23 - INFLUENCE OF MYOFASCIAL TECHNIQUES IN EMPLOYEES OF STATE UNIVERSITY OF WEST PARANÁ WITH CHRONIC NONSPECIFIC LOW BACK PAIN

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INTRODUCTION

Low back pain is any pain condition with or without rigidity, located in the lower back, between the last rib and the gluteal fold (TSUKIMOTO et al., 2006). According to epidemiological studies, about 50% to 90% of adults will suffer an episode of low back pain throughout their lives. In industrialized countries, low back pain is the leading cause of disability in people under 45 years (IMAMURA et al., 2001).

The low back disorders are multifactorial and the pathological factors, physical, neurophysiological, psychological and social factors have different impact on each individual. In most cases it is not possible to determine the cause, featuring a nonspecific low back pain (COX, 2002). Low back pain still can be classified according to their duration, into acute (up to 3 weeks), subacute (4-12 weeks) and chronic (more than 12 weeks) (IMAMURA et al., 2001).

The tension of the muscles and fascia are the main causes of back pain. This tension can lead to the development of trigger points, with body spasms that tend to spread in the back, as a protection mechanism spontaneous and subconscious (CASSAR, 2001). The continuous repetition of the same movement can cause densification of fascia, thus altering tissue extensibility and efficiency of muscle contraction, leading to muscle retractions and decreasing the range of motion (DANTO, 2003). Some studies have associated the pain with a reduction in flexibility and mobility to the lumbar level (THOMAS et al., 1995; MCGREGOR et al., 2005).

Individuals with chronic low back pain avoid movements for fear of increase pain, leading to disuse and limitation of the activities of daily living. Thus, patients with low back pain do not only suffer by the physical discomfort, but also by functional disability that decreases the quality of life. It is therefore important assess the level of disability of these patients to characterize the natural history of disease and evaluate the effectiveness of treatment (HORNG et al., 2005).

The physical therapy has several therapeutic resources that assist in pain relief and rehabilitation of these patients. There is among them the manual therapy. One of the techniques that compose the manual therapy is the myofascial manipulation, which affects the mechanical properties of tissue through the fluid movement, compression, stretching and enlargement of muscle fibers, which, consequently, improves the range of motion and decreases the pain (BRIGANÓ e MACEDO, 2005; LEDERMAN, 2001; DIXON, 2007).

Therefore, this study aimed to verify the influence of myofascial techniques on the level of inability, decrease overall pain and increasing the range of motion of the lumbar spine in employees of the State University of West of Paraná with chronic nonspecific low back pain (CNL).

MATERIALS AND METHODS

This study was classified as a clinical trial. Previously approved by the Ethics in Research Involving Human Subjects at the State University of West Paraná (UNIOESTE), by the protocol n º 1011/2011. All volunteers received and signed the consent term.

The sample was selected intentionally and non-probabilistic, composed of 15 employees of the State University of West of Paraná, with CNL and age 20 to 55 years. After the formal invitation and clarification about the objectives and procedures of the study, the volunteers underwent an evaluation to identify possible factors of not inclusion. The inclusion criteria adopted were: sedentary volunteers and persistent low back pain for more than three months. Were not included in the sample: individuals with low back pain whose clinical history suggested etiology no mechanical or involvement of the nervous system, practitioners of regular physical activity with frequency equal to or greater than twice a week,individuals who were performing clinical treatment or physiotherapy, patients who already underwent surgery because of the low back pain, individuals who were making use of anti-inflammatory drugs (NSAIDs) and those with conditions such as ankylosing spondylitis, rheumatoid arthritis, fibromyalgia and lumbar fractures.

The clinical outcomes evaluated were: inability, pain intensity and range of motion (ROM) of the lumbar spine. For evaluation of inability was used the instrument Roland-Morris, a recourse self-administered, properly adapted and validated for use in Brazil. The questionnaire consists of 24 questions covering aspects related to activities of daily living, pain and function, where the patient marked only the phrases that describe on that moment, otherwise goes to the next sentence. For each question is given a score of "1" if patient agrees and "0" for each question that the patient disagree. The score is the sum of the values, so the closer the score "24" higher is the inability of the individual. This questionnaire has a cutoff score "14", ie, individuals assessed with a score greater than 14 have inability (NUSBAUM et al., 2001).

