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Powered Exoskeleton Assisted Walking for Cardiovascular Fitness:

A Feasibility Trial

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The University Of Sheffield.

NHS Sheffield Teaching Hospitals NHS Foundation Trust

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Overview

- Multiple Sclerosis
- Physical Activity/Exercise and Multiple Sclerosis
- Technology and Multiple Sclerosis
- Powered Exoskeleton Trial
  - Aims
  - Intervention
  - Outcome Measures
  - Project Challenges
  - Project Update

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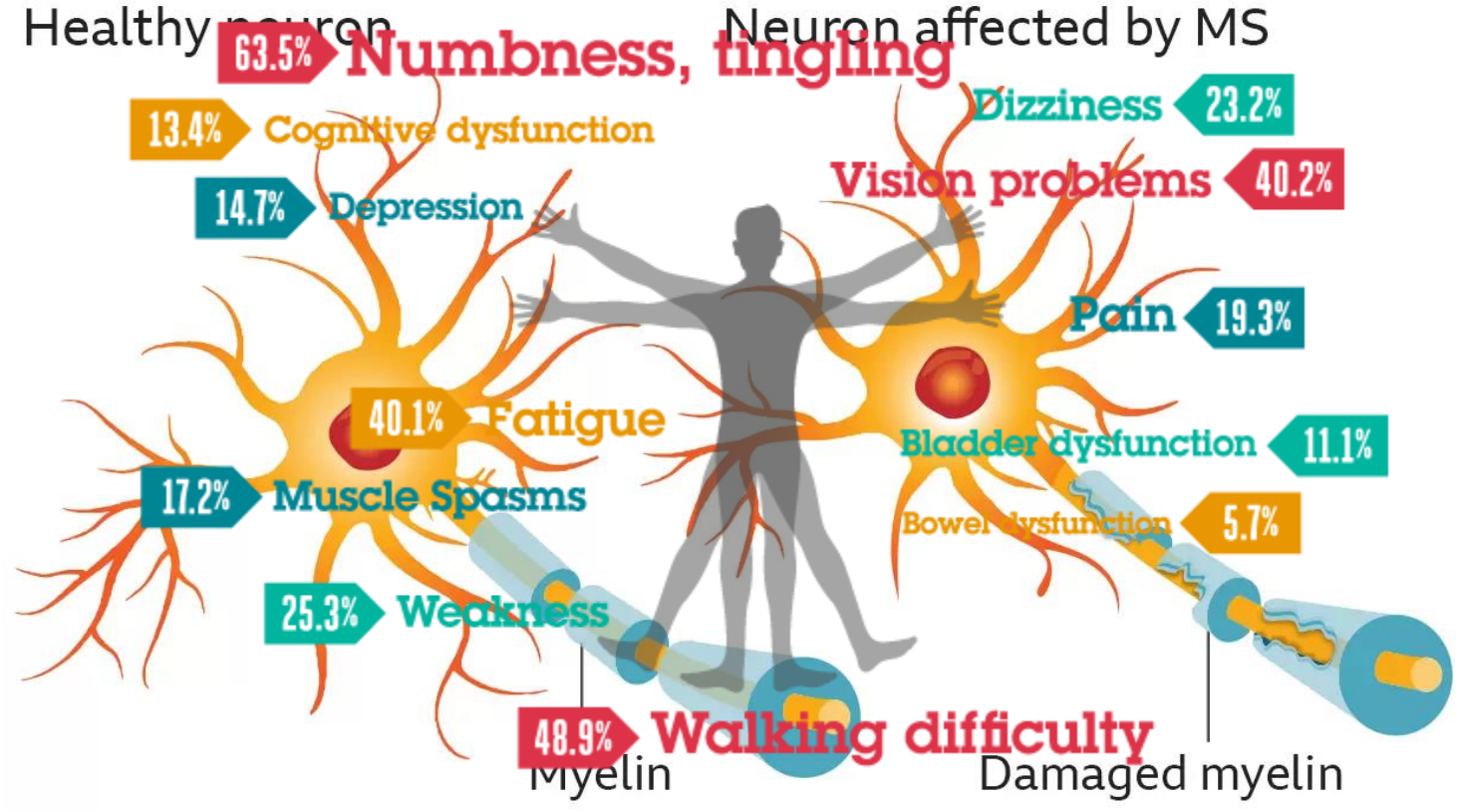
Multiple Sclerosis



