

Efficacy of ground Pilates for chronic low back pain patients. Case reports*

Eficácia do método Pilates no solo em pacientes com lombalgia crônica. Relato de casos

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SUMMARY

BACKGROUND AND OBJECTIVES: The inability to stabilize the spine due to the unbalance between trunk extensor and flexor muscles is a strong indication of the development of lumbar spine disorders. The exercise commonly referred to as Pilates[®] advocates improvement of muscle agonist and antagonist relations favoring the work of stabilizing muscles and preventing several lumbar spine disorders. This study aimed at evaluating the effectiveness of Pilates to treat chronic low back pain.

CASE REPORTS: We have evaluated seven female patients aged between 18 and 50 years, with clinical diagnosis of chronic low back pain and able to perform basic and intermediate Pilates exercises. Evaluation tools were the pain visual analog scale (VAS) and Oswestry's low back pain questionnaire, in addition to an Identification Questionnaire. Data were analyzed by simple arithmetic average. There has been significant pain improvement by VAS which initially had a mean of 7 and after 3 months of treatment has decreased to 1.7. There has been improvement in quality of life, with Oswestry's index decreasing from 36.8% to 8% after 3 months of treatment.

CONCLUSION: Pilates was effective to treat chronic low back pain, having improved pain and incapacities.

Keywords: Low back pain, Lumbar pain, Pain evaluation.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A incapacidade de estabilização da coluna vertebral, causada pelo desequilíbrio entre a função dos músculos extensores e flexores do tronco, é um forte indício de desenvolvimento de distúrbios da coluna lombar. O exercício, frequentemente referido como Pilates[®] preconiza a melhora das relações musculares agonista e antagonista, favorecendo o trabalho dos músculos estabilizadores, prevenindo diversos distúrbios na coluna lombar. O objetivo deste estudo foi avaliar a efetividade do método Pilates no tratamento de pacientes com lombalgia crônica.

RELATO DOS CASOS: Foram estudadas 7 pacientes do sexo feminino, com idade entre 18 e 50 anos, com diagnóstico clínico de lombalgia crônica e com habilidade para executar os exercícios do nível básico e intermediário do método Pilates. Foram utilizados como instrumentos de avaliação e medida a escala analógica visual (EAV) de dor e o Questionário de Oswestry de lombalgia, além de um Questionário de Identificação. A análise dos dados foi feita por média aritmética simples. Houve melhora significativa da dor, demonstrada pela EAV que, inicialmente, apresentava média de 7 e após 3 meses de tratamento, diminuiu para 1,7. Houve melhora na qualidade de vida, com redução do Índice de Oswestry de 36,8% para 8% após 3 meses de tratamento.

CONCLUSÃO: O método Pilates foi efetivo no tratamento de pacientes portadores de lombalgia crônica, diminuindo a dor e as incapacidades.

Descritores: Avaliação da dor, Dor lombar, Lombalgia.

INTRODUCTION

Low back pain is common in industrialized societies,

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temporarily or definitively disabling people for professional and daily activities, being the most frequent cause of physical limitation of individuals below 45 years of age¹.

Pilates ® appeared during World War I to rehabilitate those injured by the war. Recently, the method started to be used by health professionals with the objective of integrating body and mind, because it improves fitness, flexibility, strength, balance and body awareness². However, there are few scientific evidences about Pilate’s propositions³.

Pilates advocates the improvement of muscle agonist and antagonist relations, favoring the work of stabilizing muscles, being necessary the evaluation of its effectiveness to treat chronic low back pain.

This study aimed at evaluating Pilates effectiveness to treat chronic low back pain patients.

CASE REPORTS

Participated in this study 7 female volunteers aged between 18 and 50 years, weighing from 58 to 62 kg and height between 1.55 and 1.76 m, being that 62.5% of them had normal body mass index (BMI). All were able to perform Pilates basic and intermediate level exercises and had clinical diagnosis of chronic low back pain characterized by pain for more than 3 months, caused by retractions/shortening of muscle chains, deficit of muscle strength of flexor and extensor muscles of the trunk, lumbar hypomobility or hypermobility. Exclusion criteria were patients with radicular compression and positive Laségue, structural deformities such as spondylolisthesis, vertebral canal stenosis, CT or MRI documenting herniated disc, rheumatoid arthritis or any other type of rheumatism.

All patients answered the Oswestry Low Back Pain Disability (OQ)⁴ identification questionnaire and pain intensity was evaluated by the pain visual analog scale (VAS). Pilates sessions were applied by a qualified professor in the method, twice a week, for three months, in a total of 25 sessions.

