disability, flexibility, and radiculopathy than TENS. Future studies will require larger samples to confirm these findings.

1. Introduction

Lumbosciatica refers to a set of clinical conditions resulting from the pinching of a lumbosacral nerve root, generally L5 and S1, which produces sudden radiating pain with metameric distribution. Lumbago is the main symptom, with pain generally occurring in an area from the lower ribs to the end of the gluteal folds (Larraguibel, 2006). There may also be signs of root stretching, alteration of osteotendinous reflexes or changes in the strength of the affected muscle group, parasthesia, pain, and functional limitation. Lumbago/lumbosciatica is the most frequent musculoskeletal complaint of patients seeking care at Primary and Specialized Health Centers (Hidalgo-Mendia et al., 2013). More than 55,000 patients of working age visit the doctor for this reason in Spain every year. Not only does lumbosciatica reduce the quality of life; it also has a major economic, social, and employment impact and constitutes a significant cause of absenteeism and early retirement (Dahm et al., 2010; Rubinstein et al., 2011).

Lumbosciatica has multiple causes. The most frequent are herniated discs, mainly in young people, and spinal canal stenosis in

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https://doi.org/10.1016/j.jbmt.2019.05.015
1360-8592/

people over the age of 50 (Zazpe-Cenoz et al., 2006). In the case of the former, the basic clinical symptom is radiating, normally intense pain which is initially sharp and extends to the lower limbs (LL). The pain increases with movement and prolonged periods of standing, as well as with movements that increase vertebral and abdominal pressure (coughing, defecation, Valsalva) and may be accompanied by motor-sensory symptoms (Larraguibel, 2006). Spinal rigidity is often observed, with a decrease in the Shöber index. The Lasègue maneuver is normally positive. In some cases, an antialgic posture can be observed, with kyphosis and inclination of the body. On the other hand, if lumbosciatica is the result of canal stenosis, the spinal symptoms are mainly motor-sensory: lumbago and motor-sensory frailty, generally bilateral and associated with effort (walking, standing for long periods of time). The pain is eased with rest and flexing in a sitting position (Larraguibel, 2006).

Diagnosis of this condition requires a comprehensive physical and neurological examination (Larraguibel, 2006), which may be completed with supplementary tests (Rx, TAC, RM, Neurophysiology). Ninety percent of cases are resolved with conservative treatment (rest, non-steroidal anti-inflammatories, muscle relaxants, and physiotherapy) (Larraguibel, 2006; Roelofs et al., 2008). Other possible treatments include: injections of botulinum toxin, spinal manipulation therapy, traction, epidural infiltration with steroids, transcutaneous electrical nerve stimulation (TENS) and acupuncture (Rubinstein et al., 2011; Waseem et al., 2011; Luijterburg et al., 2007; Johnson, 2000). Severe neurological pinching requires surgery (Larraguibel, 2006). Despite TENS being one of the most used conservative techniques to treat back pain, more studies are needed to corroborate its efficacy (Sluka et al., 2013). Besides, it seems interesting to investigate other alternative therapeutic options that can improve or complement the existing ones.

Reflex Locomotion or Vojta Therapy was first used in 1959 for the rehabilitation of children with motor alterations and infants with a risk of cerebral palsy. Years later it was successfully applied to adults with neurological and motor alteration problems (Husárová, 2005; Laufens et al., 1999). Its kinesiological responses include the coordinated activation of abdominal muscles and the autochthonous muscles of the spine, provoking the physiological extension of the axial axis by extending and rotating each of its segments; which improves its functional mobility, reducing rigidity and kyphosis that can accompany the herniated disc. In this way, the entrapment of nerve roots is reduced, decreasing pain and paresthesias. Through the repetition of the activation, the innate physiological patterns can be integrated into the spontaneous mobility. As this corrects postural alterations that can cause pain, Vojta might specifically address back pain. Our proposal to use Vojta relies on its conservative and long lasting effect, because this therapy is able to change pathological patterns to painless patterns that reduce the use of energy caused by movement difficulty. The end result is to facilitate movement without strain. (Husárová, 2005; Bauer et al., 1992). Until now, there have been no studies on its use in pathologies of the spine and, in particular, at the lumbar level.

