Adapt Movement

Exercise is Medicine

MS Seminar - 2024

Exercise is Medicine

Physical activity promotes optimal health and is integral in the prevention, treatment and management of many medical conditions.

MS Goal of Exercise

To maximize quality of life and functional independence

Make exercise as routine as taking your daily prescriptions

Everybody’s exercise ‘pill’ is unique

MS is characterised by significant physical & mental symptoms:

01 Particularly muscle weakness

02 Walking & Balance impairments

03 Spasticity

04 Fatigue

05 Cognitive impairment

06 Depression

07 Lower cardiorespiratory fitness

08 Heat intolerance (Uhthoff's syndrome)

Exercise Considerations & Contraindications

Many high quality RCTs demonstrate exercise is not associated with an increased risk of relapse in MS

Secondary Complications

1 **Decreased Physical Activity**

People with MS are substantially less physically active than the general population

2 **Increased Risk of Disease**

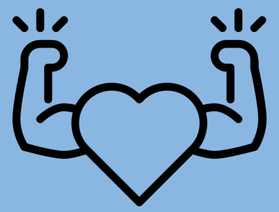
Which in turn increases the risk of many lifestyle-mediated chronic diseases

3 **Onset of Secondary Disease**

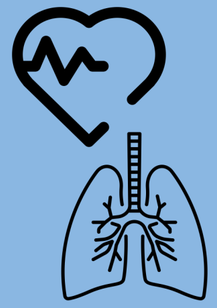
including coronary heart disease, osteoporosis and type 2 diabetes.

Exercise Benefits

Improvements



Improved Muscular Strength



Improved Cardiorespiratory Fitness

Improved Mobility

Better Balance

Reduced Fatigue

Primary (Disease Related) & Secondary (Non-Disease Related)

Improved Mood & Quality of Life

Accumulating evidence to support

- Reduction of relapses in people with RR MS
- Slowing of disability progression
- Possible disease modifying effect

Neurological benefits of exercise & MS

Evidence suggesting that exercise may influence several neurotrophic factors known to be involved in neuroprotective processes, and potentially slow progression of MS.

Exercise effect on neuroplasticity & neuroprotection

- Increase blood flow to the brain
- Increase anti-inflammatory cytokines
- Stimulating oligodendrocyte activity (myelinating cells in CNS)
- Stimulating BDNF (preventing death of existing brain cells, inducing growth of new neurons and synapses)

