

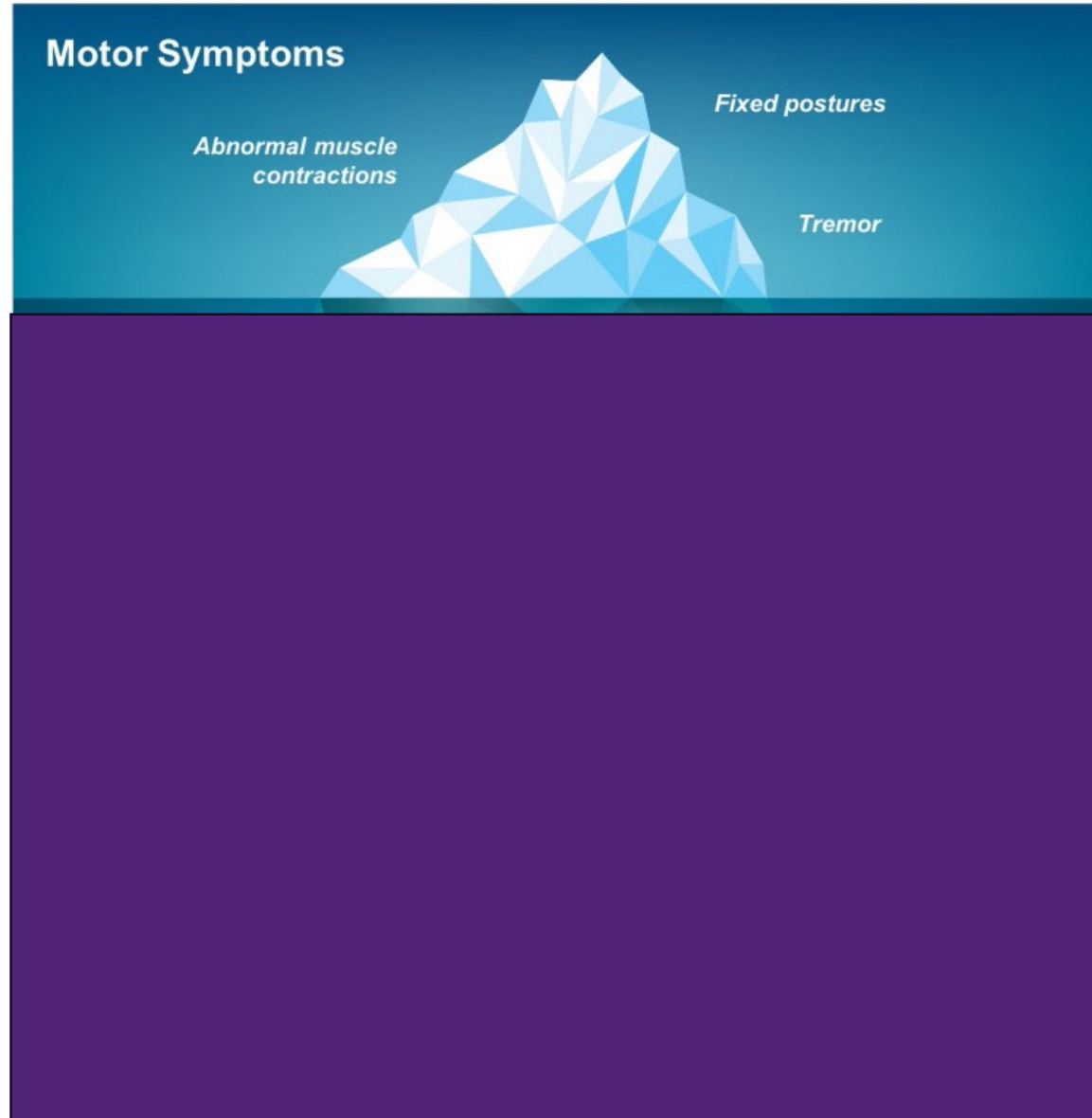
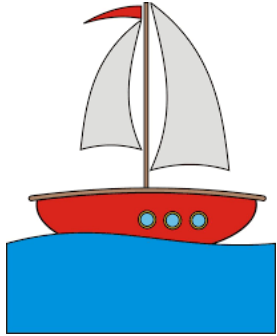
Cervical Dystonia: The Role of Physiotherapy

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Background

Cervical Dystonia (CD)

- Most common form of focal dystonia
- Involuntary posturing of the head away from the normal upright position.
- Idiopathic cervical dystonia has no known cause
- In 90% of cases will be a lifelong condition.
- Posture in CD can feature one or a combination of postures.



