



## REVIEW ARTICLE

### Benefits of rehabilitation therapies in patients with a medical diagnosis of multiple sclerosis

*Beneficios de las terapias de rehabilitación en pacientes con el diagnóstico médico de esclerosis múltiple*

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### ABSTRACT

**Introduction:** multiple sclerosis is a multifactorial disease with diverse symptoms and currently no cure. Rehabilitative therapy improves the quality of life and reduces the severity of the symptoms and signs that may appear.

**Objective:** explain the benefits of rehabilitation therapies in patients with a medical diagnosis of multiple sclerosis.

**Methods:** exhaustive search and review in Spanish and English using keywords. Information from the last 5 years was collected in the Google Scholar search engine and high-impact scientific journals. A total of 50 articles were obtained, to which complete articles, with available references, that

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referred to the general objective of the work and publications in Spanish and English were applied as selection criteria, finding 23 bibliographies that corresponded to it.

**Development:** aspects related to rehabilitation therapies such as physical exercises, aerobic exercises, virtual rehabilitation, taichí and aquatic therapy and their benefits for better control of muscle strength, gait, balance and coordination are addressed.

**Conclusions:** rehabilitative therapies for the treatment of patients with multiple sclerosis are of great benefit. Evidence from various modalities has allowed rehabilitation to be an option not to be underestimated by the scientific community.

**Keywords:** Quality of life; Multiple sclerosis; Patients; Program; Aquatic therapy; Rehabilitation

## **RESUMEN**

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**Introducción:** la esclerosis múltiple es una enfermedad multifactorial de sintomatología diversa y sin cura en la actualidad. La terapia rehabilitadora permite mejorar la calidad de vida y disminuir la gravedad de los síntomas y signos que pueden aparecer en los pacientes.

**Objetivo:** explicar los beneficios de las terapias de rehabilitación en pacientes con diagnóstico médico de esclerosis múltiple.

**Métodos:** se realizó una búsqueda y revisión en idioma español e inglés utilizando palabras clave. Se recopiló información de los últimos 5 años en el buscador Google Académico y revistas científicas de alto impacto. Se obtuvo un total de 50 artículos, a los que se les aplicó como criterio de selección artículos completos, con referencias disponibles, que se refirieran al objetivo general del trabajo y publicaciones en idioma español e inglés. Se encontraron 23 bibliografías que se correspondieron con el tema.

**Desarrollo:** se abordan aspectos afines a las terapias de rehabilitación como ejercicios físicos, ejercicios aeróbicos, rehabilitación virtual, taichí y terapia acuática, así como sus beneficios para un mejor control de la fuerza muscular, la marcha, el equilibrio y la coordinación.

**Conclusiones:** las terapias rehabilitadoras para el tratamiento de pacientes con esclerosis múltiple resultan de gran beneficio. Las evidencias de diversas

modalidades han permitido que la rehabilitación sea una opción que no debe menospreciarse por la comunidad científica.

**Palabras clave:** Calidad de vida; Esclerosis múltiple; Pacientes; Programa; Terapia acuática; Rehabilitación

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## **INTRODUCTION**

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Multiple sclerosis (MS) is a disease that is characterized by outbreaks of disability in any functional system (visual, motor, sensory, coordination, language and sphincter control, among others) that are produced by inflammation and demyelination of the system central nervous MS is considered to be a multifactorial condition, with genetic and environmental pillars. It is the most disabling non-traumatic disease in the young adult population around the world. <sup>(1,2)</sup>

Physiopathologically, there would be a deregulation of the immune response mediated by T and B cells that would lead to direct autoimmune damage to the central nervous system. There are also other mediators involved in the damage mechanisms: macrophages, microglia, natural killer cells, antibodies, cytokines. <sup>(3)</sup>

It is estimated that around 2.5 million people suffer from it in the world, 60 per 100,000 inhabitants, and it is the leading cause of disability of neurological origin in young adults, especially between the ages of 20-40, with a predominance in women in a 2:1 ratio. <sup>(4)</sup> In the Americas region, the prevalence is highest in the United States and Canada (30-50 cases/100,000 inhabitants); while in Latin America it is lower. <sup>(5)</sup>

Cuba published its first case of MS in 1965. In the province of Villa Clara, in 2017, a multidisciplinary follow-up strategy was carried out with 86 patients, aimed at increasing their quality of life. <sup>(6)</sup> However, the Health Statistical Yearbook published each year by the Ministry of Public Health (Minsap) does not include descriptive tables of the incidence and prevalence of the disease in the country.

