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



**Larissa K. Sousa, Ms, OT, Marina B. Brandão, PhD, OT,  
Lívia C. Magalhães, PhD, OTR**

Graduate Program in Rehabilitation Sciences  
Universidade Federal de Minas Gerais, Belo Horizonte, Brazil

# INTRODUCTION



*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*

# INTRODUCTION



*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*

# INTRODUCTION

In **CO-OP** – **self-chosen** tasks are practiced in a **guided discovery** context

## **1<sup>st</sup> 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?*

## **2<sup>nd</sup> discover**

### **DOMAIN SPECIFIC STRATEGIES**

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

# INTRODUCTION



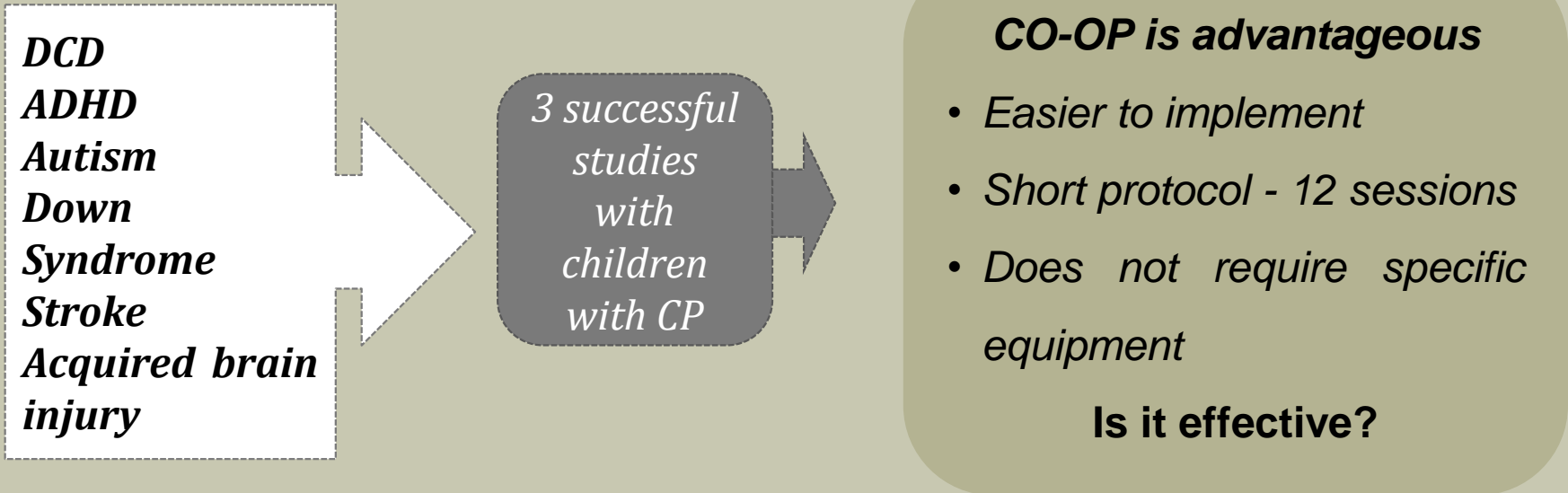
## Objectives of the CO-OP Approach:

1. Skill acquisition
  2. Development and use of strategies
  3. Generalization
  4. Skills transfer
- } ***Participation***

