



From Sensory Overload to Calm

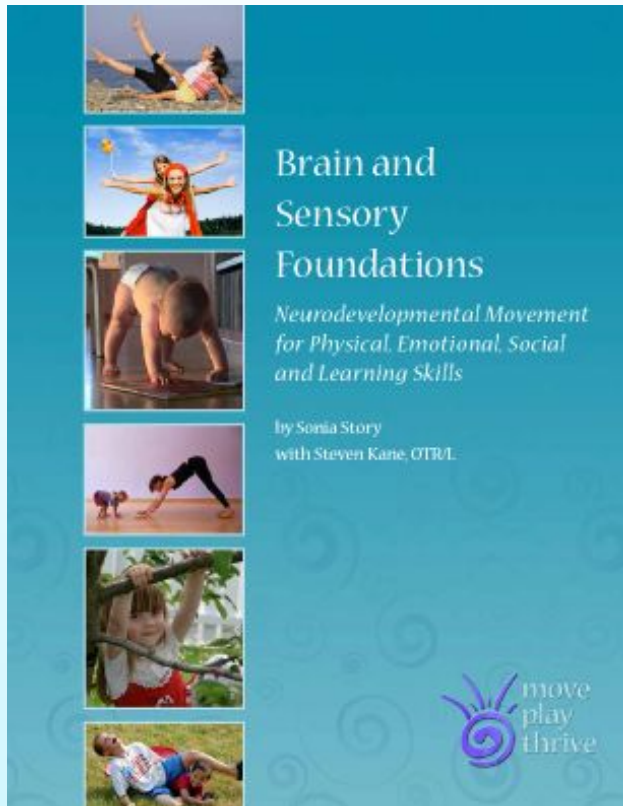
Innate Reflexes and Rhythmic Movements

Presented by
Sonia Story

www.moveplaythrive.com



Teaching Neurodevelopmental Movements



Neurodevelopmental Movement Instructor

- ⦿ Parents and Educators
- ⦿ OTs, PTs, Vision and Speech Therapists
- ⦿ Pain specialists, Trauma specialists
- ⦿ Mental Health counselors
- ⦿ Learning specialists
- ⦿ Healthcare professionals



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Recognizing **quality** in
continuing competence


Bethany

Progress with Sensory, Speech and Learning

This is Bethany biting into an apple.

- ⦿ Before doing the (innate rhythmic and reflex integration) movements from the Brain and Sensory Foundations course it was "near impossible" to get Bethany to bite into something with out first cutting it into small pieces.
- ⦿ She was also reluctant to wear clothing and mostly non-verbal.
- ⦿ Bethany is now eating well, wearing clothes and her speech is improving daily.
- ⦿ Her Mom says, "I'm amazed. The movements have clicked and we are seeing good results that remain over time."

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What is Neurodevelopmental Movement?

Innate movements of womb and infancy



These are REQUIRED, not optional to allow an infant to:

- ◎ Adapt to Gravity
- ◎ Roll, crawl, stand, walk and run
- ◎ Develop sensory processing, brain maturity
- ◎ Ability to speak and learn with ease
- ◎ Have upright posture, strength and stamina
- ◎ Develop emotional and cognitive skills



Neurodevelopmental Movements are **ESSENTIAL** for brain, body and sensory systems.



Hidden Key for resolving anxiety, learning, speech & sensory challenges



Neurodevelopmental movement —
Food the brain, body and sensory systems are starving for.

Which toddlers have brain and sensory maturity established?

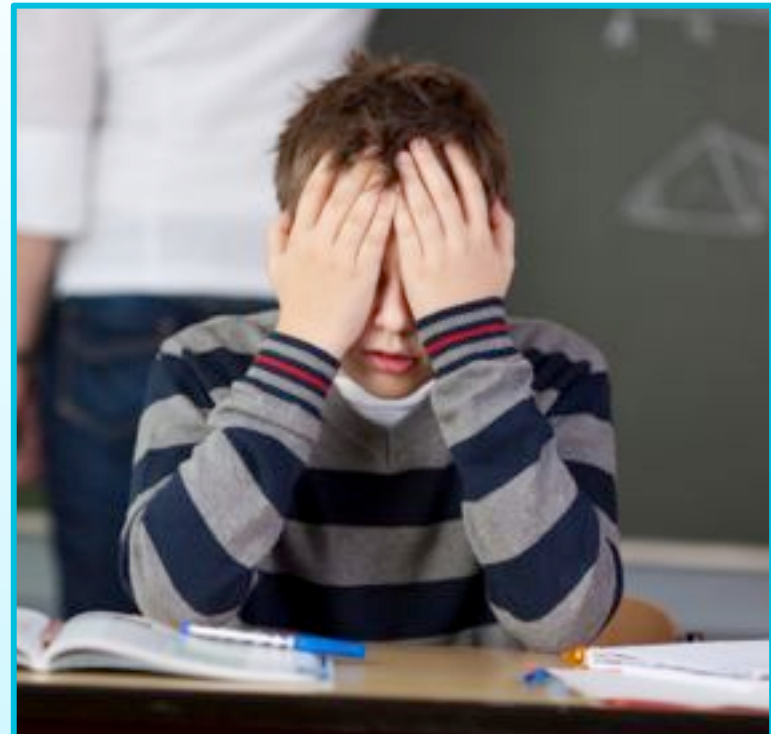
Photos from Kathleen Porter, author of
Healthy Posture for Babies and Children
<https://naturaltothecore.wordpress.com>



