

Preliminary results from an observational study of functional screening tests in cervical dystonia

Melani Boyce, Colleen Canning, Neil Mahant, Florence Chang, Victor Fung, Alana McCambridge, Arianne Verhagen, Lynley Bradnam



Acknowledgements

- ▶ Scholarship funding from:
 - ▶ The Westmead Medical Research Foundation
 - ▶ Early Career Research Scholarship (2016)



Cervical Dystonia

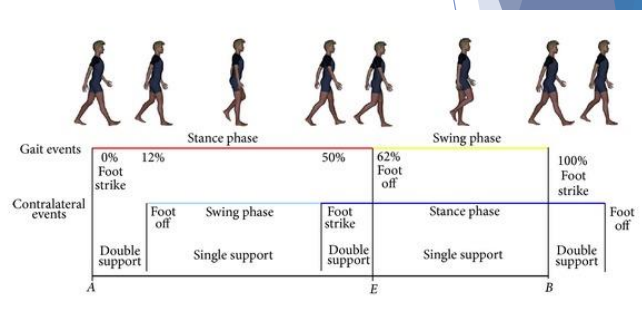
- ▶ Isolated, focal, idiopathic dystonia affecting the neck and upper back
- ▶ **Motor impairments** - muscle spasms +/- tremor
- ▶ **Non-motor impairments** - pain, headaches, stiffness

(Albanese et al 2013)



Gait analysis in people with CD

- ▶ People with CD compared to healthy controls
- ▶ Shorter step length
- ▶ Longer double support phase
- ▶ Slower TUG
- ▶ More fear of falling (FES-I) - 29.5



(Barr et al, 2017; Esposito 2018)

Do people with CD have problems with balance and walking?

- ▶ No studies have been conducted assessing functional activities of walking, balance or upper limb function.
- ▶ **Implications of balance and walking problems:**
 - ▶ Possible falls risk
 - ▶ Possible restrictions to physical activity -> negative effect on health
- ▶ **Implications for physiotherapy:**
 - ▶ Devise interventions that address walking, balance or UL problems

A cross-sectional study of functional screening tests in CD

- ▶ Aim:
 - ▶ To conduct an exploratory study into UL and LL functional tasks in people with CD using standardized assessment scales.

Methods

- ▶ Cross-sectional study of 30 adults with idiopathic CD
- ▶ **Inclusion criteria:**
- ▶ Over 18 years of age
- ▶ Idiopathic CD
- ▶ No other neurological / musculoskeletal conditions affecting balance
- ▶ Walk unaided

Data collection

- ▶ Participants screened for inclusion by a neurologist
- ▶ Assessment conducted in the same week as BTN injection
- ▶ Data collected by experienced physiotherapists
- ▶ **Data collected:**
- ▶ Demographic information + current treatment regime
- ▶ Dystonia severity - TWSTRS
- ▶ Montreal Cognitive Assessment (MoCA)
- ▶ Scale for the assessment and rating of ataxia (SARA)

Assessment scales - questionnaires

- ▶ **BALANCE CONFIDENCE AND FEAR OF FALLING:**
- ▶ Activities Balance Confidence Scale (ABC)
- ▶ Falls self-efficacy international scale (FES-I)

- ▶ **EXERCISE CONDUCTED IN A USUAL WEEK:**
- ▶ Incidental and planned exercise questionnaire (IPEQ)

Assessment scales - physical

- ▶ **WALKING:**
- ▶ Functional Gait Assessment (FGA)
- ▶ Figure of eight test

- ▶ **BALANCE:**
- ▶ Balance Evaluation Systems Test - MiniBEST
- ▶ 5 x sit to stand test (5xSTS)
- ▶ 4 squares step test

- ▶ **UPPER LIMB - GROSS AND FINE MOTOR:**
- ▶ Box and Block test
- ▶ Coin rotation test

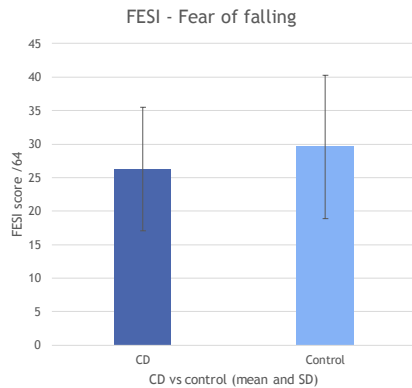
Analysis Plan

- ▶ Descriptive statistics -> means and CIs for each variable
 - ▶ Allow comparison to published literature of healthy normals and known cut off points for falls
- ▶ Pearson's Correlations -> relationships between CD severity (TWSTRS) and each variable

