



RANDOMIZED CROSSOVER CLINICAL TRIAL

Pilates exercises improve low back pain and quality of life in patients with HTLV-1 virus: A randomized crossover clinical trial



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KEYWORDS

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Summary *Background:* Low back pain is highly prevalent in patients with HTLV-1. The effects of physical activity on this condition are not known, but postural misalignment and motor deficits are frequently present.

Objectives: To assess the effect of Pilates exercises on chronic low back pain in these patients, and its impact on quality of life.

Methods: A randomized crossover clinical trial was conducted, involving 22 patients from a reference center in Salvador, Bahia, Brazil. The VAS was used to evaluate the effect of Pilates on pain intensity and the SF-36 to assess its impact on quality of life.

Results: Our results provide evidence of positive effects on pain intensity and almost all domains of quality of life when patients followed the Pilates exercise program described.

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Conclusion: The Pilates method may be a useful tool in alleviating the symptoms of low back pain, and had a significant impact on quality of life in this sample of patients.
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Introduction

Human T-lymphotropic virus type 1 (HTLV-1) was the first human retrovirus identified (Poisez et al. 1980). HTLV-1 exists worldwide, with about 20 million people infected. This virus is endemic in certain areas of the world such as Africa, Japan, Malaysia, the Caribbean islands, Central America, and Latin America (Mueller et al., 1996). In Brazil, the city of Salvador has the highest prevalence of cases in the country (Dourado et al., 2003). About 5% of infected individuals develop severe pathologies (Manns et al., 1999). Among the clinical alteration commonly observed, HTLV-1 associated myelopathy/tropical spastic paraparesis (HAM/TSP), which is associated with HTLV-1 infection, interferes most with HTLV patients' quality of life, due to its neurological effects (Ribas and Melo, 2002).

HAM/TSP mainly affects females between the ages of 35 and 49 and progresses slowly, causing reductions in muscle strength, changes in the urinary system (retention or urinary incontinence), intestinal constipation, decreased libido and erectile dysfunction in males (Proietti et al., 2005). Ten years after the onset of HAM/TSP about 30% of patients develop paraplegia (Franzoi and Araújo, 2007). Individuals with HAM/TSP have biomechanical, functional and sensory abnormalities, characterized by decreased muscle strength of the pelvic girdle and lower limbs, gait disturbances, spasticity, muscle shortening and/or joint hypomobility, predisposing these individuals to postural abnormalities and generalized pain, which can affect their quality of life (Macêdo et al., 2002).

Low back pain is the most common type of pain in patients infected by the HTLV-1 (Netto and Brites, 2011), and may be related to muscle dysfunction, which is even more pronounced in the presence of spasticity (Gessain et al., 1985). Low back pain in these patients is generally treated with analgesics, but their prolonged use, due to the chronic nature of the pain, causes serious side effects. This has led to the search for alternative therapies that target the causes of the pain.

The Pilates method can improve physiological and psychological functions, as well as teach functional posture and appropriate motor patterns, and may be useful for these patients (Goldby et al., 2006; La Touche et al., 2008). This method of exercise is based on attention to the details of movement, and patterning of significant muscle groups, especially the core (powerhouse) muscles (Muscolino and Cipriani, 2004). Dysfunction of these muscles has been associated with LBP (Hodges and Richardson, 1996). Previous studies addressing the functional recovery of patients with other diseases that exhibit similar symptoms to those of HTLV-1 point to the benefits of specific therapeutic exercise programs (La Touche et al., 2008), suggesting that a program based on the Pilates method could be useful for patients with HTLV-1 associated back pain (Posadzki et al.,

2011). Therefore, the aim of this study was to assess the possible/potential therapeutic effect of the Pilates method on chronic low back pain in patients infected by the HTLV-1 and its impact on patients' quality of life.

Methods

A randomized crossover clinical trial was developed, involving patients infected by the HTLV-1 from the Integrative and Multidisciplinary Center for HTLV (CHTLV) of the Bahian School of Medicine and Public Health in Salvador, Bahia, Brazil. The following individuals were included in the study: 1) Individuals infected by the HTLV-1, who had reported low back pain for at least six months (felt everyday or almost everyday); 2) Age 18 or older and younger than 65; 3) Able to understand the exam questions and proposed exercises; 4) Able to empty the bladder before each therapeutic session voluntarily or by catheterization. The following were considered exclusion criteria for the study: 1) Physical deformity; 2) Associated neurological deficits, unrelated to the viral disease; 3) Patients doing another physical activity; 4) Pregnant women.

The project was approved by the Research Ethics Committee of the Bahian School of Medicine and Public Health, under protocol number 083/2010. Signed consent was obtained from participants after they had been given verbal and written explanations of the study protocol, in accordance with the principles of Resolution 196/96 of the Brazilian National Board of Health.

The sample size calculation was based on an improvement of six points in the visual analogue scale, a standard deviation of four points, an alpha value of 5%, and beta of 10% ($1 - \beta = 90\%$). These parameters generated a sample size of nine subjects per group. We included two more subjects in each group to address potential dropout issues, which generated a sample size of 11 subjects per group.

Patients were selected by the CHTLV neurologist, and classified according to the WHO criteria for the presence of HTLV-1 infection, randomized by a table of random numbers and allocated into groups by a team member who did not participate in the assessment, treatment, or statistical analysis phases.

Pain intensity was considered the primary outcome of the study, and quality of life the secondary one. For pain evaluation, body maps were used to verify the location of the symptom, and the visual analogue scale (VAS) to measure its intensity varying from 0 (no pain) to 10 (worst possible pain). The simplified version of the SF-36[®] Health Survey was used to evaluate quality of life (Campolina et al., 2011). This survey consists of 11 questions and 36 items assessed in eight domains: physical functioning, physical role functioning, emotional role functioning, bodily pain, general health perceptions, vitality, mental

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