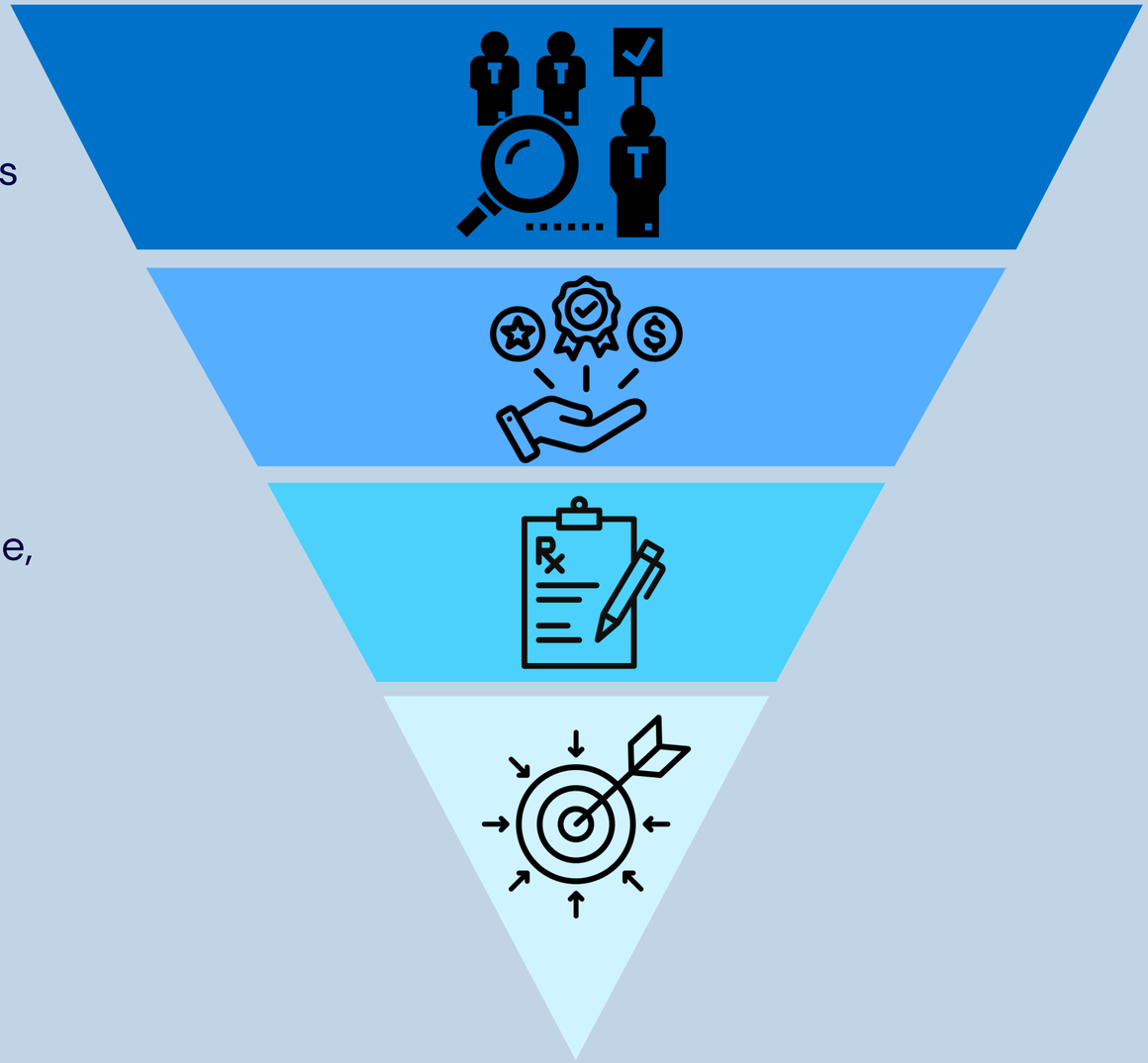
PRESCRIPTION

01 Screening about MS, risk factors, secondary conditions by a professional is essential for effective and safe prescription of exercise

02 Exercise programs should be designed to address an individual's main clinical presentations and concerns such as his/her desires to improve strength, endurance, balance, fatigue, manage spasticity, mobility and/or reduce falls.

03 Exercise prescription FITT principle: Frequency, intensity, type, time

04 Exercise specificity



Resistance Exercises

Goal

Increase strength, power & functional performance

Frequency

2–3 sessions/week

Intensity

Initially 1 set of 8–15 repetitions (70–80% of 1RM)

Rest

2–4 min of rest
In between sets
To avoid muscle fatigue

Type

Weight machines, free weights, cable pulleys;
OR
Body weight exercises (e.g. sit-to-stand), elastic resistance bands, aquatic exercises and calisthenics

Progression

Increase towards 2–4 sets of 8–15 repetitions (75–80% of 1RM)

depending on individual tolerance.

Amount

5-10 Exercises

Aerobic

Goal

Increase and maintain cardiovascular function

Frequency

2–3 sessions/week

Duration

Initially 10–30 min per session

Gradually increase to at least 30 min per session.

Type

Bicycle ergometry,
Arm-leg ergometry,
Arm ergometry elliptical trainer

Rowing & running for those with low EDSS

Side Note: Clinicians may also consider prescribing high intensity aerobic interval training, i.e. alternate periods of intense activity with intervals of less intense activity (i.e. active periods of lower exercise intensity or periods of rest), as a method to employ progressive overload.

Intensity

40–60% of Max predicted HR
OR
40–60% of VO2max
OR
RPE =11 (fairly light) – 13 (somewhat hard)

Progression

Progress to up to 5 sessions/week & up to 40 min each at 70% VO2max
OR
80% Max predicted HR & RPE approaching 15 (hard) out of 20

Combined Exercise

Purpose

Well-tolerated in individuals with MS

Recommendations

Perform each type of exercise on alternate days with equal proportions of resistance and aerobic training

Considerations

If performed on the same day, begin with resistance training before proceeding with aerobic training

Prescription

Apply frequency, intensity, time, type and progression as recommended for each type of exercise above

Flexibility

Goal

Increase and maintain ROM and maintain spasticity.

Frequency

Perform daily

Duration

Hold the stretch for a minimum of 30-60s x 2 repetitions for each muscle group

Additional Notes

Muscle Contractures & Hypertonia may require prolonged stretch >20min.

Exercise Specificity

Stretch & Impact Therapy, Balance

The adaptation of the body or change in physical fitness is specific to the type of training undertaken

Stretch and impact therapy to reduce spasticity

Balance specific training to reduce falls risk

Conclusion

1. Exercise is Medicine
2. Need to address disease specific and secondary complications
3. FITT Principle for prescription
4. Exercise Specificity