The purpose of this study was to determine the efficacy of Vojta Therapy in treating lumbosciatica and to compare the results with those obtained with TENS treatment.

2. Methods

2.1. Design

A pilot "pre-post" quasi-experimental study was carried out on 12 patients diagnosed consecutively with lumbosciatica in 2011 at the Quintanar de la Orden Health Center in Toledo, Spain. The patients were recruited as follows: the rehabilitation doctor evaluated and diagnosed the patient and referred them to the Physiotherapy Unit (PTU) with a prescription for "TENS or Vojta" treatment. At the PTU of the health center, the patient was informed about the possibility of taking part in the study. Patients who agreed to take part were then chosen alternately in order of arrival to the PTU so that half of the sample was treated with TENS and the other half with Vojta therapy (Fig. 1).

- Inclusion criteria:

Patients diagnosed with acute, sub-acute, or chronic lumbosciatica by a rehabilitation doctor were referred to the PTU as candidates for one or the other therapeutical procedure.

- Exclusion criteria:

Patients with lumbosciatica resulting from a specific pathology (infection, metastasis, neoplasia, osteoporosis, fracture, or inflammatory arthropathy).

2.2. Study variables

- *Social demographic data:* sex, age, employment situation, type of work, diagnostic tests, previous treatment(s), acquired habits, smoker, length of time suffering pain, and type of pain.
- *Pain*: to quantify pain, the Visual Analogical Scale (VAS) and the Oswestry questionnaire were used. The latter includes a disability questionnaire, apart from an Oswestry scale for back pain and another Oswestry scale for lower leg pain. VAS measures the intensity of pain as subjectively described by the patient, with maximum reproducibility amongst observers. It consists of a graduated scale from 0 cm ("no pain") to 10 cm

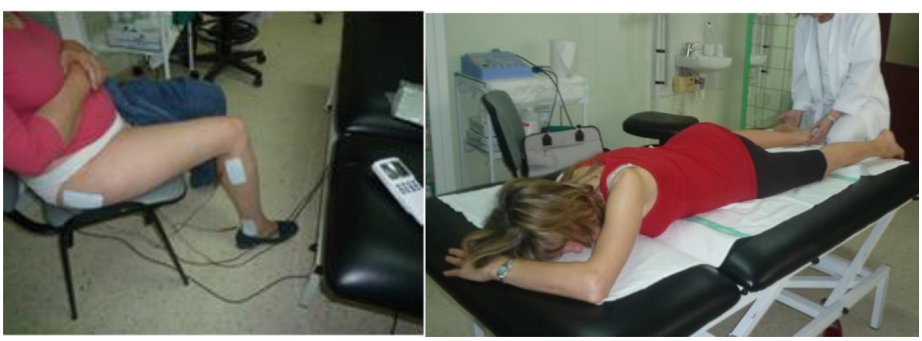

Fig. 1. Application of TENS current versus Vojta therapy.

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("unbearable pain"), in which the patient establishes a point on the scale that best describes the intensity of the pain. It is universally used and relates well to descriptive scales, with good sensitivity and reliability (Hjermstad et al., 2011).

- *Disability:* to measure the degree of disability, validated Spanish versions of the Oswestry and Roland-Morris questionnaires were used. The Oswestry disability back pain questionnaire or Oswestry Disability Index (ODI) contains 10 items with 6 possible answers (0-1-2-3-4-5), from lowest to highest limitation. A clinically significant change is considered to be an improvement of at least 10%. This index has a predictive value for chronic degrees of pain, duration of sick leave, and resulting treatment. This scale is considered to belong to the highest level of methodological quality (level A) and has a correlation coefficient of 0.92 (Roland and Fairbank, 2000).

The Roland-Morris questionnaire contains 24 questions relating to the patient's daily activities with a yes/no possible response. The final score ranges from 0 to 24; the higher the score, the greater the disability (Roland and Fairbank, 2000). Clinically relevant changes are considered to be differences of 2−5 points.

