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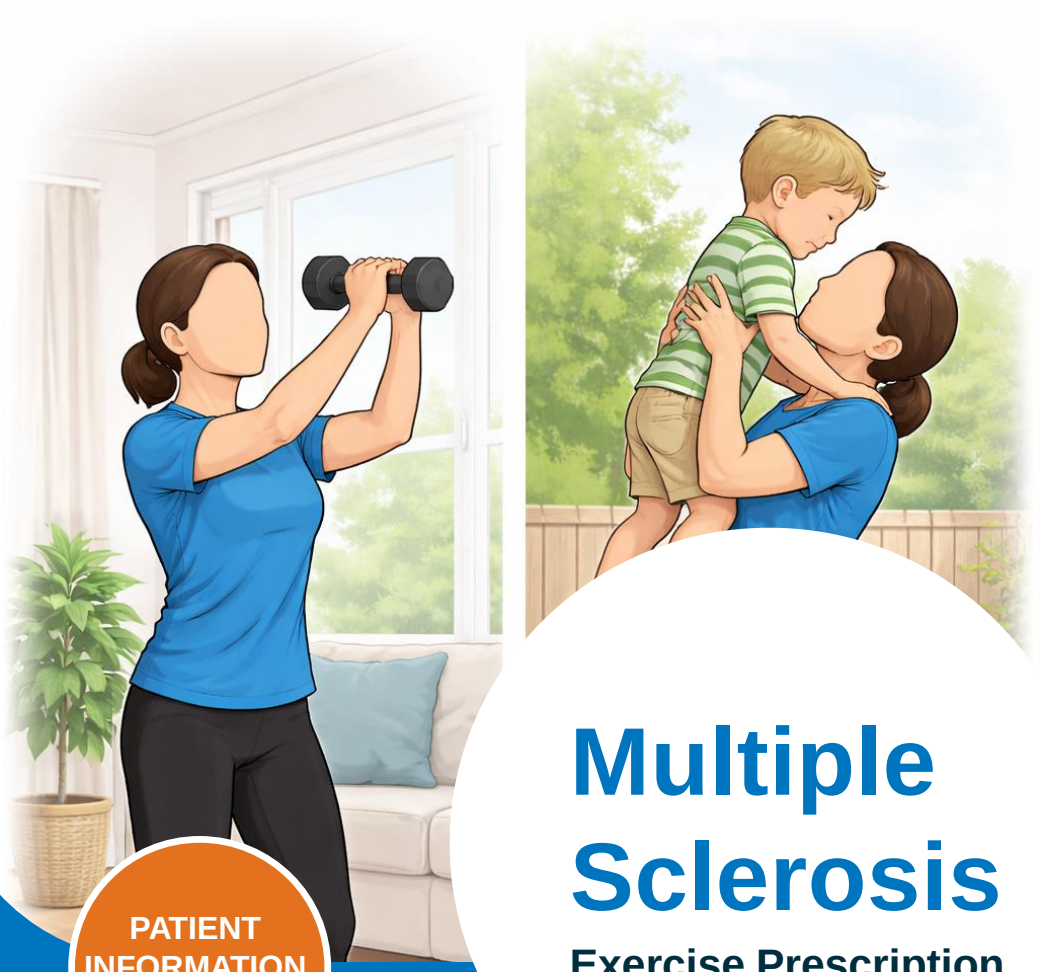


