



Developmental Trajectories of Impairments, Associated Health Conditions, and Participation of Children with Cerebral Palsy: The 'On Track' Study

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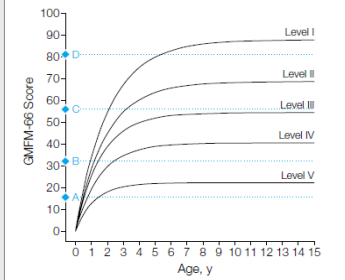
BACKGROUND

The On Track study is the next step, following Move & PLAY, in a research program to refine measures and methods to track developmental progress in children with cerebral palsy (CP)

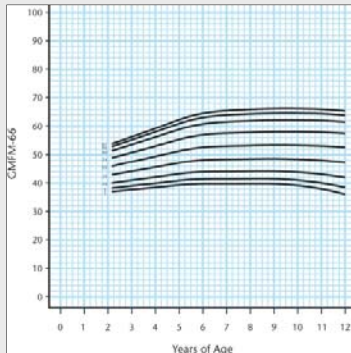
Gross Motor Function Measure: GMFM-66¹
Measures change in motor function of children CP

Gross Motor Function Classification System (GMFCS)² and GMFCS E&R³
Classifies children with CP into one of five levels

Ontario Motor Growth Curves (OMG curves)⁴
Combines the GMFM-66 and the GMFCS to describe average motor development for the 5 groups of children



Interpreting the GMFM-66⁵ using reference percentile curves



Using probability of change in percentiles to understand how children are developing over a one year interval:

Probability	Interval of change in percentiles				
	I	II	III	IV	V
80%	± 20.0	± 19.9	± 15.9	± 15.1	± 16.9

For example, if in GMFCS level III:

- 'as expected' - within ± 16 percentile points
- 'better than expected' - increase >16 percentile points
- 'more poorly than expected' - decline >16 percentile points

OBJECTIVES

1. To establish developmental trajectories (i.e., reference percentile curves) for primary and secondary impairments and health conditions by GMFCS levels
2. To explore a system of multivariate classifications incorporating the GMFCS, Manual Ability Classification System (MACS)⁶, and the Communication Function Classification System (CFCSS)⁷
3. To establish developmental trajectories for participation in family and recreational activities and self care by meaningful classifications
4. To replicate a method for families and therapists to determine whether children within each of the 5 levels of the classification system are developing 'as expected', 'better than expected', or 'more poorly than expected'

STUDY DESIGN

- Longitudinal, prospective, observational, cohort study
- Each participant seen 2 times over 12 months; Time 2 visit 12 months after the first data collection point

PROPOSED SAMPLE

- N = 875 children (60% Canada, 40% US), Stratified by GMFCS levels I - V (n= 175 per level)
- Inclusion Criteria
 - Ages 1.5 – 10 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 and understand English or French or Spanish

MEASURES

Therapist Completed Measures

- Early Clinical Assessment of Balance (ECAB)
- Functional Strength Assessment
- Six-Minute Walk Test
- Spinal Alignment and Range of Motion Measure (SAROMM)
- Classification Systems: GMFCS, MACS, CFCSS*

Parent/Caregiver Self-Report Measures

- Child Engagement in Daily Life Questionnaire
- Early Activity Scale for Endurance (EASE)
- Health Conditions Questionnaire
- Services Questionnaire
- Classification systems (GMFCS, MACS, CFCSS)*

*consensus between parents and assessor to determine level

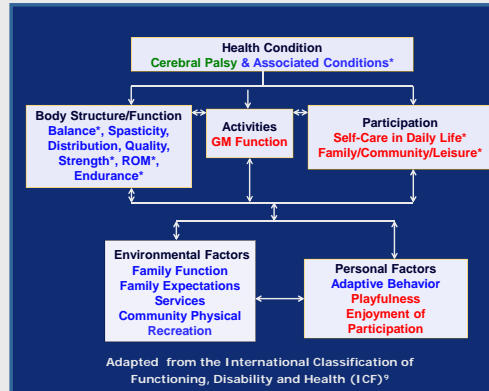
Measures are recorded at Time 1 and 2 Assessments

Description of the measures used:

www.canchild.ca/en/ourresearch/moveplay.asp



CONTEXT OF MEASURES : MOVE & PLAY⁸



Adapted from the International Classification of Functioning, Disability and Health (ICF)⁹

- In the Move & PLAY study, we tested models of the relationships between the blue determinants and the red outcomes
- In the On Track study we aim to develop reference percentile curves for the measures with an asterisk

EXPECTED OUTCOMES

1. Anticipate current and future strengths and needs of children with CP
2. Understand whether individual children are developing 'as expected', 'better than expected', or 'more poorly than expected'
3. Proactively plan efficient services and supports to optimize outcomes using evidence from both the Move & PLAY and On Track studies

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pcori
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1. Extend data collection from 2 times over 12 months to 5 times over 24 months
2. Engage more parents of children with CP in all parts of the study
3. Develop longitudinal growth curves (analogous to the Ontario Motor Growth Curves⁴), in addition to reference percentiles
4. Compare service characteristics of children who are developing 'as expected', 'better than expected', or 'more poorly than expected' to understand services associated with optimal outcomes

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