- *Flexibility*: to evaluate the patients' ability to bend the spine and the degree of restriction, we used the Schöber Test and Fingertips to Floor Test (Buckup, 2007).

Schöber Test: in a standing position, the L5 spinous process is located and marked. A distance of 10 cm towards the head is then measured and another mark is made. The person is then asked to flex his/her torso and the length between both marks is recorded.

Fingertips to floor (FTF) test: the person stands with straight knees and feet separated a waist width apart. In this position, they are asked to bend over as far as possible and the distance between the patient's fingertips and the floor is measured.

- *Radiculopathy:* to determine the existence of sciatic nerve compression, we used the Lasègue maneuver. While lying down, the patient lifts one leg with the knee straight. It is a positive sign if the leg hurts at an angle from 30 to 70°. To determine whether the damaged nerve root is L5 or S1 (motor weakness), patients are analyzed walking on their heels and toes. If the most affected nerve root is L5, the patient will have difficulty walking on his/her heels. If patients have difficulty walking on their tiptoes, the most affected nerve root is S1.

2.3. Intervention: therapeutic methods

The TENS procedure used in our unit consists of applying a high frequency current (80 Hz), which is the most effective way to combat pain (Sluka and Walsh, 2003), for a phase duration of 60−200 μs at a comfortable range. Electrodes are placed on the skin over the sciatic nerve path, with the (−) cathode on the most painful area as it is the most stimulating and the (+) anode placed distal to the first (Sluka and Walsh, 2003).

Vojta therapy entails the activation of certain overall and innate locomotion patterns or complexes (e.g. reflex creeping and reflex rolling), which provokes the contraction of striated muscle throughout the entire body in a determined coordination with the central nervous system. These patterns are triggered from different positions (prone, supine, and with the patient lying on his/her side) and only with certain stimulation. They contain all the locomotion components: automatic postural control, uprighting, and phase movements.

The physiotherapist informed the patients about the study. If they decided to take part, they were given an informed consent form. After signing the form, patients then provided information about their social demographic and pain history to be added to their clinical files. A pre-intervention examination was then performed in the PTU to obtain an objective clinical analysis (measurements of pain, disability, functionality, and joint movement) by means of simple questionnaires completed by the patient (VAS scale, Oswestry and Roland-Morris questionnaires) and exploration techniques (Lasègue maneuver, Schöber test, fingertips to floor test, and walking on heels and toes). Once the information had been compiled and the patient examined, treatment was assigned in an alternate fashion, with 6 patients receiving TENS and the other 6 undergoing Vojta therapy. Each group received 15 sessions of treatment. In both cases the treatment lasted 30 min per session.

2.4. Ethical issues

The Ethical Research Committee of the Rey Juan Carlos University approved this study (registry number 280920168216). All the patients included in the study were duly informed and gave their informed consent upon acceptance.

2.5. Statistical analysis

A descriptive analysis was performed of all the variables included in the study. Qualitative variables were expressed as absolute and relative frequencies. Quantitative variables were described as central trend measures (average or median) and measures of dispersion (standard deviation or interquartile range), according to their distribution. The Wilcoxon test for matched data was used for pre-post analysis of the results in the case of quantitative variables; the McNemar test was used for qualitative variables, such as in the case of the Lasègue test. A value of $p < 0.05$ was considered statistically significant. For the statistical analysis, we used the PASW v18 computer program (SPSS Inc).

3. Results

The study subjects ranged from 31 to 74 years of age, with weights ranging between 56 and 104 kg. Fifty percent were housewives, 25% had sedentary jobs, and 16.7% were smokers. All patients had been suffering pain for at least 1 and up to 24 months.

