OT QUARTERLY

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THE GILLEN BREWER SCHOOL

Using Exercise and Nutrition To Improve Brain Development

The staff members of the occupational therapy department had the opportunity to attend a one-day workshop, "Using Nutrition to Improve Clinical Outcomes: Strategies for Addressing the A, B, C's : Attention, Behavior, and Cognition", given by Kelly Dorfman, MS, LND in December of 2009. The workshop was full of excellent information that we would like to share with the Gillen Brewer School community. The first topic that we would like to review involves brain development. A child's brain development is influenced by environmental experiences and nutrition. Ms. Dorfman emphasized that play is necessary for neurological development. The movement center of the brain is right next to the language center of the brain. Exercise increases Brain Derived Neurotrophic Factors which in turn improves neuron growth and development in the brain. Sensory rich environments have also been shown to shape the developing brain, children who interact in sensory rich environments have been shown to have 25% more connections in their brain structure.

Nutrition also impacts brain development, Ms. Dorfman referred to an article, "Feeding Problems and Preschool Intelligence Scores: A Study Using the Co-Twin Method" published in the American Journal of Clinical Nutrition by Anne M. Brown and Adam P. Maltheny in 1971. This article discussed how picky eating may affect IQ, it stated that subtle differences in eating behavior between twins caused a small but reliable difference in mental development. Animal studies have also indicated that diet affects the behavior of animals. A study conducted by the National Institute of Aging concluded that high fat diets made rats less able to cope with brain damage. The researches suggested that high fat/high sugar diets not only damage the ability to learn and remember new information but also puts consumers at a higher risk for neurodegenerative disorders in the future. Ms. Dorfman feels that an interaction between a biological vulnerability from poor nutrition/ impaired absorption, genetics, timing, prenatal trauma/preterm birth, environmental toxins, and early exposure to virus/bacteria cause children to be susceptible to developmental delays and immune system depletion. As a result she recommends that children exercise on a regular basis, interact in sensory/motor rich environments, and limit their exposure to toxins.

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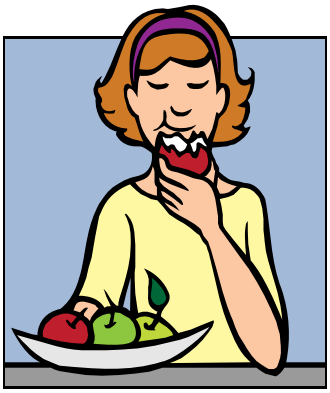
In This Issue:

2 Simple Steps to Reduce Environmental Toxins



Ms. Dorfman recommended buying organic products when possible, especially cheese and meat. She also mentioned that the 12 most contaminated fruits/vegetables were: peaches, apples, sweet bell peppers, celery, nectarines, strawberries, cherries, pears, grapes, spinach, lettuce and potatoes. So, if you are not able to purchase all organic food, consider purchasing these products organically.

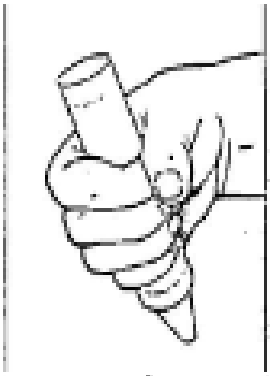
She also recommended that you check your personal care products and avoid the use of certain plastic containers. You are able to check the contents of your personal care products on-line using the Skin Deep research program at Environmental Working Group (www.ewg.org). In order to avoid Bisphenol A (BPA), which is a key ingredient in plastic and epoxy resin coating on the inside of plastic containers, avoid the use of plastic containers with the #7, #3, and #6 on them. Also, store and reheat leftovers in ceramic or glass containers, instead of using plastic containers. BPA has been linked to endocrine disruption, heart disease, and diabetes (JAMA study September 17, 2008). For further reading you can refer to either of these two books: (1) "Changing the Course of Autism: A Scientific Approach for Parents and Physicians, " by Bryan Jepson, Sentient Publications, 2007 and (2) "Autism: Effective Biomedical Treatments, " by Jon Pangborn and Sidney Macdonald.

