



What is spasticity in MS? How can I manage Spasticity?



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Acknowledgement



We acknowledge and pay respect to the traditional custodians past and present on whose lands we meet today.

We acknowledge the deep feelings of attachment and the relationship of Aboriginal people to country and respect the cultural authority of the elders in each community

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Goals for Today's session?



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Program Outline



- What is spasticity?
- How does it affect daily functions?
- What are management strategies of spasticity
- Where to access further information

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What is spasticity

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Spasticity is the result of an imbalance in the electrical signals coming from the brain and spinal cord, often **caused** by damage to these areas by **multiple sclerosis**. This imbalance **causes** hyperactive muscle stretch reflexes, which result in involuntary contractions of the muscle and increased muscle tension.

(www.webmd.com/multiple-sclerosis/guide/controlling-muscle-spasms)

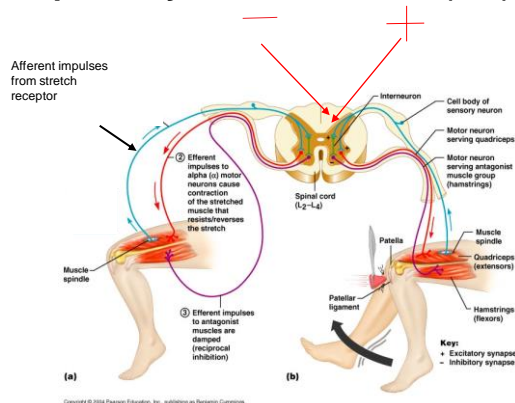
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What is spasticity

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* **Origin of Spasticity:** first central then peripheral



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Spasticity in MS



- 60-80%
- Spasticity in a typical MS population in Sydney metropolitan
 - ✓ 156 participants (DS 0 – 6)
 - ✓ Mean duration of MS: 15 years
 - ✓ 66% : in any muscle
 - ✓ 48.4% : in calf muscle (gastrocnemius)
 - ✓ 40.7%: in the knee (knee extensors)
 - ✓ 10% : in the elbow and wrist

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Most common site of spasticity : calf muscles and thigh



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A video of severe spasticity in calf muscles



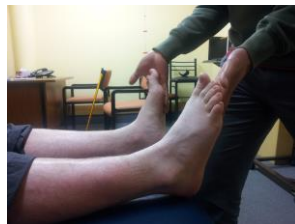
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Spasticity is different from joint contracture (or stiffness)



- Spasticity is different from joint contracture or joint stiffness: structures around the joint changed and prevented the joint from moving full range



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Spasticity & joint contracture occur together



- In MS, spasticity, joint contractures and muscle weakness often occur together
- However, their causal relations have not been proven yet

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Impacts of spasticity in MS

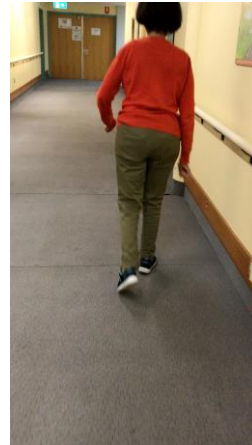


- Difficulty initiating movements
- Difficulty relaxing muscles once a movement has ceased
- Sensation of muscle tightness or pain
- Decreased range of motion
- Muscle spasms, especially at night
- ***Two major impacts: impaired mobility and disrupted sleep pattern.***

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Impacts of spasticity on walking gait



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Management of spasticity



Aims

1. Reducing spasticity and preventing its consequences
2. Preventing provocative factors

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Management of spasticity



- ✓ **Oral Baclofen****
- ✓ **Marijuana-based drug – Sativex****
- ✓ **Physiotherapy****
- ✓ Invasive methods:
 - ❑ Intrathecal Baclofen pump (ITB)
 - ❑ Botox – some temporary effects but not clinically meaningful

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Oral BACLOFEN



- ✓ Most commonly used in Australia (GP or Neurologists prescribe)
- ✓ Often requires high dose to have good results (~ 80-100 mg/day)
- ✓ Factors to consider
 - Side effects: muscle weakness, dry mouth, sleepy, "hazy" thinking
 - Is it necessary? Affects functions?
 - Appropriate dosage? Frequency?