For the measurement of pain intensity was used the Visual Analog Scale of pain (VAS), consisting of a line of 10cm, with markers at their ends, corresponding to 0 no pain and 10 maximum pain exists (TEIXEIRA e FIGUEIRÓ, 2001). Patients were asked to mark the amount of pain exists at the moment. Then the mark was measured by a ruler of 10cm and the number obtained by this measurement was the value assigned to the pain of the volunteer.

The range of motion (ROM) of the lumbar spine (flexion and extension) was assessed by the test of Shöber and modified Shöber . Both require the average distance between the posterior superior iliac spines (PSIS) and from this, points are scored below 5cm and 10cm above. In the test of Shöber was measured the flexion of the lumbar spine, where the patient was standing erect, with naked back. Then was marked the distance between the two points and, following the request for spinal flexion, the distance was again checked, being the difference these the amount of bending that occurs in the lower back. To verify the lumbar extension was used the modified Shöber test. After checking the distance between two points in the standing position, called for the extension of the lumbar spine and got again the measure (MAGEE, 2002).

After evaluation, patients were referred to the treatment protocol with myofascial techniques that consisted of: a) global pompage: done through a smooth and symmetrical tension of both hands placed under the patient's head; b) psoas pompage: the lower limb to be treated was placed in abduction, flexion and external rotation of hip and knee flexed, then the

tension was obtained by a slight tilt of the therapist body; c) low back pompage in the supine position: bending the legs on the abdomen of the patient and his feet resting on the front of therapist shoulders, who advanced the trunk to get the pompage movements; d) piriformis pompage : thigh of the side to be treated bent at 90 °, the tension was obtained by an adduction of the thigh and the movements of pompage by an internal rotation; e) hamstring pompage: tensioning performed with maximum flexion of the hip and extension knee; f) diaphragmatic stripping: the therapist's thumbs were placed bilaterally at the level of the diaphragm, just below the ribs, so it was made a sliding motion during expiration; g) release of the thoracolumbar junction: the therapist's hands were resting on either side of the thoracolumbar junction of the patient, then the therapist applied a voltage, pulling and twisting on the tissues in her hands, identifying sites of mobility disability in the skin and superficial fascia, the tension was maintained until there was relaxation and stretching; h) trunk pompage : patient with a pillow under her navel, while the therapist leaned a hand on the base of the skull and the other hand on the sacrum, with getting the tension between the hands; i) low back pompage in prone: the therapist placed one hand on the lower back portion and the other on the sacrum, performing a tension between them; j) quadratus lumborum liberation: patient in lateral position, while the therapist places one hand on the patient's iliac crest and the other on the rib cage, distancing them; k) rolling the skin: a motion was made to "roll", compressing and sliding the skin and subcutaneous tissues of the lumbar region and deeper structures; l) lumbar stripping: slow and deeper movements were performed sliding with the pulp of the thumb in the lumbar region; m) trigger points release: was performed transverse palpation to the muscle fibers in search of nodules hypersensitive, then the therapist applied a pressure level in place until the tissue release (BIENFAIT, 1999; MAKOFSKY, 2006; DIXON, 2007).

The procedure was performed for four weeks, three times a week and by only one therapist, every session lasted 45 minutes, totaling 10 sessions. In the first and last session was applied the Roland-Morris questionnaire and evaluated the mobility of the lumbar spine. During all sessions were verified, at the beginning and the end of the intervention, the amount of pain present.

For the statistical analysis were used the program BioEstat 5.0, this being accomplished by means of the paired Student t test. Were considered statistically significant the results where the "p" value was less than or equal to the level of significance of 0.05 (α = 5%).

RESULTS

The average age of participants was 38, 7 years (± 10.49). Of the 15 participants, nine (60%) worked in the cleaning sector, three (20%) as cooks and three (20%) as secretaries. Statistical analysis of data obtained in the initial and final evaluations of the lumbar spine ROM and the inability by the Roland-Morris questionnaire can be seen in Table 1. There were statistically significant differences in all variables.