According to the World Health Organization, there are several forms of presentation: <sup>(7)</sup>

1. Clinically isolated syndrome (CIS): episode of neurological symptoms that are the first clinical sign of possible MS.

2. Relapsing-remitting (RRMS): most common form characterized by intermittent attacks of symptoms, followed by a short or long period without clinical attacks.
3. Secondary progressive (SPMS): After living with RRMS for a long period of time, relapses decrease and symptoms continue progressively, without relapses or remissions.
4. Primary progressive (PPMS): starting from the initial symptoms, the disease gradually progresses and worsens, without clear relapses or remissions.

Its symptoms, described for the first time by Jean-Martin Charcot in 1868, include, among its clinical manifestations, sensory-motor disorders in one or more limbs, optic neuritis, diplopia due to internuclear ophthalmoplegia, ataxia, neurogenic bladder, fatigue, dysarthria, and symptoms paroxysmal symptoms such as trigeminal neuralgia, nystagmus and vertigo. <sup>(8,9)</sup>

Although there is still no cure for this disease, there are medications that help modify its course, reduce outbreaks and control symptoms. In addition, there is rehabilitative treatment, which is used to reduce the level of disability and social disadvantage that a person and their family endure as a result of a neurological condition. <sup>(10)</sup>

It is important to update the topic of rehabilitation in patients who are diagnosed with the disease, essential for health professionals and those who are in the training process, so that it is useful in making decisions regarding treatment and MS care. The objective of this work is to explain the benefits of rehabilitation therapies in patients with a medical diagnosis of MS.

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## **MATERIALS AND METHODS**

A search and review was carried out in Spanish and English, using the key words: quality of life; EM; patients; program; aquatic therapy; rehabilitation. Information from the last 5 years was collected in the Google Scholar search engine and in high-impact scientific journals. A total of 50 articles were obtained, to which complete articles, with available references, that referred to the general objective of the work and publications in Spanish and English were applied as selection criteria 23 bibliographies were found that corresponded to the topic. Analysis-synthesis methods were used, which made possible the interpretation of the bibliography found and the organization of knowledge.

## **DEVELOPMENT**

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With the aim of counteracting the manifestations and progress of the disease, rehabilitative treatment must be aimed at all affected areas and prevention to prevent loss of functions, slow its progression and relieve symptoms. A multidisciplinary team must intervene to collaborate and respond from their specialty on the procedure, according to the characteristics of the disease at an individual and group level, and include physiotherapy exercises aimed at improving the general condition of the patient, addressing disabilities and facilitating adaptation to the patient context. <sup>(11)</sup>

This multidisciplinary team must include: neurologist and/or internist, rehabilitation doctor or physiatrist, physical therapists, occupational therapists, speech therapists, psychologists, nurses with training in rehabilitation, social workers, orthotist technicians for making splints and/or accessories in required cases. <sup>(12)</sup>

López Argüelles et al. <sup>(13)</sup> presented the effectiveness of a rehabilitative treatment applied to 15 patients with MS in the province of Cienfuegos. The program included physical therapy, occupational therapy and treatment with magnetic fields in 12 treatment sessions lasting 15 minutes each, with a daily frequency from Monday to Friday. It was repeated every 3 months by an experienced Physical Medicine and Rehabilitation graduate; the final evaluation was carried out 2 years after starting treatment.

The results were very encouraging in the opinion of the authors. It was possible to reduce the number of seizures, especially in remission MS, with a reduction to  $1.22 \pm 0.83$  as the average number of post-treatment seizures and with a significant decrease in the total number of seizures with a significant decrease in the degree of disability of the patients patients.

In the author's opinion, it is important to develop rehabilitation programs or protocols where the combination of therapeutic activities greatly benefits the health of these patients. For their development, implementation and reproduction by those interested in the topic, these must include elementary aspects such as inclusion, exclusion and exit criteria; material and human resources; informed consent of patients and relatives; detailed explanation of the program with treatment techniques and action algorithm.

