What Neuro Physio's Hope MS Nurses Know…..

& the whole multidisciplinary team

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BSc Hons Physiotherapy

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Todays Journey…..

- Positive effects of exercise including its role in neurological protection
- Neuro muscular fatigue
- Excise induced exacerbation
- Why is early intervention so critical
- Foot drop / Vestibular / Pelvic floor

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Are Neurological Physiotherapists Different?

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What is a primary impairment?

Compared to a secondary impairment?

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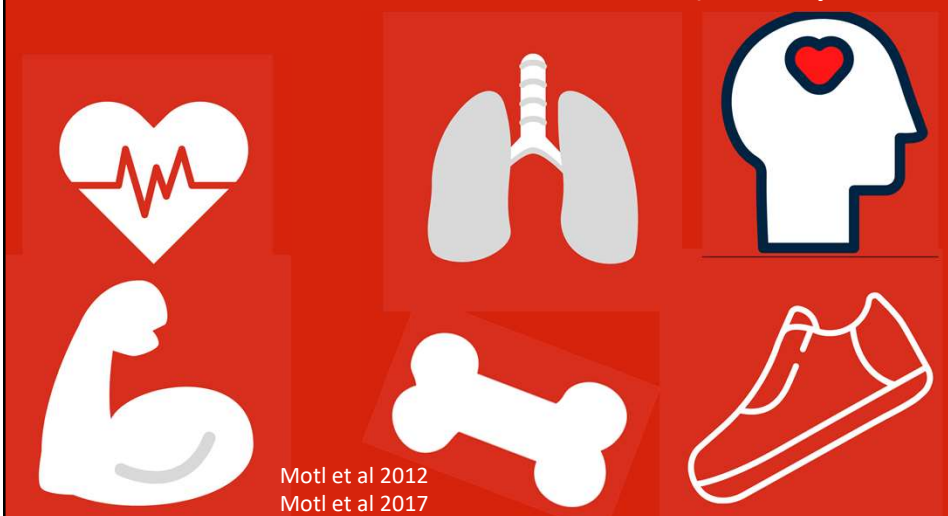
The Benefits of Exercise (what you already know)



Motl et al 2012
Motl et al 2017
Jorissen et al 2018, Campbell et al 2018
Motl and Pilutti 2016

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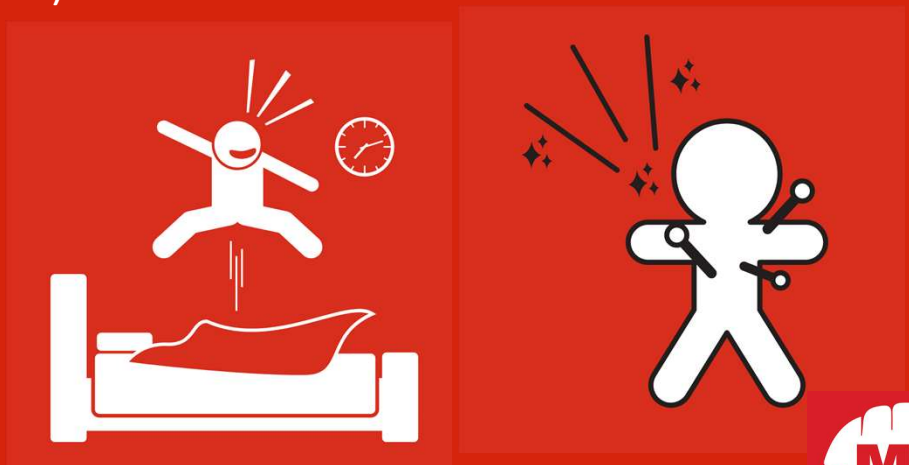
The Benefits of Exercise (what you might not know)



