



Understanding the Special Needs of Your Students

Many individuals with MS can experience some hesitation and ambivalence attending an exercise class or facility for the first time or when symptoms might be impacting their ability to move freely, especially when the class is not designed *only* for individuals living with MS. When working with individuals with MS it is important to help them feel comfortable and welcome no matter their limitations.

Important reminders for participants at the beginning of each class:

- Encourage participants to advise instructor about medications being taken that could impact attention, balance, concentration, etc.
- Each participant needs to know his/her own limitations and to exercise at his/her own pace. Classes are not competitive in nature and each participant has his or her own situation, which may change from week to week. Short breaks during the class are appropriate and recommended if needed.
- Any time a person experiences new difficulty with the exercises in class or symptoms increase, recommend that they contact their physician.

The following are a sample questions you can ask your students regarding how they are doing, symptoms they are experiencing and anything with which they may need help:

1. How do you feel today?
2. Could you please describe the typical amount and types of exercise per day or week you have engaged in during the past year?
3. What type of symptoms are you experiencing today? What do you see as the limitations MS imposes on you (e.g. fatigue, heat sensitivity, numbness and visual disturbances) for doing exercise?
4. What do you think you may need extra help with or attention to today?
5. What concerns do you have?
6. Are there any exercises that your physician has cautioned you against doing?
7. What are your short-range and long-range goals in designing your own personal exercise program?
8. What is your favorite exercise format (group classes, individual classes, walking or tread mill, self-motivated individual gym regimen, swimming, yoga, etc.)?



Functional Levels: Options for Movement Modifications

The following levels are intended to assist health, fitness, and wellness professional in designing exercise programs and class formats that address the needs of a group with mixed functional levels. When designing a class or one-on-one training session, keep the following three levels in mind.

Level 1: These individuals may have no symptoms or mild symptoms. They will generally walk independently or use a cane. However, they may be experiencing symptoms that are not outwardly visible to the instructor.

Level 2: These individuals have more motor-physical limitations. Symptoms may also be affecting postural alignment. They may be more dependent on assistive devices such as walkers and wheelchairs for mobility. They have good transfer skills, but may need additional help getting into a chair, onto the floor, or into the pool. They may require assistance with balance while participating in a class.

Level 3: These individuals have greater functional impairment and may experience paralysis and spend most of their time in a wheelchair. These participants may need personal attention and may require an assistant.

As a general guide most of your students will likely fit into the first two levels, however, it is important to understand and feel comfortable making modifications across a range of ability levels. It is important to remember that symptoms of MS are different for each individual and may change daily or weekly. Many common symptoms, including fatigue, heat sensitivity, numbness and visual disturbances can be “invisible.” Be sure to discuss any specific limitations with each student. If a movement needs to be adapted, involve the student if possible so that they can modify the movement to best meet their needs. Should you see changes in an individual’s functional level, consider a discussion with your student to connect them with the appropriate rehabilitation professional.

MS Symptoms: Considerations for Movement Modification

As discussed earlier, individuals with MS can experience an array of symptoms due to the disruption of nerve signals, and vary depending on where the damage has occurred. Over the course of the disease, some symptoms will come and go, while others may be more lasting.

In general, exercise at low or moderate levels of intensity are best tolerated by people with MS. This means that the time spent performing an exercise may be gradually increased while holding the intensity at a stable level. This may help reduce early fatiguing, overheating and possibly reduce the risk of fall and injury. When people with MS begin to feel fatigued, it is generally better to heed their body’s signals of exhaustion and shift to a cool-down phase of exercise, or non-fatiguing exercise rather than trying to push past their limit of endurance. Gradually increasing an exercise program over several months will allow more physical activity without more fatigue.

The following table discusses how symptoms may impact exercise and considerations for modification and movement.

