



# Cross-Sectional Comparison of Impairments in Young and Older Children with Cerebral Palsy

Lynn Jeffries, PT PhD PCS

Alyssa LaForme Fiss, PT PhD PCS

Sarah Westcott McCoy, PT PhD



# Disclosure Information

## **Disclosure of Relevant Financial Relationships**

We have no financial relationships to disclose.

## **Disclosure of Off-Label and/or investigative uses:**

We will not discuss off label use and/or investigational use in the presentation.

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# Developmental Trajectories of Impairments, Health, and Participation of Children with Cerebral Palsy



## **Academic Researchers**

Doreen Bartlett, Sarah Westcott McCoy, Lisa Chiarello, Robert Palisano, Lynn Jeffries, Alyssa LaForme Fiss, Jan Willem Gorter, Steve Hanna, Kristie Bjornson, Cheryl Kerfeld

## **Parent Researchers**

Barb Sieck Taylor, Tina Hjorngaard, Lisa Diller, Nancy Ford, Paula Drew, Marquitha Gilbert, Kimberly Rayfield

## **Research Coordinators**

Barb Galuppi, Monica Smersh, Allison Yocum, Tracy Stoner, Erin English Wentz, Jennifer Miller, Amanda Porter

## **Students**

Deepa Jeevanantham, Emily Dyszuk, Linda Montas, Kim Ward

# Background

- Children with cerebral palsy (CP) typically present with body structure/function impairments in balance, strength, range of motion (ROM), and endurance.
- Therapists focus on the prevention of these impairments.

# Purpose

To describe and compare balance, strength, range of motion, and endurance in age groups of children with cerebral palsy.

## Why is this important?

*Cerebral palsy (CP) describes a group of disorders of the development of movement and posture, causing activity limitation, that are attributed to non-progressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbances of sensation, perception, cognition, communication, and behaviour, by epilepsy, and by secondary musculoskeletal problems.*

(Rosenbaum et al. 2007, page 9)

# Participants

- A convenience sample of 771 children with CP 1.5 yrs through 11 yrs (mean age 6 years [SD 32 mo], 56% boys)
- Recruited from multiple sites across Canada and the United States
- Across Gross Motor Function Classification System (GMFCS) levels: I = 226, II = 161, III = 82, IV = 132, and V = 110
- Age Groups:
  - 1.5 years up to 3<sup>rd</sup> birthday (N=131)
  - 3 years up to 6<sup>th</sup> birthday (N=218)
  - 6 years up to 9<sup>th</sup> birthday (N=244)
  - 9-11 years (N=118)

# Methods

- Observational prospective study
- Trained and reliable assessors measured primary and secondary impairments in children.
- Parents completed a questionnaire related to child endurance.

# Tools

- **Balance:** Early Clinical Assessment of Balance (ECAB)

- Scores between 0-100

- **Strength:** Functional Strength Assessment (FSA)

- Score between 1 (lowest) to 5 (highest)

# Tools

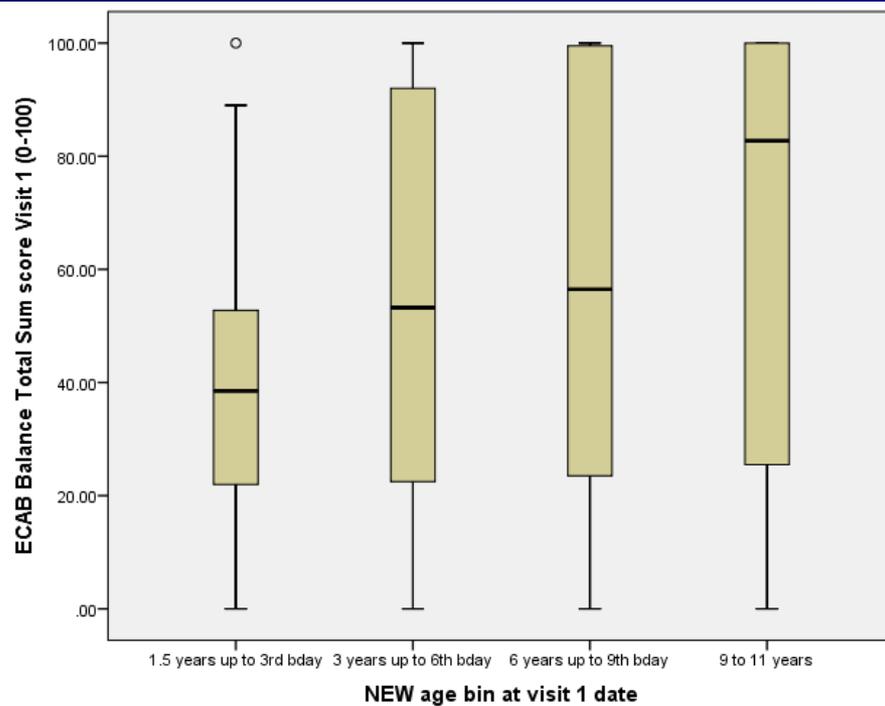
- **Range of Motion:** Spinal Alignment and Range of Motion Measure (SAROMM) balance