Helping the Picky Eater

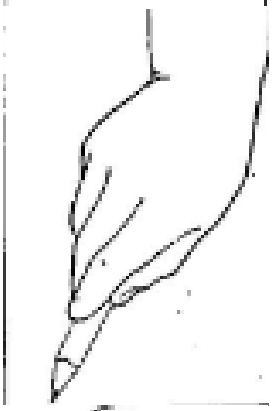
- Consult with you speech therapist, doctor, occupational therapist, and nutritionist for further information
- We are passing this information on to you, each child is an individual, therefore it is very important that you consult with your child's doctor before implementing any of these strategies
- Address oral motor/sensory issues as recommended by your speech and/or occupational therapist
- Start with the assumption that you will be successful
- Explain expectations in simple terms to your child
- Offer 2 choices of how to accomplish your goal
- Control your behavior- give yourself a time out if the child unravels, stay calm and provide a safe, constant structure
- All feedback should be positive
- Books that may be helpful to read to picky eaters are available on-line at www.betterspeech.com or by phone at # 856-751-1937
- For further information contact Kelly Dorfman, M.S., L.N., L.D. at Kelly@kellydorfman.com

Developmental Sequence of Hand Grasp

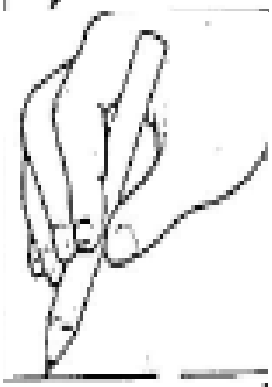
Just as a child moves through developmental milestones for gross motor skills, a similar progression of developmental skills occurs in the hand. The pictures below demonstrate a typical developmental progression of hand grasp, however keep in mind, that each child may demonstrate variances from this general developmental sequence.



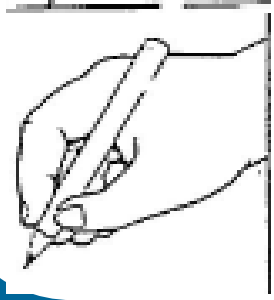
1) Fisted Grasp- is the first grasp to develop in young children. A child who utilizes this grasp tends to fist their hand around the writing utensil, bend their wrist, and move their whole arm as a unit.



2) Digital Pronated Grasp– is typically the next grasp that is observed to emerge. The writing implement is held diagonally within the hand with the tips of the thumb and index finger on the writing tool. It is characterized by wrist pronation (thumb down position), decreased finger isolation, and the arm moving as a whole unit.



3) Quadripod Grasp– is typically the next grasp pattern to emerge. Children who use this grasp typically hold the writing tool with the thumb opposed to their other four finger tips. There is typically some isolated movement of their fingers during tool use.



4) Tripod Grasp– is the most mature grasp pattern to emerge. It is characterized by holding the writing tool with the tip of the thumb and the index finger, allowing the writing tool to rest against the side of the middle finger. The other fingers are bent in toward the palm. This grasp allows for isolated finger movement

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Improving Hand Grasp Development

Improving a child's ability to use each finger individually (finger isolation) and developing their hand strength will help to improve their ability to manipulate small objects with their hands. A few activities to improve grasp that can be dome at home include:

- Use Play Doh/Silly Putty– hide coins, beads, and pegs in putty and encourage children to find the hidden objects. Have your child pinch the putty/play-doh using their thumb and index finger. Roll out the putty/play-doh on an inclined surface and practice cutting it with scissors.

- Clothespins and a String– have your child try to squeeze and release the clothespins onto a string using his/her thumb and index finger. If you hold the string up in the air (or hang it up) the child will then also have to reach over their head in order to place the clothespin on the string, this will not only develop hand strength, but also arm and wrist strength.

- There are great resources on-line that also assist in fine motor skill development, that include: www.highlightskids.com (mazes, hidden pictures, and puzzles), www.crayola.com (coloring, dot-to-dot, make your own cards) and www.abcteach.com (patterns, crosswords, and dot-to-dot activities).

- Tongs/tweezers– have your child use tongs/tweezers in order to pick up tissue paper or cotton balls. Encourage your child to squeeze the tweezers/tongs using their thumb and index finger while bending the remaining fingers in towards the palm of their hand.

- For further tips speak to your occupational therapist.