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Spasticity Management

The Next Generation

Edward Levy, June 2022

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What is spasticity

- Spasticity is a velocity dependent increase in the tonic stretch reflex
- Upper motor neuron damage / lesion
- Common conditions include MS, stroke, CP, partial spinal injury, etc
- Leads to joint immobility and deformity and reduced ability to interact if unmanaged

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Management

- Serial casting
- Pharmacology
- Surgical
- AFO and orthoses
- Electrical stimulation

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Serial Casting

- Stretch, Immobilise, repeat
- Can reduce spasticity and increase joint range of motion
- Sometimes used with Botox therapy
- Bulky, uncomfortable, difficult to mobilize

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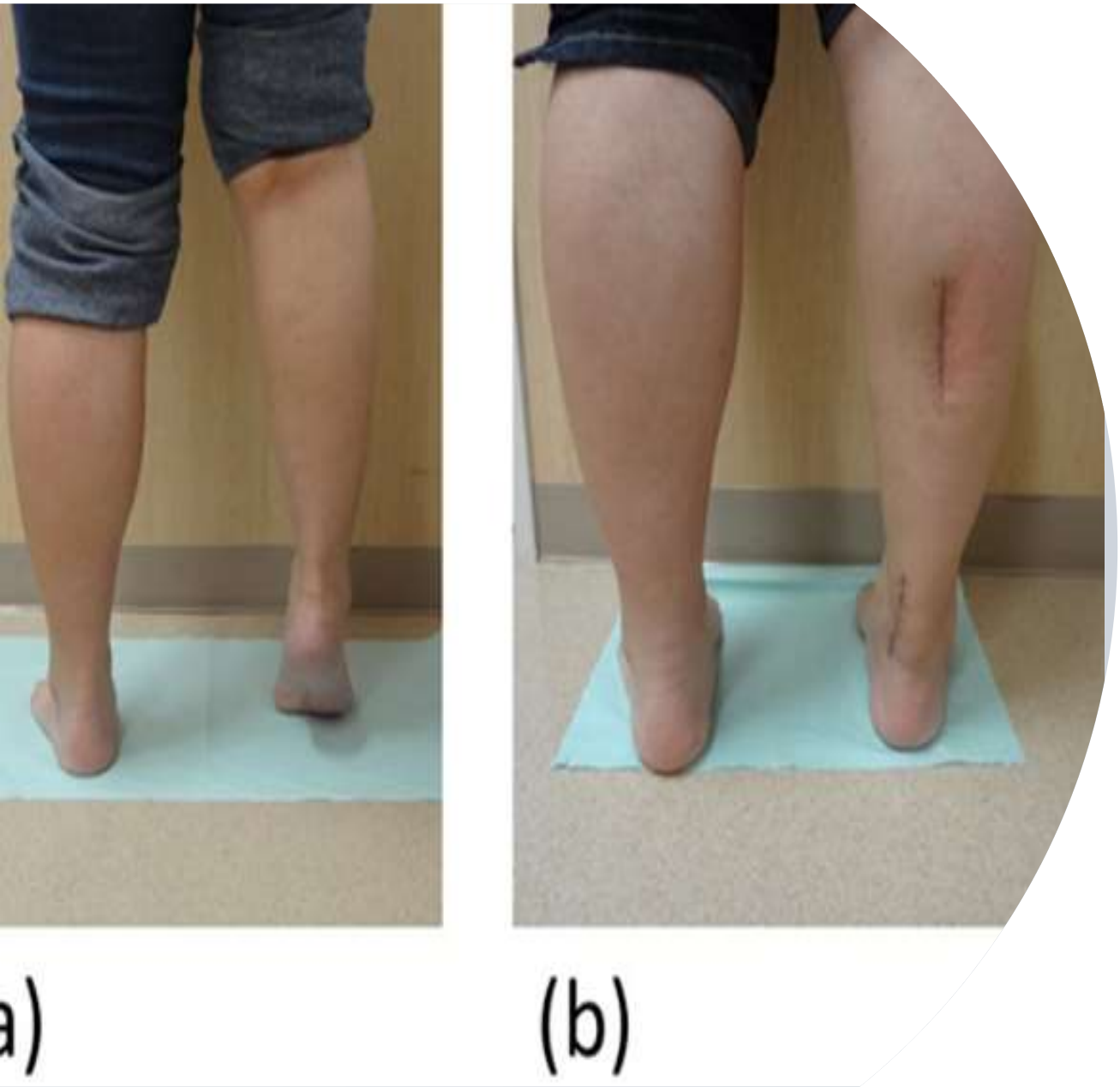
Pharmacology