Note: on the bottom panel of photos, only the faces of the babies have been changed to protect privacy, the body positions are unaltered and shown exactly as photographed. Photographs are from *Natural Posture for Pain-Free Living* (2013) and *Sad Dog Happy Dog: How Poor Posture Affects Your Child's Health* (2010) by Kathleen Porter. www.naturalposturesolutions.com Used with permission.

Turning off “Fight, Flight and Freeze”

- ⦿ Safety: First step to heal sensory processing issues
- ⦿ Innate Rhythmic Movements
Key—calming and maturing
- ⦿ Reflex integration is key
- ⦿ Joy, play, love, connection
- ⦿ Honoring child’s pace



Help for Behavior Issues

OT is amazed at changes in 6 weeks

I had one of my patients begin doing the rhythmic movements [from the Online Brain and Sensory Foundations course] 6 weeks ago. This child is 8 years old and attends a special school for emotionally and behaviorally challenged children that can't attend regular public education. When he gets frustrated at school, it typically results in a major melt down with hitting, throwing desks and chairs, and yelling. He has had 4-5 adults holding him down on the floor at times. **This boy has not had hardly any behavior or emotional outbursts like I described since he has started doing the rhythmic movements at home or at school.**

He has already made **great gains with balance, coordination, sensory processing, impulse control, and frustration tolerance and it has only been 6 weeks. Amazing!!**



Help for Sleep Issues

Girl, 8 years old with PANDAS

“The first time I started working with my daughter, I did rhythmic movements [from Brain and Sensory Foundations course].

It was amazing.

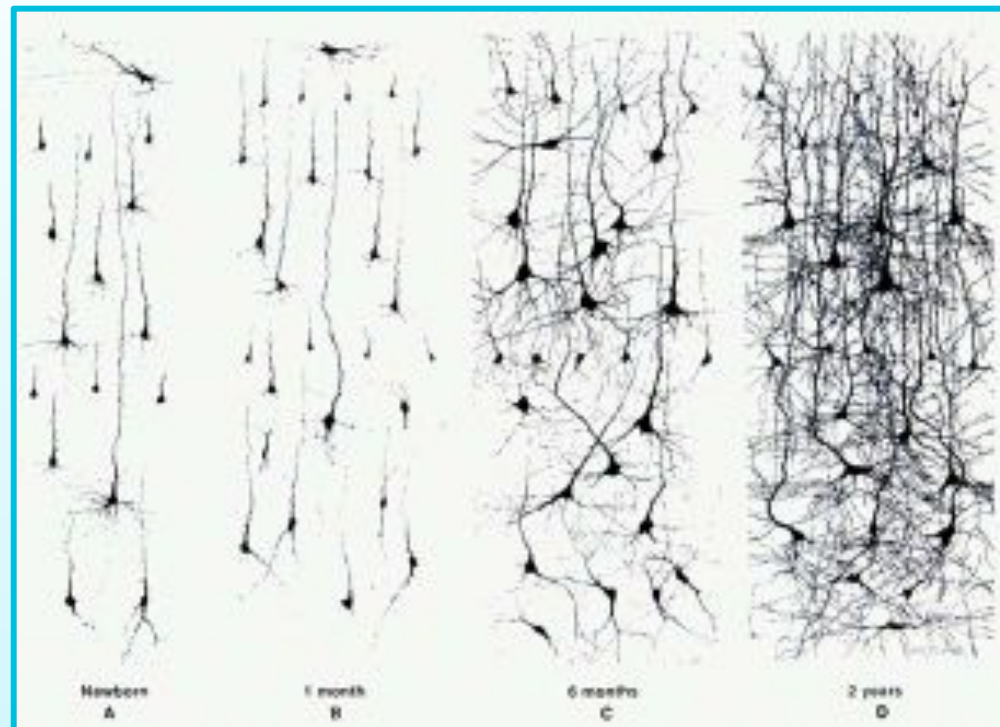
She slept through that first night without waking up. After months, maybe even a year, of not sleeping well and not sleeping through the night, she was able to get her first night of solid sleep.”