Laterocollis



Torticollis



Anterocollis

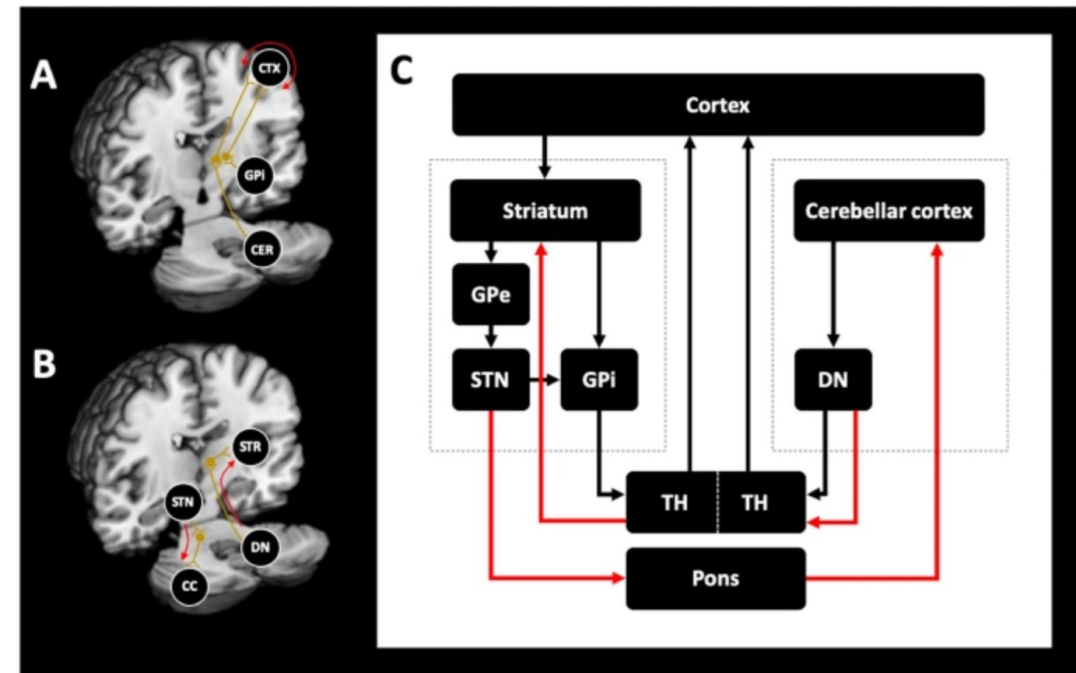


Retrocollis

Source: Dystonia Network of Australia Inc

Pathophysiology

- Excessive co-contraction of agonist and antagonist muscles is one of clinical hallmarks of dystonia.
- A consequence of impaired central reciprocal inhibition
- Traditionally viewed as disorder of the basal ganglia



Epidemiology and Risk Factors

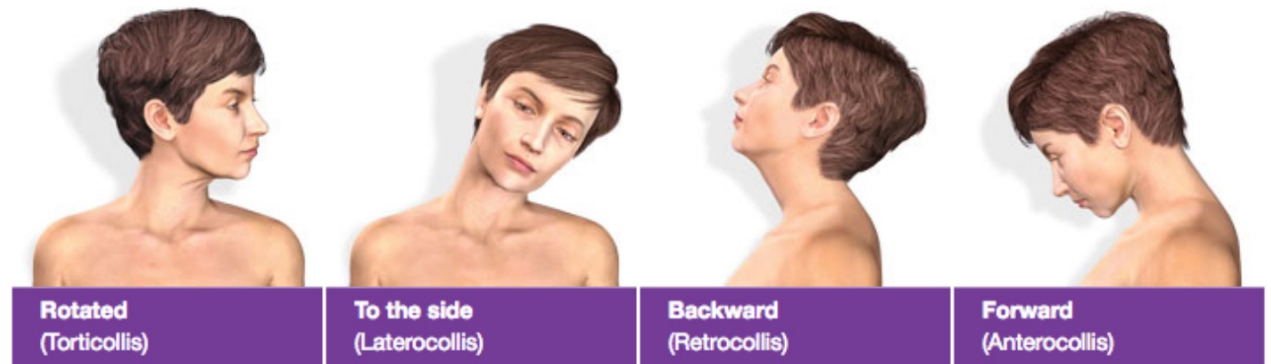
- Prevalence of 5-30 per 100,000 population

Risk factors:

- Age: commonly after the age of 30 (average age 42 years old)
- Female predominance, ratio of men to women 1:1.4-2.2
- Genetics
- Can be linked to head, neck or shoulder injuries

Signs and Symptoms

- Symptoms usually begin gradually
 - Painful tonic contractions or intermittent spasms muscles such as the sternocleidomastoid and trapezius.
 - Sensory tricks may be helpful
- Impairments in physical function

