Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XX, ISSUE 2 Supplement, 2020, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengage Learning, Cabell's Directories

Science, Movement and Health, Vol. XX, ISSUE 2 Supplement, 2020
September 2020, 20 (2 Supplement): 227 - 232
Original article

PILATES AS AN INSTRUMENT IN IMPROVING THE QUALITY OF LIFE IN MULTIPLE SCLEROSIS PATIENTS

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Abstract

Problem statement. The objective of this paper is to analyze the effectiveness of the Pilates method in patients with multiple sclerosis and the effects it has on the health and mental state, reflecting in the health status and in the quality of life of the patients concerned.

Methods. We examined a lot of 10 multiple sclerosis patients that practicated a program of pilates exercises several times per week, for a period of 6 months and a lot of 10 multiple sclerosis patients that did not practice pilates- the control group. We performed tests in the form of questionnaire: Health Status Questionnaire (SF-36) with specificity for multiple sclerosis.

Results. The assessments from the study focused on the health status and quality of life of the lot of multiple sclerosis patients. The results of the studies were variable, because of the different perceptions of each patient in the study. The results of the questionnaires after the 6 months of practice of the pilates method demonstrated the improvement of the mental and physical state of the pilates group patients, who also enhanced their cognitive function through sport and also gained an improvement in emotional state, all of which were summed up in an increased in their health status.

Conclusions. Studies in the literature have shown that the Pilates method has benefits in people with multiple sclerosis, but does not differ from those that can be obtained with other physical therapies. Also, the conclusions showed that the pilates therapy has positive effects on people with multiple sclerosis, both physically and mentally, by increasing the quality of life. In order for patients with multiple sclerosis to enjoy the beneficial results of this method it took at least 8 weeks of practice.

Keywords: multiple sclerosis, pilates, physical exercise, health status.

Introduction

Multiple sclerosis is defined as an autoimmune disease that causes inflammatory and demyelinating lesions in various parts of the central nervous system. It has a progressive, fluctuating and unpredictable clinical course that, and for the moment this disease has no curative treatment (Stroe, 2020) (Sirbu, 2015).

Multiple sclerosis is represented as a neurological disease that is manifested by the occurence of focal inflammatory lesions, being named plaques that are located in the white matter, as a representative form of demyelination (Stroe, 2020). The course of multiple sclerosis is mostly persisting of recurrent multifocal attacks and neurological signs and symptoms, with different recovery levels of each patient in particulary (Docu Axelerad, 2019), (Docu Axelerad, 2020).

Multiple sclerosis is a disease with an unknown cause. Studies have concluded that the cause could be autoimmune of unknown origin and, in any case, multifactorial, with the intrication and interaction of different genetic sensitivity factors and different environmental factors (Sirbu, 2017), (Docu Axelerad, 2019), (Docu Axelerad, 2020).

The lesions are frequently multiple in number and are located in the central nervous system. Demyelinated plaques are lesions which consist in a loss of myelin, but without maximal lesions in axons and astrocyte scars. The lesions have a special prefference for the optic nerves and for the white periventricular matter of the brain, cerebellum and spinal cord (Docu Axelerad, 2020), (Docu Axelerad, 2019).

The symptoms do not have a special clinical presentation behaviour, but are conected with the location of the demyelinating lesions. The lesions can be included into three braches: primary, secondary and tertiary (Docu Axelerad, 2020), (Dantes, 2020).

The primary symptoms consist of direct neurological deficits from central nervous system lesions (ataxia, spasticity, tremor, paresthesias, etc.)

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*the abstract was published in the 20th I.S.C. "Perspectives in Physical Education and Sport" - Ovidius University of Constanta, May 28-29, 2020, Romania
Received 12.05.2020 / Accepted 05.08.2020

(Falup-Precurariu, 2019); the secondary ones are the complications of the previous ones (contractures, skin ulcers, urinary tract infections, etc.), and the tertiary ones or, also known as disabilities, are the psychological, social and economic consequences of the disease.