Pilutti et al 2013, Kargarfard et al 2012
Motl et al 2017

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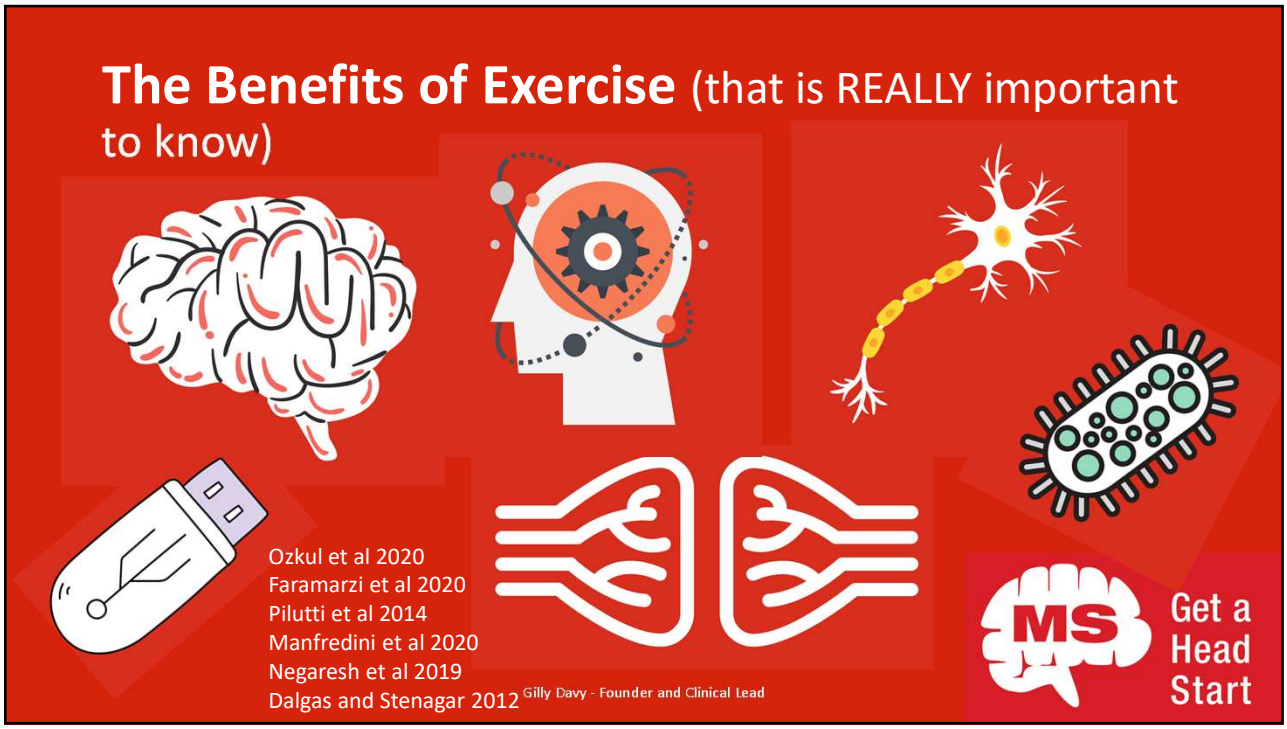

