

Occupational Therapy Newsletter

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Visual Spatial Skills and Math Performance

Children who have difficulty with visual spatial skills often have academic difficulties as well. In particular, certain aspects of math achievement are tied to visual spatial development. In their book *Number Sense and Number Nonsense* (Brookes, 2009), Krasa and Shunkweiler review scientific journal articles from many fields in order to understand how best to teach children with math disabilities or dyscalculia.

Sense of Quantity

One theme identified in the literature is the sense of quantity. Children who do well in math tend to have an internal visual image of a number line to which they refer. They develop an intuitive sense that numbers always go in order and occur at regular intervals. Some ideas for helping students develop a sense of quantity include:

- Adding numbers to the spaces on a board game such as Candyland. Students can “count on” from where they left off.
- Using numbered squares on the floor for students to line up on. You can also have children draw cards with numbers and arrange themselves in numerical order.
- Number lines can be vertical as well as horizontal. Think of the floors in a tall building.
- A number balance with weights that can be added to each side is another way to develop quantity sense.

Mental Rotation

OTs frequently work on spatial relations, or the ability to determine the position of objects relative to each other, and to determine the direction of forms. Spatial skills are related to mathematical understanding and versatility in its application. Activities that address spatial relations skills include:

- Paper folding activities, like making “cootie-catchers” or a paper cup
- Toys with interlocking gears. Try having the child predict which way the gears will turn.
- Block building, especially building structures from a model, and making a drawing of a structure.

Summarized from O’Flynn, J. (2009, October 12). Improving Math Performance.

Advance for Occupational Therapy Practitioners, 25(21), 32-34.

Math + Movement + Touch = Success

Incorporating movement and touch into math lessons can facilitate the learning process, increasing focus and presenting the information through an additional avenue for the kinesthetic learners of whom there are so many. Experiencing math through many senses provides more opportunities and ways to learn the material.

Some ideas include:

- Putting a vertical number line on the wall and having the kids jump to touch the consecutive numbers while they say them out loud.
- Creep track- numbers or facts on the floor in an alternating track. The kids can crawl, touching each subsequent one with alternating hands again, saying it out loud.
- Incorporating movement in any way- turn around a number of times, jump, clap hands, give self squeezes, blow hard on their hand etc.
- Matching/scanning activity, either table top or large on the white board. Where there are pairs (numeral:written number, problem:solution) the child scans to find and then touches the matching pairs.
- Writing with their paper on top of sand paper
- Sandpaper cut out numbers
- Fun foam numbers
- Wooden 3D shapes
- Writing numbers/answers in a sand tray
- Tracing a large sideways figure 8 on the wall
- Tracing in/doing mazes, dot to dots
- Completing partially drawn shapes or numbers
- Identifying shapes by feel without looking
- Presenting a group of 4 shapes, or numbers, removing one and identifying which one is gone
- Working on scanning/spatial skills with “Where’s Waldo,” “Eye Spy”