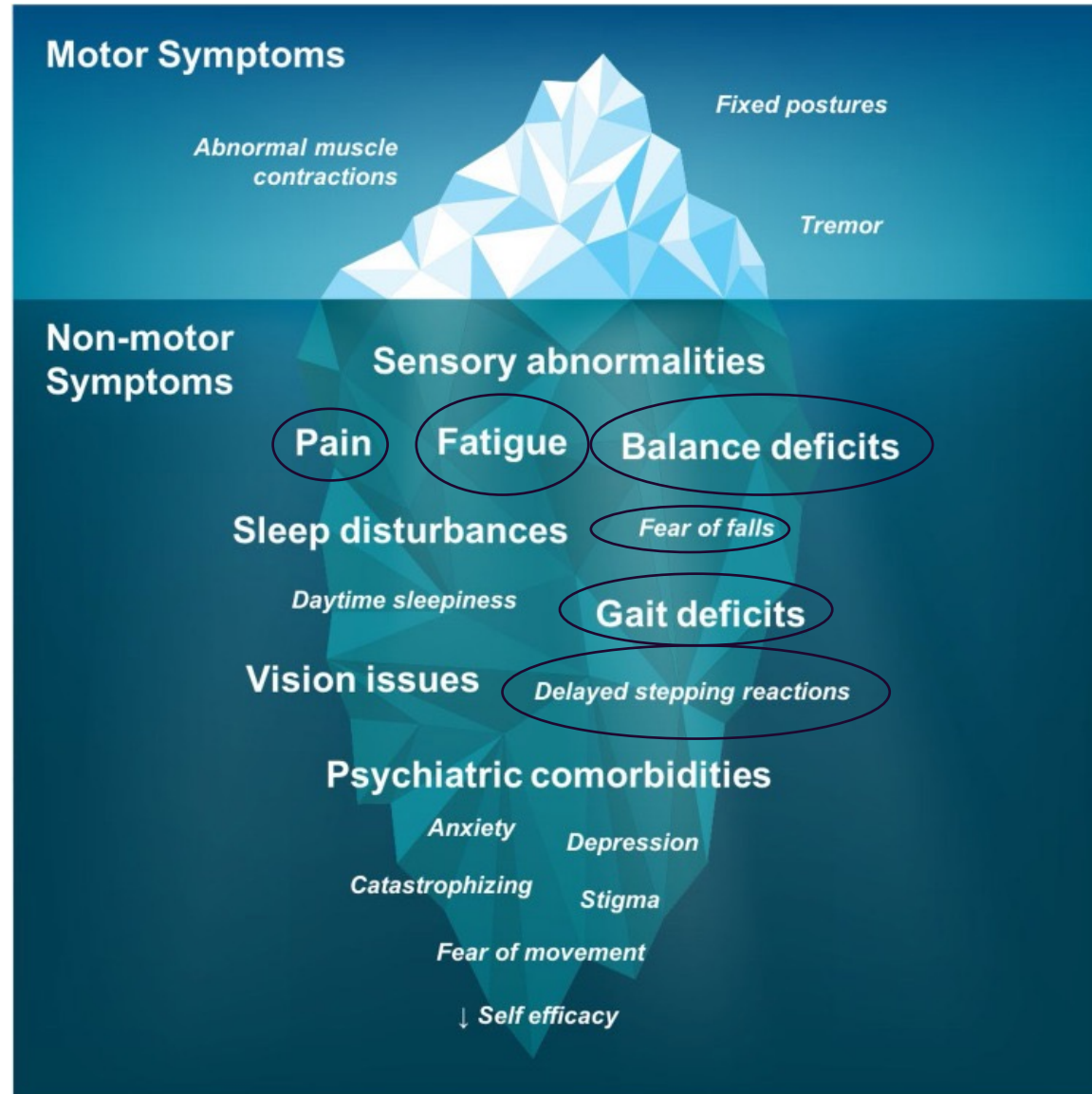
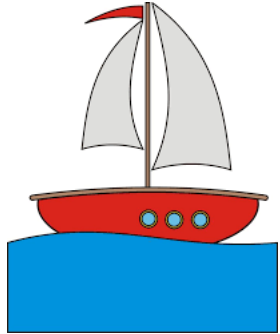


Dystonia head positions | Source: Allergan

Sensory Trick (ST)

- A characteristic feature of idiopathic cervical dystonia
 - Improvement in dystonic symptoms when the affected body segment is touched
 - Mismatch between sensory input and motor output in dystonia.
 - Modulation of somatosensory and motor cortical processing via mechanisms of sensorimotor integration.
 - A temporary relief

