



Activity Capacity & Performance, Participation, and the Environment of Children with Cerebral Palsy



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BACKGROUND

Children with CP have large variations in motor function. No evidence-based guidelines exist to inform decisions about the focus and intensity of rehabilitation services to achieve desired outcomes.

A key tenet of family-centered services is to provide families evidence-based information that allows for informed decision and advocacy for their children.¹

The On Track Study is a large multi-site collaboration involving researchers, therapists, families, and children with cerebral palsy (CP) ages 18 months through 11 years from across Canada and the United States. The study objective is to create longitudinal developmental curves for children with CP and identify the characteristics of services of children whose developmental progress is more optimal.

The Activity Performance sub-study of the On Track Study plans to examine the relationship between body structure & function impairments, activity capacity & performance, participation, and the environment in children with cerebral palsy (CP). This work will lay the foundation for future development of longitudinal growth curves and reference percentile curves for walking and physical activity for children with CP.

STUDY OBJECTIVES

1. Examine the relationship of community based walking and physical activity (accelerometry) to measures of endurance, balance, and participation in daily life
2. Examine the relationship of capacity-based walking measures (1 and 6 Minute Walk Test) to community based walking (StepWatch)
3. Examine the relationship of capacity-based push measures (1 and 6 Minute Push Test) to community based physical activity (Actigraph)
4. Identify and compare environmental facilitators/barriers (Participation and Environment Measure for Children and Youth, Services Questionnaire) to participation of children whose walking or physical activity trajectories for participation in self-care and recreation are predictive of optimal change (above 50th percentile)
5. Track walking and physical activity across Gross Motor Functional Classification System (GMFCS) levels over 3-5 time points to create preliminary developmental walking and physical activity curves for children with CP.

STUDY DESIGN

- Longitudinal, prospective, observational, cohort study
- Each participant seen a minimum of 3 times up to 5 times at 6 month intervals

PROPOSED SAMPLE

- N = 90 children with CP across GMFCS levels from Washington, Oregon, and Georgia
- Inclusion Criteria
 - Ages 3 – 12 years (i.e. up to the 11th birthday) at the time of recruitment
 - Diagnosis of CP by a physician **OR** Delay in gross motor development and impairments in: muscle tone, righting and equilibrium reactions, anticipatory postural movements of the head, trunk, or legs during movement, and active range of motion during movements
 - Must speak English or Spanish

MEASURES

Therapist Completed Measures

- Gross Motor Function Classification System (GMFCS)*
- Early Clinical Assessment of Balance (ECAB)
- One and Six-Minute Walk Test²
- One and Six-Minute Push Test³
- Accelerometry (StepWatch⁴, Actigraph⁵)