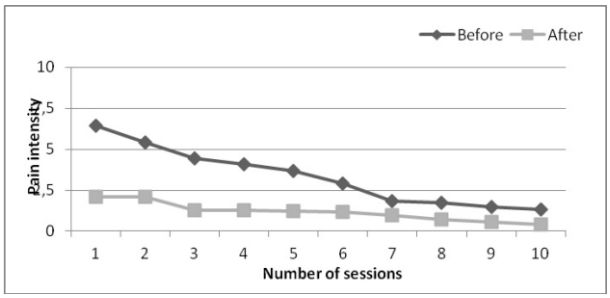
TABLE 1 - Mean values for lumbar flexion and extension and Roland-Morris questionnaire evaluated at the pre treatment and end post treatment

	Pre treatment	Post treatment	*P* value
Flexion	6,61 ± 1,18	7,5 ± 1,15	< 0,0001*
Extension	1,97 ± 0,5	2,51 ± 0,44	0,0046*
Q Roland-Morris	10,2 ± 4,33	4,33 ± 3,13	< 0,0001*

* Statistically significant difference between the values obtained at the pre treatment and pos treatment

The average pain level at baseline was 6.42 cm and the end was 0.42 cm, observing statistically significant difference (p <0.0001). Graph 1 shows the VAS results. Statistically significant differences were observed when comparing the values before and after application of the techniques on the first day (p <0.0001) and on the tenth day (p = 0.01).

GRAPH 1 - Mean of the VAS obtained between the sessions.



DISCUSSION

In the present study, there was a significant decrease in back pain immediately after treatment and after ten sessions, and an improvement in mobility of the lumbar spine after treatment. Corroborating the findings by Fernandes et al. (2009) that verified the immediate effect of a protocol of manual therapy in low back pain and mobility in athletes with low back pain, practitioners of various modalities, they observed a significant reduction in pain between beginning and final (p = 0.00) and an increase in lumbar mobility (p = 0.04).

Bell (2008), applied manual therapy techniques to the intercostal muscles in the thoracic and lumbar areas, erector spinae, quadratus lumborum, psoas major, iliacus, gluteus, piriformis, hamstrings and gastrocnemius and diaphragmatic breathing exercises for ten weeks in a patient with low back pain associated with sciatica. The results were similar to those found in this study, suggesting that the techniques were effective in reducing the level of pain and increase range of motion after the ten weeks.

Briganó e Macedo (2005), using a protocol myofascial manipulation techniques similar to this study, observed after 30 treatment sessions difference on the lumbar pain(p <0.05). They also observed that lumbar mobility is reduced when compared to asymptomatic individuals (p <0.05).

According to Imamura et al. (2008), manipulation of the affected muscles and fascia may induce biochemical changes

that modulate local blood flow and oxygenation in the muscle. These local effects can influence neural activity at the level of spinal cord segment and can modulate the activities of subcortical nuclei that influence mood and pain perception. Another effect of the manipulation is to increase the pain threshold through the release of endorphins and serotonin.

Hypertonic muscles and trigger points can interfere in the range of motion. However, the methods of manual therapy can reduce the firing of the trigger points by ischemic compression that works by increasing blood flow to a tissue due to ischemia, and by myofascial and petrissage techniques that relax hypertonic muscles, release adhesions, increase the length of the fascia and the muscles and consequently increase the range of motion (BELL, 2008; MCPARTLAND e SIMONS, 2006).

In a study by Macedo et al. (2009), in order to verify the validity and reliability of the Schober test to evaluate ROM of the lumbar spine in relation to the gold standard (radiography) in individuals with low back pain, found an average mobility of the lumbar spine of 5.8 cm, lower than the present study. However, they suggested that the test can be used only as an adjunct in the monitoring of individual clinical, in the rehabilitation process, because this showed poor validity for measuring the ROM of the lumbar spine, compared to the gold standard.

Regarding the assessment of inability by the Roland-Morris questionnaire, the study sample had a mean score of 10.2 ± 4.33. This result was below the cutoff of 14 points, recommended by Nusbaum et al. (2001), indicating that, on average, the subjects showed no significant inability. However, the scores ranged from 5 to 21, demonstrating a great variability of the sample.

According to Moraes (2003), chronic nonspecific low back pain rarely incapacitates totally a person to perform daily activities. However, it may partially and temporarily limit and often recurrently.

Kuijer et al. (2005) and Moraes (2003), observed a significant correlation between the intensity of pain with inability. Kuijer et al. (2005), also stressed that the improvement in pain may be due to the reduction of limitations and improvement of "state" functional of the individual.

Similar results to this study were observed in the survey conducted by Preyde (2000), with 98 individuals with low back pain divided into four groups: comprehensive massage therapy (soft-tissue manipulation, remedial exercise and posture education) (n = 25), soft tissue manipulation only (n = 25), remedial exercise with posture education only (n = 22) and placebo of sham laser treatment (n = 26). Both the comprehensive massage therapy group and the soft tissue manipulation group showed statistically significant results, after treatment, in the level of pain and in the outcome of the Roland-Morris questionnaire.