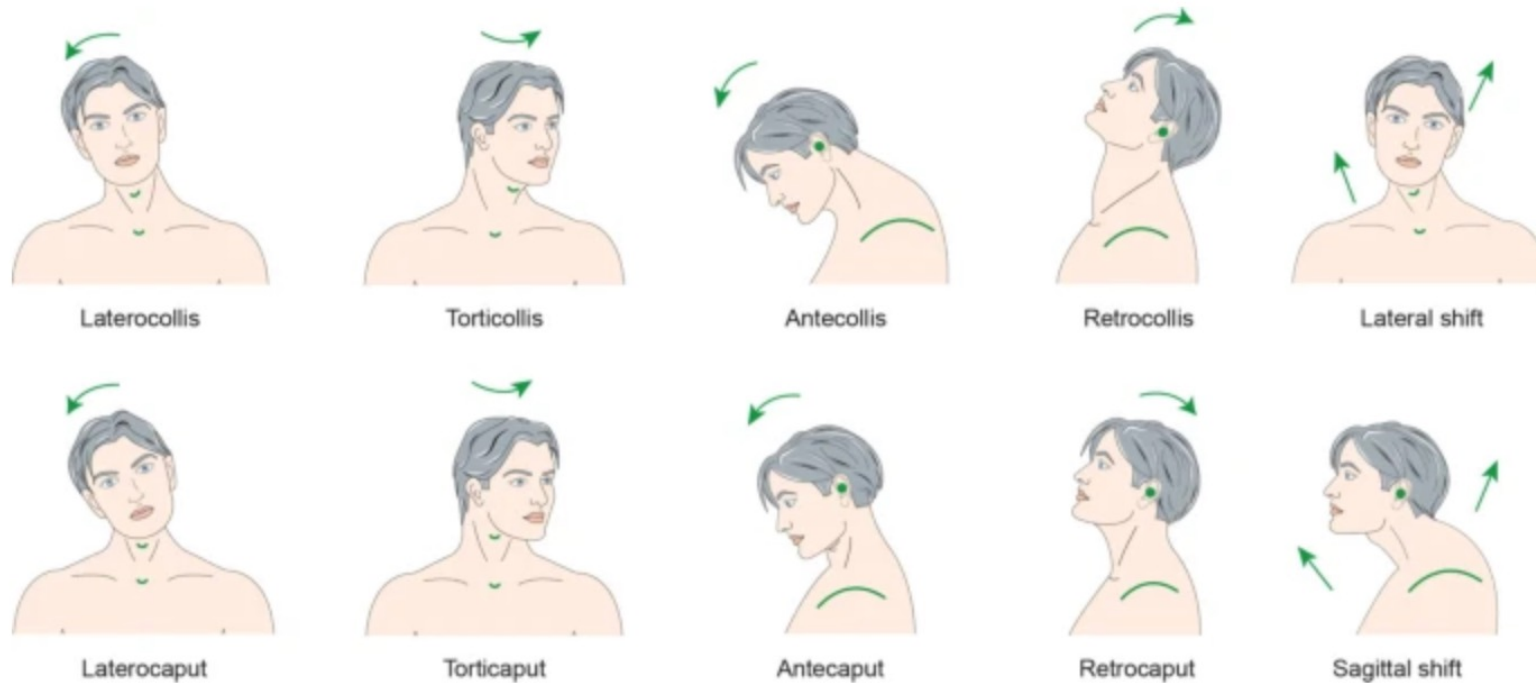




Assessment

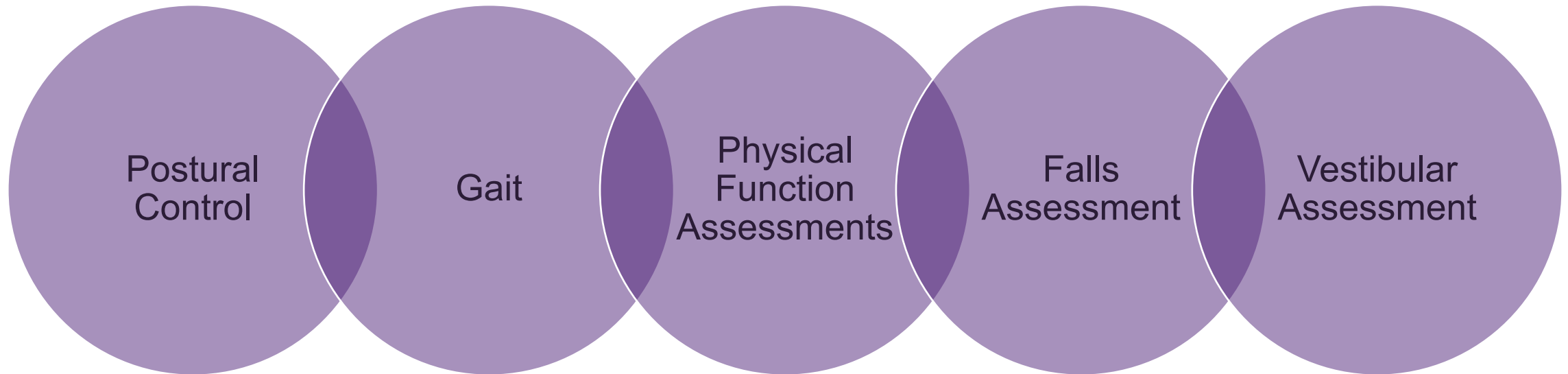
Assessment