Symptom/ Condition	Impact on Movement	Suggested Exercises	Special Considerations
Fatigue	<ul style="list-style-type: none"> ▪ Decline in energy levels ▪ Peaked level of fatigue commonly reached by mid afternoon 	<ul style="list-style-type: none"> ▪ Cardio exercises which stay at lower end of target heart range of 45%-60% (i.e. swimming, walking, stationary bike, etc) ▪ Mild interval training ▪ Muscle conditioning ▪ Slow stretches, yoga postures 	<ul style="list-style-type: none"> ▪ Advisable to encourage clients to eat small portion of food before exercise session to increase energy ▪ Allow for resting periods ▪ Monitor duration & intensity of exercise ▪ Utilize Perceived Exertion Scale of 1-20 with clients (12-14) being an appropriate range
Heat Sensitivity	<ul style="list-style-type: none"> ▪ Heat & humidity can lead to fatigue ▪ Decreased energy levels ▪ Loss of balance ▪ Visual changes ▪ May lead to pseudoexacerbation 	<ul style="list-style-type: none"> ▪ Indoor activities ▪ Aquatics/water aerobics ▪ Add cooling device for land activities ▪ Mild interval training 	<ul style="list-style-type: none"> ▪ Provide cool environment ▪ Awareness of early signs of heat-related problems ▪ Allow for rest periods ▪ Increase fluid intake to avoid dehydration ▪ Drink cold water ▪ Wear free-breathing fabrics and dress in layers that can be easily removed
Balance	<ul style="list-style-type: none"> ▪ Foot drop or dragging; may be related to muscle weakness ▪ Foot may turn in while walking: spasticity may be contributing factor ▪ Shuffling of foot while walking ▪ Wobbling gait ▪ Loss of balance leading to risk of falling 	<ul style="list-style-type: none"> ▪ Choose activities that provide support (i.e. aquatics, stationary bike, walking with adaptive device, wall or bar work, or using a supportive prop like a chair) ▪ Dynamic balance exercises ▪ Weight-shifting exercises ▪ Balancing on unstable surface (eyes open and closed) ▪ Sitting on balance ball ▪ Tandem walking 	<ul style="list-style-type: none"> ▪ Provide surrounding support to prevent falls ▪ Stand close to the client ▪ Develop strength before working on balance exercises ▪ Avoid sharp turning of the head and neck or closing of the eyes in order to prevent loss of balance ▪ Work against a wall or corner

Symptom/ Condition	Impact on Movement	Suggested Exercises	Special Considerations
<p style="text-align: center;">Ataxia (Coordination)</p>	<ul style="list-style-type: none"> ▪ Staggered gait ▪ Appearance of client to be drugged or drunken ▪ Drop foot ▪ Circumducted hip during swing phase (one must swing the leg around to clear the ground) 	<ul style="list-style-type: none"> ▪ Choose activities that provide support (i.e. aquatics, stationary bike, walking with adaptive device, wall or bar work, or using a supportive prop like a chair) ▪ Strength & conditioning exercises ▪ Balance exercises ▪ Walking in a straight line ▪ Fine motor exercises 	<ul style="list-style-type: none"> ▪ Provide surrounding support to prevent falls ▪ Monitor for fatigue ▪ Provide extra assistance as client performs movement ▪ Avoid sharp turning of the head and neck or closing of the eyes in order to prevent loss of balance
<p style="text-align: center;">Spasticity</p>	<ul style="list-style-type: none"> ▪ Most common in legs & postural muscles ▪ Causes muscles to lose their ability to interact with each other as in the case of muscle contraction & relaxation ▪ Causes muscle tightness & stiffness ▪ Contributes to mobility & gait imbalances: might be noted by foot turning in 	<ul style="list-style-type: none"> ▪ Any type of rotational stretch of the affected area ▪ Choose supportive exercise such as stationary bike ▪ Perform gentle rhythmic flexibility exercises ▪ Focus on mobility and lengthening of tight areas. 	<ul style="list-style-type: none"> ▪ Avoid quick forceful movement or stretching and move slowly through range of motion ▪ Allow for rest periods ▪ Perform gentle rhythmic flexibility exercises before static stretching ▪ Avoid excessive plantar flexion for increased duration. ▪ Utilize toe clips and heel straps for foot stability
<p style="text-align: center;">Contracture</p>	<ul style="list-style-type: none"> ▪ Static muscle shortening due to spasm ▪ Can cause loss of mobility, balance and muscle paralysis 	<ul style="list-style-type: none"> ▪ Rotational movement around the contracture ▪ Gentle, slow flexibility exercises before static stretching ▪ Supported balancing exercises 	<ul style="list-style-type: none"> ▪ No over-stretching ▪ Avoid quick forceful movements ▪ Assisted stretching—helping clients to move through full range of motion ▪ Intensity should be increased very slowly

