

COMPARISON OF THE FREQUENCY OF PHYSIOTHERAPY ON QUALITY OF LIFE, ANXIETY, AND DEPRESSION IN PATIENTS WITH CHRONIC LOW BACK PAIN

COMPARAÇÃO DA FREQUÊNCIA DA FISIOTERAPIA NA QUALIDADE DE VIDA, ANSIEDADE E DEPRESSÃO EM PACIENTES COM LOMBALGIA CRÔNICA

COMPARACIÓN DE LA FRECUENCIA DE LA FISIOTERAPIA EN LA CALIDAD DE VIDA, ANSIEDAD Y DEPRESIÓN EN PACIENTES CON LUMBALGIA CRÓNICA

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ABSTRACT

Objective: To evaluate the effects of the frequency of physiotherapeutic intervention on quality of life, anxiety, and depression in patients with chronic low back pain. **Methods:** A randomized clinical trial was conducted with 40 patients undergoing treatment at the Physiotherapy Outpatient Clinic of a teaching hospital. Participants were divided into two groups: Group 1 received the physiotherapeutic protocol once a week for four weeks (totaling four sessions); Group 2 received the protocol three times a week for four weeks (totaling twelve sessions). The protocol included mat and studio Pilates, myofascial release, and elastic functional bandaging. Assessments were performed at the beginning and end of treatment using a visual analog scale for pain, the WHOQOL-PAIN quality of life questionnaire validated for Portuguese, the Beck Anxiety Inventory, and the Beck Depression Inventory. **Results:** Group 2 showed significantly greater improvement compared to the group that underwent the protocol once a week, confirming that more frequent physiotherapy ensures better psychophysical outcomes and functional-clinical improvement. **Conclusion:** Physiotherapy administered three times per week was more effective in improving quality of life, anxiety, and depression in patients with chronic low back pain. **Level of evidence I; Therapeutic studies – Investigation of treatment outcomes.**

Keywords: Physical Therapy Services; Low Back Pain; Depression; Anxiety; Quality of Life.

RESUMO

Objetivo: Avaliar os efeitos da frequência da intervenção fisioterapêutica na qualidade de vida, ansiedade e depressão em pacientes com lombalgia crônica. **Métodos:** Foi realizado um ensaio clínico randomizado com 40 pacientes em tratamento no Ambulatório de Fisioterapia de um hospital escola. Os participantes foram divididos em dois grupos: Grupo 1 submetidos ao protocolo fisioterapêutico uma vez por semana durante quatro semanas, totalizando quatro sessões; Grupo 2 submetidos ao protocolo três vezes por semana durante quatro semanas, totalizando 12 sessões. O protocolo foi realizado por meio de Pilates em solo e estúdio, liberação miofascial e bandagem funcional elástica. Também foram avaliados através da escala análoga de dor, questionário de qualidade de vida WHOQOL-PAIN validado para a língua Portuguesa, inventário de ansiedade de Beck e escala de depressão de Beck, no início e término do tratamento. **Resultados:** O grupo 2 teve maior relevância quando comparado ao grupo que seguiu o protocolo de 1 vez na semana durante as 4 semanas, o que assegura, a melhora do psicossomático e do quadro clínico funcional quando realizada a fisioterapia em maior frequência. **Conclusão:** A frequência de fisioterapia 3 vezes na semana foi mais eficaz na melhora da qualidade de vida, ansiedade e depressão de pacientes com lombalgia. **Nível de evidência I; Estudos terapêuticos – Investigação dos resultados do tratamento.**

Descritores: Serviços de Fisioterapia; Lombalgia; Depressão; Ansiedade; Qualidade de Vida.

RESUMEN

Objetivo: Evaluar los efectos de la frecuencia de la intervención fisioterapéutica sobre la calidad de vida, la ansiedad y la depresión en pacientes con lumbalgia crónica. **Métodos:** Se realizó un ensayo clínico aleatorizado con 40 pacientes en tratamiento en el Consultorio de Fisioterapia de un hospital escuela. Los participantes se dividieron en dos grupos: el Grupo 1 se sometió al protocolo fisioterapéutico una vez por semana durante cuatro semanas, totalizando cuatro sesiones; el Grupo 2 lo siguió tres veces por semana durante cuatro semanas, sumando doce sesiones. El protocolo incluyó Pilates en suelo y en estudio, liberación miofascial y vendaje funcional elástico. También se evaluó al inicio y al término del tratamiento mediante la escala análoga de dolor, el cuestionario de calidad de vida WHOQOL-PAIN validado para el portugués, el Inventario de Ansiedad de Beck y la Escala de Depresión de Beck. **Resultados:** El Grupo 2 obtuvo mejoras

Study conducted by the Faculdade de Medicina de São José do Rio Preto, SP, Brazil.