The patients treated with TENS improved significantly with respect to the pain threshold, according to the VAS scale ($p = 0.026$) (Table 1) (Fig. 2). They also improved their scores on the Oswestry disability index ($p = 0.033$), with substantial reductions in both back pain ($p = 0.024$) and leg pain scores ($p = 0.035$), as measured by the test. In contrast, no significant statistical differences were observed in the disability evaluation as measured by the Roland-Morris questionnaire before and after TENS ($p = 0.066$) (Table 1) (Fig. 3). We likewise found no differences in the scores of the Lasègue test, nor in the walking on toes or heels tests, although in the latter, a certain improvement in some patients was observed. There were significant differences in the fingertips to floor distance obtained ($p = 0.041$) as well as in the Schöber test results ($p = 0.038$) (Table 1) (Fig. 4).

The patients treated with Vojta therapy showed statistically significant improvements ($p = 0.027$) with respect to the pain threshold as measured by the VAS scale (Table 2) (Fig. 2). They also showed substantial improvements in disability ($p = 0.027$), back pain ($p = 0.027$), and leg pain ($p = 0.027$), according to the Oswestry index. Improvement was both positive and statistically significant as measured by the Roland Morris ($p = 0.041$) questionnaire, in the fingers to floor distance test ($p = 0.028$) and in the average distance in the Schöber ($p = 0.042$) and Lasègue tests ($p = 0.031$) (Table 2) (Figs. 3 and 4). However, no significant differences were observed in walking on toes and heels before and

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Table 1
Evolution of patients who received TENS treatment.*

Scanning techniques pre-post			Mensuration	Average	SD	Median	IR	P worth[a]
Visual Analog Scale		Pre	Pain	7	0,90	7	6–8	0,026
		Post		5,33	0,52	5	5–6	
Oswestry Questionnaire for Pain	Lumbar	Pre		7,33	1,03	7	6,75-8,25	0,024
		Post		5,83	1,17	5,5	5-6,5	
	Leg	Pre		7,66	1,51	8	6,5-9	0,035
		Post		5,91	1,96	6	4,5–7,38	
Oswestry Questionnaire for Disability		Pre	Disability-functionality	38,33	15,31	41	27–52	0,033
		Post		34,83	18,86	40	21,25-50	
Roland-Morris Questionnaire		Pre		15,67	3,67	16,50	15–17	0,066
		Post		13,67	6,06	15,05	13–17	
Schöber test		Pre	Flexibility-Range of motion	3,58	0,66	3,5	3-4,13	0,038
		Post		4,25	0,82	4	3,5-5,13	
Finger-ground test		Pre		18	10,02	18	9,75-27,25	0,041
		Post		15,17	10,21	15	7,75-22,5	
				% (N)				
Lasègue Maneuver positive		Pre	Localization-Radiculopathy	66,67 (4)				1,000
		Post		66,67 (4)				
To walk on heels (L5)		Pre		33,33 (2)				0,500
		Post		66,67 (4)				
To walk on tiptoes (S1)		Pre		33,33 (2)				0,500
		Post		66,67 (4)				

*Pre-post: before and after applying TENS; SD: standard deviation; IR: interquartile range.
[a] Evaluation of differential by nonparametric methods: Wilcoxon test for paired data (quantitative variables); McNemar test (qualitative variables).

Table 2
Evolution of patients who received Vojta treatment.*

Scanning techniques pre-post			Mensuration	Average	SD	Median	IR	P worth[a]
Visual Analog Scale		Pre	Pain	7,83	2,14	8,50	6,25-9,25	0,027
		Post		3,33	2,25	3,50	1-5,25	
Oswestry Questionnaire for Pain	Lumbar	Pre		6,50	2,17	6	4,75-8,50	0,027
		Post		2,33	1,03	3	1–3	
	Leg	Pre		7,50	1,64	7	6-9,25	0,027
		Post		2,50	2,81	1	1-4,25	
Oswestry Questionnaire for Disability		Pre	Disability-Functionality	42	27,22	31	27-59,5	0,027
		Post		10,17	7,33	6	5,50-18,75	
Roland-Morris Questionnaire		Pre		14,67	5,09	15	10,25-20,75	0,041
		Post		6,17	4,36	7	3,50-11,75	
Schöber test		Pre	Flexibility-Range of motion	2,50	0,71	2	2-3,25	0,042
		Post		3,60	0,96	3,50	2,75-4,5	
Finger-ground test		Pre		23,83	14,16	20,50	16,25–33,75	0,028
		Post		13,50	7,12	14,50	6,75-20,25	
				% (N)				
Lasègue Maneuver positive		Pre	Localization-Radiculopaty	100 (6)				0,031
		Post		0				
To walk on heels (L5)		Pre		66,67 (4)				1,000
		Post		83,33 (5)				
To walk on tiptoes (S1)		Pre		83,33 (5)				1,000
		Post		83,33 (5)				