Aure et al. (2003), concluded in their study that manual therapy showed significantly improved when compared to active exercise therapy in patients with chronic low back pain.

CONCLUSION

It was observed that the protocol with myofascial techniques can decrease the levels of pain, increase the range of motion of the lumbar spine and decrease levels of inability in patients with chronic nonspecific low back pain.

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INFLUENCE OF MYOFASCIAL TECHNIQUES IN EMPLOYEES OF STATE UNIVERSITY OF WEST PARANÁ WITH CHRONIC NONSPECIFIC LOW BACK PAIN

ABSTRACT

The chronic nonspecific low back pain (CNL) has high incidence and may interfere with the mobility of the lumbar spine and level of inability of individuals. A major cause may be the tension of the muscles and fascia. Among the many features for its treatment there is the manual therapy, which, through myofascial techniques, stretching and normalizes shortened tissues and, consequently, can improve mobility and reduce abnormal tension in the body. The aim of this study was to assess the influence of myofascial techniques on the level of inability, decreased pain and increased range of motion of the lumbar spine in employees of the State University of West Paraná with chronic nonspecific low back pain. The sample consisted of 15 patients with CNL, sedentary, aged 20 to 55 years. Were not included individuals with low back pain, whose medical history suggested no mechanical etiology or nervous system involvement and practicing regular physical activity. The patients were treated for 10 sessions, with a protocol which consisted of myofascial manipulation techniques, for three weekly sessions. In the first and last session was applied the Roland-Morris questionnaire and were made evaluations of the mobility of the lumbar spine (Shober test and modified Shober test). During all sessions were seen at the beginning and the end of the intervention, the amount of present pain (visual analog scale). There were statistically significant differences in flexion (<0.0001), extension (0.0046), Roland-Morris questionnaire (<0.0001) and pain (p <0.0001). Was concluded that the protocol with myofascial techniques can decrease the levels of pain, increase range of motion of the lumbar spine and lower levels of inability in patients with CNL.

KEYWORDS: Low back pain, manual therapy, range of motion

INFLUENCE DES TECHNIQUES MYOFASCIALES DANS LES FONCTIONNAIRES DE L'UNIVERSITÉ DE L'OUEST DU PARANÁ AVEC LOMBALGIE CHRONIQUE NON SPÉCIFIQUE

RÉSUMÉ

La lombalgie chronique non spécifique présente une incidence élevée et peut intervenir dans la mobilité de la colonne lombaire et dans le niveau d'incapacité des individus. Une des causes principales peut être la tension des muscles et des fascias. Parmi les nombreuses ressources pour son traitement on rencontre la thérapie manuelle qui, au moyen des techniques myofasciales, allonge et normalise les tissus raccourcie et, par conséquent, peut améliorer la mobilité et réduire les tensions anormales dans l'organisme. L'objectif de cette étude était vérifier l'influence des techniques myofasciales sur le niveau d'incapacité, sur la diminution de la douleur et sur l'augmentation de l'ampleur de mouvement de la colonne lombaire dans les fonctionnaires de l'Université de l'ouest du Paraná pourteuses de lombalgie chronique non spécifique. L'échantillon était composé de 15 patientes pourteuses de lombalgie chronique non spécifique, sédentaires et âgés de 20 à 55 ans. Ne sont pas incluses les personnes qui ont de douleur lombaire, dont les antécédents médicaux suggérât étiologie non mécanique ou englobement du système nerveux, et qui pratiquent une activité physique régulière. Les patientes ont été soumettre au traitement par 10 séances, qui a été composé d'un protocole avec des techniques de manipulation myofasciale, pendant trois séances hebdomadaires. Dans la première et dernière séance, le questionnaire Roland-Morris a été appliqué, et les évaluations de la mobilité de la colonne lombaire ont été realisé (test de Shöber et test de Shöber modifié). Pendant toutes les séances, au début et à la fin de l'intervention, la quantité de douleur présente a été vérifié (échelle visuelle analogique). Donc, on conclut que le protocole des techniques myofasciales a été capable de diminuer les niveaux de la douleur, de augmenter l'ampleur de mouvement de la colonne lombaire et de réduir les niveaux d'incapacité dans les patientes avec lombalgie chronique non spécifique.

