

## TRAINING TWO PRESCHOOL CHILDREN WITH MULTIHANDICAPS TO OPERATE A POWERED WHEELCHAIR

(Abstract 544)

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In habilitation and rehabilitation the traditional use of powered wheelchairs is for goal-directed mobility. First after training motor function to an optimal level decisions are made if training in powered wheelchair could be used in intervention to improve independent mobility. Conservative prescription criteria for powered wheelchairs have often ruled out children with severe multiple handicaps as candidates for independent mobility. Their outward appearance and multiple dysfunctions conceal their potential for development and success. This paper describes the training of two young children with severe multiple handicaps in powered wheelchair, with the specific aim to explore what children who normally would not get access to training, can achieve by experiencing independent mobility.

**Methods.** Description and exploration of the outcome of powered wheelchair activity in context (self-directed locomotion) for two pre-school children with severe multiple handicaps. Video-recordings of a total of 42 training sessions, field notes and in-depth interviews were used to analyze the processes the children underwent during the training.

**Results.** The two multihandicapped children made clear steps forward in their development of self-directed mobility in powered wheelchairs. Their common improvements included an enhanced alertness and concentration during the experience of self-directed mobility. This in turn widened their attention to environmental sensory input, and the use of this input to guide action enhancing sensory integration. Both children have shown an improved capacity to interpret and use information from simultaneously occurring sensory channels. From their initial starting position, they have developed a better understanding of their hands as tools for activity and started to coordinate eye and hand-movement. Their understanding of simple cause-and-effect relationships has evolved while driving the wheelchair and they have experienced autonomy in controlling their own mobility and aspects of their environment. It seems that some of these effects are maintained and even transferred to other activities. For example increased exploratory behavior and increased ability to use and integrate sensory information in other activities. It can not yet be estimated how far they can reach on the road to goal-directed mobility, only the ongoing training will determine this.

**Conclusions.** With limited cognitive skills and frequent episodes of ill health, these children need extended practice sessions over years in order to assimilate and adapt to new events. For the child who is severely disabled and retarded to develop more complex behavior it is essential to allow opportunities for growth in the selected

activity. Altering any modality in the activity ever so slightly often present a new challenge to the child who then needs to modify and adapt his or her behavior to master these new circumstances. If severely retarded, the child may experience these slight changes in the activity as new requiring the adaptation process to start over from the beginning.

Hindrances to this process, besides the child's combination of disabilities, are the caregiver's and the habilitation staff's lack of experience in interacting with, and interpreting the child's behavior and signals. Uncovering the child's attempts at communication point to the possibilities of undiscovered or undeveloped capacity in the child. This is why it is so important to see the multihandicapped child as an individual with potential for development. By sharpening our own senses to watch for subtle changes in the child's behavior, we develop the means for giving more adequate reinforcement and feedback which stimulates the child's development. The possibility to develop independent mobility in a powered wheelchair opens new doors of development for the multihandicapped child.

This study's unexpected positive results have formed the basis for extended studies including more persons at different ages and with different combinations of dysfunction. The results from these studies will in turn form a program for the use of powered wheelchair as an intervention tool for persons with severe multiple handicaps.

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