Intervention to Advance Postural Transitions and Problem Solving Ability in Children With Cerebral Palsy

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BACKGROUND INFORMATION:
• The relationship of postural control and early self-mobility to cognitive development, although implied in many descriptions, is not well understood.
• We know that crawling has been linked to the ability to perceive object permanence. However, no studies have specifically examined self-mobility and the progression of cognitive skill in children with neuromotor disorders.
• The ability to learn about objects partly relies on motor abilities, and should be reflected in problem solving ability.

PURPOSE:
• The purpose of this pilot study was to investigate and compare the effects of a perceptual motor approach (PMA) and a body weight support (BWS) intervention in advancing postural transitions and problem solving skills in children with CP. The PMA which focuses on enhancing complexity of movement variability, was shown effective to improve sitting control and play skills in our previous study.

PARTICIPANTS:
• Twelve children with mild to moderate CP, 6 in each therapy group
• Between the ages of 9 months to 3 years (17.8 months for BWS & 18.2 months for PMA intervention)
• Children entered the study when they were able to sit for one minute alone
• Intervention was twice weekly for 12 weeks, 60 minutes every time.

METHODS:
• Gross Motor Function Measure-88 (GMFM), sitting/ crawling/ standing/walking dimensions.
• Toys play and problem solving was taped, then assessed using a tool called EPSI (Early Problem Solving Indicator). The EPSI assessment was composed with 3 standard toys in a roll, pop-up pets, stacking cups, gumball machine. Infants are offered those toys for 6 mins, 2 mins each. Manipulation events (look, explore, function and solution) are coded for 6 mins.
• Data collected pre-intervention and post-intervention

RESULTS:
• The scores of EPSI explores and functions decreased in BWS group (-0.50±0.05, -0.83±1.07 and -1.5±0.71), conversely, the scores of explores and functions in the PMA group increased (3.00±10.56 and 7.17±11.44).

CONCLUSIONS:
• BWS training and perceptual motor approach are both useful in promoting postural transitions.
• Considering the limited sample size, statistical differences between two interventions could not be detected.
• The descriptive data imply that BWS intervention was more helpful in advancing dynamic motor abilities, such as crawling and walking. In contrast, the perceptual motor approach was more beneficial in improving static posture control, such as sitting and standing.
• BWS intervention may not benefit the children with CP in their problem solving ability. However, problem solving skills in the perceptual motor intervention group may help with it.

CLINICAL IMPLICATIONS FOR INTERVENTION:
• We suggest to use different interventions to improve different types of posture control for infants with CP. BWS may be beneficial for dynamic motor while PMA may improve static posture.
• Problem solving skills can be addressed and improved with specific types of motor interventions.

REFERENCES:

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