*Pre-post: before and after applying Vojta therapy; SD: standard deviation; IR: interquartile range.
[a] Evaluation of differential by nonparametric methods: Wilcoxon test for paired data (quantitative variables); McNemar test (qualitative variables).

after the treatment, although as in the TENS treatment group, some improvement was observed in some patients.

The patients treated with Vojta therapy showed a significantly greater improvement in pain, according to the VAS scale, with respect to patients treated with TENS ($p = 0.033$) (Table 3). A better result was also obtained in the Oswestry disability and back pain tests with Vojta ($p = 0.005$ and 0.030, respectively). Vojta therapy likewise led to improvements in average disability, according to the Roland Morris questionnaire ($p = 0.044$) and was more effective than TENS in both the Lasègue test ($p = 0.014$) and in reducing the distance in the fingertips to floor test ($p = 0.016$). However, no significant differences were observed after either treatment in the Schöber test results ($p = 0.292$) or in leg pain as measured with the Oswestry test ($p = 0.063$).

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Table 3
Comparison of improvement by Vojta therapy versus treatment with TENS.*

			Mensuration	Average	SD	Median	IR	P worth[a]
Visual Analog Scale		Tens	Pain	1,66	0,82	1,50	1–2	0,033
		Vojta		4,5	2,74	4	3–6	
Oswestry Questionnaire for Pain	Lumbar	Tens		1,5	0,84	1	1–2	0,030
		Vojta		4,17	2,71	3,5	3–5	
	Leg	Tens		1,75	2,19	1	0,5-2	0,063
		Vojta		5	2,61	5	4–6	
Oswestry Questionnaire for Disability		Tens	Disability-functionality	3,5	3,89	2	2–4	0,005
		Vojta		31,83	29,45	24	12–30	
Roland-Morris Questionnaire		Tens		2	2,68	1	0–3	0,044
		Vojta		7,67	6,89	6	3–8	
Schöber test		Tens	Flexibility-Range of motion	0,67	0,59	0,75	0,5-1	0,292
		Vojta		1,1	0,65	1	0,5-1,5	
Finger-ground test		Tens		2,83	0,92	1,5	0–2	0,016
		Vojta		10,33	9,44	8,50	3–12	
				% (N)				
Lasègue Maneuver positive		Tens	Localization-Radiculopaty	66,67 (4)				0,014
		Vojta		0				
To walk on heels (L5)		Tens		66,67 (4)				0,505
		Vojta		83,33 (5)				
To walk on tiptoes (S1)		Tens		66,67 (4)				0,505
		Vojta		83,33 (5)				

*Tens-Vojta: mean improvement after applying each therapy; SD: standard deviation; IR: interquartile range.
[a] Evaluation of differential by nonparametric methods: *U* test Mann-Whitney (quantitative variables); Chi-square test (qualitative variables).

