MS: Flexibility

Assessment: (evidence-based instruments)
- Impairments: Goniometry, muscle length testing
- Functional Limitations: Observe patient perform movements (apley’s scratch test, touch back of head, reach to back pants pocket, transfers, gait, squat, touch toes: if strong enough), look for foot drop.

Patient Education
- Explain to patient the purpose of stretching and flexibility (to prevent contractures, decubitus ulcers, and spasticity, maintain or improve range of motion)
- Exercises should be performed slowly and gently, no dynamic/ballistic stretching
- Stretches should target the whole body, including muscles of the upper body, lower body, neck, and back
  - But do not stretch beyond physiological or functional ROM (tenodesis effect). Overstretching can create a hyper-mobile unstable joint (Kisner and Colby, 2007)
- Exercises should be performed sitting or lying down to decrease the risk of falling, using a towel when necessary to facilitate stretching
- Guidelines
  - Stretching should be performed 10-15 minutes per day, preferably before or after aerobic or resistance exercise
  - Include each muscle group in stretch
  - Each stretch should be held at minimum 15-30 seconds
  - Repeat 3-4 reps for maximum improvement
- Educate patient that feeling a “stretch” is okay, but should not bring on pain
- Patient should stay hydrated and strongly consider doing stretching/exercises in the morning

General Considerations

The responses to stretching interventions must be closely monitored and balanced with pharmacological interventions. For example stretches will respond best with oral baclofen if applied in middle of dosing cycle rather than end or beginning.

Ice packs and other cryotherapy can temporarily reduce spasticity and allow greater ROM for stretching. However, it is important to closely monitor cryotherapy as it may cause unpleasant sensation and can be contraindicated for patients

Heat modalities are generally indicated before beginning ROM stretches, but for patients with MS heat modalities can have temporary worsening of symptoms known as pseudoexacerbation.
Interventions

Early Stage
According to evidence-based practice, Tai Chi, Yoga, and aquatic therapy (80-85 degrees) are suitable in gaining and/or maintaining adequate flexibility and ROM at least 2-3 times a week.

On their off days from those activities, MS patients should perform their self “static” stretching program with proper posture.

Use a towel/belt to conserve energy. Self pacing is important!

Intermittent static stretching can be held a minimum of 30 to 60 seconds for 5 to 10 repetitions. Start PNF patterns as early as possible. PNF patterns hold-relax and contract-relax are effective strategies to gain ROM.

Stretching can also be achieved with low-load prolonged positioning for up to 30 minutes to 3 hours.

Middle Stage
As in the early stage of MS, prevention of muscle contractures is important.

As the disease progresses to the middle stage, the patient may demonstrate decreased balance, strength, endurance, and mobility. These factors will greatly influence what posture the patient maintains throughout most of the day. For example, a patient may remain seated for most of the day in a wheelchair or lying down in a bed.

- According to an article by White & Dressendorfer, patients with multiple sclerosis often present with tightness in the pelvic, chest, calf, and hip flexor areas.
- Flexibility activities should still target the entire body but should also consider the posture the patient maintains throughout the day.
- Patients that are confined to wheelchairs are more likely to demonstrate tightness in hip flexors, adductors, hamstrings, calf muscles.
- Patients that are confined to beds are more likely to demonstrate tightness in hip extensors, and quadriceps muscles.

Stretching exercises should be slow, gentle, rhythmic, and repetitive.

- Perform gentle stretching repetitively for short time periods (10-15 minutes general flexibility daily)
- Patients can utilize belts, towels, or ropes for assistance when performing self-stretching activities.
- For patients that demonstrate greater weakness on one side of the body relative to another, active assisted ROM (AAROM) exercises can help to maintain flexibility on the weaker side.
• Flexibility exercises should be performed in sitting or lying positions to allow for increased hold time and to prevent falls.
• Before and after participation in aerobic and strength exercises, stretch the primary muscles involved the exercise activities.

PNF techniques such as ‘hold-relax’ are appropriate manual stretching strategies.

• Each stretch should be held statically for 10-15 seconds.
• Isometric contractions should be held for 5-10 seconds.
• The stretches should be performed 3-5 times.

Spasticity in patients with multiple sclerosis can lead to muscle contractures.

• Flexibility activities will not eliminate spasticity, but they can help to counteract the tissue effects.
• Stretching activities should be performed so that end range is approached slowly and without bouncing.
• The stretches should be held statically for 20-60 seconds.

The patient can continue to participate in yoga and tai chi to maintain flexibility.

• Patients should perform the activities in sitting or lying positions due to balance, mobility, and energy conservation concerns.

Patients with balance, strength, endurance, and mobility deficits would benefit from use of assistive devices in ambulation.

• When possible, patients should use a walker or cane.
• This will allow patients to stand upright and help prevent loss of flexibility related to confinement to a wheelchair or bed.
• Other equipment such as an AFO can also be beneficial in preventing muscle contractures.

Education about the importance of maintaining flexibility in this stage of the disease should be given to the patient and family/caregiver.

• Patients that maintain flexibility will demonstrate a greater level of functional independence.
• The potential to retain independence will encourage patient compliance with flexibility activities.
Late Stage

The patient’s family/caregiver should be instructed on how to perform and the importance of daily flexibility activities.

- Flexibility activities should be performed daily and in safe positions
- Again, maintain full body flexibility but also give consideration to postures that the patient maintains throughout the day
- If the patient is bed-ridden, maintain a proper turning schedule of every 2 hours to prevent development of decubitis ulcers.
- Consider equipment such as splints and bed boards to prevent calf muscle contractures.

References