Movement Analysis and Muscle Activity



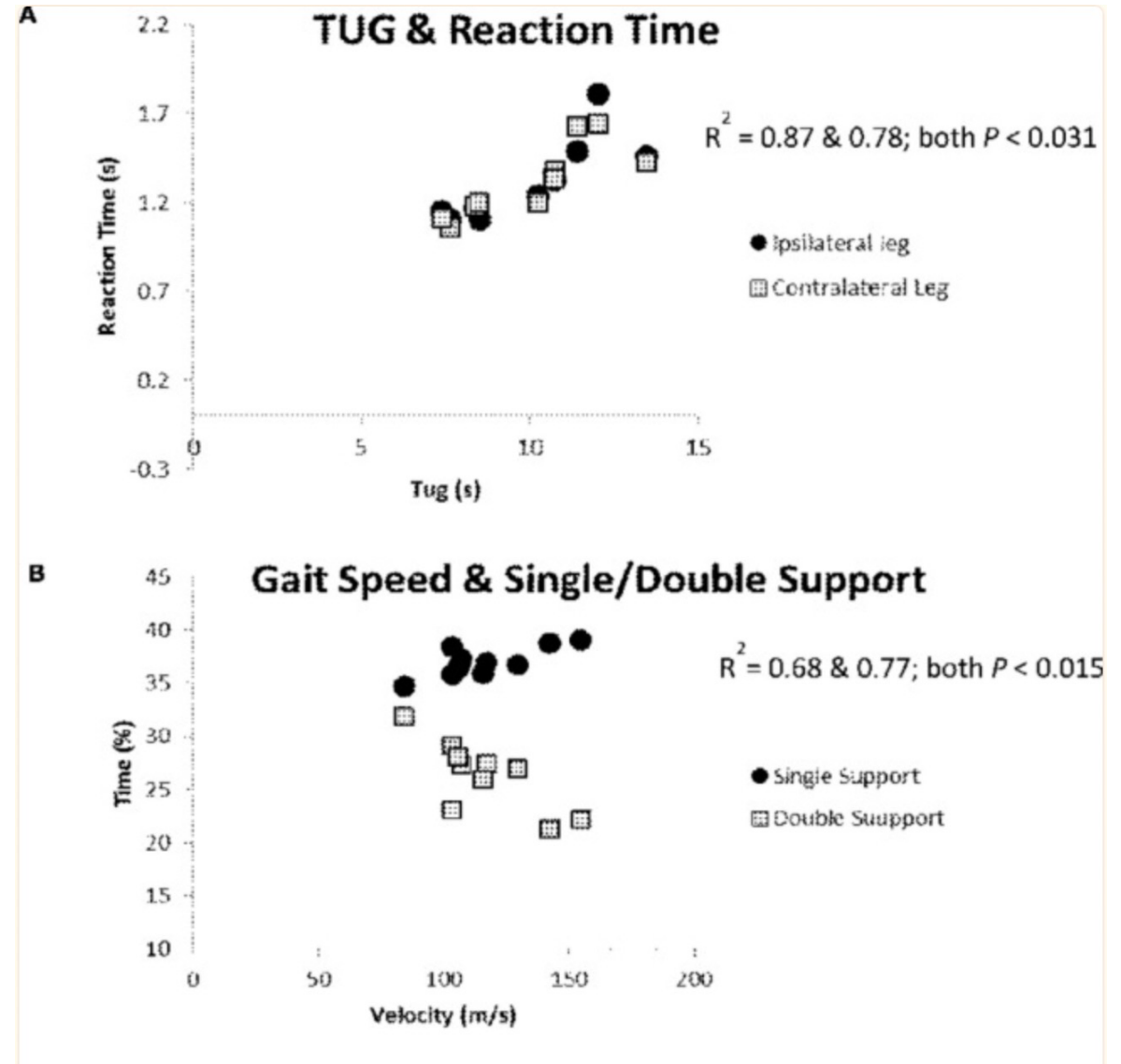
The Col–Cap classification, eight main subtypes and shift forms