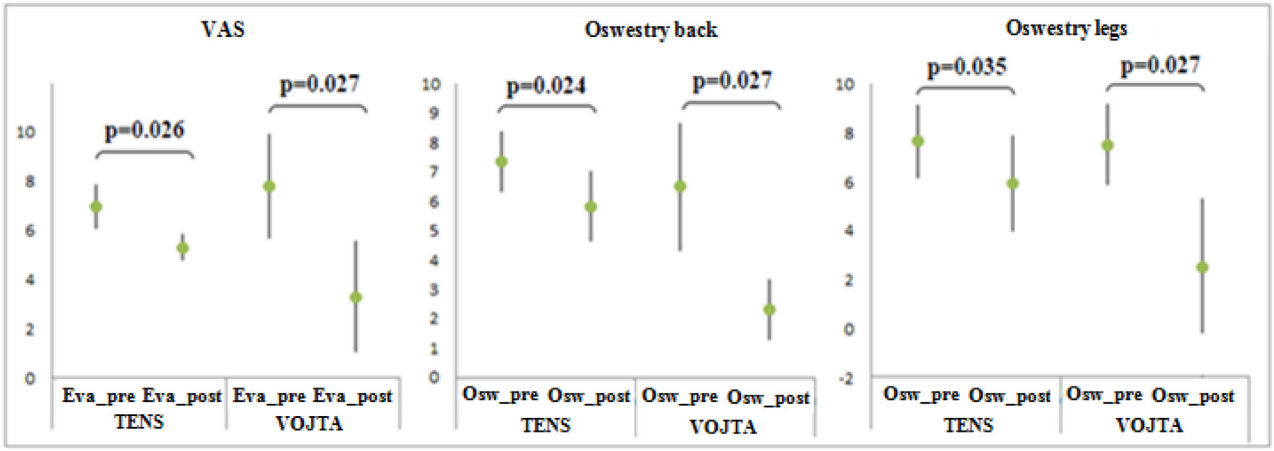

Fig. 2. Evaluation of pain decrease by Visual Analog Scale (VAS/EVA) and Oswestry back and legs after TENS therapy or VOJTA therapy in lumbosciatica.

4. Discussion

This study constitutes a prospective evaluation of the efficacy of Vojta therapy as compared with TENS current therapy in the conservative treatment of lumbosciatica. Almost all indicators of pain, disability, and flexibility improved after both treatments, with the exception of disability according to the Roland-Morris test after TENS. In addition, the Làsegue test was not positive in patients treated with Vojta therapy. Our results showed that Vojta therapy produced significantly better results than TENS in the majority of tests performed, with the exception of the Oswestry leg pain questionnaire, the Schöber test, and walking on heels and toes, in which no significant differences were observed.

TENS is one of the least invasive procedures for treating radicular pain and, as such, it is the most widely used technique in the La Mancha Centro Health area. The interest in evaluating alternative therapies to TENS for therapeutic treatment of lumbosciatica is based simply on the fact that this condition constitutes the greatest worldwide cause of disability. In this context, we found that Vojta therapy had a significant, positive effect on the measurements resulting from the main pain indicators used to evaluate this pathology, including the Oswestry index, which evaluates pain and disability in daily life, as well as the VAS, which evaluates pain. The "post-" as opposed to "pre-" test evaluations also varied significantly in the fingertips to floor test used to evaluate the degree of flexibility. Moreover, in addition to achieving greater improvement in "post-" measures and as opposed to TENS, Vojta therapy also lead to significant improvements in disability, as measured with the Roland Morris questionnaire. Finally, it is worth noting that the Lasègue maneuver resulted negative in all cases.

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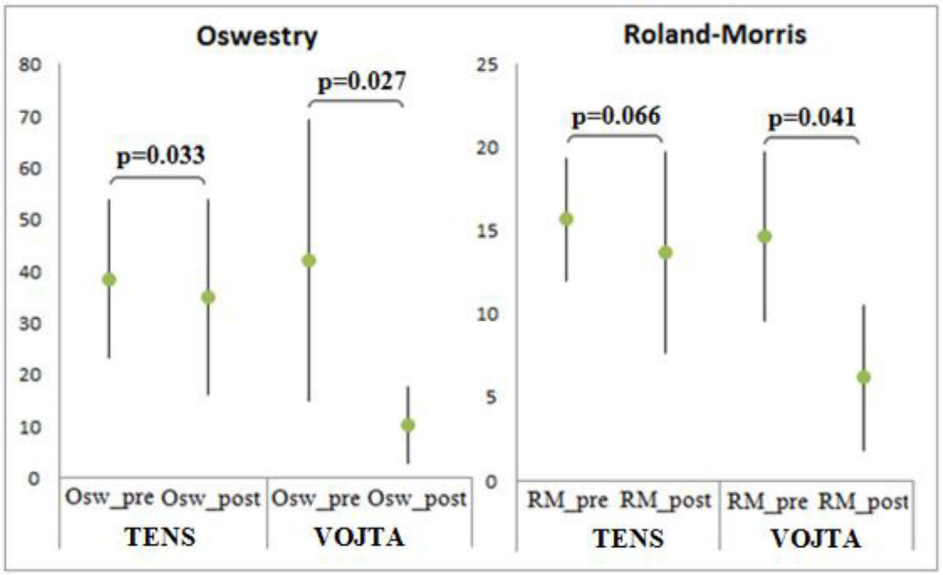