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significativamente superiores en comparación con el grupo que siguió el protocolo una vez por semana, lo que indica que realizar fisioterapia con mayor frecuencia favorece la mejora del aspecto psicofísico y el cuadro clínico funcional. Conclusión: La fisioterapia aplicada tres veces por semana fue más eficaz en mejorar la calidad de vida, la ansiedad y la depresión en pacientes con lumbalgia crónica. **Nivel de evidencia I; Estudios terapéuticos – Investigación de los resultados del tratamiento.**

Descriptor: Servicios de Fisioterapia; Lumbalgia; Depresión; Ansiedad; Calidad de Vida.

INTRODUCTION

Low back pain is a common health problem worldwide. Almost 80% of the population will experience low back pain at least once during their lifetime¹. The prevalence of chronic low back pain must be considered within the context of the prevalence of low back pain in general. Many studies attest to the high frequency of back complaints in society. The annual prevalence of back pain ranges from 15% to 45%, with point prevalences averaging 30%².

It is the musculoskeletal condition with the greatest global burden of disease, defined in terms of disability-adjusted life years or years lived with disability. Although pain and disability are associated with a range of psychosocial and physical factors, the direct pathways linking pain and disability remain unclear. Thus, clinicians and researchers face difficulties in designing targeted interventions to relieve the burden of chronic low back pain³.

Chronic pain negatively affects patients' psychological state and limits activities of daily living, which predisposes the patient to depression, in addition to being associated with high direct and indirect health care costs⁴.

There is an association between psychological factors and the occurrence of low back pain. These factors include anxiety, depression, somatization symptoms, stressful responsibility, job dissatisfaction, mental stress at work, negative body image, and low self-esteem⁵.

Depression and anxiety are among the main diseases affecting society. According to the WHO (World Health Organization), it is estimated that in Brazil 12 million people suffer from depression and consequently develop anxiety. This is the highest rate in Latin America and the second highest in the Americas, behind only the United States in mortality⁶.

Depression is characterized as a mental disorder, a clinical condition whose main feature is a profound feeling of sadness and a loss of interest in everyday things. The patient feels as if nothing in their life makes any sense. These are examples of complications that are aggravated by the lack of knowledge on the subject and by the lack of resources for treatment⁷.

Another condition also related to the psychological factor is anxiety. In Brazil, 7.3% of the population have anxiety disorders, resulting from obsessive and compulsive attitudes, post-traumatic stress, panic attacks, and phobias. It is not linked to the threat itself; it may occur by anticipation, before the threat, persist after the threat has ended, or occur without identifiable threats. It is often accompanied by physical and behavioral changes similar to a panic attack^{3,4}.

Although most treated cases of low back pain resolve in the acute form, a percentage develops disability and persistent pain. For this reason, the investigation of psychosocial factors is necessary, since they influence pain coping mechanisms and consequently contribute to its chronicity, foster the development of disability, hinder adherence to physical activity programs, increase movement-related fear, and alter the prognosis³.

Assessing these factors in clinical practice is essential for a good treatment outcome and for improving aspects of life. The integration of psychological factors into physiotherapeutic treatment can occur in several ways: through goal setting; through the use of techniques to distract attention from pain; through the use of coping strategies via gradual exposure to movement and attenuation of the painful stimulus; and through the encouragement of self-efficacy and assistance in changing beliefs and attitudes toward the pain condition³.

The physiotherapist has the autonomy and competence to perform various activities and to establish parameters through a

physiotherapeutic assessment and diagnosis, in addition to planning and scheduling preventive actions and health education².

Physical therapy modalities are the most common conservative methods used in the treatment of low back pain. In general, these modalities are combined with exercises, manual techniques, and elastic bandages⁸⁻¹⁰. Several physical therapy modalities have been investigated in low back pain studies; however, there is no consensus regarding the ideal number of sessions and intervals. Furthermore, there are currently no studies in the literature comparing the effects of the frequency of physiotherapeutic modalities on pain, quality of life, anxiety, and depression in patients with chronic low back pain.

In view of this, this study aims to evaluate the effects of the frequency of physiotherapeutic intervention on quality of life, anxiety, and depression in patients with chronic low back pain, comparing the effects of a physiotherapy program once a week and three times a week.

