Occupational Performance in Children with Cerebral Palsy: A Systematic Review of Group and Individual Interventions

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OBJECTIVES

At the conclusion of this presentation, participants will be able to:

- Explain the reasoning for comparing group-based and individual occupational therapy (OT) interventions for children with hemiplegic cerebral palsy (CP)
- Identify when group-based or individual OT interventions may be selected for children with hemiplegic CP

BACKGROUND

- The most common motor disability in childhood is cerebral palsy (CP), with an estimated ratio of 1 in 345 children diagnosed (Centers for Disease Control and Prevention [CDC], 2019)
- Spastic hemiplegic CP accounts for 29% of individuals with CP (Reidy, Coker-Bolt, & Naber, 2020)
- Areas of concern related to motor, social, and processing skills associated with CP impact occupational performance (Reidy et al., 2020)
- Group interventions have shown positive outcomes for children with other diagnoses for these skills, however, the effect of group interventions in comparison to individual interventions on occupational performance for children with hemiplegic CP has not been analyzed before (Blanche, Chang, Gutiérrez, & Gunter, 2016; Rosenberg, Maeir, Yochman, Dahan, & Hirsch, 2015; Wilkes-Gillan, Munro, Cordier, Cantrill, & Pearce, 2017)

METHODS

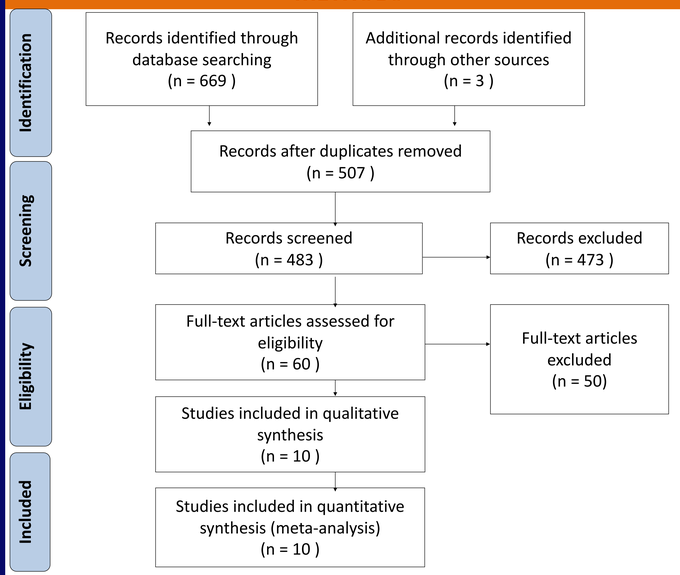

Figure 1. PRISMA flow chart (Page et al., 2021)

- The following databases were searched: CINAHL, OTSearch, PubMED, American Journal of Occupational Therapy (AJOT), Google Scholar, and the Cochrane Database
- **Inclusion criteria:** Level II-Level III evidence, participants between the ages of 18 months-19 years with hemiplegic cerebral palsy, interventions provided in a group or individual setting
- **Exclusion criteria:** physical agent modalities (PAMs) or assistive technology were utilized as the primary intervention or participants received Botulinum toxin-A injections prior to intervention