MOTS-CLÉS: Lombalgie, Thérapie manuelle, Ampleur de mouvement

INFLUENCIA DE LA TÉCNICA MIOFASCIALES EN LAS FUNCIONARIAS DE LA UNIVERSIDAD DEL OESTE DEL PARANÁ CON DOLOR CRÓNICA NO ESPECÍFICA EN LA LUMBAR

RESUMÉN

El dolor crónico inespecífico en la columna lumbar (LCI) presenta una gran incidencia y puede interferir en la movilidad de la columna lumbar y en el nivel de incapacidad de los individuos. Una de las principales causas puede ser la tención de la musculatura y de la fascia. Entre los diversos recursos para su tratamiento esta la terapia manual, que, por medio de las técnicas miofasciales, alarga y normaliza los tejidos acortados y como consecuencia puede mejorar la movilidad e reducir las tenciones anormales del cuerpo. El objetivo del presente estudio fue comprobar la influencia de las técnicas miofasciales en el nivel de incapacidad, en la reducción del dolor y en el aumento en la amplitud del movimiento de la columna lumbar en las funcionarias de la Universidad Estadual del Oeste del Paraná, portadoras del dolor crónica inespecífica en la columna lumbar. La muestra fue compuesta por 15 pacientes portadoras de LCI, sedentarias y con edad de 20 a 55 años. No fueran incluidos individuos con dolor en la lumbar, cuyo histórico sugiriese etiología no mecánica o la participación del sistema nervioso y practicantes de actividad física regular. Las pacientes fueran sometidas al tratamiento por 10 sesiones, el cual fue compuesto por un protocolo con técnicas de manipulación manual, por tres sesiones semanales. En la primera y en la última fue aplicado el cuestionario Rolland-Morris y fueran realizadas las valuaciones de la movilidad de la columna lumbar (teste de Shöber e teste de Shöber modificado). En todas las sesiones fueran averiguadas la cantidad del dolor presente (escala visual analógica). Por lo tanto, concluye-se que el protocolo de técnicas miofasciales fue capaz de reducir los niveles del dolor, aumentar la amplitud del movimiento de la columna lumbar y reducir los niveles de incapacidad en los pacientes con LCI.

PALABRAS-CLAVE: Dolor en la columna lumbar; Terapia manual; Amplitud del movimiento;

INFLUÊNCIA DE TÉCNICAS MIOFASCIAS EM FUNCIONÁRIAS DA UNIVERSIDADE ESTADUAL DO OESTE DO PARANÁ COM LOMBALGIA CRÔNICA INESPECÍFICA

RESUMO

A lombalgia crônica inespecífica (LCI) apresenta alta incidência e pode interferir na mobilidade da coluna lombar e no nível de incapacidade dos indivíduos. Uma das principais causas pode ser a tensão dos músculos e da fáscia. Dentre os diversos recursos para seu tratamento está a terapia manual, que, por meio de técnicas miofasciais, alonga e normaliza os tecidos encurtados e, como consequência, pode melhorar a mobilidade e reduzir as tensões anormais no organismo. O objetivo deste estudo foi verificar a influência de técnicas miofasciais no nível de incapacidade, na diminuição da dor e no aumento da amplitude de movimento da coluna lombar em funcionárias da Universidade Estadual do Oeste do Paraná portadoras de lombalgia crônica inespecífica. A amostra foi composta por 15 pacientes portadoras de LCI, sedentárias e com idade de 20 a 55 anos. Não foram incluídos indivíduos com dor lombar, cujo histórico clínico sugerisse etiologia não mecânica ou envolvimento do sistema nervoso e praticantes de atividade física regular. As pacientes foram submetidas ao tratamento por 10 sessões, o qual foi composto por um protocolo com técnicas de manipulação miofascial, durante três sessões semanais. Na primeira e na última foi aplicado o questionário Roland-Morris e foram realizadas as avaliações da mobilidade da coluna lombar (teste de Shöber e teste de Shöber modificado). Durante todas as sessões foram verificadas, no início e ao fim da intervenção, a quantidade de dor presente (escala visual analógica). Foram observadas diferenças estatisticamente significativas na flexão (< 0,0001), extensão (0,0046), questionário Roland-Morris (< 0,0001) e na dor (p < 0,0001). Portanto, concluiu-se que o protocolo de técnicas miofasciais foi capaz de diminuir os níveis de dor, aumentar a amplitude de movimento da coluna lombar e reduzir os níveis de incapacidade em pacientes com LCI.

Palavras-chave: Lombalgia; Terapia manual; Amplitude de movimento