- Used in conjunction with other therapies
- Drugs include names such as Baclofen, Gabapentin, Botulinum and many more
- Can reduce and manage spasticity presentation to varying degrees
- Side effects such as sedation, drowsiness or weakness can occur



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Surgical Correction

- Permanent
- Does not manage spasticity itself at all
- Allows mechanical release for more neutral joint alignment
- Many available procedures depending on presentation

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AFO and other Orthoses

- Manage spasticity by mechanically holding a desired position
- Many configurations available
- Good mobilization results possible.
- Ability to Don correctly important
- Shoe fit important

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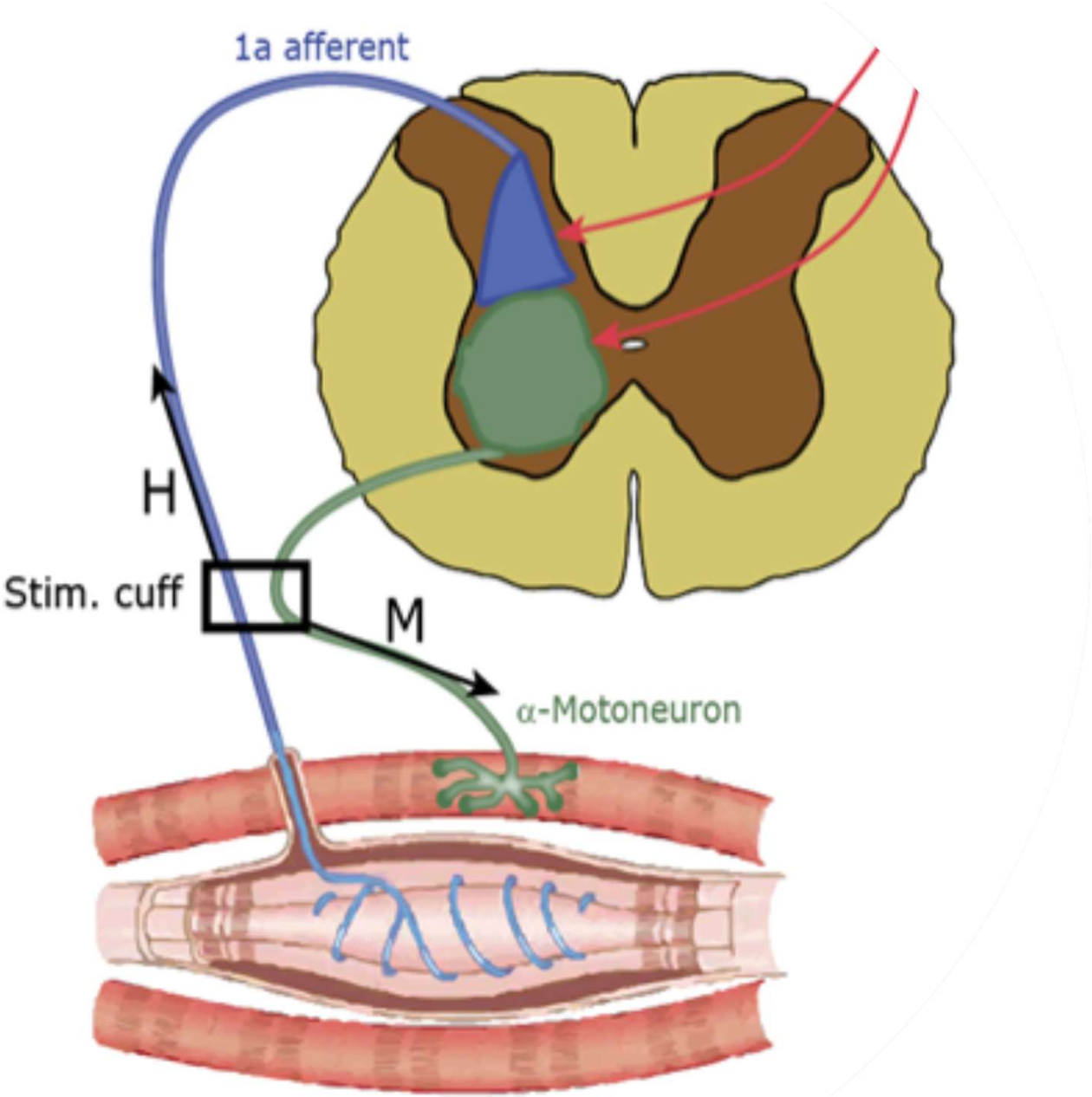
Electrical stimulation