Symptom/ Condition	Impact on Movement	Suggested Exercises	Special Considerations
<p>Paresthesias (w/L'Hermitte's)</p>	<ul style="list-style-type: none"> ▪ Numbness & tingling ▪ Creeping sensation of the skin 	<ul style="list-style-type: none"> ▪ Refer to health professional for evaluation and treatment ▪ In many cases, does not cause real distress, but is more of a nuisance. ▪ Can typically engage in all modalities of exercise ▪ Monitor duration & take breaks 	<ul style="list-style-type: none"> ▪ Modify intensity to avoid increase in tingling sensation ▪ Stop exercise if experienced ▪ Monitor duration & take breaks
<p>L'Hermitte's Sign</p>	<ul style="list-style-type: none"> ▪ Uncomfortable electrical sensation/shock traveling down the spinal cord when head is bent forward (chin to chest) ▪ Pins & needles sensation in limbs 	<ul style="list-style-type: none"> ▪ Refer to MD for pain management therapy ▪ Choose activities that maintain neck in neutral position 	<ul style="list-style-type: none"> ▪ Avoid neck flexion exercises ▪ Avoid extreme forward or backward movement of the neck.
<p>Vision Problems (<i>Optic Neuritis</i>)</p>	<ul style="list-style-type: none"> ▪ Typically, blurred vision, that is temporary ▪ Double vision ▪ Sensitivity to bright light and florescent lighting ▪ Heightens tension and fatigue 	<ul style="list-style-type: none"> ▪ Refer to health professional ▪ Relaxation exercises <p>Choose activities that provide support (i.e. aquatics, stationary bike, walking with adaptive device, wall or bar work, or using a supportive prop like a chair)</p>	<ul style="list-style-type: none"> ▪ Mindful of environment ▪ Keep exercise area well lit but not extremely bright ▪ Keep working area clear of obstruction

Symptom/ Condition	Impact on Movement	Suggested Exercises	Special Considerations
Incontinence	<ul style="list-style-type: none"> ▪ Students should empty bladder before exercise ▪ May impact the intensity and duration of the exercise 	<ul style="list-style-type: none"> ▪ Add Kegel exercise pelvic tilt, wall slide and bridge (easier to contract when gluts are activated) ▪ Abductor exercise (i.e. squeeze small medicine ball between thighs) ▪ Refer to medical professional 	<ul style="list-style-type: none"> ▪ Avoid dehydration if client is intentionally reducing water consumption ▪ Allow for restroom breaks ▪ May not be appropriate for aquatic activities ▪ Encourage clients to continue different types of exercise training aside from aquatics.
Tremor	<ul style="list-style-type: none"> ▪ Tremors may be random ▪ Can occur in various parts of the body 	<ul style="list-style-type: none"> ▪ Refer to PT for individual therapy ▪ Adding weights to a limb during exercise may decrease a tremor, but must consult a PT for utilizing this modification 	<ul style="list-style-type: none"> ▪ Make sure to provide a safe environment ▪ Modify balance exercises
Cardiovascular Dysautonomia	<ul style="list-style-type: none"> ▪ Dysfunction of the autonomic nervous system causing possible problem with cardioacceleration and reduction in blood pressure response. 	<ul style="list-style-type: none"> ▪ Cardio exercises which stay at lower end of target heart range of 45%-60% ▪ Work at lower intensity and duration 	<ul style="list-style-type: none"> ▪ Monitor for lightheaded and dizziness ▪ Discontinue exercise if symptoms progress

Adapted from *Exercise and Multiple Sclerosis*, Karl Knopf, EdD

Equipment Usage and Analysis

Equipment can enable an individual to complete a movement action or position, when range of motion, flexibility or individual symptoms would otherwise prohibit it. In this way, full benefits of the exercise or position are achieved without stress, strain or injury. Equipment can also be used to increase or decrease intensity and add challenge or variety to activities.

An important first step in selecting the appropriate exercise equipment is to determine the needs of the student. Next, evaluate specific pieces of equipment to determine which type will best address these needs. Once you have made a selection, knowing how to use it correctly is essential. Equipment that is effective as an exercise tool can also be ineffective and damaging when used inappropriately. When used correctly exercise equipment can be an excellent tool for modification/adaptation or intensification of movements.

When considering the use of equipment, do the following:

- Establish intended use/application
- Assess for correct body mechanics during use
- Identify contraindications/risks
- Determine benefits
- Determine the ability of the client
- Identify tool limitations (cost, availability, intended ability level, etc.)
- Determine desired action or benefit you wish to impart.