Functional Assessment



Gait

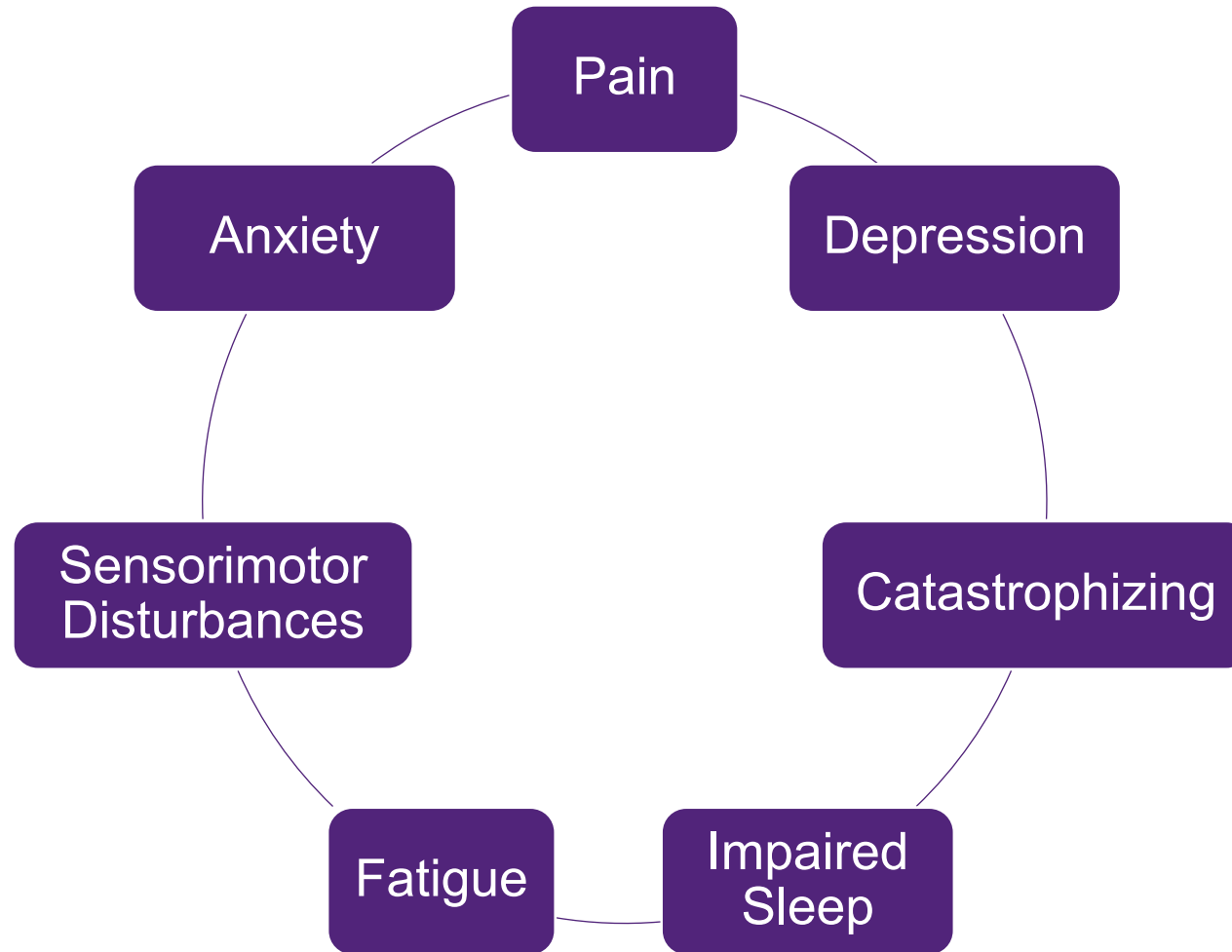
- Gait deficits and slower walking speed
- Reduced step length and increased step time
- Increased TUG time



Falls Assessment

- Fear of falling
- May be a consequence of physical or psychological impacts
- Common reasons:
 - Losing balance when walking
 - Turning
 - Reaching
 - Stairs
- Important to assess balance and falls risk

Non-Motor Symptoms



Pain

- A prevalent and debilitating symptom.
- Reported in 55-89% of people.
- Current knowledge of the mechanism is incomplete.
- Likely a consequence of abnormal neural processing.
- Common localization of pain in the neck and upper back.
- Described as diffuse, sharp shooting or sometimes burning pain.

Fatigue

40-50% of patients

Association with
pain, anxiety and
depression



Severity of motor
symptoms does not
contribute to impaired
sleep quality

Significant barrier
to exercise

Outcome Measures

Toronto Western Spasmodic Torticollis Rating Scale (TWSTRS)

- Composite scale measuring 3 aspects of CD: severity, disability and pain
- Validated and reliable tool
- New revision of the scale TWSTRS-2 and TWSTRS-PSYCH

E. Television

- 0 = No difficulty
- 1 = Unlimited ability to watch television in normal seated position but bothered by torticollis
- 2 = Unlimited ability to watch television in normal seated position but requires use of tricks to control torticollis
- 3 = Unlimited ability to watch television but requires extensive measures to control torticollis or is able to view only in nonseated position (e.g., lying down)
- 4 = Limited ability to watch television because of torticollis
- 5 = Unable to watch television more than a few minutes because of torticollis

F. Activities Outside the Home (e.g., shopping, walking about, movies, dining, and other recreational activities)

- 0 = No difficulty
- 1 = Unlimited activities but bothered by torticollis
- 2 = Unlimited activities but requires simple tricks to accomplish
- 3 = Accomplishes activities only when accompanied by others because of torticollis
- 4 = Limited activities outside the home; certain activities impossible or given up because of torticollis
- 5 = Rarely if ever engages in activities outside the home

III. Pain Scale (MAXIMUM = 20)

A. Severity of Pain Rate the severity of neck pain due to ST during the last week on a scale of 0–10 where a score of 0 represents no pain and 10 represents the most excruciating pain imaginable. Score calculated as: (worst + best + (2ndusual))/4

Best ____
Worst ____
Usual ____

B. Duration of Pain

- 0 = None
- 1 = Present < 10% of the time
- 2 = Present 10%–25% of the time
- 3 = Present 26%–50% of the time
- 4 = Present 51%–75% of the time
- 5 = Present > 76% of the time

C. Disability Due to Pain

- 0 = No limitation or interference from pain
- 1 = Pain is quite bothersome but not a source of disability
- 2 = Pain definitely interferes with some tasks but is not a major contributor to disability
- 3 = Pain accounts for some (less than half) but not all of disability
- 4 = Pain is a major source of difficulty with activities; separate from this, head pulling is also a source of some (less than half) disability
- 5 = Pain is the major source of disability; without it most impaired activities could be performed quite satisfactorily despite the head pulling

1. Gonsky ES, Lang AE. Clinical assessments of patients with cervical dystonia. In: Jankovic J, Hallett M, eds. *Therapy with Botulinum Toxin*. New York, NY: Marcel Dekker, Inc.;1994:211-237.

