Effectiveness of the Cognitive Orientation to Daily Occupational Performance (CO-OP) in improving the occupational performance of children and adolescents with cerebral palsy

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64 types of intervention documented for children with CP

→ Only 24% effective and few address participation

Among effective approaches, task training have evidences to improve function

→ Gains in motor activities and self-care

(Novak, 2014; Noval et al., 2013)
Among top down approaches in OT

Cognitive Orientation to Daily Occupational Performance (CO-OP) Approach

The use of cognitive strategies to solve problems in daily occupational performance

(Polatajko et al., 2001; Polatajko & Mandich, 2004)
In CO-OP – self-chosen tasks are practiced in a guided discovery context

1st learn GLOBAL STRATEGIE

**GOAL:** What do I want to do?

**PLAN:** How I am going to do?

**DO:** Execute the plan.

**CHECK:** Did the plan work?

2nd discover

**DOMAIN SPECIFIC STRATEGIES**

- Body position
- Attention to doing
- Task modification
- Feel the movement
- Verbal script

*(Polatajko, Mandich, 2004; Polatajko et al., 2001)*
Objectives of the CO-OP Approach:

1. Skill acquisition

2. Development and use of strategies

3. Generalization

4. Skills transfer

Participation

(Polatajko, Mandich, 2004; Polatajko et al., 2001)
INTRODUCTION

- CO-OP has been successful with children and adults with different conditions

**CO-OP is advantageous**

- Easier to implement
- Short protocol - 12 sessions
- Does not require specific equipment

(Dawson et al., 2013a; Dawson et al., 2013b; Henshaw et al., 2011; Mcewen et al., 2015; NG et al., 2013; Missiuna et al., 2010; Polatajko et al., 2012; Poulin et al., 2016; Rodger, Vishram, 2010S; Kidmore et al., 2011; Wolf et al., 2016 - Cameron et al., 2016, Jackman et al., 2016; Ghorbani et al., 2017)
OBJECTIVES

GENERAL

Investigate, in Brazilian a rehabilitation center, the effectiveness of the CO-OP Approach to improve occupational performance in children and adolescents with Cerebral Palsy

QUESTIONS?

• Children & adolescents with CP present better functional outcomes when submitted to CO-OP than Conventional Occupational Therapy?

• Do they retain, generalize and transfer the acquired skills?
MATERIALS & METHOD

- **Study design:**
  - Crossover randomized clinical trial with 12 participants
  - Rehabilitation Center - AMR
  - Ethical approval & trial register
MATERIALS & METHOD

• Participants

INCLUDED

• Diagnosis of CP
• Age 6 to 15 y old
• GMFCS - I or II
• MACS - I, II or III
• IQ (K-BIT-2): >70
• 2 Weekly OT sessions at AMR

EXCLUDED:

• Visual and/or hearing deficiency
• Botulin toxin and/or orthopedic surgeries in the last 6 months.
Goal setting

- **Perceived Efficacy & Goal Setting System (PEGS)**

Identify 4 goals

- 3 goals to work in CO-OP
- 1 goal – not trained ➔ measure skills transfer

(Missiuna et al., 2006).
Outcome measures

**Canadian Measure of Occupational Performance (COPM)**
- 10 point scale
- Performance & Satisfaction
- Perception of parents and children
  - Change score ≥ 2 = clinically relevant

**Performance Quality Rating Scale - Generic (PQRS-G)**
- 10 point scale
- Task quality & Completeness
- External examiner **blinded** to group and timing - **videotapes**
- Change score > 3 = clinically significant

*(Law et al., 2009; Martini et al., 2015)*
Generalization & transfer measures

- **Generalization**: number of parents reporting the child/adolescent was doing the trained task at home or school

- **Transfer**: number of participants achieving a change score $\geq 2$ on the COPM for the extra goal, not trained during intervention

**Data analysis** ➔ Generalizing Estimating Equations (GEE)
MATERIALS & METHOD

Intervention

CO-OP – adapted protocol:
12 individual sessions, 2 weekly, 45 min
- Sessions 1 and 12: videotaping of goals
- Sessions 2-12: Task training
+ 1 parents’ meeting with orientation

Fidelity ✓
Intervention

**Conventional OT (C-OT):**
12 individual sessions, 2 weekly, 45 min
- Sessions 1 and 12: videotaping of goals
- Sessions 2-12: Task training

Stretching
Positioning
Functional training
# RESULTS

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group CO-OP1</th>
<th>Group CO-OP2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMFCS</td>
<td>I</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>II</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>MACS</td>
<td>I</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>II</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>III</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Type of CP</td>
<td>Diparesis</td>
<td>1</td>
<td>2</td>
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<tr>
<td></td>
<td>Hemiparesis</td>
<td>4</td>
<td>3</td>
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<tr>
<td></td>
<td>Quadriparesis</td>
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<td>1</td>
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<tr>
<td>IQ</td>
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<td>4</td>
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<tr>
<td></td>
<td>Average</td>
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<tr>
<td></td>
<td>Above average</td>
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<tr>
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<td>Mean</td>
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<td>10,2</td>
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<tr>
<td></td>
<td>Male</td>
<td>3</td>
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</tbody>
</table>

Table 1. Participants’ characteristics

Low income families → class C
**RESULTS**

- **Participants goals**
  - They all learned and applied the **global** and **specific** cognitive strategies

<table>
<thead>
<tr>
<th>Goals</th>
<th>Total Frequency</th>
<th>CO-OP 1 Frequency</th>
<th>CO-OP 2 Frequency</th>
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<tbody>
<tr>
<td><strong>School tasks</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Handwriting</td>
<td>44%</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Coloring</td>
<td></td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Cutting with scissors</td>
<td></td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Organize school materials</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>ADL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating</td>
<td>42%</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Dressing</td>
<td></td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Personal care – hair</td>
<td></td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td><strong>Play</strong></td>
<td>14%</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Bike ride/play ball</td>
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</tbody>
</table>
RESULTS

Significant gains after CO-OP (GEE) → Participants' perspective (COPM)

Performance

Satisfaction
RESULTS

Significant gains after CO-OP (GEE) → Parents’ perspective (COPM)
RESULTS

Evolution of PQRS-G means → External examiners

Group 1

Score increased after CO-OP
No return to baseline at follow up

Group 2

- Too young
- Learned to tie shoes, not motivated to do other goals

4 participants increased score after CO-OP
No return to baseline at follow up

- Low parental involvement
- Missed therapy
- Family conflicts
RESULTS

**Goal achievement**

- COPM-Performance post CO-OP = 8.4
- Some participants did not fully achieved their goals $\rightarrow$ 2/3 extra sessions needed

**Evidence of Generalization**

All children Group 1 and 5 children Group 2 generalized skills to home and school

**Skills transfer ??**

COPM & PQRS-G on extra goal

- Participants 4 transferred
- Parents 2 transferred
- External examiner No transfer
DISCUSSION

- CO-OP was viable in a Rehabilitation center → No need to change anything
- CO-OP was effective → Significant gains in occupational performance at home
- Gains were more evident for children & parents than external examiners
CONCLUSION

- The study is limited due to small sample size
- CO-OP - 13 session/45 minutes → was viable and effective to improve occupational performance of children & adolescents with CP
- There was retention & generalization, but less evidence of skills transfer
- Low parental involvement and family conflicts → lower treatment gains
- Some participants did not fully achieve their goals → adding 2-3 CO-OP sessions would be more effective in CP?
Obrigada!