Principles of Motor Learning and Motor control: Supported in CE?

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What is the goal of an intervention for a child with cerebral palsy?

- Support participation in roles and activities available to the child—present and future.

- Reduce the impact of secondary health and disability issues—present and future.
Frameworks that therapists use:

- WHO ICF universal guide (WHO ICF, 2002)
- Family centered care (Rosenbaum et al, 1998)
- Multivariate model (Bartlett & Palisano, 2002)
- Person-occupation-environment (Law et al, 1996)
- Model of Human Occupation (Keilhofner, 2002)
Environment
Physical/attitudinal/cultural

Occupation
Task parameters/tools/purpose

Person
Strengths and limitations
Understanding CP

- Therapists acknowledge the new definition of CP that emphasizes the heterogeneity within the condition—etiology, epidemiology. (Bax, Goldstein, Rosenbaum, Leviton, & Peneth, N., 2005)

- By embracing this definition, one acknowledges the core feature as abnormal motor behaviour, AND the “disruption to bio-psychosocial development”

- Therefore past emphasis on the motor system must also move forward to the whole child.
Theories underlying practice

- Socio biological
- Task Oriented
- Bio mechanical
- Neuro maturational
- Developmental
- Neuro Developmental
- Bio Medical
- Motor learning
- Compensatory
- Remedial
- Educational
- Neuro plasticity
- Ecological
- Neuro psychological
- Bio Medical
Emerging/Existing practice methods

- Evidence based on WHO ICF (Majnemer, 2006)
- Strengthening/exercise/activity based (Damiano, 2006; Dodd, Taylor & Graham, 2003)
- CIMT/BIT (Taub et al, 2004; Charles & Gordon, 2006)
- NDT (Butler and Darrah, 2001)
- Goal directed (Eliasson, 2005)
- Participation in real contexts (King et al, 2003)
- Cognitive orientation to occupational performance (CO-OP) (Polatajko & Mandich, 2004)
- Family Centered Functional Therapy (FCFT) (Lammi & Law, 2003)
Achieve goals Identify obstacles

- Body system
- Cognitive
- Perceptual
- Visual
- Motor
- Behavioral
- Sensory
- Developmental

Odding, Roebroeck & Stam, 2006
CE addresses the child’s learning needs.

- Understanding the learner

- Enabling learning through
  1. Creating an environment that motivates
  2. Multimodal learning opportunities
Key Concepts in CE

Understand the learner

Enable the learner

Child learns skills for life
Unique facilitations and practices are used to enable the learner:

- Conductor
- Group
- Equipment
- Rhythmic intention
- Task series
- Daily program
- Child centered
- Motivation
- Self concept
- Self esteem
- Orthofunction
- Personality
Motivation = real self + imagined self

- Watching
- Listening
- Learning
- Trying
Conductor:

- Group leader “conducts”
- Trained professional
- Transdisciplinary model: Various professionals act as conductor
- Leads with routine, tasks, rhythm, songs and direction for group.
Group:

- CE delivered as group program
- Children grouped by age, needs, rate of progress
- Social context
Equipment:

- Specifically designed to enable stability when needed. Proper position can be maintained with minimal adult intervention.
- Promotes movement that allows achievement.
- Fully adjustable to suit child’s skill level and size.
- Plynth; ladder back chair; stool; blocks; dowel; rings; arm bands...
Rhythmic Intention:

- Verbal self direction
- Follows required rhythm for child’s success
- Description of movement being attempted/achieved
- Rhythmical speech; key word repetition; counting; song; chant; rhyme
My feet are flat
My knees are straight
My bottom is in
My back is straight
My head is in the middle
My hands are holding on, and
I am standing tall!
I reach up with my left hand
I reach up with my right hand
I hold on with both hands
  I PULL myself UP!
Task Series:

- Elements of every activity throughout the day that are designed with each child’s learning needs in mind
- Threaded through each aspect of daily program
- Based on what the child needs to learn to overcome challenges/obstacles caused by CP
Friends sitting, ready to paint...
Daily Program:

- Structured routine that mirrors normal daily activities that the child needs to learn
- Life skills emphasis
- Provides many opportunities for learning and practicing skills
- Specifically sequenced and organized with the task series of the group and each child in mind
- Predictable, themed, engaging.
Does CE use principles of Motor Learning and Motor control?

YES!
References provided in handout.

With thanks to the children in the slides and their families, as well as all staff at the Center for Independence through Conductive Education.