Commentary
Volume 7:8, 2022

Journal of Physiotherapy & Physical Rehabilitation

ISSN: 2573-0312 Open Access

A Network Meta-analysis of Randomized Controlled Trials on the Effects of Different Exercise Therapies and Functional Walking Ability in Multiple Sclerosis Patients

Anthony Rosner*

Department of Neurology & Kinesiology, International College of Applied Kinesiology, Watertown, MA, USA

Introduction

Multiple sclerosis is one of the most common neurological disorders in the world, with a median onset age of 29 years. Multiple sclerosis affected 2.5 million people globally in 2017 and the number is growing. Physical symptoms such as muscle weakness, decreased mobility and balance, as well as mental symptoms such as weariness and cognitive impairment, are among the many negative impacts of the disease on patients. Around 75% of patients with MS exhibit balance and walking-related deficits in the early and later phases of the disease, this increases their risk of falls and injury due to a combination of impaired physical and mental function.

Physical injuries and psychological worries linked with falls may have a negative impact on patients' physical and mental health, producing a vicious cycle that worsens their quality of life. In addition to standard treatments such as daily care and rehabilitation, other forms of exercise are increasingly being used in clinical non-pharmacological treatment and rehabilitation. Exercise has been shown in a number of randomized controlled trials to have beneficial benefits on mental components such as fatigue and cognitive performance in patients that outweigh typical rehabilitation treatments.

Description

In patients, variables such as fatigue and cognitive ability outperform typical rehabilitation metrics. Furthermore, meta-analyses comparing one exercise intervention versus traditional rehabilitation measures on MS patients' physical and mental functional abilities, as well as network meta-analyses comparing multiple exercise interventions versus traditional rehabilitation measures on MS patients' mental function, both provide significant clinical evidence-based recommendations. In addition to classic meta-analysis, researchers developed network meta-analysis (NMA), a novel evidence-based medical technique that, unlike the original technique, allows researchers to analyze and rank the effects of several interventions for a condition at the same time [1].

Exercise therapy has been found to improve physical function and increase neuroplasticity as a rehabilitation tool. For patients with MS, the combined effect of better physical function and mental rehabilitation helps to lower the risk of falling. Previous meta-analyses have found that different types of exercise treatment enhance patients with MS's physical and mental functioning capacities more than typical rehabilitation approaches. In their study, Harrison et al. ranked the various exercise therapies in order to determine which one was the best for improving the mental health of patients with MS. However, there is still debate in the study about which exercises are most useful in increasing physical function in patients with MS [2].

For the first time, we looked at the effects of various workouts on patients with MS's physical functioning abilities. Based on improvements in the BBS Balance Scale and the TUG test, the meta-analysis concludes that yoga is the best intervention for improving dynamic and static balance in persons with MS, while aquatic exercise is the best intervention for improving functional walking ability in people with MS [3]. The BBS test is a comprehensive functional examination that assesses MS patients' ability to actively move their centre of gravity by analysing their dynamic and static balance in a sitting or standing position; the results are reliable and acceptable.

The findings of this study suggest that yoga outperforms other therapies in terms of improving dynamic and static balance, as well as postural control, in patients. Several mechanisms can be used to explain how yoga improves BBS: Yoga practise focuses the nervous system's control over the muscles through less strenuous stretching-type movements, enhancing the muscles' unconscious particular response to dynamic joint stability signals and stressing core muscle control over the entire trunk during the activity. Yoga involves joint function training, which allows for the maintenance of normal joint range of motion and the correction of distorted postures through active or passive stretching to relieve abnormal joint capsule tension [4].

Aquatic exercise appears to be better to other therapies in increasing functional walking abilities. There are numerous approaches to explain how aquatic exercise enhances TUG: Water resistance allows the patient to perform exercises more slowly than on land, resulting in longer weight-bearing time on the lower limbs; additionally, the patient's torso is exposed to a certain amount of water pressure in the aquatic environment, which has a similar effect on the skeletal muscles as blood flow restriction training (a training modality that was shown to have a significant effect on increasing muscle strength).

When exercising in the water, hydrostatic force causes blood and lymphatic fluid to move up the torso, which, when combined with the gravitational offload and hydrostatic effect of the water, increases the amount of blood circulating from the periphery to the centre, resulting in an increase in the end-diastolic volume of the heart and, as a result, an increase in cardiac output. This rise in blood volume is followed by an increase in serum brain-derived neurotrophic factor (BDNF), an anti-inflammatory factor critical for brain and muscle repair [5].

The body lowers sympathetic activity and improves sympathetic–parasympathetic balance by raising vagal tone during and after aquatic exercise. Both activities have highly beneficial rehabilitative benefits in their respective areas, hence we recommend that MS patients emphasise both when repairing their physical function. Furthermore, we hypothesise that yoga and aquatic training can be alternated during a full rehabilitation cycle when conditions allow, but due to a lack of direct clinical evidence, we are taking a wait-and-see approach to this combined intervention in the hopes of further experiments proving or disproving our assumptions.

Conclusion

Based on studies employing the Berg Balance Scale and the Timed-Up-

***Address for Correspondence:** Anthony Rosner, Department of Neurology & Kinesiology, International College of Applied Kinesiology, Watertown, MA, USA; E-mail: rosnerAnthony@gmail.com*

Date of submission: 14 August, 2022, Manuscript No. jppr-22-67403; **Editor Assigned:** 16 August, 2022, Pre-QC No. P-67403; **Reviewed:** 22 August, 2022, QC No. Q-67403; **Revised:** 25 August, 2022; **Published:** 31 August, 2022, DOI: 10.37421/2573-0312.2022.7.291

and-Go test, we believe that the exercise therapies presented in this study improved dynamic and static balance as well as functional walking abilities in MS patients when compared to standard care. Yoga, virtual reality and aerobic exercise, on the other hand, were more effective in improving dynamic and static balance, whereas aquatic exercise, aerobic training and virtual reality training were more effective in increasing functional walking ability.

Conflict of Interest

None.

References

1. Correale, Jorge, María I. Gaitán, María C. Ysrraelit and Marcela P. Fiol, et al. "Progressive multiple sclerosis: From pathogenic mechanisms to treatment." *Brain* 140 (2017): 527-546.
2. Abou, Libak, Kevin Qin, Aditya Alluri and Yiting Du, et al. "The effectiveness of physical therapy interventions in reducing falls among people with multiple sclerosis: A systematic review and meta-analysis." *J. Bodyw Mov Ther* (2021).
3. Torres-Costoso, Ana, Vicente Martínez-Vizcaíno, Celia Álvarez-Bueno and Iván Cavero-Redondo, et al. "Effect of exercise on fatigue in multiple sclerosis: A network meta-analysis comparing different types of exercise." *Arch Phys Med Rehabil* (2021).
4. Harrison, Anthony M., Reza Safari, Tom Mercer and Federica Picariello, et al. "Which exercise and behavioural interventions show most promise for treating fatigue in multiple sclerosis? A network meta-analysis." *Mult Scler J* 27 (2021): 1657-1678.
5. Rouse, Benjamin, Anna Chaimani and Tianjing Li. "Network meta-analysis: An introduction for clinicians." *Intern Emerg Med* 12 (2017): 103-111.

How to cite this article: Rosner, Anthony. "A Network Meta-Analysis of Randomized Controlled Trials on the Effects of Different Exercise Therapies and Functional Walking Ability in Multiple Sclerosis Patients." Physiother Rehabil 7 (2022): 291.