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Exercise and MS

Mild to Moderate Disability

- For many years exercise was not recommended
- Rapid increase in research over the last 20-30 years
- We now know
  - Exercise is safe and can improve fitness, fatigue and quality of life
  - Early evidence suggests it may also modify disease progression
- Current exercise guidelines exist for people with mild to moderate MS (Latimer-Cheung et al., 2013)

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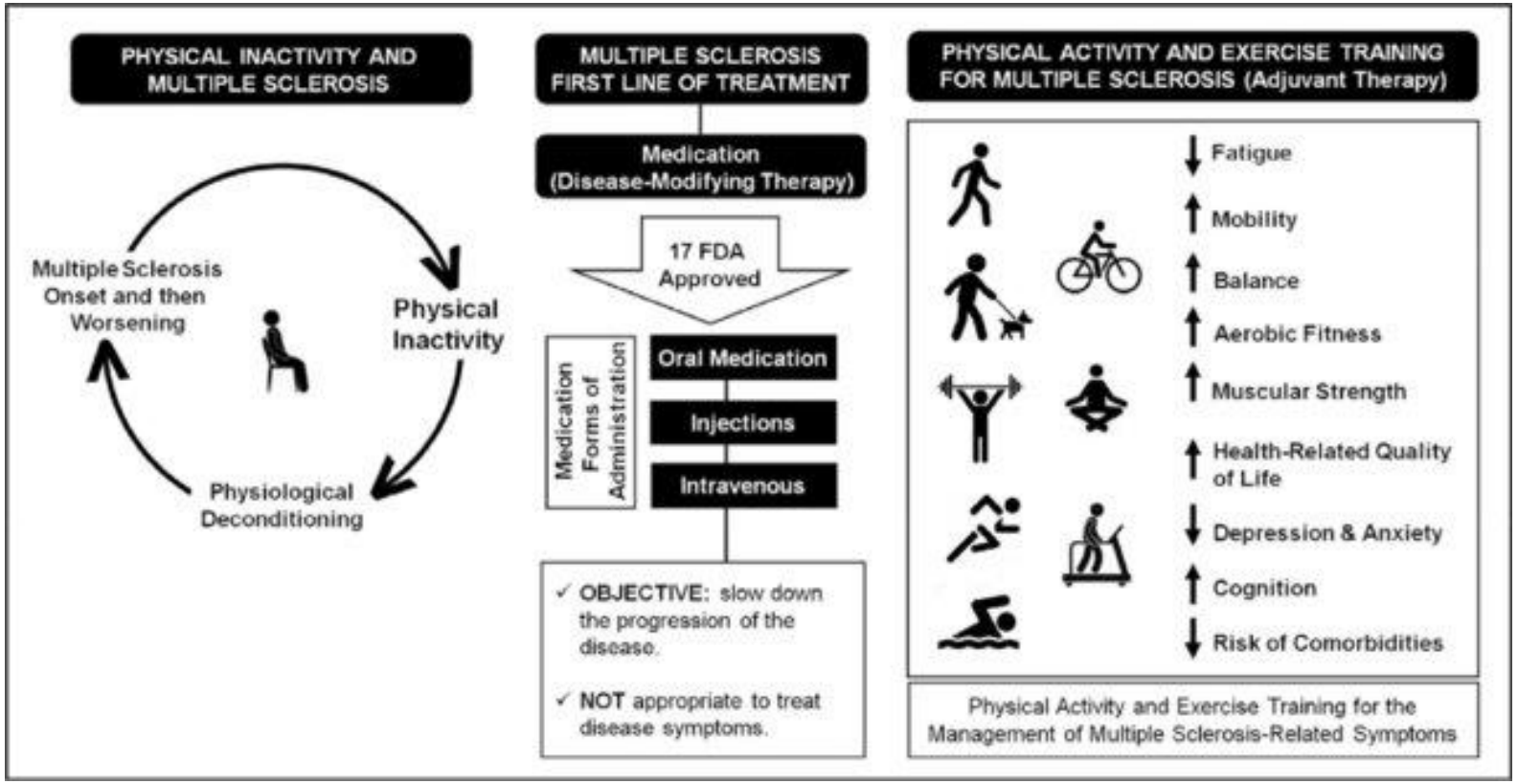
Importance of Activity for MS



Sebastiao et al., 2022

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Exercise and MS

Moderate to Severe Disability

- Exercise recommendations are cautious

4. Patients presenting with disability levels where physical activity and exercise training become more challenging should be referred to specialists for safety and appropriate prescription.
5. Exercise for patients with limiting physical mobility should be facilitated by a trained specialist.