- Many methods of stimulation
- Outcomes can be functional, therapeutic or diagnostic
- Good body of evidence to support its use for pain and spasticity management
- Further research being conducted into neuroplastic effects
- Fewer drawbacks
- Can only hit one muscle, or small area, per session limiting its effect



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How electrical stimulation works

- Electrical stimulation applied
- Travels up sensory nerves
- Communication in the spine
- Activates muscle motor nerve (or other receptor pathway to the muscle)
- Muscle contraction seen

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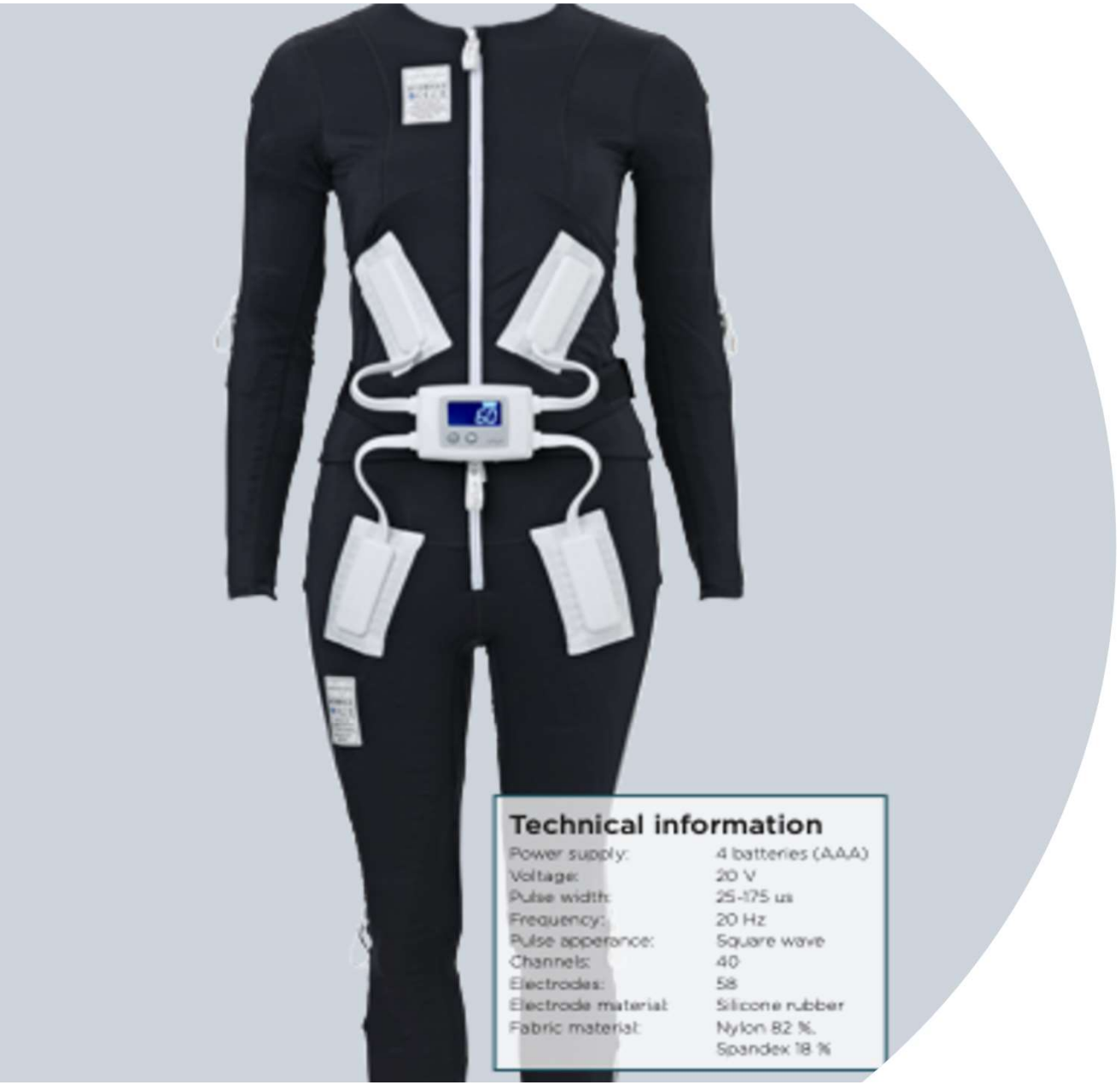
Reciprocal inhibition