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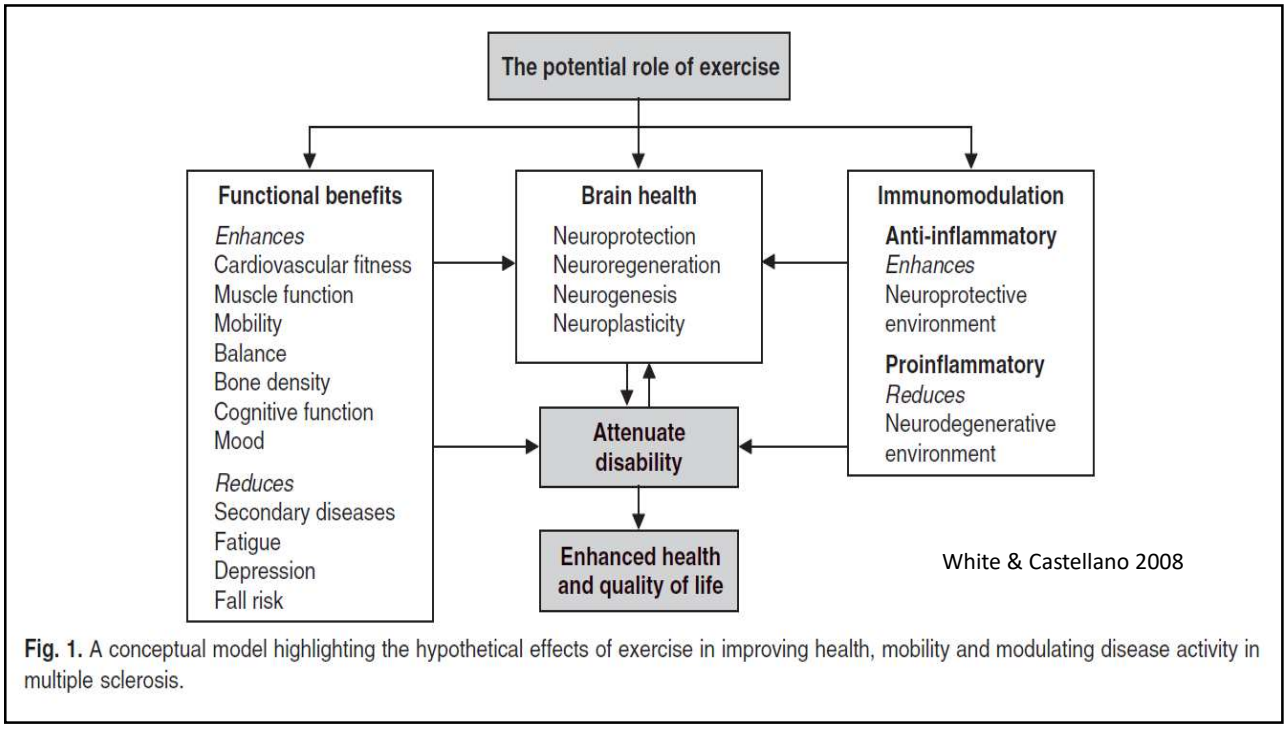

Fig. 1. A conceptual model highlighting the hypothetical effects of exercise in improving health, mobility and modulating disease activity in multiple sclerosis.

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How to Exercise……Intensive

- Aerobic = 3 to 4 times a week = High Intensity Interval Training
- Strength = 2 to 3 times a week

- Need to address specific impairments;
  - Balance
  - Gait training
  - Hand function