S.M., Mom



The Infant's Brain is Undeveloped

- ⦿ The first 2 years of life are crucial for formation of nerve nets
- ⦿ This process does not happen by itself
- ⦿ The brain needs stimulation from the senses for branching off and myelination to occur.
- ⦿ The stimulation the brain receives in the first year of life is fundamental.



Sensory-Motor Input Required for Normal Brain Development

This is WHY Human Begins Come with Innate Movement

Neuropsychol Rev (2010) 20:327–348

DOI 10.1007/s11065-010-9148-4

REVIEW

The Basics of Brain Development

Joan Stiles & Terry L. Jernigan

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essential role in establishing the mature organization of the neocortex. The development of normal brain organization requires input via all of the major sensory systems. When specific aspects of input are lacking, alternative patterns of brain organization can and do emerge. These alternative patterns of organization reflect the effects of altered profiles of neural competition and capture a fundamental property of mammalian brain development, the capacity for plastic adaptation.

The Role of Input on Brain Development

Greenough introduced the term “experience expectant” development to capture the idea that the early experience of the organism plays an essential role in normal brain development, particularly in the early postnatal period (Greenough et al. 1987). Although cortical patterning begins in the embryonic period it remains malleable for an extended period of time. Typical, expected, postnatal experience is necessary for the emergence of normal patterns of neocortical organization. When that input is lacking brain areas develop differently, and the specific

Sensory Processing Issues

A sign of brain, body and sensory-motor immaturity

- ⦿ Hindrance in the womb, at birth, in infancy, toddlerhood, childhood
- ⦿ Or, illness, injury, trauma, exhaustion, at any age



Sensory and Motor Issues Are Connected

Both are a core characteristic of ASD

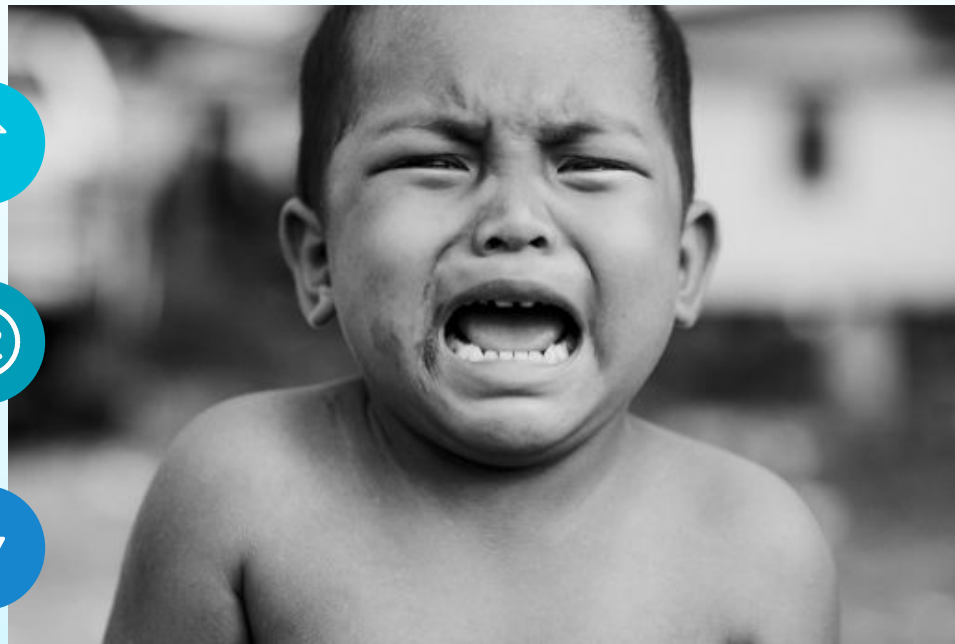
Do NOT have to be permanent



But TOUGH to “grow out of”



Neurodevelopmental
Movements work for ALL ages



Retained Reflexes Result in Sensory Challenges



Case Study: Finn

Amazing Turnaround in 9 months, Terran Daily, OT

Within about a month, Finn was able to tolerate the buzz cutter on his entire head, but he was still afraid of the vacuum cleaner.