Adapted from: Kalb and colleagues [26].

- Research is more limited
- Increased barriers to participation
- Physical inactivity and deconditioning are more common
- Technology has been increasingly explored to support people with increased disability from MS to benefit from being active

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Technology and MS

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Powered Exoskeleton for MS

- Walking is often cited as an and effective means of exercise
- Early exoskeletons research suggest improvements in walking ability
- It is not clear how walking with a powered exoskeleton impacts on health and fitness for people with MS

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Aims and Objectives

Aims

- To determine feasibility, acceptability and safety of the intervention
- To explore the level of exercise achieved through powered exoskeleton walking compared to standard exercise training

Intervention

- Active group (n=12): Walk for up to 30 minutes wearing the exoskeleton twice a week for 8 weeks.
- Control group (n=12): Participants will undergo supervised fitness training twice a week for 8 weeks.

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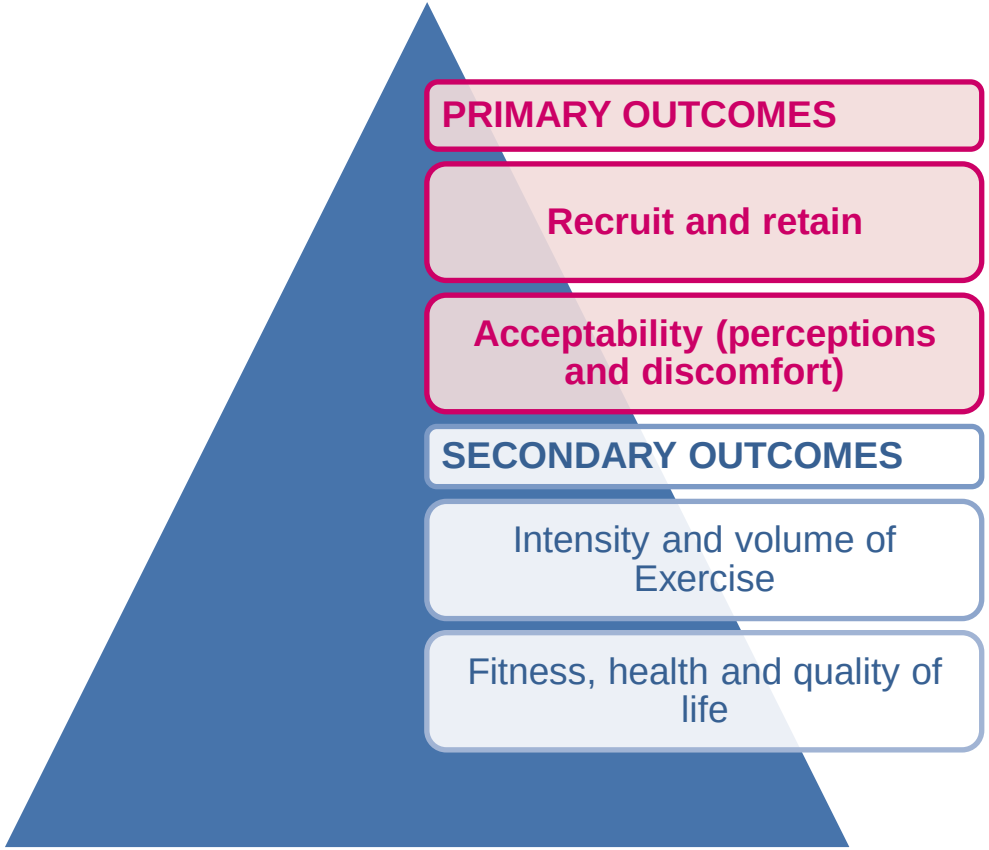
Outcome Measures



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Project Challenges

- Delays
  - Covid-19
  - Equipment
  - Changing timelines

- Management of Expectations
  - Not everyone is suitable to use an exoskeleton
  - Requires familiarisation
  - It is not a magic wand to being able to walk
  - It is expensive for personal use

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Project Update

- We have training lined up on the new exoskeleton this week and are due to re-start the trial in the next couple of weeks

keeogo
Powered by B-Temia

- We hope to have some results to share by the end of the year

Thank you for listening