

Growing the Mind Through Movement

From Infancy to School Aged;
Why Sensory Motor Development Needs
to be Center Stage

Presenter Christine Roberts,
Founder Nurturing Pathways
nurturingpathways.com

info@nurturingpathways.com

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**“...movement is crucial
to every other brain
function,
including memory,
emotion, language and
learning.”**

*John Ratey, User's Guide to the
Brain*



Why Should We Be Curious About Brain Development?

- It is clear movement is central to how well we think, feel and learn.
- The brain is the only organ that changes its structure and function due to the demands placed on it by the environment.
- With this in mind it is important to understand what the brain does and how fast it grows in the first 4 years.



How Does It Grow?

- The brain doubles in size from 1 pound to 2 pounds in twelve months.

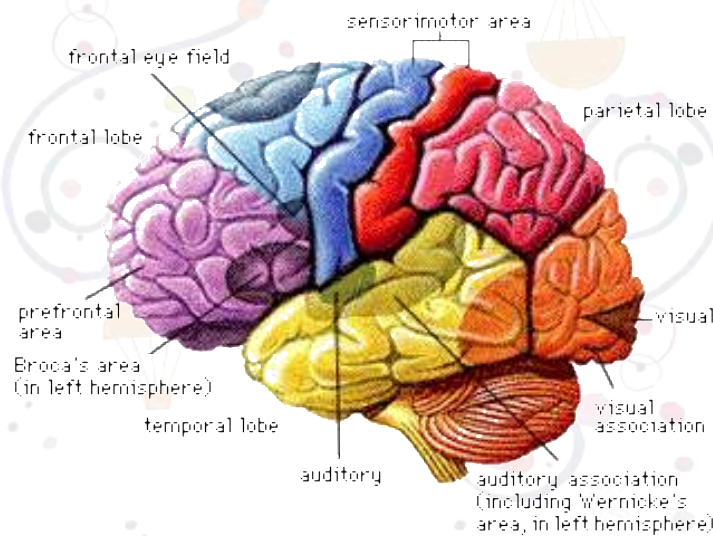


- By age four a child has 95% of its adult brain weight of 3 pounds.



80% of the brain is dedicated to processing sensory motor experiences.

Jane Ayres



Prime Time for Sensory Motor Development

- **Visual - Occipital Lobe: 0 - 2 years**
- **Posture - Cerebellum: 0 - 2 years**
- **Tactile - Parietal Lobe: 0 - 2 years**
- **Auditory - Temporal Lobe: 0 - 4 years**
- **Movement - Frontal Lobe: 0 - 5 years**



Doug McKenzie, BMC

“It is in the first year of life that we learn how to learn and establish a basic perceptual framework. In this formative time, our strengths and perceptions grow through movement patterns that integrate all of our body systems.”



“In a world that is constantly changing, there is no one subject or set of subjects that will serve you for the foreseeable future, let alone for the rest of your life. The most important skill to acquire now is learning how to learn.”

John Naisbitt



- Neuroscience and research on sensory motor development all point to the importance of knowing what the sensory motor building blocks are and how to develop them during the first five years.
- You will learn what sensory motor activities need to be learned when and why they are so important for school readiness and life long learning.



Center on the Developing Child, Harvard

“Brain architecture is built over a succession of sensitive periods. Each of which is associated with the formation of specific circuits that are associated with specific abilities. The development of increasingly complex skills and their underlying circuitry builds on the circuits and skills that were formed earlier. Through this process, early experiences create a foundation for lifelong learning, behavior and both physical and mental health.”



DID YOU KNOW?

- By 2018 in the US \$344 billion dollars will be spent by the medical community on obesity related disorders; representing 1 out of every 5 dollars spent on medical care in the US.



“We have the most sedentary generation of young people in American history.”

David Satcher, US Surgeon General



“Studies have shown that excessive media use can lead to attention problems, school difficulties, sleep and eating disorders, and obesity.” AAP 2013



NOT ENOUGH PHYSICAL ACTIVITY

- There is a 10% increase in ADD, ADHD disorders for every hour of TV watched and a 30% buffer against these disorders for every hour of interactive play.