Multiple Sclerosis

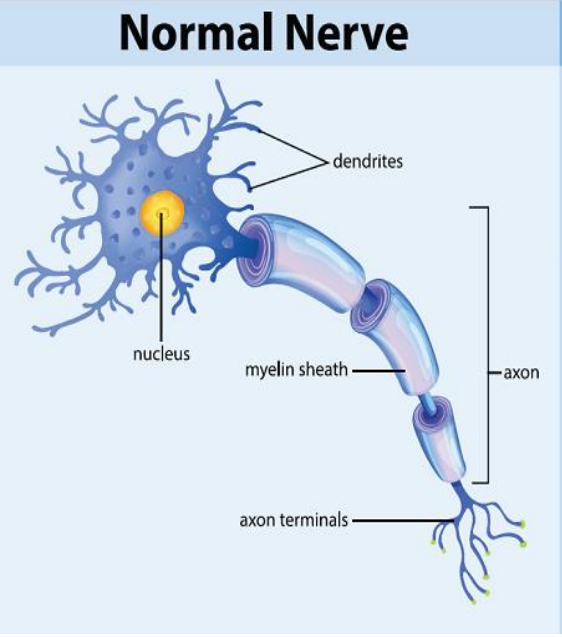
Exercise Prescription

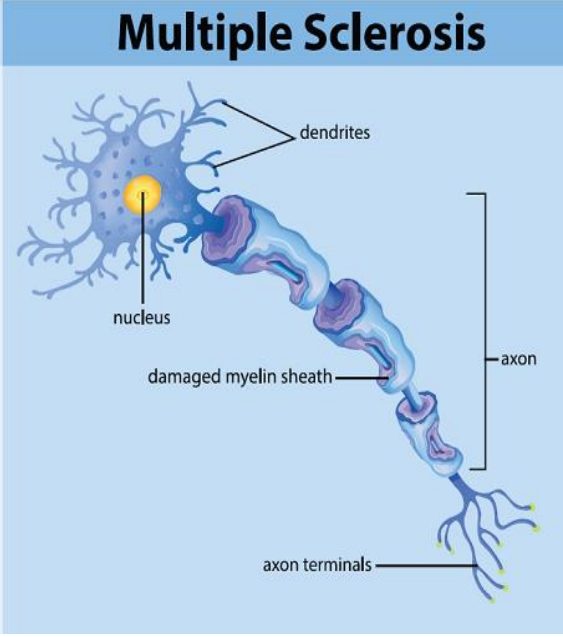
PATIENT INFORMATION BOOKLET

Contents

- What is Multiple Sclerosis?
- Types of Multiple Sclerosis
- Exercise Guidelines
- Exercise Program
- Special Considerations
- Exercise Diary
- Useful Resources







Multiple Sclerosis (MS)

MS is a condition that affects the central nervous system (CNS) – the brain and the spinal cord.

The CNS sends messages that control how we move, feel and think. These messages travel along nerves that are coated in a protective layer called myelin.

In MS, the body's immune system mistakenly attacks this myelin, thinking that it is harmful. This damage is called demyelination.

When myelin is damaged:

- Messages travel more slowly
- Messages may get mixed up or blocked
- Scar tissues forms, which can be seen on MRI scans as plaques or lesions

Sometimes the body repairs the damage. This is called re-myelination, but the new myelin is often weaker. After repeated attacks, the body may not be able to repair the damage fully.

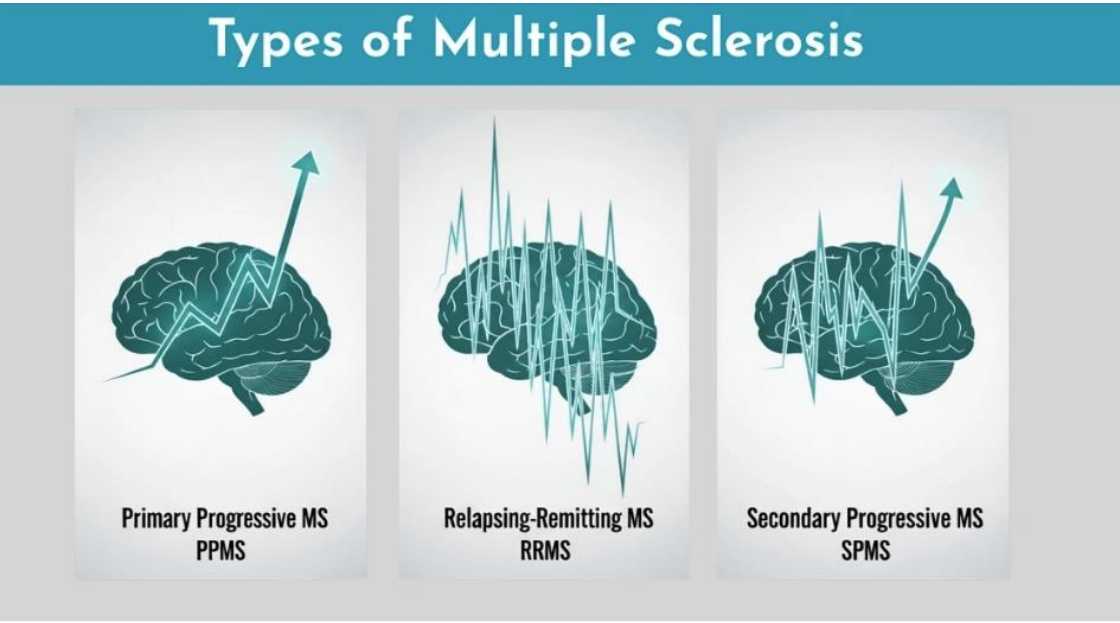
However the brain can sometimes find new pathways to send messages, this is plasticity.