Preliminary results - participant characteristics

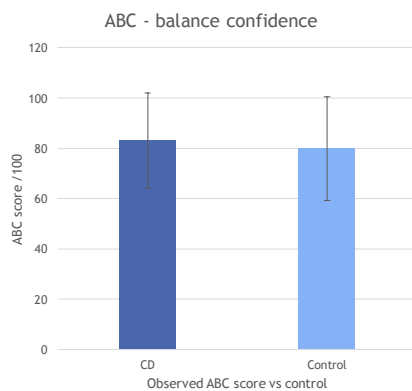
- ▶ N =15 (M = 9; F = 6)
- ▶ Average age = 62 years (34 - 81 years)
- ▶ Average MoCA - 26.4 (SD 1.7) - normal
- ▶ Average SARA - 0.7 (SD 1.4) - no ataxia
- ▶ 67% having regular BTN injections
- ▶ Average TWSTRS score = 30.7 (SD 17.2) ->mod CD

Fear of falling - FES-I



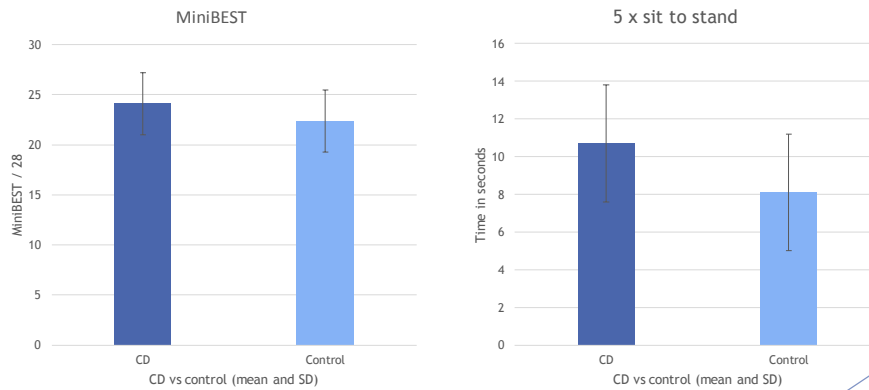
- ▶ Cut off point for a fall > 29.5
- ▶ Average score < 29.5
- ▶ 5/15 > 29.5 -> high risk of a fall

Balance confidence - ABC

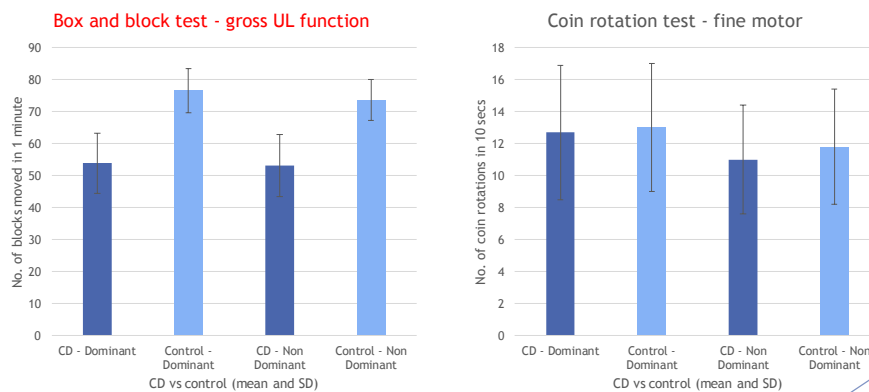


- ▶ < 67 indicates risk of fall in healthy elderly
- ▶ Average score for CD = 83
- ▶ 2/15 have reported scores < 67

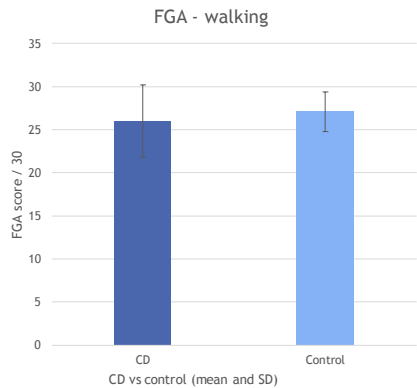
Balance assessments



Upper limb assessments



Walking assessment



- ▶ Cut off point for a fall = 23
- ▶ Average score > 23
- ▶ 3/15 participants scored < 23

Summary - preliminary results

- ▶ Assessments of walking and balance appear similar to published normal data, however some participants have scored below falls cut off points in some scales
- ▶ Incomplete data set, heterogenous sample
- ▶ Gross UL function is showing a trend towards being different from healthy controls → perhaps turning of head has more effect on UL than currently known

Thank you

- ▶ Co-authors
- ▶ Physiotherapy department and Movement Disorders Unit
Westmead Hospital, Sydney
- ▶ Physiotherapy Department, Graduate School of Health,
University of Technology, Sydney