This rating scale is provided by WE MOVE. Additional scales and assessment forms are available at www.wemove.org (<http://www.wemove.org>)



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Toronto Western Spasmodic Torticollis Rating Scale (TWSTRS)¹

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I. Torticollis Severity Scale

A. Maximal Excursion

1. **Rotation** (turn: right or left)

- 0 = None [0°]
- 1 = Slight [$< 1/4$ range, 1°–22°]
- 2 = Mild [$1/4 - 1/2$ range, 23°–45°]
- 3 = Moderate [$1/2 - 3/4$ range, 46°–67°]
- 4 = Severe [$> 3/4$ range, 68°–90°]

2. **Laterocollis** (tilt: right or left, exclude shoulder elevation)

- 0 = None [0°]
- 1 = Mild [1°–15°]
- 2 = Moderate [16°–35°]
- 3 = Severe [$> 35^\circ$]

3. **Anterocollis/Retrocollis** (a or b)

- a. **Anterocollis**
- 0 = None
- 1 = Mild downward deviation of chin
- 2 = Moderate downward deviation (approximates $1/2$ possible range)
- 3 = Severe (chin approximates chest)

(continues inside)

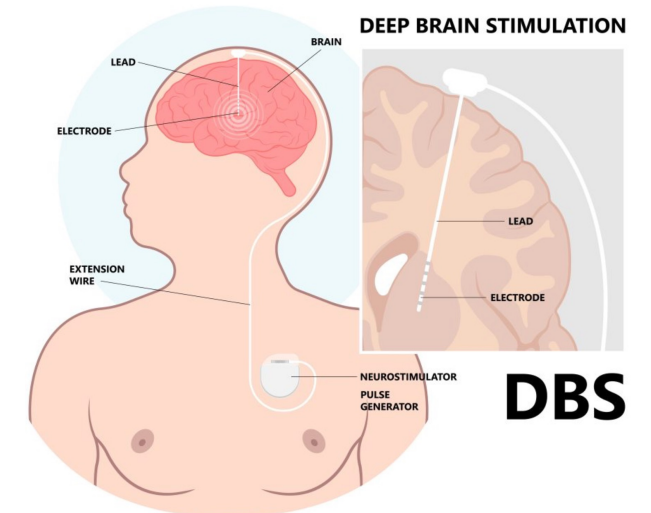
Comprehensive Cervical Dystonia Rating Scale

- A comprehensive scale that measures for motor, pain, disability and psychiatric complications and the impact of CD on QOL
- Developed in 2015
- A composite scale for rating modules for each of these features.
- Includes TWSTRS2, TWSTRS-PSYCH and Cervical Dystonia Impact Profile-58