Types of MS

Relapsing Remitting MS(RRMS)
Symptoms flare up (relapse). This is followed by periods of recovery (remission).

Primary Progressive MS
Symptoms gradually worsen over time, no clear relapses or remissions.

Secondary Progressive MS
Can develop after RRMS, symptoms no longer fully recover after relapses and disability slowly increases.



Types of Exercise

Aerobic Exercise

Activities that use large muscles in a steady, rhythmic way, walking or cycling for example. Benefits include a stronger heart and lungs, better stamina and easier to complete everyday tasks.

Strength Training

Exercises that make your muscles work against a weight or resistance, for example bands, free weights or body weight. This helps improve muscle strength, power and endurance.



Balance & Coordination

Exercise that challenge the systems that help you stay upright – your vision, inner ear (vestibular) and joint sense (proprioception). These exercises help reduce the risk of falls. Always make sure you have a sturdy surface nearby for support.

Flexibility

Stretching exercises that help muscles and joints move comfortably through their full range. Helps prevent stiffness and maintain mobility.

Aerobic

Three times a week
For 10–30 minutes at a moderate exercise intensity of 3-4 on the Modified Borg Scale

Advanced:
Up to five times a week for up to 40 minutes. Approaching 5-6 on Modified Borg

Optional High Intensity Interval Training (HIIT)
One session per week
Five intervals of 30–90-seconds
Very hard effort 7-8 on the Borg scale with equal rest time between intervals



Strength Training

Two to three times a week
One to three sets of 8–15 repetitions/set
Five to 10 exercises

Balance & Co-ordination

Three to six times per week for 20–60 minutes, tailored to your needs with a focus on falls prevention.

Flexibility

Every day, with two to three sets of each stretch
Hold each stretch for 30–60 sec/stretch

Why Exercise Matters in MS

Research shows that starting exercise in the course of MS can help reduce long term disability. When exercise is combined with MS medications your quality of life can improve significantly.

Exercise is neuroprotective

When you exercise blood flow to the brain increases, helpful chemicals are released and nerve connections become more active. This supports brain health and may reduce relapse rates, improve daily function and improve overall wellbeing.

The **key point** is that staying active slows physical decline. The fitter and stronger you are, the more control you have over your symptoms.

Exercise has also been proven to make positive impacts upon:

- Better cardiovascular fitness
- Improved thinking & memory
- Increased strength
- Reduced fatigue
- Stronger bones
- Better balance
- Lower risk of falls
- Improved mood
- Reducing pain
- Reduced spasticity
- Better quality of life



Aerobic

	General	Advanced
How often?	Three days a week	Five days a week
How much?	Gradual increase in duration over time from 10-30minutes	Interval approach 40 minutes
How to?	Walking, stationary bike, rower, treadmill, ski ergometer, running, swimming	Intensity 5-6 on the 10-point on Modified Borg Scale. 80% Heart Rate peak or 70% VO2 peak.

Walking as exercise

Walking is one of the easiest and most accessible forms of aerobic exercise. To get the most benefit, walk at a moderate to vigorous intensity.

How to know your working hard enough?
Use the *'Talk Test'.* Walk at a pace where you feel slightly out of breath and can only speak in short sentences. This usually feels like 3-4 out of 10 on the Modified Borg Scale.