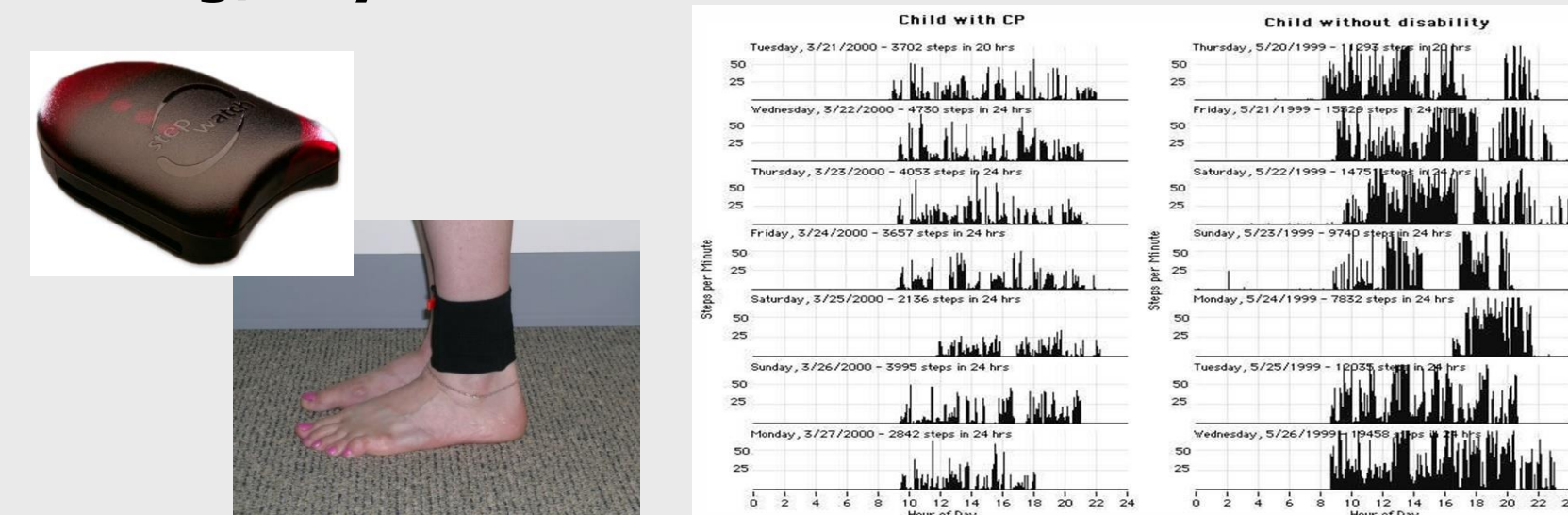
Parent/Caregiver Self-Report Measures

- GMFCS*
- Early Activity Scale for Endurance (EASE)
- Child Engagement in Daily Life Questionnaire
- Services Questionnaire
- Participation and Environment Measure Children and Youth: Environment Section (PEM-CY)⁶

*consensus between parents and assessor

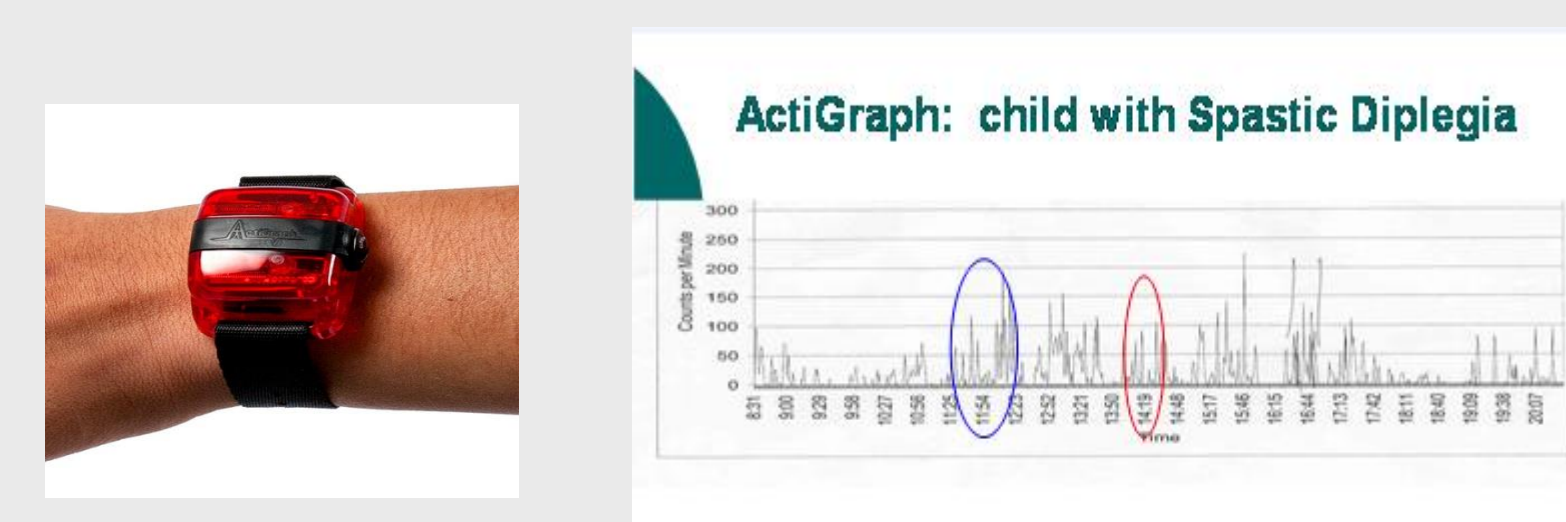
StepWatch

Average strides – Number of steps with one leg on average/day
Percent time active – Amount of waking hours of walking/day