# INTRODUCTION



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



# 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?

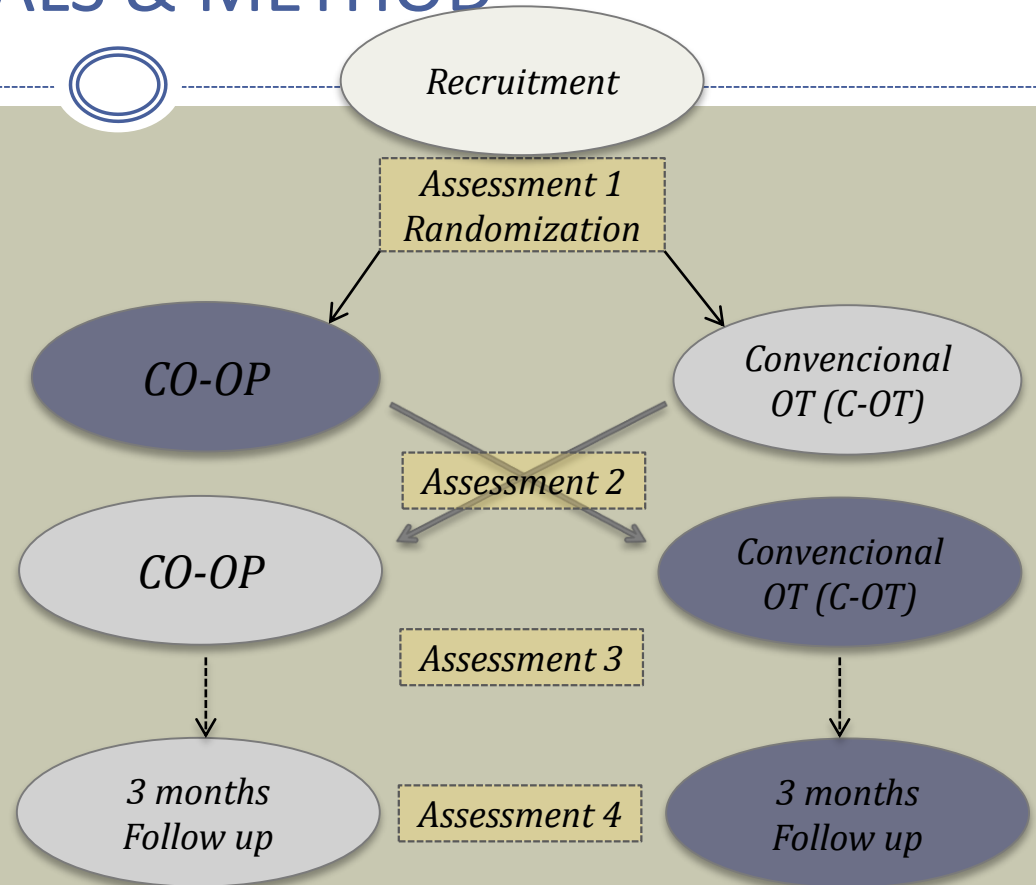
- *Children & adolescents with CP present better functional outcomes when submitted to CO-OP than Conventional Occupational Therapy?*
- *Do they retain, generalize and transfer the acquired skills?*

# 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:*

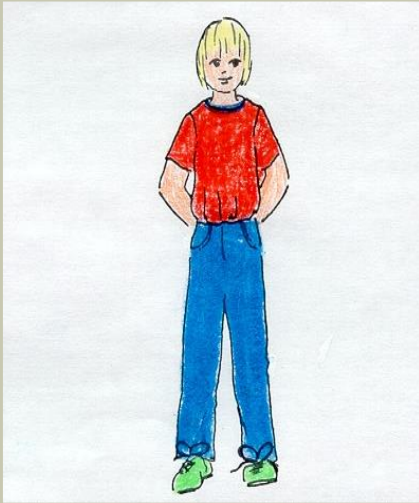
- *Visual and/or hearing deficiency*
- *Botulin toxin and/or orthopedic surgeries in the last 6 months.*

# MATERIALS & METHOD



## 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*

# MATERIALS & METHOD



## Outcome measures

### *Canadian Measure of Occupational Performance (COPM)*

- *10 point scale*
  - *Performance & Satisfaction*
- *Perception of parents and children*
- *Change score  $\geq 2$  = 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*

# MATERIALS & METHOD



## **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 ✓



# MATERIALS & METHOD



## ***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



Variables	Group		Total	
	CO-OP1	CO-OP2		
<b>GMFCS</b>	I	4	3	<b>7 (58,3%)</b>
	II	2	3	<b>5 (41,7%)</b>
<b>MACS</b>	I	3	2	<b>5 (41,7%)</b>
	II	2	3	<b>5 (41,7%)</b>
	III	1	1	<b>2 (16,7%)</b>
<b>Type of CP</b>	Diparesis	1	2	<b>3 (25%)</b>
	Hemiparesis	4	3	<b>7 (58,3%)</b>
	Quadriparesis	1	1	<b>2 (16,7%)</b>
<b>IQ</b>	Below average	1	4	<b>5 (41,7%)</b>
	Average	3	2	<b>5 (41,7%)</b>
	Above average	2	0	<b>2 (33,34%)</b>
<b>Age</b>	Mean	10,04	10,2	<b>10,13</b>
<b>Gender</b>	Female	3	3	<b>6 (50%)</b>
	Male	3	3	<b>6 (50%)</b>