Spasticity is a motor disorder in which some muscles remain permanently contracted, causing muscle stiffness and shortening that interfere with their movement and functions (Docu Axelerad, 2020). In severe cases it can aggravate mobility impairment, may be responsible for pain and loss of function. Treatment also includes physical therapy strategies, such as passive, assisted, or free joint mobilizations (depending on the degree of dysfunction) to prevent joint contractures, stretching exercises, and inhibitory postures (Docu Axelerad, 2019). Other physical measures include cryotherapy and electrical stimulation.

Fatigue is defined by a loss in the physical or mental energy that is reported by the patient, which disrupts his usual activities (Docu Axelerad, 2020). Every multiple sclerosis patient experiences tiredness at some level in their course of illness.

Studies show that approximately 50% of patients have experienced severe fatigue and other neurological symptoms when they encountered a heated environment (Tomruk, 2016). Also, the patients can suffer secondary functional difficulties with the fever being the cause in high ambient temperatures or during intense physical activity that raises body temperature (Docu Axelerad, 2020). Proper control of the ambient temperature is recommended for multiple sclerosis' treatment.

Paroxysmal phenomena are episodes of neurological dysfunction or short-term deficits that are repeated with high frequency. The paroxysmal phenomenas are included in groups with: pain disorders (trigeminal neuralgia); sensitivity deficits (paresthesias, pruritus and oferhermitte sign); visual disturbances (diplopia, Unthoff's sign); motor disorders (sudden loss of strength and tonic spasms); gait and speech coordination disorders (paroxysmal ataxia, dysarthria). Pain can occur in the lives of multiple sclerosis patients in 30-60% of cases. A relief of pain can be found in the field of sports performance until rehabilitation.

Pilates is represented by groups of physical exercises that are configured on the movement of the entire body. Also, the exercises practiced in pilates highights the self- awareness of body anatomy, physical alignment, and muscle movements with the includement of a stable position of the core muscles while dynamic movement.

Therefore, Pilates migth bring a positive effect on people with multiple sclerosis, as well as using the core muscles might relieve difficulties with mobility and balance. As the creator of these exercises sustained: "the balance between body and mind is the basis for obtaining a perfect physical and mental form" (Pilates, 1934), as he patented the "Contrology", that has the meaning of the art of motion control. These exercises start on the ground usig a mat, without any type of device. In the progression could be used a series of machines with springs and pulleys and various devices that complete the system.

The responde that is aimed is to perfectionate in achieving the correct muscle balance through its six fundamental principles: breathing, control, fluidity, center, concentration and precision.

Pilates contains a complex system of physical functioning, in which the body as a whole is conditioned, from the deepest muscles to the most peripheral and in which both the mind and the body intervene (Stroe, 2020). This technique defends the idea that, by strengthening the energy center of each individual, a free movement of the rest of the body can be achieved. The "center of force" is represented by the abdominal muscles, the base of the back and the gluteal portion. By strengthening these parts of the body, the energy is worked "from the inside out", allowing the movements of the rest of the anatomy to be performed freely (Docu Axelerad, 2020). Finally, the goal is to achieve muscle balance, strengthen weak muscles and lengthen shortened muscles. This leads to increased control, endurance and flexibility of the body, respecting the joints and back (Marandi, 2013).

Methods

This study aims to demonstrate that the Pilates method improves the functionality and quality of life of patients with multiple sclerosis with moderate disabilities. For this, a sample of 10 patients, who performed a Pilates program for three months was the Pilates group and another group of 10 multiple sclerosis patients was the control group.

The variables were measured to test the hypothesis are the perception of deficits and the quality of life. Given that this project focuses on improving the functionality of patients with multiple sclerosis, the examiner's action focused on strengthening, increasing, supplementing or replacing the strength, knowledge and / or will of the person and his family, in order to achieve maximum independence as soon as possible.

In order to achieve the main objective of the project, it was necessary to assess the health status of the patients and to check for improvements after the completion of the proposed exercise program. Therefore, a pre- and post-intervention assessment was needed to be measured the functionality and health status with multiple sclerosis.

All the patients were recruited from the neurological private clinic of dr Docu Axelerad Any, being diagnosed with multiple scleroris by a neurologist. Patients with definitive multiple sclerosis according to Poser criteria, Expanded Disability Status Scale (EDSS) < 3.5, and without steroid or immunosuppressive therapy within the past 4 weeks. Patients were also excluded if their diagnosis was not

clearly established, they were suffering from an acute relapse or severe cognitive deficits, or had signs of any psychiatric disease. Individuals did provide the signed consent associated with the program to ensure that all procedures and tests, their risks and benefits are fully understood.