METHODS

This is a randomized clinical trial, approved by the Research Ethics Committee of the institution under the code CAAE: 58191522.4.0000.5415. Forty patients of both sexes, over 18 years of age, referred to the Physiotherapy Outpatient Clinic of a teaching hospital for the treatment of chronic low back pain, participated in the study.

Participants were selected at random, by order of arrival and acceptance to participate in the study. The research subjects were divided into two groups:

- Group 1: 20 participants underwent a physiotherapeutic protocol once a week for four weeks, totaling four sessions;
- Group 2: 20 participants underwent a physiotherapeutic protocol three times a week for four weeks, totaling twelve sessions.

The inclusion criteria were the presence of chronic low back pain established by two criteria: one that identified the lumbar region as the site of pain in a figure of a person in an upright, supine, and prone position with the lumbar, thoracic, and cervical regions painted in different colors, and another that confirmed the presence of this pain for seven weeks or more.

Exclusion criteria comprised patients with physical-functional alterations that prevented the performance of the exercises, as well as patients with cognitive alterations that made the assessments impossible.

Patients who agreed to take part in the research completed the Free and Informed Consent Form, a clinical and demographic data collection form, a physical assessment form, the Analog Pain Scale, and the WHOQOL-PAIN Quality of Life Questionnaire validated for the Portuguese language, the Beck Anxiety Inventory, and the Beck Depression Inventory on the first day and at the end of treatment.

After data collection, the data were entered into an Excel spreadsheet. Descriptive statistical analysis was performed based on the calculation of measures of central tendency and dispersion and frequency counts.

For the inferential statistical analysis of the quantitative variables, the Kolmogorov-Smirnov test was used to verify the normality of the data. The paired t-test and Wilcoxon test were then used. Frequency comparisons were obtained using the classical Chi-square test and Fisher's Exact test.

In all analyses, a p-value ≤ 0.05 was considered statistically significant. The software programs used were SPSS (IBM, version 23, 2014), PRISMA (version 6.10, 2015), and GraphPad Instat (3.10, 2009).

Physiotherapeutic treatment protocol

Patients underwent a physiotherapeutic protocol for pain treatment and postural re-education, using the methods of Mat and Studio Pilates, Myofascial Release, and Elastic Functional Bandaging in the daily clinical practice of the Physiotherapy Outpatient Clinic, in sessions lasting 45 minutes. They also received guidance on home exercises for body stretching and postural instructions.

Pilates method

The Pilates method was developed by Joseph Hubertus Pilates and consists of comprehensive body conditioning aimed at developing better body awareness and improving posture. Pilates exercises mainly involve isometric contractions (i.e., contraction without joint movement) of the core muscles, which make up the muscular center responsible for stabilizing the body, both in movement and at rest.

Traditional Pilates exercises follow six basic principles: centering (contraction of the core muscles), concentration (cognitive attention during the performance of the exercises), control (postural management during the performance of the exercises), precision (accuracy of the exercise), flow (smooth transition of movements within the exercise sequence), and breathing in coordination with the exercises.

The exercises are considered similar to spinal stabilization exercises (also known as motor control exercises); however, they do not involve the conscious activation of specific muscles in the manner often used in spinal stabilization exercises. During dynamic Pilates exercises, co-contraction of the multifidus (a deep back muscle), the transversus abdominis (a deep abdominal muscle), the pelvic floor, and the diaphragm muscles is observed. The purpose of the co-contraction of these muscles is to reduce joint compression and alter pelvic tilt.

The Pilates method includes several stretching and strengthening exercises, which can be divided into two categories: Mat Pilates (exercises performed on the floor, without any specific equipment) and exercises with Pilates apparatus to perform exercises against resistance provided by springs and pulleys. The reported benefits of Pilates exercises include improvements in strength, range of motion, coordination, balance, muscle symmetry, flexibility, proprioception (postural awareness), body definition, and general health. The exercises are adapted to the patient's condition and the difficulty is gradually increased, respecting individual abilities and characteristics. The springs and pulleys of each apparatus can be used to make the exercises easier or harder⁸.

Myofascial release

Myofascial release is a technique similar to other manual therapy techniques, having a passive character, using the hands, elbows, finger, or specific instruments. It is suggested that this technique be performed with shearing movements between the skin and the fascia. The main purpose of the technique is to reduce fibrous adhesions in the fascial networks and, consequently, to reverse the loss of energy of the structure after strong mechanical stress, allowing the return of the functionality of the fascial networks⁹.