Dr. Dimitri Chritakistis 2013

- Babies learn 6-8 fewer words per hour of TV with the greatest harmful effects from 8-16 months.

ILABS Seattle, WA 2010



- 8 - 18 year olds spend 10:45 hours per day exposed to media:

- | | |
|------------------|---------------------|
| ✓ TV 4:29, | ✓ Video Games 1:13, |
| ✓ Music 2:31, | ✓ Print :38 |
| ✓ Computer 1:29, | ✓ Movies :25 |

Kaiser Family Foundation, Generation M2: Media in the Lives of 8- to 18-Year-Olds, 2010



What Kind of Future Will They Have?

- 46% of all Elementary Schools in the United States have eliminated recess and have 30 minutes for lunch.



“We all know that sitting is the new smoking - it raises the risk of disability, diabetes, heart disease and cancer, not to mention obesity.” *Health Jun 16 2014*
Newsweek



Ring Any Bells?

- Picky Eaters
- Difficulty listening and staying on task
- Touch others too soft or too hard
- Trouble falling asleep
- Uncomfortable with certain clothes
- Rarely plays with toys requiring dexterity
- Has difficulty shifting focus and sharing
- Cannot calm or self sooth easily
- Easily startled or under respond to loud noises
- Difficulty with toilet training
- Avoids fine motor tasks - cutting, drawing, tying shoes
- Child is in constant motion
- Speech that is hard to understand
- Difficulty with making transitions - moody



Problems You Can Avoid

- Poor balance
- Low muscle tone
- Weak eye movements
- Poor eye-hand coordination
- Confusion orienting themselves in space
- Fidgeting/needing to move all the time
- Sitting still and focusing
- Short term memory function
- Delayed reading and writing
- Poor upper/lower body integration
- Stooped posture
- Misjudge the speed at which objects are approaching
- Difficulty crossing their mid-line
- Developing cross-lateral patterns like creeping
- Not crawling on belly



Problems You Can Avoid (cont.)

- Establishing a dominate hand by the age of 8
- Fine hand motor control - proper hand grasp
- Sensitivity to the palms
- Tendency to speak with their hands
- In the feet – toe walking
- Impulsive behavior
- Alert all the time
- Dislike Change
- Insecurity - Lack of trust
- Have poor balance and coordination
- Anxiety
- Depression
- ADD, ADHD
- Sensory Integration Issues
- Vision and Hearing Problems
- Behavior challenges, Lack of confidence
- Undue effort and feelings of overwhelm



Benefits of Motor Activities

- Movement increases the rate of learning and optimizes the brain for alertness, attention and motivation.
- The brain uses the same neurons for thinking as for doing. The more active children are the better they think!
- Acetylcholine and Dopamine released for muscle function stimulates dendritic growth.



More Benefits of Motor Activities

- *BDNF-1* - Makes the brain bloom and resistant to stress
- *ANP* - Tempers the bodies stress response and quiets the mind
- *IGF-1* - Regulates glucose throughout the body (diabetes prevention)
- *FGF-2 & VEGF* - Builds new capillaries and expands the vascular system in the brain. The quality and quantity of learning improves.



Let Us Consider

- Physical development, like language development, flourishes with developmentally appropriate input that works with the baby and child's abilities, interests and the brain in mind.
- To bring out the best we have to understand the global importance of physical development and master movement activities that have been planned with science in mind.



WE WILL ANSWER...

**What We Can Do for Healthy Sensory
Motor Development?**



“Childhood is a particularly crucial time for the brain because of the neural sculpting that goes on; for many of our abilities, tendencies, talents, and reactions, those that get “hardwired” in childhood become the collective mental platform upon which we stand and grow for the rest of our lives.”

Marion Diamond, Magic Trees of the Mind



“If children are so greatly malleable, then the best way to ensure a great society is by improving the environment of its youngest members.”

Lise Eliot, Ph. D., What's Going On In There

“Change the beginning and you change the whole story.”

Foundation for Early Learning, Seattle, WA



Questions?



CONTACTS

Christine Robert

info@nurturingpathways.org

www.nurturingpathways.com

Be Active Kids

info@beactivekids.org

www.beactivekids.org