The intervention program that was followed was very simple and did not require much material. A large air-conditioned room was used to control the temperature, as the heat can affect physical fitness and increase participants' fatigue. The material consisted of mats, pilates balls with and without weight, resistance tires and elastic bands.

The intervention was also be attended by a doctor, in charge of performing neurological evaluations and a physiotherapist who was an expert in the Pilates method.

The exercise program was based on the individuals that performed it, their abilities and limitations. If the patient was not able to perform an exercise, the examiner did not force the patient and all the difficulties and the starting point of each were noted.

The results of the training were tested using Health Status Questionnaire (SF-36). The results of the training were statistically assesed using measures of paired samples test. A value of $p < 0.05$ was taken as significant. All analyses were performed using IBM SPSS Statistics 20.

Results

Patients obtained the mean score of: 87.00 ± 4.69 points at the Health Status Questionnaire (SF-36) test before the 3 months of Pilates sessions, as opposed to the score that the patients obtained: 95.90 ± 5.02 points, revealing a statistically significant increase of $p < 0.001$ (Figure 1).

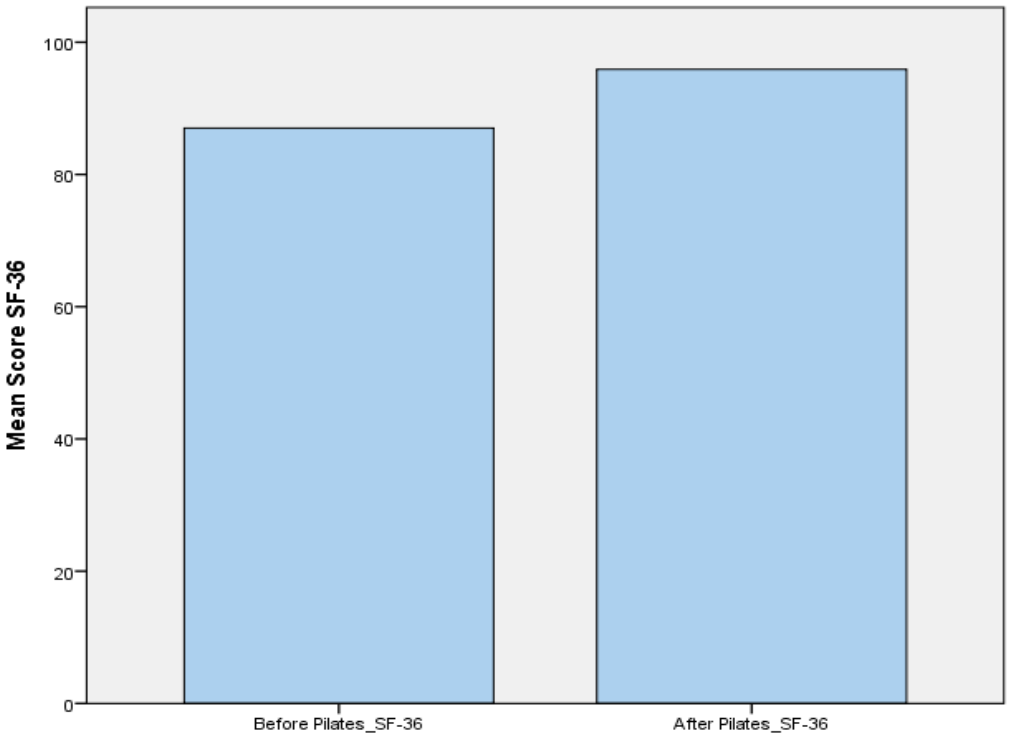

Figure 1. The results of mean score at SF-36 that the patients in the Pilates group obtained before and after the Pilates trainning sessions.

