Research In Focus: A Weekly Digest of
New Research from the NIDILRR Community

# A New Physical Therapy Program Improves Sitting and Play Skills for Children with Cerebral Palsy

Cerebral palsy (CP) is the most common cause of movement disability in children. CP can result from brain damage before, during, or soon after birth, and it can be mild, moderate or severe. Children with CP often have trouble coordinating their body movements. As a result, they may be delayed in learning to sit without support. Independent sitting is an important milestone that can help children explore and play with objects more effectively and if not achieved, can delay development in other areas. In past research, traditional physical therapy has shown little benefit in helping children with CP learn to sit independently. In a recent NIDILRR-funded study, researchers looked at an alternative physical therapy program, called perceptual-motor therapy, to see whether it could help children with moderate or severe CP improve their sitting skills. They also wanted to find out whether the program would lead to increases in the children's free play with toys.

In a study, Investigation of Interventions for Sitting Postural Control in Young Children with Moderate to Severe Cerebral Palsy, researchers enrolled 30 children in a perceptual-motor therapy program aimed at improving their sitting and postural skills. The children ranged in age from 18 months to 6 years old. All had either moderate or severe CP and could sit with support or prop themselves up on their hands or forearms for at least 10 seconds, but could not yet sit unsupported.

The perceptual-motor therapy program was delivered in two 45-minute sessions a week for 12 weeks. In the program, each child worked individually with a physical therapist and practiced postural skills, such as reaching for toys while sitting or moving into and out of the seated position. The physical therapist provided gentle touch cues to help the child explore new movement strategies. In one exercise, for example, the therapist would present a toy just above the child's reach and gently press on the child's back to encourage trunk movement. In general, the therapist presented problems for the child to solve (such as reaching for toys) and provided gentle guidance and supports but allowed the child to freely explore a variety of movements. Unlike more traditional physical therapy, the therapist did not move the child's body or discourage any of the child's unusual movements. The therapist customized the program to each child's motor skills and interests.

The researchers tested the children before and after the program to find out if the program improved their sitting and play skills. First, they used a 20-item scale to measure the children's ability to sit up and remain sitting, on their own or supported, and

reach for nearby toys. Then, they observed the children in free play during a 15-minute period, and recorded the number of times that each child attempted to manipulate toys.

After the 12 weeks, the researchers found that:

- The program improved sitting skills: On average, the children improved their sitting scores by 69%, and each child showed an improved ability to sit up and stay in the seated position after the program than before.
- The program improved free play: Most children (60%) showed an increase in their toy exploration during free play after the program, compared to how they played before the program.
- For older children, improvements in sitting were linked to improvements in playing: Children age 3 and older who improved more in their sitting skills also increased their exploration of toys during free play. These older children had the most severe delays related to their CP, and tended to have less play behavior before the program started, so they had more room to improve their play with improved sitting.

Although the researchers found that many of the children played with a larger number of toys after the program, some of the children engaged in more advanced play with a smaller number of toys. For example, they played pretending a doll was a baby, rather than just touching or moving it randomly. Others played less with toys as their sitting skills improved because they might have been more focused on developing their newfound mobility. This study had some limitations, most notable was that there was no control group and all the children received the same intervention. Future studies could compare this intervention to standard physical therapy or other types of interventions to see if this intervention produced more or less improvements in sitting ability and play skills when compared to improvements from other interventions.

The authors noted that perceptual-motor therapy may be an effective way to help children with CP develop motor skills like independent sitting. In addition, by encouraging children to spontaneously explore their environment, this approach may aid development in other areas such as social interaction and problem solving. Independent sitting may be an important milestone for therapists to target in order to encourage children to develop more complex play behaviors and explore their world more freely. This may be especially important for children with more severe developmental delays. Future studies may be useful in better understanding the complex connections between sitting skills and play behaviors in children with CP.

## To Learn More

AbleData maintains the largest database of assistive products and devices. Here are sample searches for therapeutic equipment for sitting and other gross motors skills as well as adaptive play toys for young children.

The American Occupational Therapy Association (AOTA) has several publications on the importance of play in skill building:

Building Play Skills for Health Children and Families (PDF)

How to Pick a Toy: A Checklist for Toy Shopping (PDF)

Learning Through Play (PDF)

## To Learn More About this Study

Ryalls, B.O., Harbourne, R., Kelly-Vance, L., Wickstrom, J., Stergiou, N., and Kyvelidou, N. (2016) A perceptual motor intervention improves play behavior in children with moderate to severe cerebral palsy. Frontiers in Psychology, 7. This article is available from the NARIC collection under Accession Number J73943.

---

Research In Focus is a publication of the National Rehabilitation Information Center (NARIC), a library and information center focusing on disability and rehabilitation research, with a special focus on the research funded by NIDILRR. NARIC provides information, referral, and document delivery on a wide range of disability and rehabilitation topics. To learn more about this study and the work of the greater NIDILRR grantee community, visit NARIC at www.naric.com or call 800/346-2742 to speak to an information specialist.

NARIC operates under a contract from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), Administration for Community Living, Department of Health and Human Services, contract #GS-06F-0726Z.