  - Scores of 0 (full ROM) to 4 (severe limitation)

- **Endurance:** Early Activity Scale for Endurance (EASE)

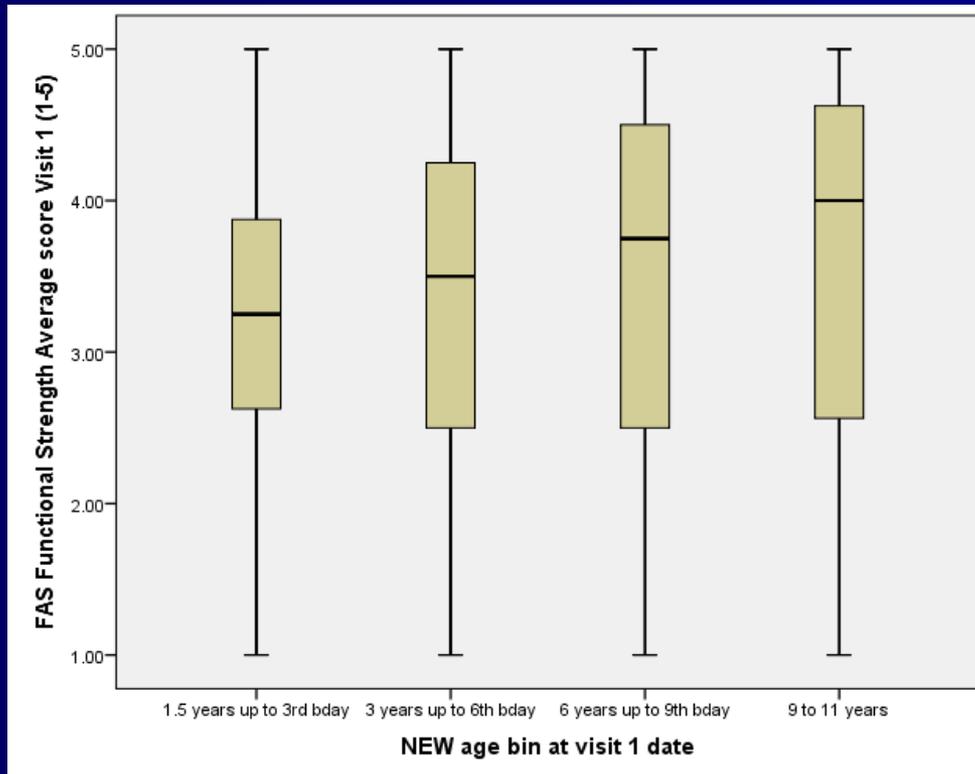
  - Scores of 1 (never) to 5 (always, higher equals more endurance)