Tips

- Start slowly and build up
- Increase speed or duration gradually
- As your fitness improves, what once felt like 8/10 will feel easier, this means you can progress.



Exercise Intensity – Modified Borg



Strength

	General	Advanced
How often?	Two to three days a week	Three days a week
How much?	One to three sets 8-15 repetitions of each exercise	Three sets 8-12 reps
How to?	Target major muscle groups: TheraBand's Dumbbells, Barbells Weight machines	Intensity of 70% One Repetition Maximum

1. Sit to Stand

Sit on a chair that has been placed against a wall to prevent it from moving. Fold your arms across your chest.

With your feet slightly apart, lean forward and stand up.

Slowly return to sitting.

Start **End** **Start** **End**



Progression: ***Staggered*** → knees bent and your feet staggered on the floor. Stand up and sit down.

Change legs.

Keep your motion controlled and smooth; do not use momentum.

Progression: Hold a weight as you stand up.

2. Glute Bridge

Lie on your back with your knees bent.

Lift your hips off the ground until your trunk is aligned with your legs.

Slowly lower and repeat.

Progression: place a small weight on your lower stomach



3. Step Ups & Press

Stand facing a step.

Step up on the step with the leg and punch upward with the same-side arm as you bring the opposite knee up.

Repeat on the other side.

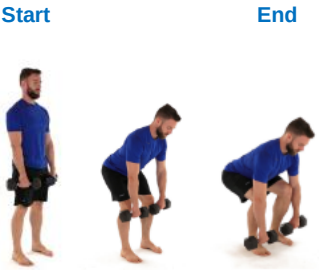
Progression: hold a weight



4. Deadlift

Stand with your arms on each side with weights in each hand. Squat down to 90 degrees with the weights in front of your legs and slowly come back up to a standing position.

Keep your back straight, chin in, shoulders back at all times.



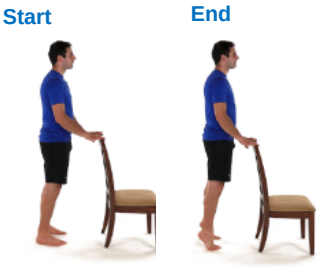
5. Calf Raise

Stand on both feet with your hands on a chair or table for balance.

Raise on your tiptoes without bending the knees.

Lower under control to come back to the starting position and repeat.

Progression: hold a weight/wear a backpack with weights.



6. Shoulder Press



Stand with both feet shoulder width apart. Bend knees slightly ‘Soft Knees’.

Bend your elbow and then press the weight above your head.

7. Bicep Curl



Stand up and step on one end of the elastic, holding the other end in your hand.

Keep your back straight and pull the elastic towards your shoulders by bending your elbow.

Return to the initial position and repeat.

8. Shoulder Flexion



Stand and step on one end of the elastic with your foot and grab the other end firmly with your hand.

Slowly raise the arm against the resistance of the band in front of you with the elbow extended until your hand is at shoulder height.



Slowly lower the arm down to the starting position and repeat as prescribed.

9. Ankle Dorsiflexion



Sit up straight in a chair. Place an elastic around your forefoot and step on the other end with the opposite foot.

Lift your forefoot up off the floor against the resistance of the band.



Keep your heel in contact with the floor at all times. The movement should occur only at your ankle. Lower your forefoot and repeat.

Balance & Coordination

	General	Advanced
How often?	Three to six days a week	Five days a week
How much?	Gradual increase in duration over time from 20-30 minutes	Interval approach 60 minutes
How to?	Balance Exercises: Static & Dynamic, Challenge different balance systems Coordination - dual tasking	Incorporate advanced exercises challenging several balance systems.

1. Standing Static Balance



Stand up straight in front of a table with your feet apart.

Try to keep your balance without holding on to the table and count to the prescribed time slowly.



Progression:

- put feet together
- close eyes

2. Rotation



Pivot at your waist from side-to-side so that your head, eyes, and torso move together in a 170-degree arc.

Maintain focus on the target at all times.

3. Single Leg Stand



Stand beside a chair or a wall.
Raise one leg. Hold for 10 seconds.
Switch legs



Progression:

No hand hold**.**
Head turns left and right.