Latimer-Cheung et al 2013
Hubbard et al 2018

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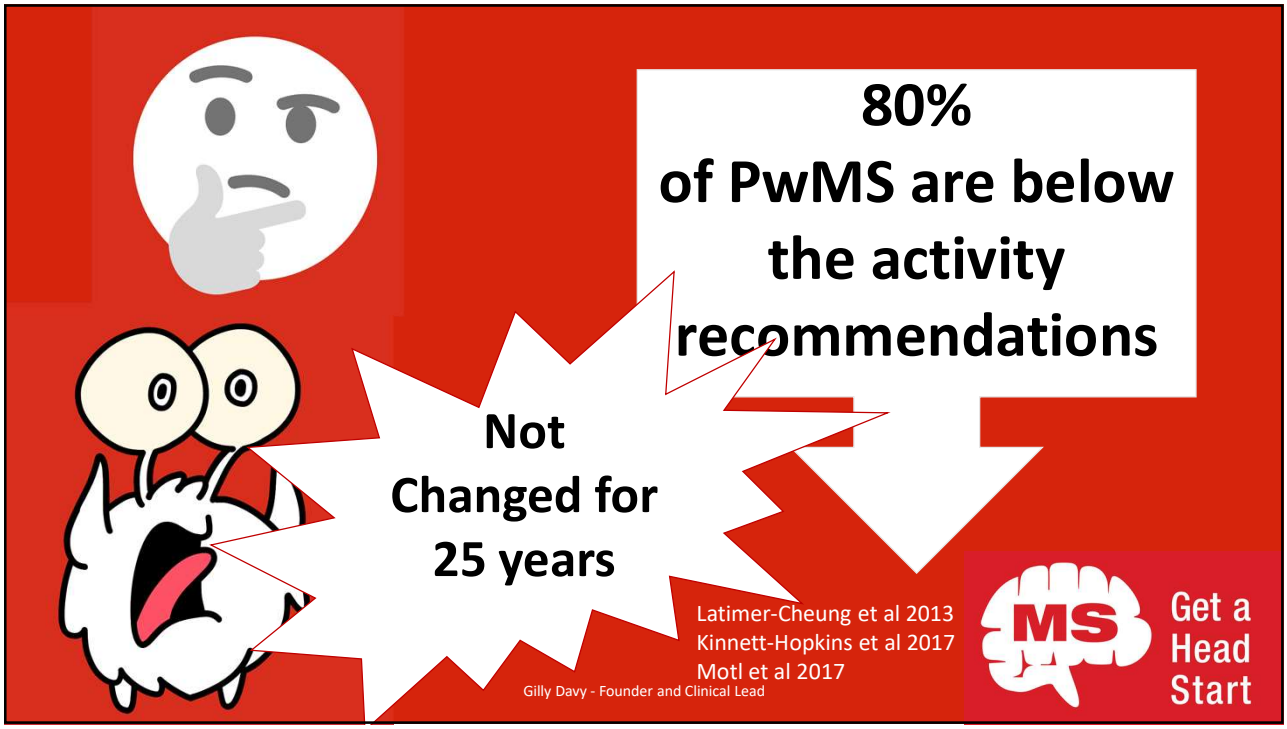

Latimer-Cheung et al 2013
Kinnett-Hopkins et al 2017
Motl et al 2017

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Fear
Inconsistency
No Manual
Poor referral
Motl et al 2017, Kayes et al 2011, Backus 2016
Learmonth & Motl 2016, Leavitte et al 2014
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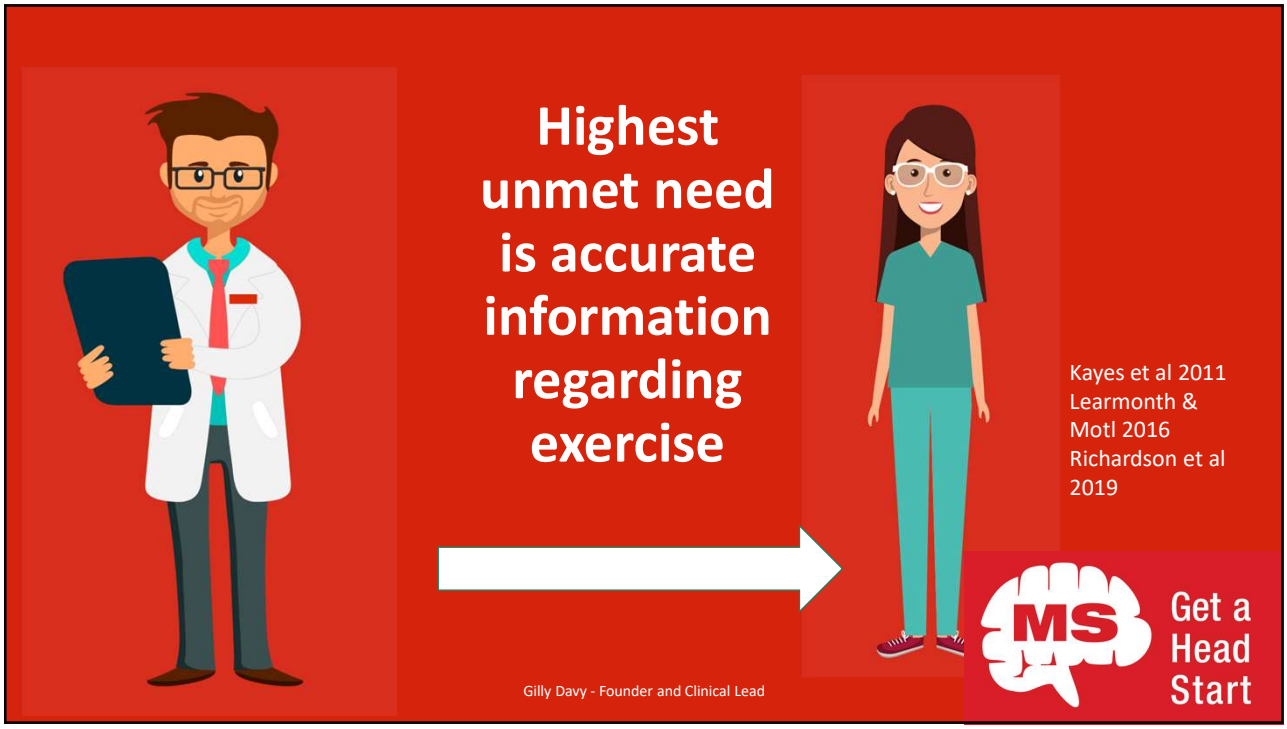
Highest unmet need is accurate information regarding exercise
Kayes et al 2011
Learmonth & Motl 2016
Richardson et al 2019
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Time to Move