# Early Clinical Assessment of Balance (ECAB)



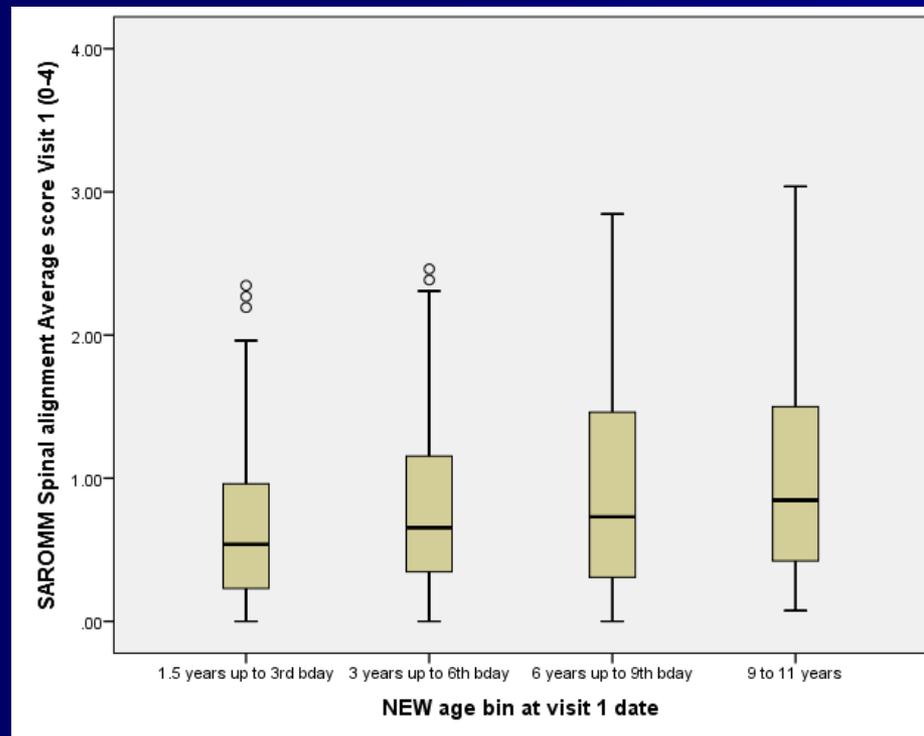
- 1.5 to 3 yrs age group was significantly different from all other age groups ( $p < .001$ )

# Functional Strength



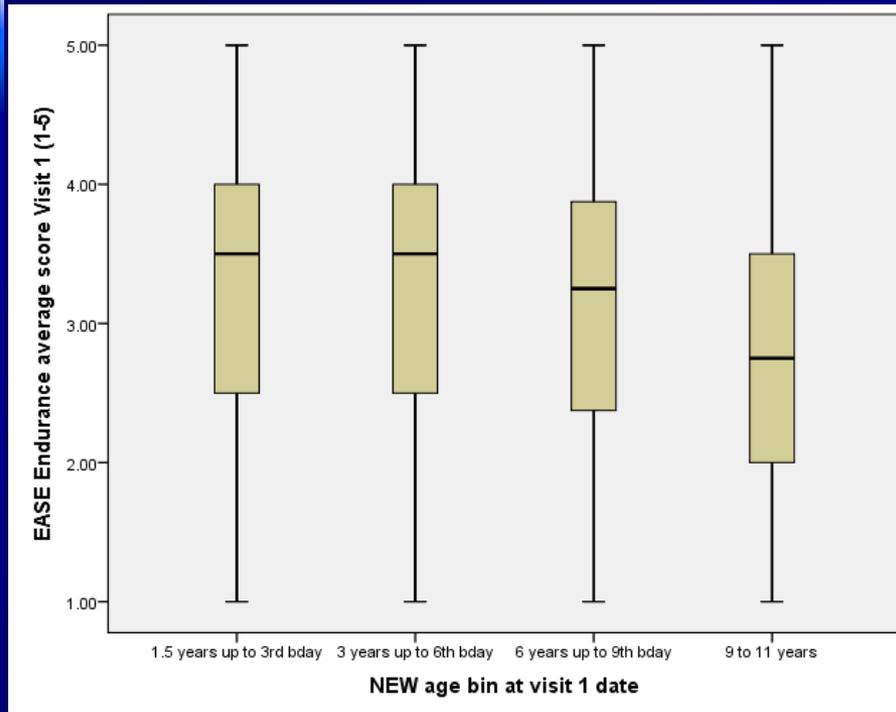
- No significant differences across age groups.

# Spinal Alignment and Range of Motion Measure (SAROMM)



- 1.5-3 yrs to 6-9 yrs ( $p < .001$ )
- 1.5-3 yrs to 9-11 yrs ( $p = .001$ )
- 3-6 yrs to 9-11 yrs ( $p = .007$ )

# Early Activity Scale for Endurance (EASE)



- 1.5-3 yrs to 9-11 yrs (p=.003)
- 3-6 yrs to 9-11 yrs (p=.001)

# Key Results

- As children with cerebral palsy age
  - Balance Improves
  - Range of Motion and Endurance Decreases
  - Strength does not change

# Clinical Considerations

- Therapists should carefully monitor impairments and focus on prevention of progression of secondary impairments.
- Therapists may be able to influence strength and endurance.
- Therapists should monitor ROM and use this information to assist with medical procedures.

# Contact Information Questions?

**Lynn Jeffries:** Lynn-Jeffries@ouhsc.edu

**Alyssa Fiss:** fiss\_al@mercer.edu

**Sally Westcott McCoy:** westcs@uw.edu

## On Track Website

<https://www.canchild.ca/en/research-in-practice/current-studies/on-track>