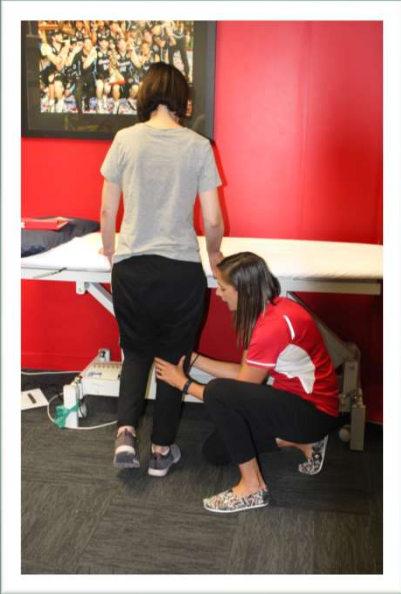





Multiple Sclerosis and Exercise

GILLY DAVY
SENIOR CONSULTANT NEUROLOGICAL PHYSIOTHERAPIST
BSC HONS PHYSIOTHERAPY
PG CERT HEALTH AND REHABILITATION SCIENCE
FOUNDER OF MS GET A HEAD START

1



Gilly Davy - Senior Consultant Neurological Physiotherapist



2

Exercise.....today's journey

- ▶ The benefits
- ▶ The challenges
- ▶ How much, how often
- ▶ Top Tips



Gilly Davy - Senior Consultant Neurological Physiotherapist

3

If exercise were a pill, it would be the most prescribed drug on the planet.



Gilly Davy - Senior Consultant Neurological Physiotherapist

4



**80%
Inactivity**

Gilly Davy - Senior Consultant Neurological Physiotherapist


Rope Neuro Rehabilitation

Rope Neuro Rehabilitation

This slide features a dark green background. In the center, a white starburst shape contains the text '80% Inactivity' in a bold, black, sans-serif font. To the right of the starburst is a large, 3D-style emoji of a person with a shocked expression, yellow face, blue hair, and hands raised to their face. The slide includes a vertical white bar in the top right corner, the speaker's name and title on the right side, and the 'Rope Neuro Rehabilitation' logo in the bottom left and right corners.

5

The problem of inactivity



Gilly Davy - Senior Consultant Neurological Physiotherapist

Rope Neuro Rehabilitation

Rope Neuro Rehabilitation

This slide has a dark green background. At the top, the title 'The problem of inactivity' is written in a white, sans-serif font. Below the title is a square photograph of a person with their head buried in their hands, suggesting distress or despair. The slide includes a vertical white bar in the top right corner, the speaker's name and title on the right side, and the 'Rope Neuro Rehabilitation' logo in the bottom left and right corners.

6

The General Benefits



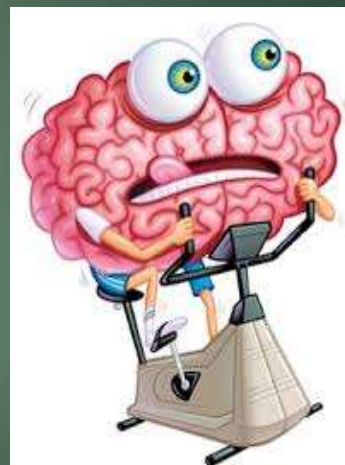
Gilly Davy - Senior Consultant Neurological
Physiotherapist

Motl et al 2012, Motl et al 2017, Pilutti et al 2013, Learmonth & Motl 2021,

7

The Neurological Benefits

- ▶ Exercise promotes neuroprotection and remyelination
- ▶ Exercise reduces brain volume
- ▶ Positive plastic adaptation of the CNS is possible for pwMS irrespective of disease severity
- ▶ Reduced relapse rates approx 27%



Gilly Davy - Senior Consultant Neurological
Physiotherapist

(Lozinski 2020, Motl 2015, Langeskov-Christensen 2021, Devasahayam 2017, Prosperini 2019)

8

The Challenges

THINGS TO DO TODAY:

1. GET UP.
2. SURVIVE.
3. GO BACK TO BED.



Gilly Davy - Senior Consultant Neurological Physiotherapist

Fatigue

- ▶ Central fatigue
 - ▶ Brain working 30-50% harder at rest
- ▶ Secondary fatigue
 - ▶ Lifestyle influences
- ▶ Neuromuscular fatigue
 - ▶ Physiological damage and need to change how you exercise



Gilly Davy - Senior Consultant Neurological Physiotherapist

Heat Sensitivity

- ▶ 0.5degree increase causes nerve conduction to slow
- ▶ Temporary exacerbation of symptoms
- ▶ It is not a relapse but it can be scary
- ▶ Can be well managed with active cooling



Gilly Davy - Senior Consultant Neurological Physiotherapist

11

Neuro Muscular Fatigue

- ▶ Intervals
- ▶ Exercise to rest ratio = 1:1
- ▶ 30 seconds of exercise = 30 seconds rest
- ▶ Strength training = 5 reps x6 sets



Gilly Davy - Senior Consultant Neurological Physiotherapist

12



How Much and How Often

MULTIPLE
SCLEROSIS
JOURNAL

MSJ

Future Perspectives

Exercise and lifestyle physical activity recommendations for people with multiple sclerosis throughout the disease course

Rosalind Kalb, Theodore R Brown, Susan Coote, Kathleen Costello, Ulrik Dalgas ,
Eric Garmon, Barbara Giesser, June Halper, Herb Karpatkin, Jennifer Keller, Alexander V Ng,
Lara A Pilutti, Amanda Rohrig, Paul Van Asch, Kathleen Zackowski and Robert W Motl 

Multiple Sclerosis Journal
2020, Vol. 26(12) 1459-1469

DOI: 10.1177/
1352458520915629

© The Author(s), 2020.