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Exercise Induced Symptom Exacerbation

- Due to a HEAT response
- Can last for 30 mins to 2 hours
- Often sensory changes
- Its temporary
- Proactive cooling – ice slushy

- You NEED to support and provide confidence in exercise

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Neuro Muscular Fatigue

- Direct fatigue of the muscle
- Muscle energy store becomes depleted
- Due to partial innervation
- Temporary

- No damage is caused pushing through……however
  - Can cause biomechanical changes
  - Increased risk of injury – falling etc.

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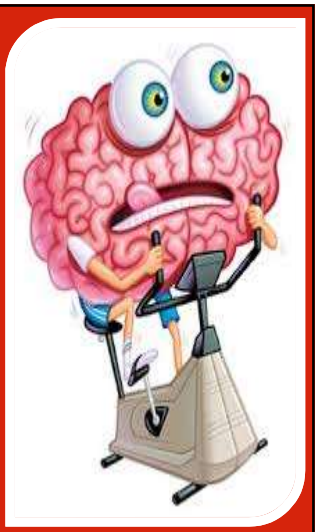
Interval Based Training

- 70% to 95% of predicted heart rate max
- 10 seconds to 4 mins with active recovery or rest
- HIIT increases outcomes by 10% to 40%
- Increased strength
- Increased walking distance



Jorissen et al 2018, Campbell et al 2018, Hayes et al 2011
Kierkegaard et al 2016, Dalgas et al 2008 and 2009
Collett et al 2011, Wens et al 2014, Zaenker et al 2017
Karpatkin et al 2016, Karpatkin et al 2015

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Why early intervention?

- The damage has started
- Fear exacerbation
- Is it damage or inactivity
- Its harder to reverse significant impairments