4. Marching on the spot

Standing, raise your knee and hip in flexion.

Simultaneously, flex the opposite shoulder and elbow.

Repeat, alternating for the prescribed number of repetitions or duration.

Progression: Complete task on pillow.



5. Lunge

With your feet in line, lower the back knee close to the floor and behind the front heel.

Keep your balance and lift yourself back up to the standing position.

The knees should be bent at 90 degrees in the bottom position

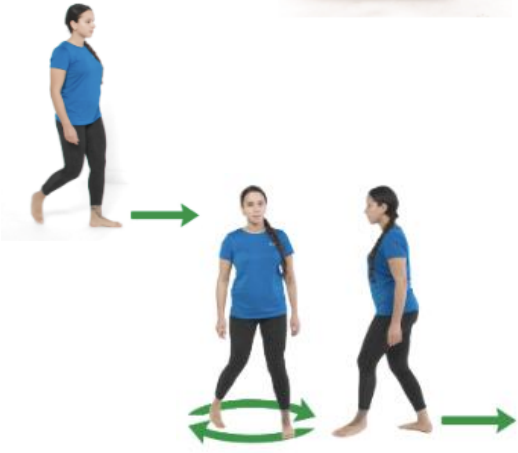
Progression: Hold weight.



6. Walking Forward & Turn & Backwards

Take a few steps forward.

Make a half-turn, then continue walking a few steps backwards.
Repeat.



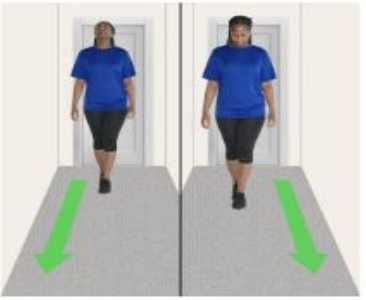
7. Walk, with head turns

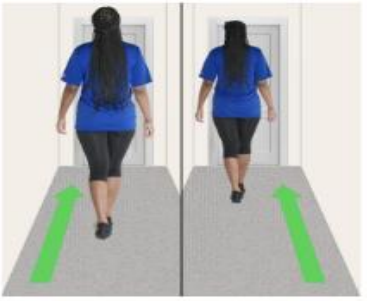
Find a corridor with a stable surface nearby to support you if you lose your balance.

Remove all objects from your path before you start.

Walk and turn your head upwards for 3 steps, then turn your head down for 3 steps.

Walk and turn your head left and right for 3 steps.

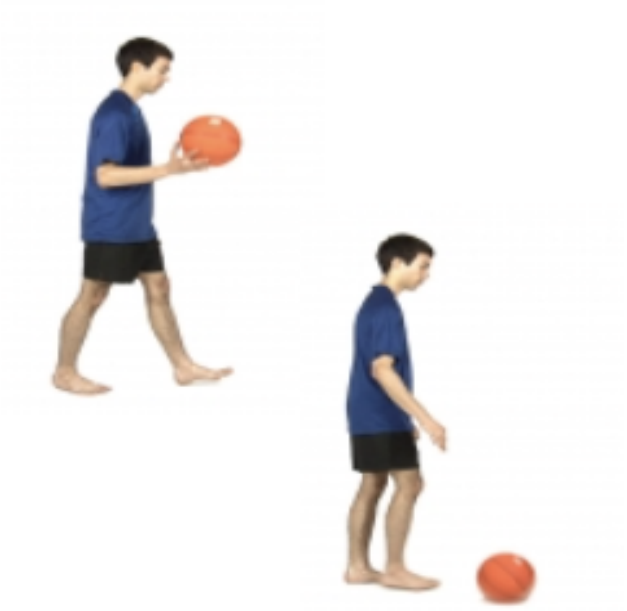


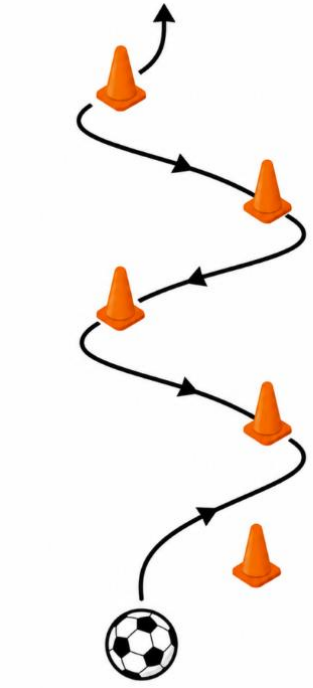


8. Walking ball bouncing

Walk while bouncing a large ball.