The literature consulted is an example of what was expressed above. <sup>(14,15)</sup> An idea also shared by Fraga Ramírez et al., <sup>(16)</sup> in their research.



Cognitive functions are alterations found in patients with MS and, therefore, comprehensive rehabilitation is opportune to improve their quality of life, as demonstrated by Vázquez Gómez et al.,<sup>(17)</sup> in a study carried out with two groups.

The study group participated in comprehensive neurorehabilitation with activities that included physical therapy, occupational therapy, speech therapy, supportive psychotherapy, cognitive rehabilitation and evaluation of the family environment plus the practice of aerobic exercises (WNQ-7000a treadmill exercise and bicycle ergometer). The control group only participated in physical therapy (WNQ-7000a treadmill, bicycle ergometer, and Frenkel exercises for physical and coordination skills). The authors concluded that cognitive functioning was more effective in the study group thanks to comprehensive neurorehabilitation.

The article by Jordán Fiallos et al.,<sup>(18)</sup> presented the researchers' judgment on the benefits and indications of virtual rehabilitation in patients with MS. They emphasized that rehabilitation in virtual reality should be seen as a complementary tool to the conventional one and not its substitute. Furthermore, they analyzed a series of investigations that reaffirm the usefulness of the integration of both rehabilitation modalities, evaluating advantages, disadvantages and possible contraindications.

With the use of virtual reality, the patient interacts with visual, auditory and tactile stimuli through multiple tasks and environments to which they must respond by managing different motor and posture control strategies. They offer you the possibility of establishing multisensory feedback during training, appropriating new learning that allows you to compensate for the deficit and, in turn, favors neuroplastic and motor changes.<sup>(19)</sup>

Aquatic therapy is known as the therapeutic procedure that results from the combination of the mechanical properties of water and specific rehabilitation techniques, with the purpose of facilitating a function, while promoting adherence to the treatment.<sup>(20)</sup>

Intervention in the aquatic environment in adults with neurological pathology is among the most current approaches in the context of their rehabilitation, and its use is becoming more frequent. Practice in the field of aquatic occupational therapy is undergoing an evolution, with specialized production increasing to provide treatments based on scientific evidence.<sup>(21)</sup>

Marín Hernández et al., <sup>(22)</sup> in their systematic review, concluded that aquatic therapy is effective as a rehabilitative treatment in MS because patients suffer significant changes in their motor skills and abilities, especially in strength and balance, as well as fatigue; in sessions at a temperature ranging between 28-30° C for 45-60 min of therapy, 3 times a week, for 8 weeks and performing balance exercises.

García Martínez et al., <sup>(21)</sup> studied the effectiveness of aquatic therapy in a clinical case of SPMS. After a thorough physical examination, it was determined to design an intervention plan that lasted 5 months with aquatic therapy, assessing the appearance of characteristic signs and symptoms of the disease such as fatigue. The results were very positive once the treatment was completed.

The patient improved her balance with arm lifts with trunk control. In the case of walking, which was very difficult for her because she tired quickly, success was achieved with the help of the therapist; the most effective exercise for movement control was knee bending on the steps of the pool. All this influenced the quality of life and their reintegration into family and social life with a better disposition.

Another typical manifestation that appears from the early stages of the disease is depression. Recognizing it early and treating it correctly is vital when it comes to avoiding suicide in patients with MS. Exercising, tai chi, and enjoying time outdoors also have a positive impact on your mood. <sup>(23)</sup>

The author urges timely assessment of the best rehabilitative therapy on an individualized basis for these patients. In addition, she will always have the support of the family and the community so that the process gains quality and satisfaction.

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## **CONCLUSIONS**

Rehabilitative therapies for the treatment of patients with MS are of great benefit. Evidence from various modalities has allowed rehabilitation to be an option that should not be underestimated by the scientific community. This method positively affects the patient's quality of life and physical components, such as fatigue, muscle strength, balance, gait and mental health, thereby achieving greater independence and autonomy in daily, work and study activities.

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