Implementing Constraint Induced Movement Therapy/Bimanual Therapy with Toddlers with Cortical Visual Impairment

Why choose Constraint Induced Movement Therapy (CIMT)/Bimanual Therapy (BIT)

- Cortical reorganization
- Behavioral modification/habit formation
- Changes in spontaneous use of the impaired UE → Changes in quality of the motor skill of the impaired UE → Changes in overall functional performance and quality of life

Core Components

- CIMT: Constraint of less affected or unimpaired upper extremity
- BIT: Practice of play-based activities and functional skills requiring two hands together
- High dosage of therapy
- Use of systematic shaping techniques and repetitive practice with task variation
- Practice of functional skills in natural and diverse settings
- Transition planning for maintenance of unilateral and bilateral gains

What can participation in CIMT/BIT do?

- Focus the child’s attention on the impaired UE
- Success oriented: Allow the child to have positive experiences with the use of the impaired UE
- Increase the child’s confidence and motivation to use the impaired UE
- Alter the child/family’s perceptions and expectations regarding use of the impaired UE
- Decrease negative responses and aversions to activities involving use of the impaired UE

Assessments

- Canadian Occupational Performance Measure (COPM)
- Goal Attainment Scaling (GAS)
- Melbourne Assessment 2
- Quality of Upper Extremity Skills Test (QUEST)
- Assisting Hand Assessment (AHA), Mini Assisting Hand Assessment (Mini-AHA), Hand assessment for Infants (HAI)
- ABILIHAND – kids
- Children’s Hand-Use Experience Questionnaire (CHEQ)

Intervention

- Sensory stimulation: tactile strategies, limit visual distraction
- Focus on intensive shaping
- Caregiver education and home programming
- Progress HEP and task refinement; “just right” challenge
- Build on success, fade support

Foundations for treatment
• Motor learning theory and principles
  o Movement, Reinforcement, Repetition, and Refinement
• Operant training techniques
  o Shaping
  o Fading

Treatment Activities

• Selected to be developmentally appropriate, motivating and engaging
• Task analysis
• Ideally follow child’s daily routine with focus on function
• May include:
  o Play
  o ADL
  o IADL
  o Leisure activities
  o Strengthening
  o Weight-bearing
  o Sensory activities

Bilateral activities (during final phase of intervention)

• Bilateral hand skills are crucial to typical daily functioning
• Constraint is removed during the last phase of treatment
  o Number of days of bilateral treatment is age and skill-dependent
• Bilateral training begins immediately after cast is removed
  o Therapist present to ensure successful experiences, re-direct any “old habits”
• Involves same treatment intensity and therapy techniques
• Helps with the transition from treatment to post-treatment period so the child is able to more spontaneously use the impaired UE in functional everyday (i.e. two-handed) activities
Adaptations for children with Cortical Visual Impairment (CVI)

Phase 1:
- Dimmed lights/lights off
- Work in a little room
- Eliminate clutter that will distract the child
- Use a black background
- Reduce auditory stimulation
- Visual target should have one or more of the following:
  - Shiny
  - Have a direct light source
  - Preferred, single color
- Use the same 3-5 objects should be used consistently in the beginning to increase glances
- Common phase 1 toys include a slinky, reflective pinwheel, shiny pom poms, different color flashlights, light up toys, etc.

Phase 2:
Environmental Modifications:
- Toys should have no more than 2-3 colors
- Consider the complexity of the environment; There may be difficulty visually attending in a busy therapy gym/room with a lot of clutter or loud noise
- Visual target should be placed no farther 18 inches from face (depending on activity)
- As the motor demand of the task increases, decrease the visual demand of the task
- Fewer toys out at one time better. For example, with block stacking, hand them 1-2 at a time
Phase 3:

- Adaptations should be minimal
- Use the light box to build visual attention
References:


