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Original article

BENEFITS OF KINESIOTHERAPY IN THE REHABILITATION PROCESS OF PATIENTS SUFFERING FROM MULTIPLE SCLEROSIS

RABOLU ELENA[1]

Abstract

Aim. This study is intended to highlight how important and what benefits does kinesiotherapy have for patients with secondary-progressive multiple sclerosis.

Methods of research: The study was conducted on a 45-year-old patient diagnosed with multiple sclerosis, who underwent a complex kinetic program, aimed at maintaining mobility under functional parameters, muscle strength, balance, gait, coordination, effort capacity and the quality of life in general. The kinetic program comprised of: massage, dynamic kinetic techniques, exercises on HUBER platform, walking, exercises on machines. In order to assess the subject's progress, the following were used: Barthel Index, Doloplus scale, Osserman scale, Pichot's fatigue scale and Berg scale.

Results: Dynamic analysis revealed improvement in the functional parameters aimed at, thus making the patient feel more comfortable both physically, and mentally in all daily living activities.

Conclusions: The conclusion can be reached, after following the patient's progress throughout the study's carry out, that kinesiotherapy for patients with multiple sclerosis is a key requirement in order to preserve their autonomy for as long as possible.

Key Words: multiple sclerosis, kinesiotherapy, quality of life.

Introduction

Multiple sclerosis is a degenerative demyelinating disease of the central nervous system, and the neurological deficits it causes differ depending on the disease's clinical manifestation (Miller, E., 2009).

Multiple sclerosis (MS) features significant clinical and psychiatric symptoms, the most common being: muscle weakness, gait and balance problems, spasticity, fatigue, cognitive disorders and depression. Thus, patients with MS frequently reduce their physical activity for fear that the symptoms may become worse, and this may actually lead to the deconditioning process setting in (Yamout, BI, Alroughani, R., 2018).

Balance problems and falls are frequent in people with MS, and most of them have trouble controlling their posture and gait, and more than 50% fall at least once a year since the disease's onset. Reduced capacity to maintain posture, slow and limited movement are all causes of balance disorders (Cameron MH, Nilsagard Y., 2018).

Studies carried out over time have revealed several possibilities by which the quality of life of multiple sclerosis patients can be improved by managing the symptoms of this diseases, writes Prof. Randall T. Schapiro in his book "*Managing the symptoms of Multiple Sclerosis"* (Schapiro, R., T., 2007).

Recovery in multiple sclerosis should be regarded as an activity in itself, based on vigilance and capable of improving gait difficulties, reducing spasticity and limiting the effects of ataxia. It does not influence the disease progression per se, but it is able to always avoid its side effects (Sbenghe, T., 1987, p. 583).

Rehabilitation's core goal is to sustain functional autonomy for as long as possible by prophylaxis of sequalae and correct damages developed, under the special mention that kinetic treatment must only be done in between the progression attacks (Kiss, I., 2007, p. 276.)

There is a lot of evidence to suggest physical exercise can improve physical fitness and functionality of patients with mild multiple sclerosis and helps maintain function for those with moderate to severe impairments (Brown, TR, Kraft, GH., 2005).

The idea at this time is that physical activity is a basic component in the rehabilitation process of the patient suffering from multiple sclerosis (Peresedova AV, Chernikova LA, Zavalishin IA., 2013)**.**

Methods

The study was conducted within a recovery clinic from Pitești city on a 45-year-old patient, diagnosed

[1] Faculty of Science, Physical Education and Informatics, University of Pitești, Romania
Corresponding author: nicolelena2001@yahoo.fr
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with secondary-progressive multiple sclerosis onset when he was 20 years old.

Research hypothesis: if rehabilitation of a patient diagnosed with multiple sclerosis is focused on a customized rigorous and staged kinesiotherapy program, the patient will have gained the necessary skills to function optimally and compensating mechanisms will have been achieved so they can work and be independent, as well as the chance for an independent life from both economic, and social points of view for as much time as possible.

In order to point out the functional deficit, but also to dynamically follow the subject's progress, patient's initial and final assessment was carried out based on the following tests and scales: Barthel Index, Doloplus scale, Osserman scale, Pichot's fatigue scale and Berg scale.

The kinesiotherapy program's objectives were aimed at:

- Increase pain tolerance
- Prevent faulty positions
- Improve and maintain joint mobility, muscle strength and resistance.
- Improve balance and coordination
- Re-educate gait
- Enhance effort tolerance and improve fatigue strength
- Reduce anxiety
- Improve the quality of life

The kinetic means used to help the patient with multiple sclerosis rehabilitate focused on therapeutic massage with myorelaxant effect, dynamic kinetic techniques like volunteer active mobilizations, stretching, isometric exercises, isodynamic exercises, cryotherapy, exercises on the HUBER 360 platform for balance, strength, coordination and mobility, gait and walking variations.

The kinesiotherapy program was performed five times a week on an actual working duration of 40-50 minutes per day, complying with the effort grading principles, but also with patient's tolerance to the requested effort. Exercises were accompanied by

wide and alternating breaths, 1-2 minutes breaks depending on the effort demand intensity.

Results

Further to the analysis of results achieved to the initial, intermediate and final assessments, the following matters can be synthesized about the patient's progress:

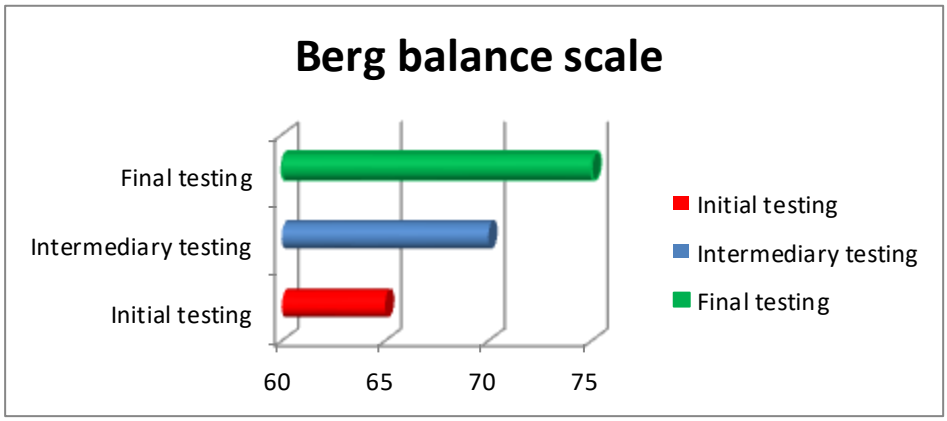

Figure 1. Patient's progress on Scala Berg

Figure 1 shows there is patient noteworthy progress after applying kinesiotherapy programs, as the patient can carry out activities such as getting up from a sitting down position, standing with eyes closed, standing with one foot in front of the other, picking up an object from the ground, turning to 360 degrees without any major loss of balance or the tendency to fall.

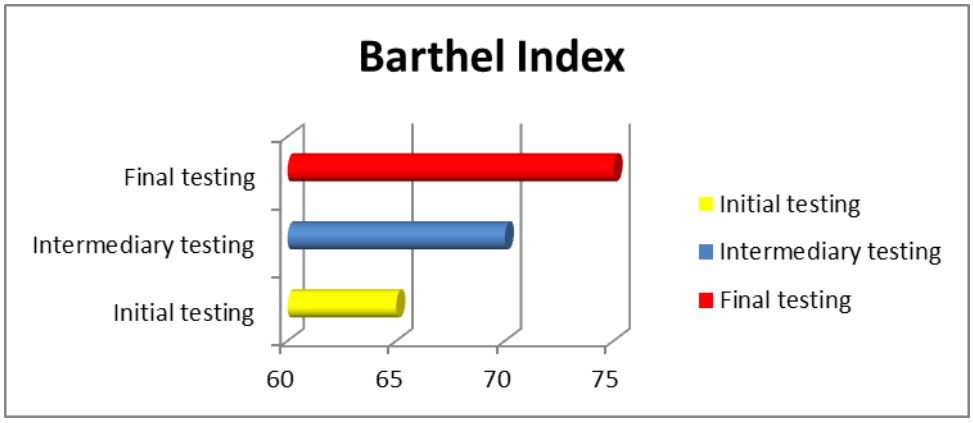

Figure 2. Patient progress on Barthel Index

Figure 2 shows an increase of the score on Barthel disability index, which demonstrates an improvement of the patient's ability to perform ADLs and their independence in performing them.

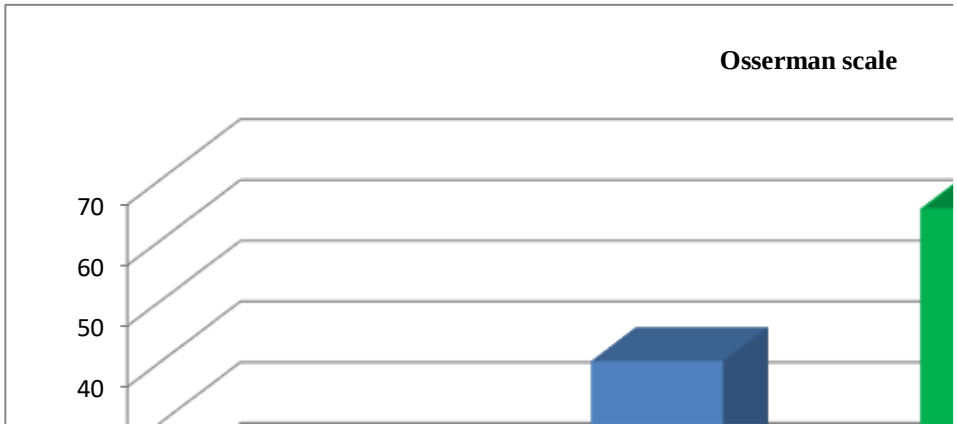

Figure 3. Muscle strength progress assessed by Osserman scale

Figure 3 analysis shows a dynamic progress of the Osserman's scale, which suggests an improvement in muscle strength, both on the upper body, and on the lower body.

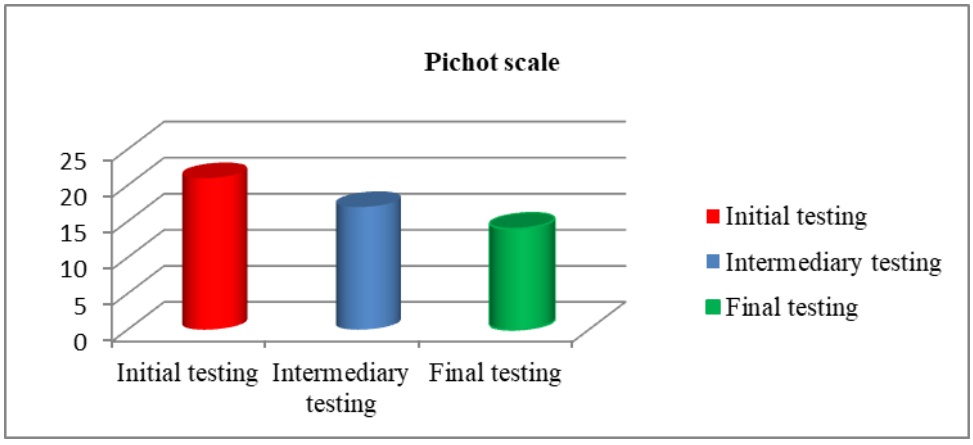

Figure 4. Patient progress by Pichot's fatigue scale

Analysis of scores achieved on Pichot's scale (figure 4) shows a reduction of the physical and mental fatigue felt, the patient managing to participate much more actively in the kinesiotherapy programs and daily living activities.

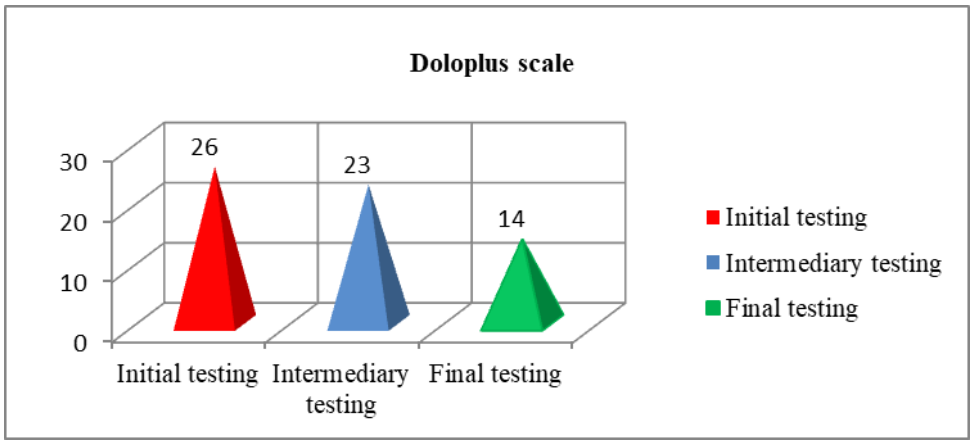

Figure 5. Patient's progress measured by Doloplus scale

Figure 5 shows a decline on the Doloplus scale, which is an indicator of pain improvement, allowing the patient to move more freely in their day-to-day activities.

Pain became manageable both upon mobilization, and at rest, and sleep difficulty during the night because of pain was significantly reduced.

Discussion

There are opinions in the specialized literature (Kubsik-Gidlewska AM, Klimkiewicz P, and colab., 2017) , according to which introduction of physical exercises in the rehabilitation program will reduce the disease-induced negative effects and will help maintain functionality of subjects to optimal parameters, a fact which confirms this study too, which demonstrates that physical exercises during the kinetic program significantly reduced the patient's problems and led to a substantial improvement in their quality of life.

Another study (Halabchi F, Alizadeh Z, and colab. 2017) highlights the importance of customizing the exercises program in order to combat fatigue and improve muscle strength, resistance, balance and coordination, which is also discussed here, as this is one of the ideas on which the kinetic program's design was based on.

Also, in his paper titled *Benefits, safety, and prescription of exercise in persons with multiple sclerosis, Motl RW* calls into question the fact that physical exercise plays a major role in the management of symptomatology in the patient suffering from multiple sclerosis, which is also highlighted in this study by the results achieved in the final tests, which have pointed out significant improvement both physically, and mentally.

Conclusion

The study's results show that the use a diversified palet of kinetic means has led to an improvement of the quality of life for the patient with multiple sclerosis.

Fatigue reduction and improved quality of sleep have had a significant impact in the increase of the patient's confidence in rehabilitation.

The kinetic program designed especially for the patient complied with the principles of customization and staging depending on their progress, a fact which helped the patient gain the necessary skills for optimal functioning as regards daily living activities and implicitly, independence.

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