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SATIVEX® (Nabiximols)



- ✓ Cannabinoid-based solution in spray container, for use as an oromucosal spray ONLY
- ✓ Studies suggested some benefits for people with MS (results often over-rated)
- ✓ TGA approved in 2012 but only available in 8 November 2017
- ✓ Indications: Moderate to severe spasticity, not responded to other anti-spasticity medication (Baclofen) and demonstrate clinically significant improvement in spasticity during initial trial of therapy (~ 4 weeks)
- ✓ Can be used together with Baclofen

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SATIVEX® – Contra-indications & Precautions



- ✓ Hypersensitive to Cannabinoid
- ✓ Family history of schizophrenia or other psychotic illness
- ✓ Breast-feeding
- ✓ < 18 years
- ✓ History of epilepsy or recurrent seizures

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How to access and use SATIVEX®



- ✓ Doctors & Neurologists can prescribe (NSW Health requires prescriber fill out a special form)
- ✓ Prescription registered to specific Pharmacies in each state
- ✓ Emerge.pharmaprograms.com.au (username: sativexprescriber; password: doctor1@)
- ✓ ACT = 5; NSW = 22; TAS = 4; VIC = 13
- ✓ \$745 per pack of 3 x 10 ml vials (10 ml allows ~ 90 spray)
- ✓ Dosage: max 12 sprays/day
- ✓ Storage: below 8°C, upright. Once opened can keep at < 25°C and use within 42 days

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Drug interventions for spasticity - summary



- ❖ Baclofen for treating MS spasticity & gait impairment are equivocal.
- ❖ Cannabinoid-based spray consistently improved the timed 10-meter walk test and significantly improved multiple spatial-temporal and kinematic gait parameters.
(Arroyo Gonzalez, R. (2018) *Expert Rev Neurotheraphy* **18** (10): 785-791)
- ❖ Some evidence botulinum toxin provides short-term benefits for MS-related spasticity
(Dressler, D., et al. (2017) *J Neurool* **264**(1): 112-120)

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Spasticity – evidence of physiotherapy



- ❖ “There is 'low level' evidence for non pharmacological interventions such as physical activities given in conjunction with other interventions (Amatya et al. (2013 - Cochrane Database Syst Rev 2)
- ❖ Physiotherapy interventions can be a safe and beneficial option for spasticity in people with multiple sclerosis. No firm conclusion can be drawn on overall spasticity. (Etoom, M., et al. (2018) Am J Phys Med Rehabil **97**(11): 793-807)
- ❖ Exercises , passive stretch, physical modalities: Functional Electrical Stimulation (FES)

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Stretching – PNF or proprioceptive Neuro-facilitation



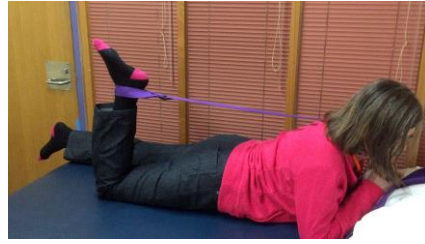
Aims to maintain or IMPROVE muscle length and flexibility

LONG TERM stretching may change the sensitivity of STRETCH REFLEX of peripheral muscle fibres

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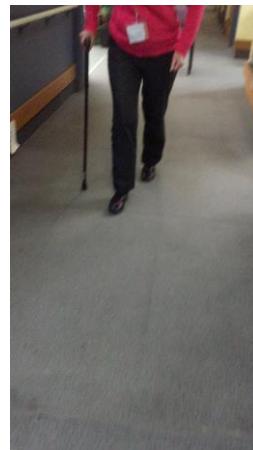
PNF



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PNF- immediate effects

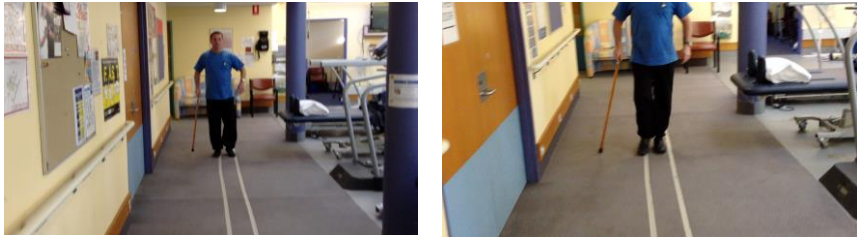


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PNF- immediate effects

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Stretching guidelines

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Consult a health professional

- Hold a stretch for 10-15 seconds
- Repeat 2-3 times – then increase the range
- Do not bounce - sustain the stretch
- Stretches should not be painful

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Whole Body Vibration



Aims to change sensitivity
STRETCH REFLEX of
peripheral muscle fibres

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Immediate effects of Whole Body Vibration



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Eccentric exercise



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Management of spasticity summary



- Aims to prevent and minimise provocative factors, reduce spasticity, and prevent its consequences
- **Treat early**
- *Mild spasticity*: physiotherapy interventions such as PNF or vibration or eccentric exercise
- *Moderate spasticity*: physiotherapy interventions + a titrated dose of oral anti-spastic medication (e.g. baclofen).
- *Severe spasticity*: consider ITB or find a working dosage of baclofen

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Aggravating factors?



- Urinary tract infection (UTI) or infection of other origins (including flu)
- Fatigue
- Stress
- Constipation

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Contacts



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