Progression: weave around cones.





Flexibility

	General	Advanced
How often?	Seven days a week	Seven days a week
How much?	One to three sets 3-5 reps, hold duration (30-60 seconds)	Three sets 5 reps, hold duration (60 seconds)
How to?	Target key muscles of upper and lower limbs. See, the following exercises in the pages ahead.	Target key muscles of upper and lower limbs.

1. Calf Stretch in Standing



Place a book or board against the wall at 45º

Stand on the book/board on the balls of your feet and lean forward

2. Standing Calf Stretch



Stand and place both hands on a wall, with your feet about half a meter from the wall.

Place one leg behind the other and slowly bend the knees while keeping the heels on the floor until you feel a stretch in the calf of the back leg.



Maintain the stretch and relax.

3.Seated Hamstring Stretch



Sit on the edge of a sturdy chair with one leg straight out in front of you and the other knee bent.

Stick your hips back while keeping your back straight, as you bend forward to feel a stretch behind your straight leg.



Hold the position for the prescribed time.

4. Standing Quadriceps Stretch

Stand holding onto a chair for balance. Place one foot on a stool behind you.

This can be quite low as in the picture or a higher object, such as a chair.

Press your pelvis forward until you feel a comfortable stretch in the front of the thigh.





5. Standing Side Bend

Stand straight with your feet hip width apart and look directly ahead of you.

Lift one arm up above your head and slowly bend sideways while reaching down with the opposite hand, until you feel a stretch at the side of your trunk.

Maintain the stretch without twisting or leaning forward. Slowly return to initial position.





6. Childs Pose

Start on all fours.

Round your back by pushing down on your hands, and hold the position for the prescribed time.

Without moving your hands, lower your buttocks onto your heels. Then move your hands forward.

Hold the stretch for the prescribed time.





7. Thread the Needle



Start in a four point position with your hands directly under the shoulders and the knees under the hips.

Keep your chin in, back straight and shoulders back.



With one arm reach under the other as far as possible rotating and rounding your upper back.

Bring your arm back and reach back in the opposite direction as far as possible.





Keep your elbow bent to 90 degrees and look at your moving hand at all times.

Repeat with the other arm.

Special Considerations

Heat Sensitivity- People with MS experience temporary worsening of symptoms when they get too warm (Uhthoff's phenomenon). Symptoms should settle with two hours after exercise.

Tips to manage heat:

- Exercise in a cool, well ventilated room
- Use a cold compress before, during or after exercise
- Reduce intensity or duration if symptoms last longer than two hours
- Track your exercise in a diary to monitor patterns.
- Drink cold water before, during and after.

Pain- MS pain can feel like spasms, burning, stabbing, aching or shock like sensations. If a particular exercise increases your pain, note it and tell your physiotherapist at your next session.

Tiredness / Fatigue This can feel overwhelming and unpredictable. Helpful strategies include:

- Pacing activities
- Breaking tasks into smaller chunks
- Using cooling techniques
- Allowing two rest days between exercise sessions when starting out, building up to the recommended dosage of guidelines.

Exercise Diary

My Physical Activity Diary

Week: _____ Month: _____

Monday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Tuesday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Wednesday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Thursday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Friday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Saturday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Sunday		
Time of Day	Description of Activity (Type and Intensity Level)	Duration

Notes

Useful Resources

MS Ireland https://www.ms-society.ie/

National MS Society https://www.nationalmssociety.org/MS-NHS
https://www.nhs.uk/conditions/multiple-sclerosis/

Overcoming MS https://overcomingms.org/

MS Trust https://mstrust.org.uk

ExWell https://www.exwell.ie/

Siel Bleu https://www.sielbleu.ie/