Management

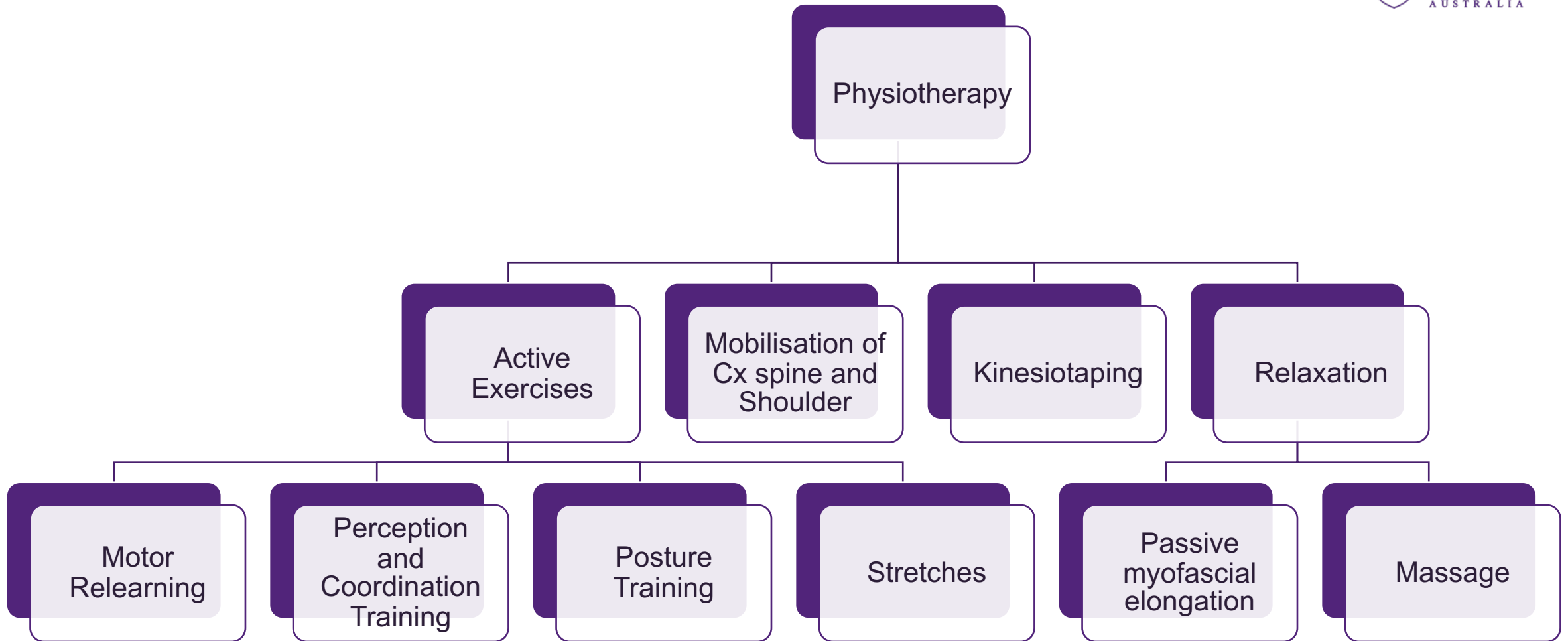
Management

- First treatment of choice: Intramuscular injections of Botulinum Toxin (BoNT)
 - Repeated every 3-4 months
 - Common sites of injection: SCM, trapezius, splenius capitus and levator scapulae
- Medical Management
- Surgical Options
 - Deep Brain Stimulation



Role of PT

- Physiotherapy in conjunction with botulinum toxin enhances clinical outcomes.
- Large variability in intervention modalities
- Holistic approach is needed
- Physiotherapy cannot cure CD



The effectiveness of physiotherapy for patients with isolated cervical dystonia: an updated systematic review and meta-analysis

- 14 included studies – 8 RCTs, 3 case-control studies and 3 case series.
- Combined with BoNT injections.
- Beneficial effect on different outcomes such as pain, disability and disease severity.
- Various PT intervention modalities with different duration and frequencies were used.
- No research available comparing the effect of BoNT alone to PT alone as BoNT is the first treatment of choice.

Neurorehabilitation in dystonia: a holistic perspective

[Lynley V. Bradnam](#),¹ [Rebecca M. Meiring](#),¹ [Melani Boyce](#),^{2,3} and [Alana McCambridge](#)²

- Current therapies are too narrow focused – limited effectiveness and patient satisfaction
- Need to consider non-motor symptoms as well
- Importance of holistic approach to rehabilitation
- Maintaining an overall healthy lifestyle



Botulinum toxin and conservative treatment strategies in people with cervical dystonia: an online survey

Melani J. Boyce^{1,2}  · A. B. McCambridge³ · L. V. Bradnam⁴ · C. G. Canning⁵ · C. Quel De Oliveira¹ · A. P. Verhagen¹

- 128 responses
- iCD had significant negative effect on participant's ability to engage in normal everyday activities
- Heat packs, massage, physiotherapy, general exercise and relaxation perceived to be effective at reducing pain and muscle spasms.
- Aim to guide future research/guideline

Activities that help participants to cope with their iCD

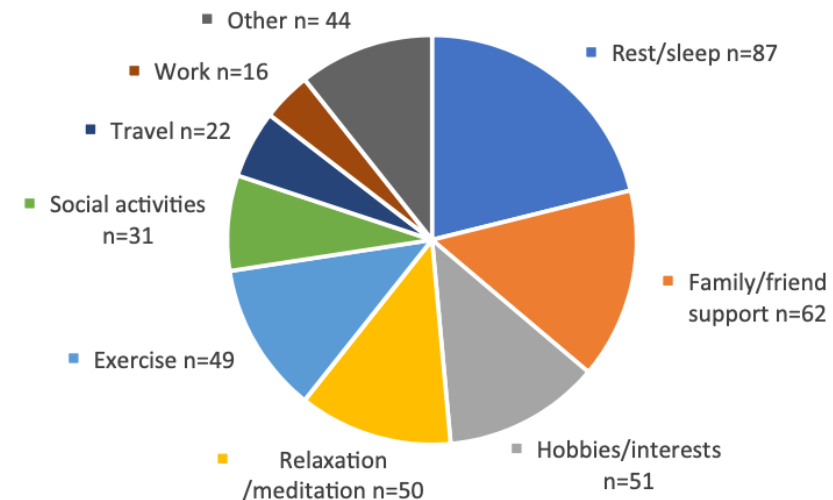


Fig. 1 Activities that help participants to cope with their iCD

Limitations in Studies

1. Lack of high quality studies
2. Small sample sizes
3. Lack of proper control
4. Long term effects of less intense and longer PT programs have yet to be explored.
5. No research available comparing the effects of BoNT alone to PT alone

Clinical Take Home Message

- CD is a lifelong, chronic condition
- Consideration of a holistic approach to assessment and management
 - Motor vs Non-Motor Symptoms
- Role of PT
 - Management of symptoms
 - Improve QoL
- Future Directions and Implications for Research

Thank You



CRICOS 00025B • TEQSA PRV12080

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