- Muscles work in agonist / antagonist pairs
- When one side is stimulated, the other side is neurologically “turned down”
- Weak muscle stimulated to relax spastic muscle



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Exopulse neuromodulation suit

- Low level TENS like electrical stimulation
- 58 electrodes covering 40 muscles groups, individually programmable
- Current research is mainly for Spasticity and pain management
- Research into other areas currently ongoing
- Carry over effect 24 – 48 hours
- Use 1 hour every other day, approx
- Use with movement encouraged

Jorgen Sandell explains spasticity

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Jorgen Sandell explains action on pain

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Case study one

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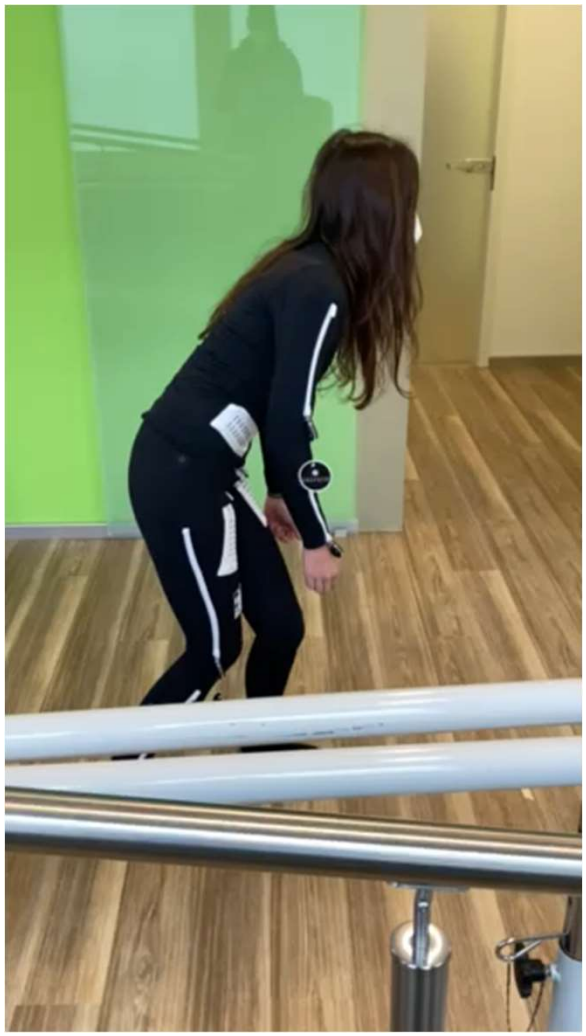
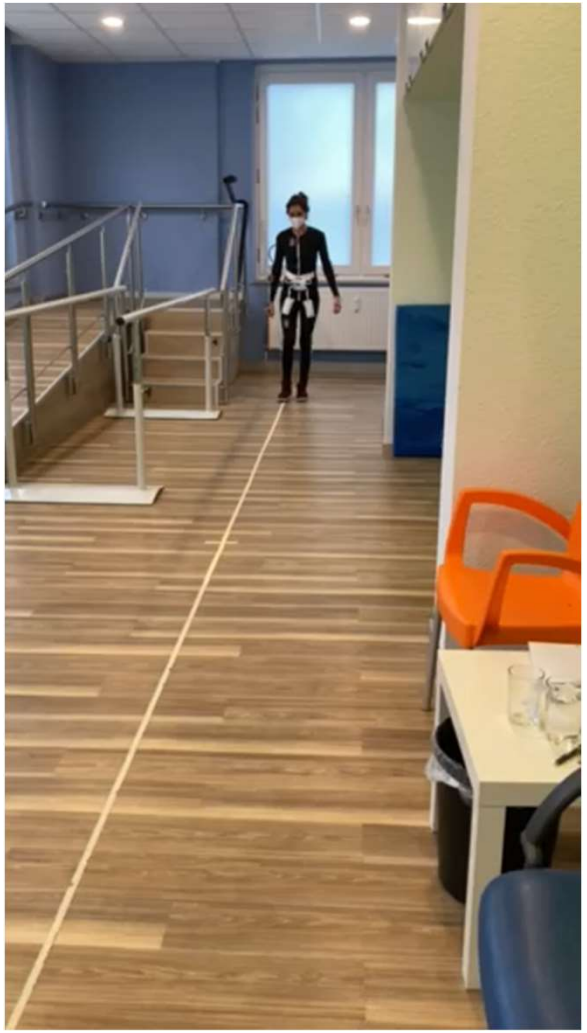
Motor Neuron Disease