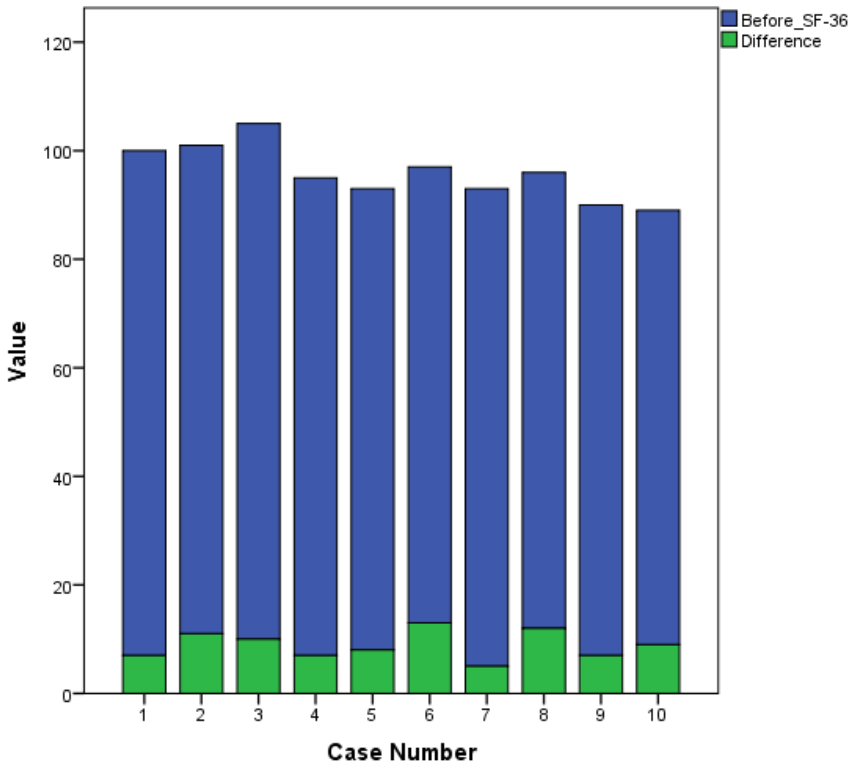

Figure 2. The difference fot the results of mean score at SF-36 that every patient in the Pilates group obtained before and after the Pilates trainning sessions.

During the investigation approach, we encountered several difficulties. However, with these limitations we were able to obtain more information about the compatibility of the proposed method with the fatigue it may encounter, the effect it has on the evolution of the outbreak and the adherence of these patients to the proposed program.

In comparison, the control group, the mean scores before the 6 months were 86.90 ± 3.44 points and after the 6 months 87.10 ± 3.47 points, with p= 0.509 – not statistically significant.

Discussion

Improving the quality of life of the patents suffering of multiple sclerosis and similar neurodegenerative diseases, has been and it still is the a priority in the medical world, and also a goal of perfectioning tecniques for the kinetotherapeuts and other professionals that sustain a work on various issues such as physical rehabilitation, motion, and physical well being, but sometimes also, emotional and social integration of the patient, during the rehabilitation classes or programs (Guclu-Gunduz, 2014), (Latimer-Cheung, 2013).

Studies with the benefits of using physical activity in the rehabilitation of the patients with multiple sclerosis has gained importance in recent years (Sirbu, 2020), (Marandi, 2013), (Kalron, 2017). This concept has arisen from the belief that exercise can have an impact in slowing the progression of this disease.

Conclusions

Fatigue is a symptom that can be a cause of the refusal to practice physical activity and also, can be a cause for the increasing of the difficulties of carrying it out (Skurvydas, 2011), (Tomruk, 2016).

In addition, the conclusion obtained may have different outcomes taking into consideration that multiple sclerosis has five forms of evolution with a highly variable clinical course and, in particular, the possibility that some individuals may suffer an outbreak during the intervention. The aim of this study was to explore the potential impact of a Pilates exercise program on fatigability and the results sustain that pilates is an advisable choice into coping with the fatigability in multiple sclerosis, with benefits determined in both physical and mental state, as demonstrated by the results of the patients in the SF-36 test before and after the pilates program.

According to the results of this study and also, another studies in the literature (Bullo, 2015), (Freeman, 2010), (Fox, 2016), Pilates clinics can be used as an effective method of treatment in multiple sclerosis due to its positive effects on physical

parameters such as balance, performance and fatigue; cognitive problems; and quality of life.

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