Table 1. Participants' characteristics

Low income families  
→ class C

# RESULTS



- **Participants goals**

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

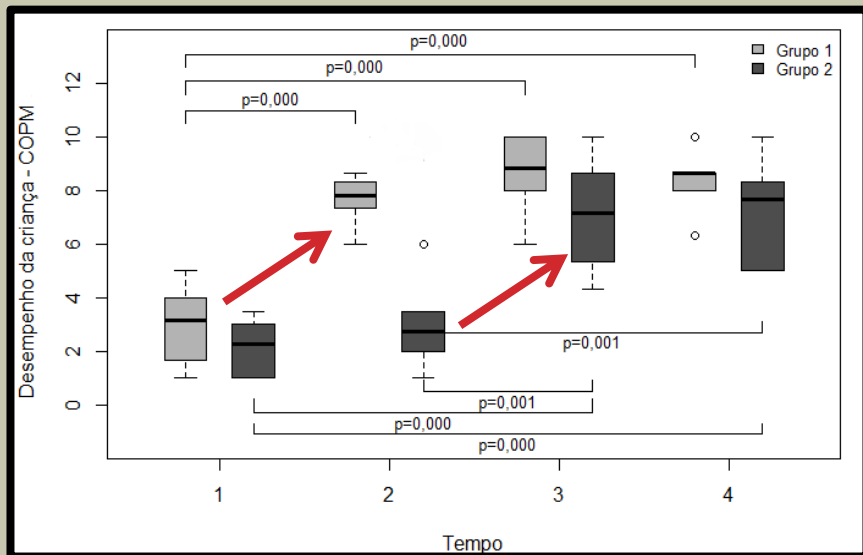
Goals	Total Frequency	CO-OP 1 Frequency	CO-OP 2 Frequency
<b>School tasks</b>	<b>44%</b>		
Handwriting	9	5	4
Coloring	2	-	2
Cutting with scissors	4	3	1
Organize school materials	1	1	-
<b>ADL</b>	<b>42%</b>		
Eating	7	4	3
Dressing	5	4	1
Personal care – hair	3	-	3
<b>Play</b>	<b>14%</b>		
Bike ride/play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