A fixed and ordinate sequence of exercises was not followed, however the six Pilates principles were applied in all sessions: breathing with activation of multifidus and transverse abdominal muscles; spine and hip stabilizing exercises; body awareness exercises including orientations for cervical and thoracic spine and scapulae organization; spinal segmental mobility exercises; pelvic floor training; passive and/or active stretching of most used or overloaded muscles; body relaxation with visual images and brief massage in trunk dorsal region.

For analysis, the points of all sessions were added followed by sum percentage calculation. The highest the percentage, the worst the health status of the spine, being possible to identify with confidence of up to 90% the clinical status of the lumbar spine.

Inability level was classified as minimum incapacity – 0% to 20%, moderate incapacity – 21% to 40%, severe or intense incapacity – 41% to 60%, severe incapacity – 61% to 80% and disabled – 81% to 100%.

All patients responded to the Oswestry Functional Evaluation questionnaire indicating lumbar spine involvement, and 4 participants had more than 15 points, that is, presented lumbar change easily detected and perceptible (Table 1). After treatment, no participant reached 15 points. There has been significant quality of life improvement, because before treatment it was 36.8% and after treatment it decreased to 8%.

Table 1 – Total scores of the Oswestry low back pain questionnaire.

Participants	Before	After
1	17 (34%)	4 (8%)
2	18 (36%)	5 (10%)
3	25 (50%)	2 (4%)
4	35 (70%)	14 (28%)
5	13 (26%)	3 (6%)
6	8 (16%)	0 (0%)
7	13 (26%)	0 (0%)
Mean	18.4 (36.8%)	4 (8 %)

Before treatment, severe pain was present in 3 out of 7 participants and the other 4 had moderate pain. Mean pain intensity was 7, suggesting severe inability or incapacity. After treatment there has been pain intensity decrease from 7 to 1.7, and only one volunteer had pain intensity of 5 (Table 2).

Table 2 – Pain intensity.

Participants	Before	After
1	4	2
2	9	3
3	5	0
4	10	5
5	8	2
6	6	0
7	7	0
Mean	7	1.7

Before treatment, only two volunteers had their sleep not interrupted by pain, 4 would only sleep using analgesics and one was prevented from sleeping by pain even using analgesics. After treatment, six started to sleep without pain and only one needed analgesics to sleep.

There has been improvement in incapacity. Before treatment, four volunteers had moderate incapacity, one had minimum incapacity, one had intense incapacity and one had severe incapacity. After treatment, six had minimum incapacity and only one had moderate incapacity.

DISCUSSION

Inability to stabilize the spine caused by the unbalance between trunk flexor and extensor muscles function is a major factor for the development of lumbar spine disorders⁵.

Pilates exercises are, in their most part, performed lying down, decreasing the impact on supporting joints of the body in the orthostatic position and, especially on the spine.

Among against resistance training methods, Pilates comes as a type of physical conditioning to provide well being to individuals, providing strength, flexibility, good posture, movement control, awareness and perception⁶. Recently, a series of studies has shown the increasing interest of investigators in the search for Pilates evidences for orthopedic rehabilitation⁷; for low back pain⁸, the comparison of its effects on body strength, flexibility and composition as compared to a conventional against resistance training⁹, among others.

This group of patients has achieved significant low back pain and quality of life improvement.

As compared to other studies, Pilates is a method working with low contraction impact muscles exercises, intensively strengthening abdominal muscles¹⁰, which is in line with our study, since it is known that abdominal and trunk extensor muscles strengthening provides further trunk stability preventing and treating low back pain.

Since the lumbar region poses major risks, because it is permanently requested during trunk movements¹¹, this study suggests that this training method may be used as strategy to strengthen such muscles, attenuating the unbalance between functions of muscles involved in trunk extension and flexion.

There are controversies about the time needed to practice Pilates to promote balanced relation of lumbar spine agonists and antagonists. Some studies suggest at least six months for low back pain relief, however a different study has shown that Pilates is effective to treat chronic low back pain, being necessary just four weeks to de-

crease pain intensity¹². Our study needed three months to provide good low back pain control.

The treatment of chronic low back pain patients should include a multidisciplinary team providing maintenance of active and independent life style, systematically adding specific activities to the daily or weekly plan¹³.

Results are important for the development of an intervention and treatment plan for low back pain patients, suggesting Pilates as a good option to treat chronic low back pain.

CONCLUSION

Results allow concluding that Pilates has provided lumbar spine stabilization, significantly improving low back pain and quality of life of volunteers.

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