Elastic functional bandaging

Elastic bandaging is widely used in sports medicine and in the rehabilitation of musculoskeletal disorders, on the rationale that it increases body stability, joint protection, correction and alignment of segments, biomechanical modifications of movement, and promotion of proprioception. It is made of an elastic polymer wrapped in cotton fibers, which allows the evaporation of sweat. Characterized by a thickness resembling that of the epidermis, and by the possibility of being stretched longitudinally up to 140% relative to its initial length, it can also remain adhered to the skin for several days, differing from traditional rigid bandages.

It can be applied in the direction from insertion to origin in order to inhibit muscle action, or from origin to insertion in order

to facilitate muscle function. The choice of shape of the bandage strips is up to the therapist, depending on the size of the muscle involved as well as the objective of the treatment. The tension applied to the bandage can vary between 0% (no tension) and 100% (maximum tension). Among its benefits are pain reduction, increase or decrease in strength, greater or lesser muscle activation, support during muscle contractions, improvement in gait pattern, improvement in functional performance, and promotion of sensory stimuli on the skin¹⁰.

RESULTS

Both groups presented pain in the lumbar region. In Group 1, with a mean age of 54 years (SD=11), 25% radiated to the buttocks, 5% above the knee, and 70% below the knee. Group 2, with a mean age of 46 years (SD=18), had 45% with radiation to the buttocks, 10% above the knee, and 45% below the knee.

The visual analog scale was applied to assess pain intensity, along with the Beck Anxiety and Depression questionnaire and the SF-12 quality of life questionnaire, which assesses physical and mental aspects.

Table 1 shows the comparisons between Group 1 and Group 2 regarding the Visual Analog Scale (VAS). There was a reduction in pain after the application of the physiotherapeutic protocol.

Table 2 presents the comparisons between the Beck Anxiety questionnaire scores of the two groups.

Table 3 presents the comparisons between the Beck Depression questionnaire scores of the two groups.

Table 4 presents the comparisons between the groups of the scores before and after the physiotherapeutic intervention of the SF-12 questionnaire, which determines the individual's quality of life, encompassing the emotional and mental factor.

Taking into account the data presented above, it can be concluded that group G2, which underwent the protocol of 3 weekly sessions, totaling 12 sessions, with a physiotherapy program based on kinesiotherapy with appropriate approaches for each case, showed greater relevance compared to the group that followed the protocol of once a week for the 4 weeks. Thus, there was an improvement

Table 1. Comparison of Visual Analog Scale scores before and after the physiotherapeutic protocol in Group 1.

VAS score	Before	After	p-value
Group 1	6 ± 1.93	3.85 ± 2.60	<0.0001*
Group 2	6.75 ± 1.80	2.05 ± 2.01	<0.0001*

*paired t-test.

Table 2. Comparison of the Beck Anxiety questionnaire scores before and after the physiotherapeutic intervention in the groups.

Anxiety score	Before	After	p-value
Group 1	16 ± 12.2	4 ± 2.1	<0.0001*
Group 2	19 ± 15.5	4.5 ± 8.4	<0.0001*

*paired t-test.

Table 3. Comparison of the Beck Depression questionnaire scores before and after the physiotherapeutic intervention in the groups.

Depression score	Before	After	p-value
Group 1	13.5 ± 12.1	8 ± 11.6	0.0002†
Group 2	14 ± 10.4	1.5 ± 6.7	<0.0001*

*Wilcoxon test; †paired t-test.

Table 4. Comparison of the SF-12 questionnaire scores before and after the physiotherapeutic intervention in the groups.

SF-12 score	Before	After	p-value
Group 1 (physical)	31.22 ± 9.26	43 ± 9.70	0.0006*
Group 1 (mental)	36.56 ± 13.32	50.24 ± 12.37	0.0029*
Group 2 (physical)	27.77 ± 6.46	49.69 ± 7.36	<0.0001*
Group 2 (mental)	32.59 ± 13.39	56.71 ± 8.45	<0.0001*

*paired t-test.

in physical aspects correlated with the improvement in mental aspects, such as anxiety and depression, which proves that with the increase in physiotherapy frequency, there is an improvement in the psychosomatic condition and, therefore, an improvement in the functional clinical condition.