Fig. 3. Evaluation of disability improving by the questionnaires of Rolland-Morris and Oswestry, after TENS therapy or VOJTA in lumbosciatica.

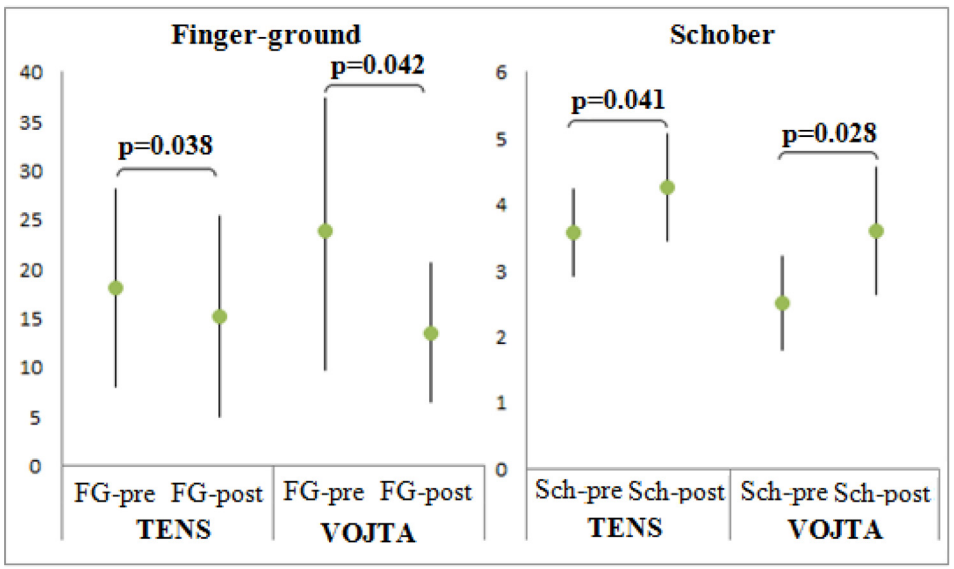

Fig. 4. Evaluation of flexibility improving by finger-ground (FG) and Schober tests, after TENS therapy or VOJTA in lumbosciatica.

There are no references of studies carried out on the application of Vojta therapy to lumbosciatica; in fact, very few studies have been published on its use in the treatment of other disorders in the adult population. Husarová (2005), Laufens and his colleagues (1999), and Henze (2005) performed pre-post studies on patients with hemiparesis and multiple sclerosis, while Pavlú et al. (2000) did the same in healthy adult patients. Backstrom and Dahlgren (2000) analyzed a series of cases of adults with cerebral palsy with different characteristics, whereas Juehring and Barber (2011) applied the therapy to chronic migraines. Still, the use of this therapy seems to be more common in children, for which there are many more published studies. These publications all point to the value of beginning Vojta early on in children with a high risk of suffering from infantile cerebral palsy (Wu et al., 2007; Giannantonio et al., 2010). In general, the authors of these studies observed that Voita therapy produced significant effects on gross and fine motor development, as well as on both respiratory and language disorders when applied to children. A recent study by Hyungwon L and TackHoon K. illustrated that the therapy also led to improvements in children with spastic diplegia (Hyungwon and TackHoon, 2013).