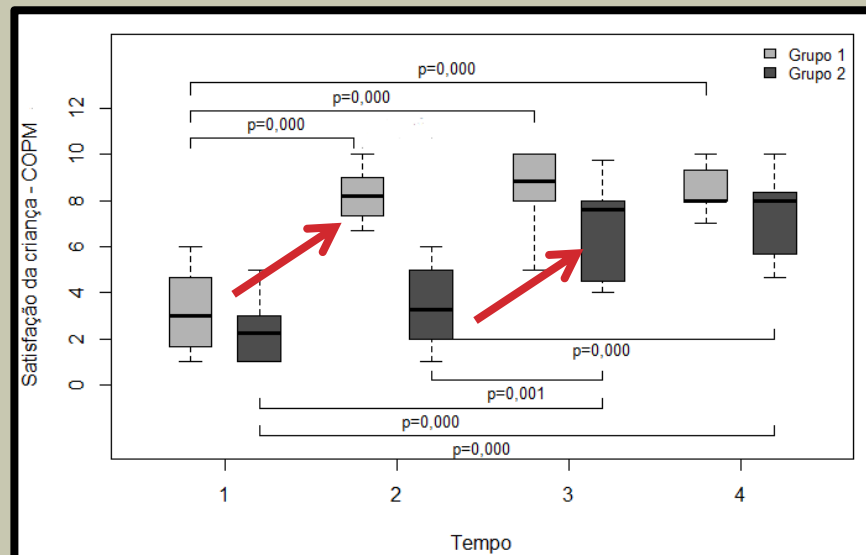
# RESULTS



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



Performance

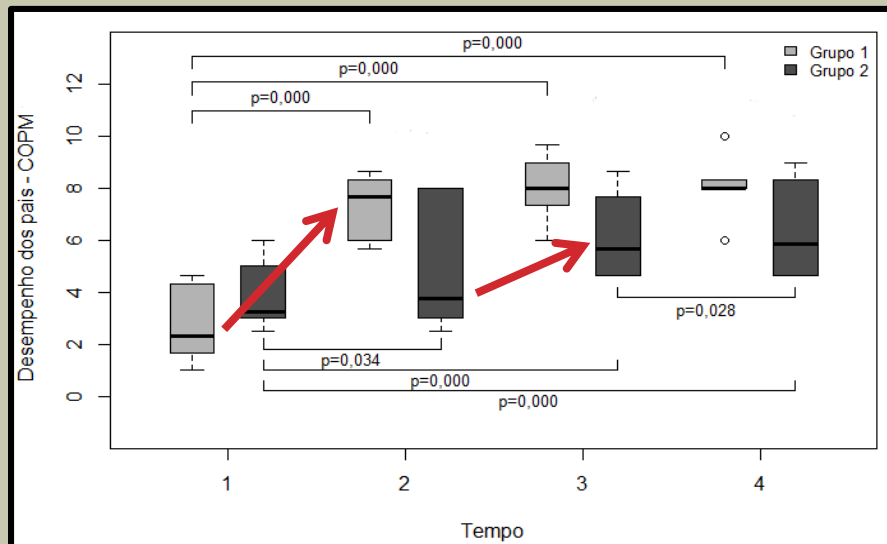


Satisfaction

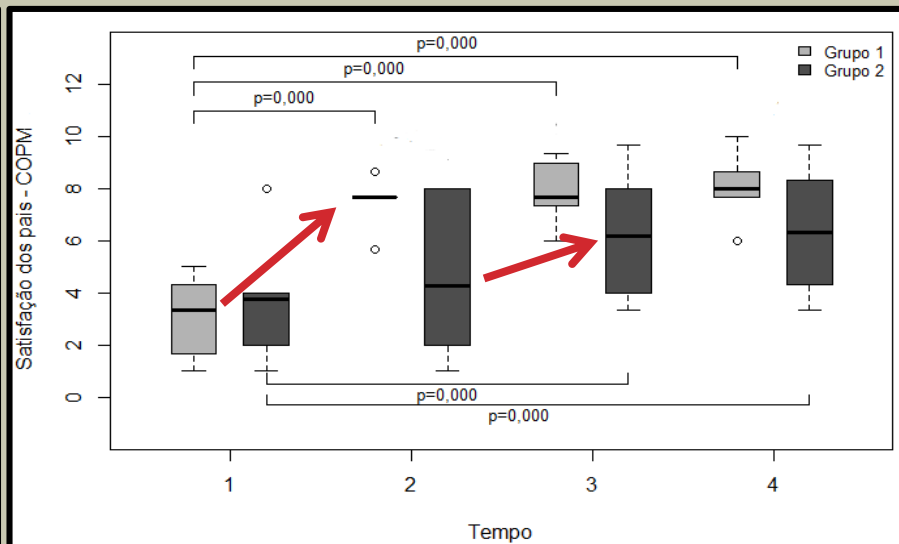
# RESULTS



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



Performance



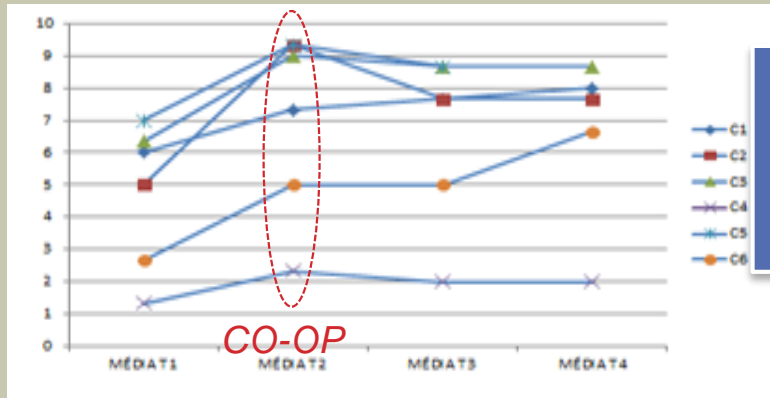
Satisfaction

# RESULTS



## Evolution of PQRS-G means → External examiners

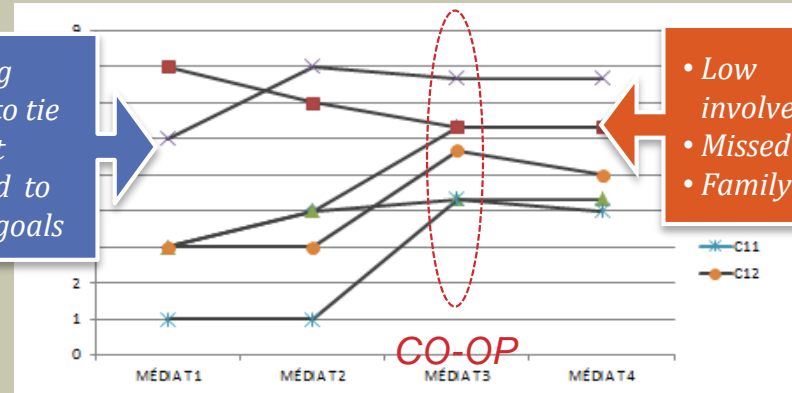
Group 1



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

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

Group 2



- Low parental involvement
- Missed therapy
- Family conflicts

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

# RESULTS



## Goal achievement

- *COPM-Performance post CO-OP = 8.4*
- *Some participants did not fully achieved their goals → 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

*Children & parents' perception of gain*



*Participation  
Daily tasks*



*Examiners' perception of gain*



*Video clip outside  
real context*

# 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!*