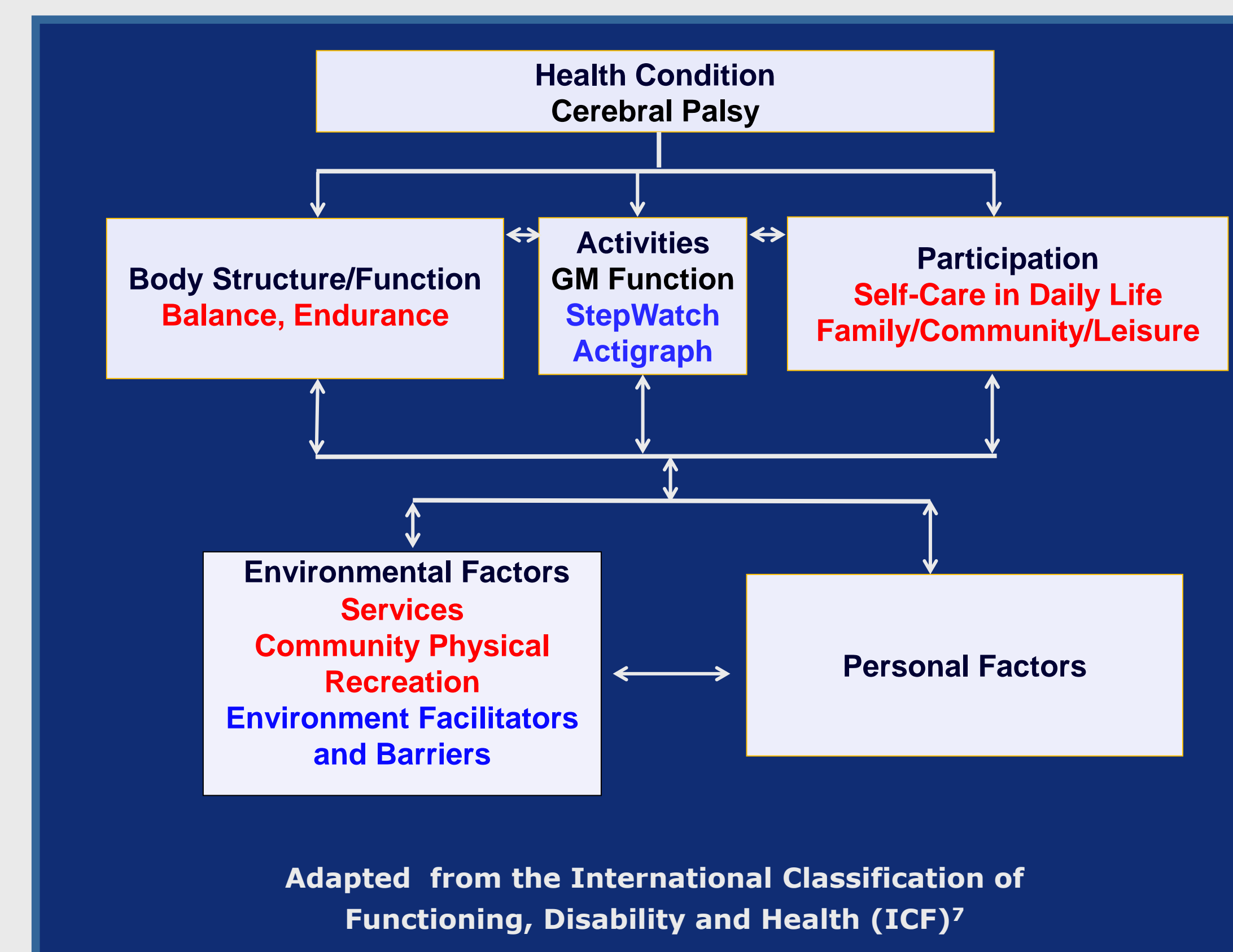


ActiGraph

Average activity counts – Average number of arm movements/day



CONTEXT OF MEASURES



- On Track study measures related to our study. (red)
- In addition, our study will collect data on walking, physical activity and the environment. (blue)

Description of OnTrack measures used:

http://www.canchild.ca/en.ourresearch/on_track_study.asp



EXPECTED OUTCOMES

1. Anticipate current and future strengths and needs of children with CP leading to developmental surveillance of walking and physical activity
2. Tailoring of interventions to optimize day to day activity and participation for children with CP
3. Future developmental trajectories will help clinicians understand whether individual child's walking and physical activity are developing 'as expected', 'better than expected', or 'more poorly than expected'

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ACKNOWLEDGEMENTS

On-Track

(http://www.canchild.ca/en.ourresearch/on_track_study.asp)

With funding from the Canadian Institutes of Health Research and the Patient-Centered Outcomes Research Institute