DISCUSSION

Progressive, supervised, and individualized physical exercise is recommended by the European guidelines for the treatment of nonspecific low back pain¹¹, however, there is a gap regarding the parameters of appropriate intensity, frequency, or duration. Based on the update of the clinical practice guidelines¹², a wide variation is currently observed regarding the duration, frequency, and intensity of active physiotherapeutic treatments in research.

In view of this, considering the regularity of treatment, Arins et al.¹³ evaluated a segmental stabilization exercise program, with a frequency of twice a week, in 25 patients with chronic low back pain. The study lasted 8 weeks, resulting in improvement in pain, functionality, and quality of life.

Similarly, Altinbilek and Murat⁷ compared the effects of interventions such as thermotherapy, conventional TENS, therapeutic ultrasound, and active exercises, performed twice versus five times a week, through their impacts on depression, pain, and functional disability. Both frequencies proved effective; however, twice-weekly treatment was more beneficial and accessible.

Bemani et al.¹⁴ analyzed the impacts of progressive exercises, warm-up, postural alignment, and electrotherapy compared with conventional physiotherapy in 70 patients, performed twice a week, over a total of 6 weeks. Conventional physiotherapy achieved better results regarding pain catastrophizing, disability, and quality of life.

A systematic review by Fernández-Rodríguez et al.¹⁵ analyzed 118 articles on the effectiveness of different types of exercise, including stretching, Pilates, McKenzie, strength, aerobic, multimodal, core-based, and mind-body. The interventions, performed one to two times a week over a period of 3 to 9 weeks, showed Pilates to be the most effective method for improving pain and disability.

Amaral et al.¹⁶ conducted a randomized study to estimate the impacts of the combination of Pilates and continuous shortwave diathermy, with 36 participants. The intervention was performed twice a week over 6 weeks. It was found that, despite the same frequency, both were effective in pain control; however, Pilates stood out regarding anxiety and depression in patients with chronic low back pain.

On the other hand, Silva et al.¹⁷ compared the Pilates method

with conventional active exercises focused on the lumbar spine and lower limbs, in a randomized study with 16 participants over 12 weeks. The interventions, performed twice a week, demonstrated improvement in flexibility, range of motion, pain relief, and increased quality of life in individuals with chronic low back pain.

According to Lin et al.¹⁸, a periodicity greater than 2 or 3 sessions a week, with a minimum duration of 60 minutes, can produce positive results in pain and functional capacity. Elikis et al.¹⁹ demonstrate a similar recommendation: although the duration, frequency, and type of Pilates directly influence the results, sessions supervised by qualified instructors and performed two to three times a week for 60 minutes prove beneficial for low back pain.

In order to determine the ideal frequency of Pilates (once, twice, and three times a week) associated with pain improvement of 30%, 50%, and 100%, Miyamoto et al.²⁰ conducted a study with 296 participants with chronic low back pain, divided into one group guided by an educational booklet and three others with different frequencies of Pilates, over 6 weeks. As a result, most patients reported pain relief of between 30% and 50% after the first week of treatment, with no significant differences between the Pilates groups.

According to Wood L. et al.²¹, the Pilates group with two weekly sessions showed a partial improvement in kinesiophobia and pain catastrophizing compared with the booklet-guided group, but not related to pain intensity. This explains how these psychological aspects partially influence the reduction of pain and functional disability when using this method in chronic low back pain.

Although the clinical difference between two and three sessions per week was not significant, practicing Pilates three times a week was considered more advantageous from a cost-utility standpoint²².

Despite many studies on the methods used in low back pain, few works directly compare the frequency of physiotherapy on quality of life, anxiety, and depression in patients with low back pain.

Therefore, even though studies suggest the effectiveness of two weekly sessions or that there is no significant difference between one and three weekly sessions, in the present research, progress in the physical, neurological, and mental aspects can be observed when physiotherapy was performed at higher frequencies, confirming that there is a relevant difference between one and three weekly sessions in individuals with chronic low back pain.

CONCLUSION

Physiotherapy at a frequency of 3 times a week was more effective in improving quality of life, anxiety, and depression in patients with low back pain.

CONFLICT OF INTEREST

All authors declare no potential conflict of interest related to this article.

CONTRIBUTIONS OF THE AUTHORS

Each author contributed individually and significantly to the development of the manuscript. MHDAF: project design, introduction, and methods. HCSP: data collection. ABOS: project design and execution. SC: review of the work. GMAF: review and supervision. JNFR: review of the work.

DATA AVAILABILITY DECLARATION

The content underlying the research text is contained in the manuscript.

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