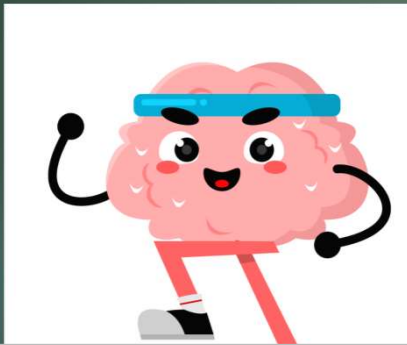
Article reuse guidelines:
sagepub.com/journals-
permissions

Gilly Davy - Senior Consultant Neurological
Physiotherapist

	Intensity	Frequency
Aerobic	40%- 60% predicted HR max 10 -30 minutes	3 x a week
Advance Aerobic	70% to 80% HR up to 40 minutes	5 x a week
High intensity interval	90% - 100% HR 5 x 30 -90 sec	1 x a week
Strength	5 to 10 exercises	2 to 3 x a week
Flexibility	30 to 60 sec hold	Daily
Neuromotor	20 -60 minutes	3 to 6 x a week

Gilly Davy - Senior Consultant Neurological
Physiotherapist

Lets start with the basics



3 to 4 x a week



2 x a week

Gilly Davy - Senior Consultant Neurological Physiotherapist



15

Who to see

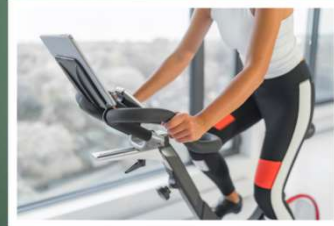
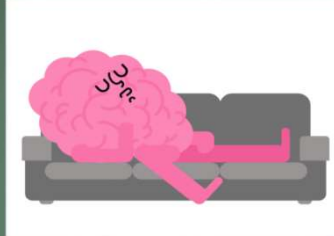


Gilly Davy - Senior Consultant Neurological Physiotherapist



16

Top Tips



Gilly Davy - Senior Consultant Neurological
Physiotherapist

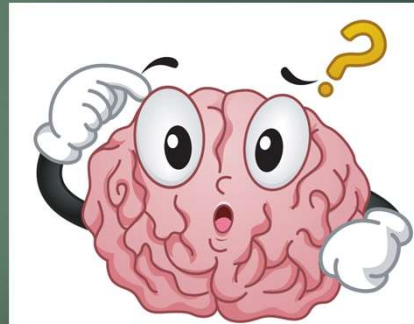
Take Home Messages

- ▶ Exercise is a powerful tool against MS
- ▶ Something is better than nothing
- ▶ Exercise can improve fatigue
- ▶ Active cooling can make it more enjoyable
- ▶ You do have to change HOW you exercise – interval training and low reps high sets
- ▶ Seek expert input – you are individual

Gilly Davy - Senior Consultant Neurological
Physiotherapist

Thank you

GILLY@ROPENEUROREHAB.CO.NZ
WWW.ROPENEUROREHAB.CO.NZ
WWW.MS-GHS.COM



Gilly Davy - Senior Consultant Neurological
Physiotherapist

References

- ▶ Devasahayam, A. J., Downer, M. B., & Ploughman, M. (2017). The Effects of Aerobic Exercise on the Recovery of Walking Ability and Neuroplasticity in People with Multiple Sclerosis: A Systematic Review of Animal and Clinical Studies. *Mult Scler Int*, 2017
- ▶ Langskov-Christensen, M., Hvid, L. G., Nygaard, M. K. E., Ringgaard, S., Jensen, H. B., Nielsen, H. H., ... & Dalgas, U. (2021). Efficacy of high-intensity aerobic exercise on brain MRI measures in multiple sclerosis. *Neurology*, 96(2), e203-e213.
- ▶ Learmonth, Y. C., & Motl, R. W. (2021). Exercise training for multiple sclerosis: a narrative review of history, benefits, safety, guidelines, and promotion. *International Journal of Environmental Research and Public Health*, 18(24), 13245.
- ▶ Lozinski, B. M., & Yong, V. W. (2020). Exercise and the brain in multiple sclerosis. *Multiple Sclerosis Journal*
- ▶ Kalb, R., Brown, T. R., Coote, S., Costello, K., Dalgas, U., Garmon, E., ... & Motl, R. W. (2020). Exercise and lifestyle physical activity recommendations for people with multiple sclerosis throughout the disease course. *Multiple Sclerosis Journal*, 26(12), 1459-1469
- ▶ Pilutti, L. A., Greenlee, T. A., Motl, R. W., Nickrent, M. S., & Petruzzello, S. J. (2013). Effects of exercise training on fatigue in multiple sclerosis: a meta-analysis. *Psychosomatic medicine*, 75(6), 575-580.
- ▶ L.A. Pilutti, M.E. Platta, R.W. Motl, A.E. Latimer-Cheung, The safety of exercise training in multiple sclerosis: a systematic review, *J Neurol Sci*, 343 (2014) 3-7.
- ▶ R.W. Motl, L.A. Pilutti, The benefits of exercise training in multiple sclerosis, *Nat Rev Neurol*, 8 (2012) 487-497.
- ▶ R.W. Motl, B.M. Sandroff, G. Kwakkel, U. Dalgas, A. Feinstein, C. Heesen, P. Feys, A.J. Thompson, Exercise in patients with multiple sclerosis, *Lancet Neurol*, 16 (2017) 848-856
- ▶ Prosperini, L., & Di Filippo, M. (2019). Beyond clinical changes: Rehabilitation-induced neuroplasticity in MS. *Multiple Sclerosis*, 25(10), 1348-1362

Gilly Davy - Senior Consultant Neurological
Physiotherapist