RESULTS

Table 1. *Outcomes of Group-Based and Individual Interventions*

Group-Based Intervention		*Individual Interventions*	
Article (Author, Title)	**Outcome**	**Article (Author, Title)**	**Outcome**
Sakzewski et al., 2011	**Statistically Significant Improvements** ➢ COPM ** ➢ LIFE-H (personal care) ** **No Significant Change** ➢ CAPE ➢ SFA	Abd El-Kafy et al., 2014	**Statistically Significant Improvements** ➢ QUEST (at all three evaluation periods) **** ➢ PAFT *
Gordon et al., 2012	**Statistically Significant Improvements** ➢ JTTHF **** ➢ AHA **** ➢ QUEST Dissociated Movement **** ➢ QUEST Grasp **** **Clinically Significant Improvements:** ➢ GAS	Reidy et al., 2012	**Statistically Significant Improvements** ➢ COPM performance *** ➢ COPM satisfaction * ➢ MAUL ** ➢ AHA *** ➢ QUEST Dissociated Movements subtest *** ➢ QUEST Grasp subtest * ➢ QUEST Weight Bearing subtest * **No Significant Changes:** ➢ QUEST Protective Extension
Hines et al., 2019	**Statistically Significant Improvements** ➢ COPM *** ➢ ABILHAND-Kids *** ➢ BBT *** ➢ CHEQ Grasp ** **No Significant Change** ➢ AHA	Wallen et al., 2011	**Clinically Significant Improvements** ➢ COPM at 6 months post-intervention ➢ Parent questionnaire 6-months post-intervention **No Significant Changes:** ➢ GAS ➢ Pediatric Motor Log
Komar et al., 2015	**Statistically Significant Improvements:** ➢ COPM self-care *** ➢ COPM Leisure Performance *** ➢ COPM Leisure Satisfaction *** ➢ COPM Productivity Performance *** ➢ COPM Productivity Satisfaction ** ➢ AHA *** ➢ QUEST Dissociated Movements subtest * ➢ QUEST Grasp subtest **		
De Brito Brandão et al., 2012	**Statistically significant improvements:** ➢ PEDI Self-Care Functional Skills **** ➢ PEDI Independence ** **Clinically Significant Changes:** ➢ COPM performance ➢ COPM satisfaction		
Thompson et al., 2015	**Statistically Significant Improvements:** ➢ QUEST Protective Extension (at 3-month follow-up) * **Clinically significant improvements:** ➢ Parent Questionnaire Spontaneity of Use ➢ QUEST Grasp ➢ QUEST Protective Extension subtest **No significant changes:** ➢ Overall QUEST scores ➢ QUEST Dissociated Movements ➢ QUEST Weight Bearing ➢ PEDI Self-Care Functional Skills ➢ PEDI Independence		

Note: One study was excluded from this table due to end results being combined and cannot be differentiated between group-based and individual interventions.

Table 2. *Assessment Tools and Occupational Performance Outcomes*

Assessment Tool	Occupation-based Outcomes Measured
ABILIHAND-Kids	Client-perceived function in all areas
Assisting Hand Assessment (AHA)	Bimanual object manipulation during play
Box and Blocks Test (BBT)	Unimanual dexterity
Children's Assessment of Participation and Enjoyment (CAPE)	Client-perceived function of play skills
Children's Hand-Use Experience Questionnaire (CHEQ)	Client-perceived hand use in daily tasks
Canadian Occupational Performance Measure (COPM)	Client-perceived function of self-care, productivity, and leisure
Goal Attainment Scale (GAS)	Goals related to play and function
Jebsen-Taylor Test of Hand Function (JTTHF)	Unimanual function
Assessment of Life Habits (LIFE-H)	Client-perceived function of self-care, play, and educational skills
Melbourne Assessment of Unilateral Upper Limb Function (MAUL)	Unimanual function during tasks (dexterity, range of motion, fluency, accuracy)
Pediatric Arm Function Test (PAFT)	Bilateral and unilateral function during play
Quality of Upper Extremity Skills (QUEST)	Bimanual upper extremity function during play
School Function Assessment (SFA)	Client-perceived function of educational skills

Table 3. *Statistical Significance Legend*

Symbol	*	**	***	****
Meaning (p-value)	p≤.05	p≤.01	p≤.001	p≤.0001

DISCUSSION

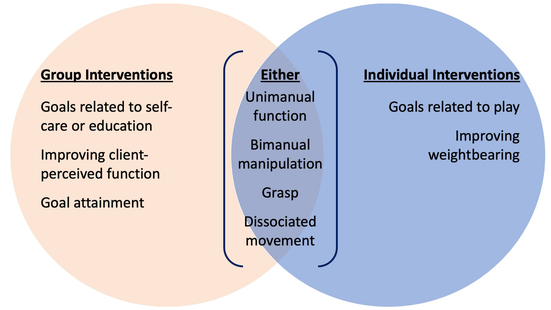

Figure 2. Ven diagram displaying the suggested determinants of selecting group or individualized interventions based on evidence.

OT Practice Implications

- Use a client-centered approach and consider the client's goals when determining group or individual interventions for children with hemiplegic CP.
- Figure 2 can be used to help determine which intervention approach would be more beneficial for this population.
- Processes can be implemented within clinics, such as screenings to obtain information to justify clinical reasoning for utilizing group-based or individualized interventions.

OT Profession Implications

- Future research: directly comparing group vs. individualized OT for children with CP, examine if there are differences based on intervention provided, or differentiating between baseline of upper extremity (UE) impairment of the participants
- Incorporate group interventions to school-based practice

CONCLUSION

- Both group-based and individualized OT interventions are beneficial to this population in addressing concerns related to occupational performance
- Important to use client-centered approach (consider goals, motivation, and areas of concern)

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