

Does hippotherapy improve balance and gait speed in a PwMS?

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Introduction

- Multiple Sclerosis (MS) affects around 130,000 people in the UK¹ with around 2/3 reporting a significant impact on balance and mobility².
- The cause is multifactorial including the somatosensory and vestibular system, lower limb and trunk weakness and spasticity.
- Hippotherapy is a therapy, which uses a horse to simulate the 3-dimensional movement of walking in the human pelvis.
- The movement of the horse challenges somatosensory, proprioceptive and vestibular systems.
- The addition of school movements such as walk/halt, half/halt transitions, serpentines and circles provide an additional challenge creating opportunity for anticipatory and postural adjustments.
- It has been demonstrated to improve balance, mobility, spasticity, quality of life, fatigue and postural control in person with MS (PwMS)³.

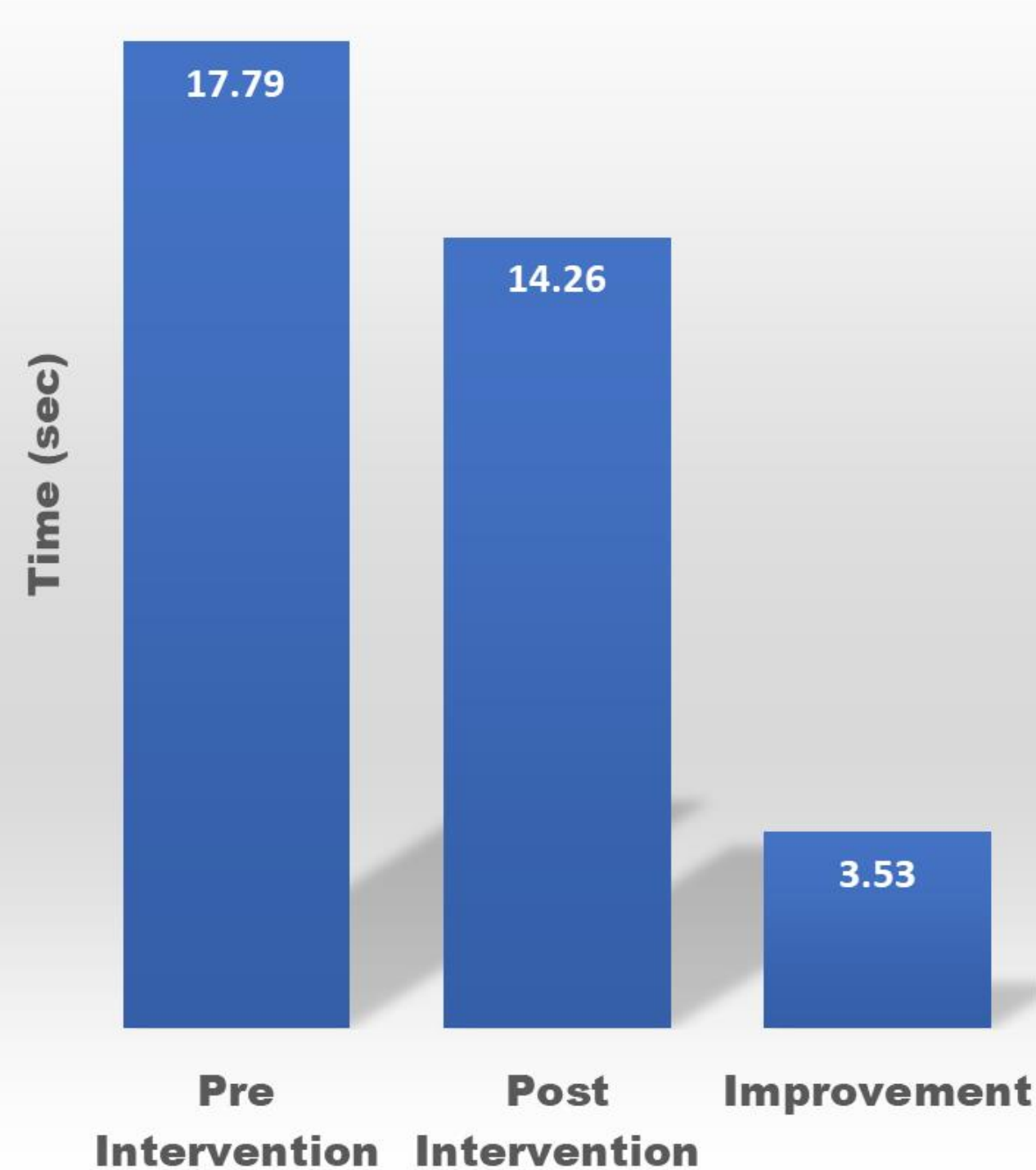
Aims and Intervention



- To establish if an 8-week program of hippotherapy can improve balance and walking speed in PwMS following hematopoietic stem cell transplantation (HSCT).
- Participant: 63-year-old man diagnosed with secondary progressive MS in 2018.
- Mobilises with 2 walking stick and reports progressive decline of mobility despite receiving (HSCT) in March 2022.
- Progress with mobility and balance had been static for 6 months despite a home exercises and balance program.
- 7 weekly session of hippotherapy on Lammfelle pad with no stirrups and reins using a range of school movements to challenge balance and righting reactions.