Case study two

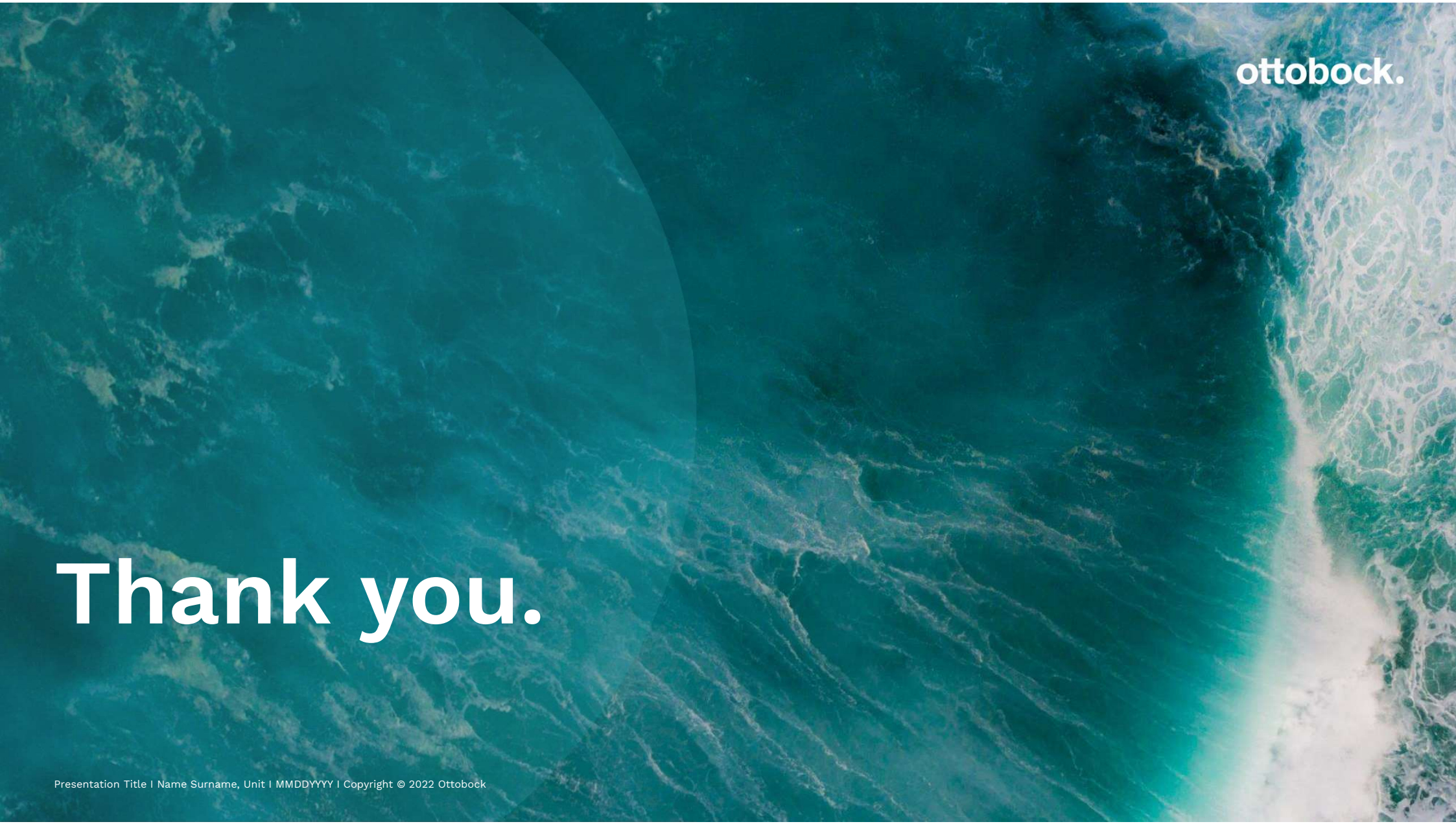
Multiple Sclerosis





Case study three

Cerebral Palsy



Thank you.

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VALUE FRAMEWORK

C-Brace