We could change the trajectory of MS

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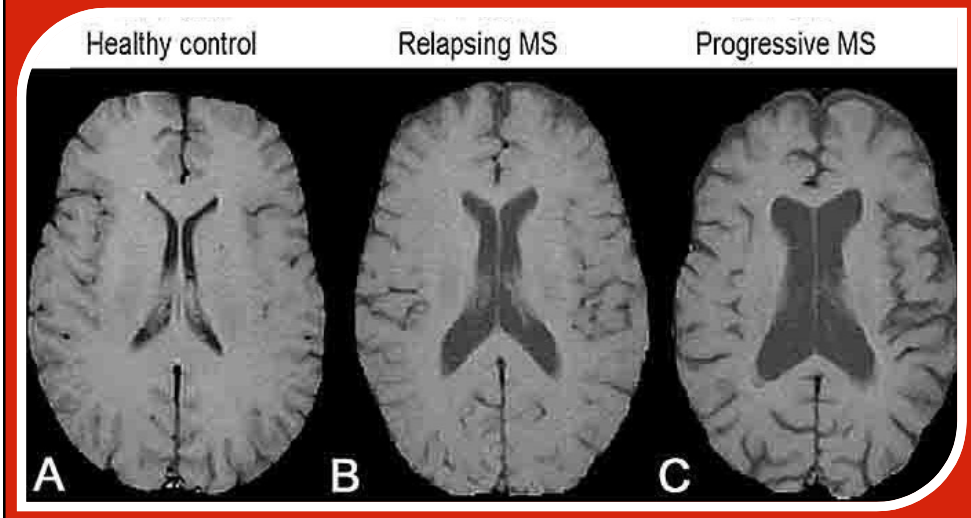
Brain Atrophy in MS – Happens Early



Disability progression in MS is related to Grey Matter atrophy in areas associated with motor and cognitive functioning.

Jasperse et al 2007, Bergsland et al 2018, Dekkera et al 2019

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MULTIPLE SCLEROSIS JOURNAL | MSJ

Topical Review

Is there an overlooked "window of opportunity" in MS exercise therapy? Perspectives for early MS rehabilitation

Morten Riemenschneider, Lars G Hvid, Egon Stenager and Ulrik Dalgas

Multiple Sclerosis Journal

2018, Vol. 24(7) 886–894

DOI: 10.1177/1352458518777377

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Foot Drop……or Decreased ground clearance

- Neuromuscular fatigue
  - Foot starts to catch or drag after a period of walking
  - Rests for a short period and can walk again until the fatigue kicks in again.
- Loss of ankle range
- Plantarflexor tone / spasticity
- Dorsiflexion weakness
- Evertor weakness (instability)
- Loss of toe off and hip flexion (weakness)

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Vestibular

- Optic Neuritis
- BPPV
- General vestibular ocular degeneration
- Specialised physiotherapists working in this area
- Proactive referrals

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Pelvic Floor

- Dramatically changed and improved
- Individualised testing / assessment
- More specific exercise prescription.
- Anyone with any slight changes should be referred

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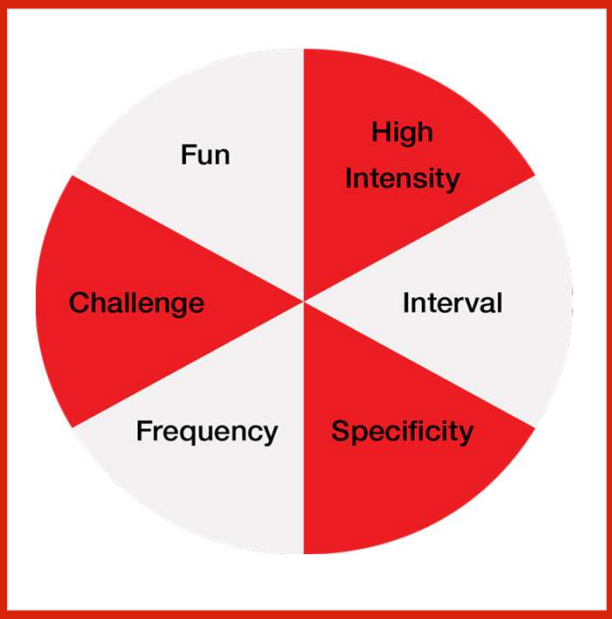

6-week HIIT & Education for Health Behavior Change

Ultimately assist in changing the trajectory of MS

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Take Home Messages

- Encourage everyone to exercise specifically for their MS not just their health.
- Educate around temporary exacerbations
- Explain neuromuscular fatigue and how to interval train
- Encourage referrals

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THANKYOU

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Questions?

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