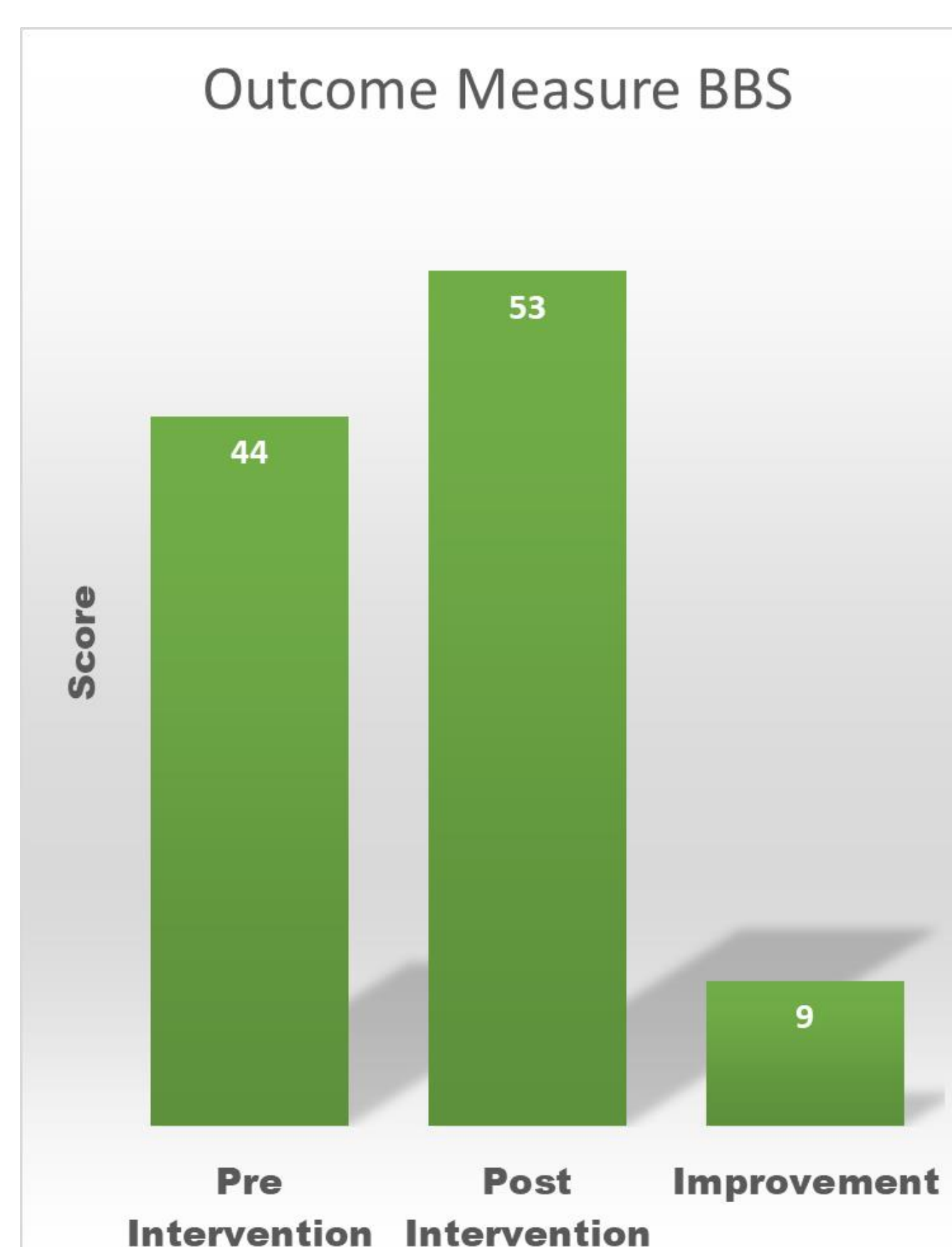
Outcomes

Outcome Measure T25FW



- Berg balance scale (BBS) and timed 25-foot walk (T25FW) outcomes were taken pre and post intervention.
- T25FW showed a 20% improvement in walking speed.
- This indicates an improvement in walking dysfunction.

Outcome Measure BBS



- BBS showed a 9-point improvement.
- This demonstrates a clinically significant improvement in balance⁴.
- An incidental finding was an increase in muscle power from 1 to 3 in hip flexors based on Oxford muscle grading scale.

Discussion

- A 7-week program of hippotherapy significantly improved BBS and given a change of 9 points demonstrated a significant clinical change in balance⁴ and moving the PwMS from high falls risk to low⁵.
- A 20% change in walking speed shown in the T25FW is likely due to changes in balance by decreasing stance and double support time during the gait cycle which increases velocity⁷
- Participant reported self improvement in climbing stairs with no rails and being able to get up from the floor with no objects to assist.
- Change in hip flexor strength was hypothesized to be due to decreased spasticity in hamstrings allowing increased activity in hip flexors.
- The horse's movement was steady and rhythmic, which along with warmth from the animal through the pad reduces spasticity.
- Significant improvement in balance and mobility was observed after a short intervention of hippotherapy where previous therapeutic intervention had stalled.
- Hippotherapy gives the body a novel input to improve balance, proprioception and mobility which provided improvements for the participant after receiving HSCT treatment.
- This could improve function long-term due to the neuroplasticity of the motor system in MS⁸.

References

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