Other authors have performed more specific studies and claimed positive effects on the reduction of different types of pain using TENS (Johnson, 2000). In the present study, as in the work of Zaniewska et al. (2012), we observed significant positive post-treatment improvement with TENS in two of the indicators used (VAS and Oswestry back pain). We also observed significant improvements in bending the back or flexibility as a result of the treatment. Although TENS is widely used, authors such as Köke et al. (2014), Nnoaham and Kumbang (2008), Khadilkar et al. (2008), and Buchmuller et al. (2012) believe that the currently available scientific evidence is not sufficient for recommending its use to treat back pain with or without radicular pain. They argue that too few studies have evaluated TENS current therapy against a

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placebo or with control groups. Indeed, several studies claim that the effects of TENS are no different than those produced by a placebo (Khadilkar et al., 2008). Other authors suggest that in order to interpret the evidence related to TENS treatment, additional factors must be taken into account. Thus, consideration of factors such as dosage, population, or even the interaction with other treatments is necessary to improve the design of clinical tests and the efficacy of TENS (Sluka et al., 2013). In summary, although this therapeutical procedure is widely used in primary care for patients suffering from back pain and lumbosciatica, its effectiveness in other types of pain has been questioned. Therefore, and according to the above, efficacy of TENS is not fully studied and then both this and other alternative therapies deserve more research. As we explained in the introduction, Vojta might yield a conservative and long-lasting effect influencing pain reduction, as this technique activates autochthonous muscles, abdominal muscles and the pelvic floor, then maintaining muscle trophism and helping to maintain the axial extension of the spine.

4.1. Limitations

The present study's main limitations are its small sample size and the absence of a follow-up, which precludes conclusions as to whether the observed results last over time. Although quality-of-life scales were not used to verify the results, both the Oswestry disability index and the Roland Morris questionnaire focus on the functional impact of this pathology as well as on the evaluation of back pain. However, given the small sample of patients evaluated, the consistency of the groups makes the comparison of certain indicators (especially the qualitative indicators of the Lasègue maneuver and heel and toes walking) difficult. Thus, although all of the hypothetical contrasts were made with nonparametric tests, the results obtained in this pilot program must be taken with some caution.

This work evaluates the efficacy of Vojta therapy in the treatment of lumbosciatica for the first time. Through comparison, it also demonstrates the effectiveness of TENS as a commonly used treatment for back pain, which is expected to become more prevalent in the coming decades as a result of the aging population (Zaniewska et al., 2012). Lumbago (with or without radicular implication) is the second most frequent cause of primary medical care and the highest cause of disability throughout the world. It is present in 80–90% of the adult population with frequent recurrence throughout their lives. As such, lumbago constitutes a social problem that not only results in increased absenteeism, but which also generates enormous financial costs for health systems (Whitehurst et al., 2015). This pathology is normally slight to moderate in the majority of cases, meaning that the therapeutical treatment tends to be conservative (Larraguibel, 2006); thus, there is a great amount interest in increasing the range of non-invasive therapeutic possibilities.

5. Conclusion

In conclusion, both Vojta and TENS were effective in the treatment of lumbosciatica, although we observed overall greater improvement in the scales of pain, disability, and degree of flexibility when the patients were treated with Vojta. This study should be extended further to better evaluate and confirm the potential benefits of Vojta therapy in relation to treatment with TENS. In future, it should include a larger sample and more homogenous groups with variables that measure the quality of life. A follow-up study over time would add needed insight into the efficacy of both treatments in the long-term.

5.1. Clinical relevance

- Both TENS and Vojta decrease pain and improve flexibility in lumbosciatica.
- Vojta reduces disability and radiculopathy in lumbosciatica.
- Vojta achieves a significantly greater improvement in pain, disability, flexibility and radiculopathy than TENS.

Funding

Our group received no specific grant from any funding agencies in the public, commercial, or non-profit sectors to conduct this research.

Conflicts of interest

We have no conflict of interest to declare.

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