Relationship of rehabilitation and community services to gross motor, self-care, and participation in young children with cerebral palsy

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I have no financial relationships to disclose.

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Background

- Rehabilitation program decisions are very important for families and society
- Therapy services are complex in children with CP
- *Therapy focus:* minimal to no literature on how to focus complex services (Palisano et al, 2012)
Services to Outcomes

Objective:
- Determine variance in gross motor (GM), self-care (SC) & participation (PAR) in home and community life in young children with CP explained by rehabilitation and community service variables

Hypotheses:
- Intensity would explain minimal variance in outcomes
- Focus of rehabilitation services would explain moderate variance in outcomes
Design & Sample

- **Aim of Move & PLAY: Prospective cohort study**
- **Sample:**
  - 389 children with CP (216 males [56%])
  - Mean age 3 years 2 months, SD 11.5 months
    - 18-30 mon = 114; 31-42 mon = 124; 43-60 mon = 149
  - GMFCS Levels
    - I = 145; II = 45; III = 49, IV = 65, V = 83; 2 missing
  - Multiple sites across Canada and the US
    - United States = 256
      - Pennsylvania, Georgia, Oklahoma, Washington
    - Canada = 131
      - British Columbia, Saskatchewan, Manitoba, Ontario, Nova Scotia, and Newfoundland and Labrador
    - 2 missing
  - Parents participating: 92% mothers
Move & PLAY Conceptual Model & Methods
(Bartlett et al. 2010; Chiarello et al. 2011)

Data at entry

GMFM-66 B&C
(Brunton & Bartlett, 2011)

Data at entry and 12 months post-entry
(Retention rate: 90%)

Child Engagement in Daily Life (Chiarello et al., in review)

Data at 6 months post-entry
Services Questionnaire

- Parents reported their children’s services:
  - Intensity
    - Minutes of teacher, physical therapist (PT), occupational therapist (OT), speech therapist (ST), # of community recreation programs
    - Extent that programs/services met the children’s and families’ needs
  - Focus of PT/OT
    - Primary & secondary impairments, activity, environment, self-care, play
  - Aspects of family-centered care

- Descriptive results:
Statistical Analysis

- **Stepwise multiple linear regression**
  - without controlling for functional (GMFCS) levels,
  - performed with variables that had significant bivariate relationships \((p < 0.05)\) with the end of study GM, SC, and PAR scores,
  - excluded variables with multicolinearity \((r \geq 0.80)\).
Results

- Significant bivariate correlations obtained for 5 intensity variables for each outcome
- Combinations of 6 PT/OT focus variables for each outcome

**Intensity**: # of community programs; Teacher, OT, PT, ST minutes per year

**Focus**: 1° impairments, 2° impairments, Activity, Environment, Self-care, Play
  - Extent: 0=not sure, 1=not at all...5=very great extent
Results

- Intensity ➔
- Final model ↓

<table>
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<tr>
<th>Outcome</th>
<th>% variance accounted for</th>
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<tbody>
<tr>
<td>GM</td>
<td>11</td>
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<tr>
<td>SC</td>
<td>15</td>
</tr>
<tr>
<td>PAR</td>
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<table>
<thead>
<tr>
<th>Outcome</th>
<th>Intensity variable</th>
<th>Standardized β</th>
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<tbody>
<tr>
<td>GM</td>
<td># community programs</td>
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<tr>
<td></td>
<td>ST service time</td>
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<tr>
<td></td>
<td>PT service time</td>
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<tr>
<td>SC</td>
<td># community programs</td>
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<tr>
<td></td>
<td>Teacher service time</td>
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<tr>
<td></td>
<td>PT service time</td>
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<td></td>
<td>ST service time</td>
<td>-0.17</td>
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<tr>
<td>PAR</td>
<td># community programs</td>
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Results

- **PT/OT focus**
  - **Final model**

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<th>Outcome</th>
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<td>SC</td>
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<td>PAR</td>
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<tr>
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<th>Intensity variable</th>
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<td>GM</td>
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<td>Self-care</td>
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<td></td>
<td>Environment</td>
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<td>SC</td>
<td>Activity</td>
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<td></td>
<td>Self-care</td>
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<td></td>
<td>Secondary Impair</td>
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<td>Play</td>
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<td></td>
<td>Environment</td>
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<tr>
<td>PAR</td>
<td>Activity</td>
<td>0.17</td>
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Clinical Implications

- Small amounts of variance in outcomes accounted for by service intensity
  - Greater participation in community programs with higher GM/SC/PAR
    - Greater participation in children with lower GMFCS levels
  - Higher intensity services with lower GM/SC
    - Higher intensity in children with higher GMFCS levels
- Optimize children’s participation in community programs
- Additional research for determination of appropriate intensities of therapy services are warranted.
Clinical Implications

- Providing an activity, self-care, secondary impairments focus within therapy should be considered for young children with CP.
- Higher focus on environmental adaptations associated with lower GM and SC
  - Likely associated with appropriate greater environmental focus for children with high GMFCS levels
- Higher focus on play associated with lower SC
  - Possibly higher focus on play as perhaps expectations for independent self-care were lower
Limitations

- Observational study – caution re: cause/effect
- Services reported by parents
  - Sub-study: no significant correlations between therapist and parent for focus & extent of PT/OT services and differences on 5 out 7 ratings (Fiss et al, 2012)
- Quality of services unknown
- Further analysis needed by functional abilities
  - GMFCS level I/II and III/IV/V
Thanks and Questions
Key References


Key References