Mom continued with rhythmic movement over the summer, and we recently added integration of the fear paralysis and Moro reflexes.

Now look—Finn is the one vacuuming!

Finn was completely dependent in dressing. Now he can dress himself, apart from some closures.

When we started, Finn was unable to isolate finger movements and held his pencil in a dagger grasp. Now he can touch each fingertip to his thumb, and he holds his pencil in a good tripod grasp.

In January, he could sit in circle time about 30 seconds before he began throwing things and crawling over the other children. He can now usually participate meaningfully in group activities for 30-40 minutes, taking turns, following instructions and respecting other children's space.

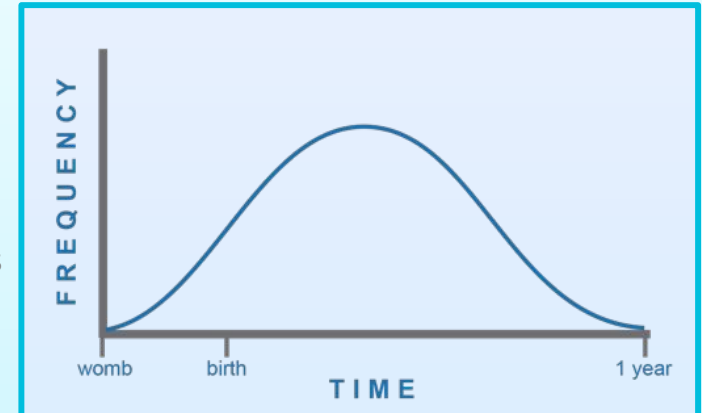


Primitive Reflexes

Definition and Lifecycle



- ⦿ Innate, automatic movement pattern in response to a specific stimulus
- ⦿ Reflexes help with survival, protection, sensory integration, brain growth & development
- ⦿ Primitive infant reflexes are designed to
 - Emerge
 - Repeat until integrated (jobs are complete)
 - Become dormant—inhibited by higher brain centers
 - Dormant means: no longer triggered by the initial stimulus



Importance of Reflex Integration—Jobs



BRAIN and NERVES

Reflexes develop the brain and nerve networks to “link up” the brainstem and cerebellum with mid-brain and neocortex.



SENSES

Reflexes provide stimulation necessary for development of Tactile, Vestibular, Proprioceptive, Visual and Auditory Processing



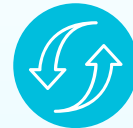
BALANCE and POSTURE

Ability to be upright, free of tension.



MUSCLE TONE

Muscle Strength, Stamina



MOVEMENT and MOTIVATION

Develop volitional movement with coordination. Relates to motivation & moving forward to attain goals.



EMOTIONAL and SOCIAL SKILLS

Learning to manage the emotions, control impulses and get along with others



LEARNING SKILLS

Reflexes develop the foundation for learning skills.

Possible Challenges with Un-integrated Reflexes



- ⦿ Sensory Processing Disorders
- ⦿ Body parts do not move independently—brainstem “static”
- ⦿ Anxiety, Frustration
- ⦿ Muscle aches and tension, fatigue—too much effort to move, do tasks—hinders learning.
- ⦿ Lack of solid neuro-sensory-motor-vestibular foundation—prevents brain from maturing properly

Research: Motor Issues Are Core Characteristic of ASD and ADHD



- ⦿ Decades of research
- ⦿ “Retained Primitive Reflexes in ADHD and ASD among Children in an Inpatient Psychiatric Setting”
- ⦿ Research by Dr. Khiela Holmes, PhD, Pamela Handloser, OTR/L and Diane Hanley, OTR/L University of Arkansas for Medical Science, Psychiatric Research Institute, Little Rock, AR, June 2016.
- ⦿ **“90.3% of the sample had at least one retained reflex present”**

Research: Motor Deficits in ASD linked to Specific-Language and Social Impairment

⊙ Motor Deficits in Children with Autism Spectrum Disorder: A cross-syndrome study

⊙ Martin McPhillips, Jennifer Finlay, Susanne Bejerot, Mary Hanley

⊙ [Autism Res. 2014 Dec;7\(6\):664-76. doi: 10.1002/aur.1408. Epub 2014 Sep 24.](#)

correlation between the General Communication Composite (GCC) and MABC-2 scores for the ASD and SLI groups. This suggests that overall language communication skills may be more related to basic motor skills than isolated, specific elements of language, such as receptive or expressive vocabulary. It also provides further evidence that language functioning in children with ASD and children with SLI is closely related to the attainment of basic motor skills.

Help for Speech

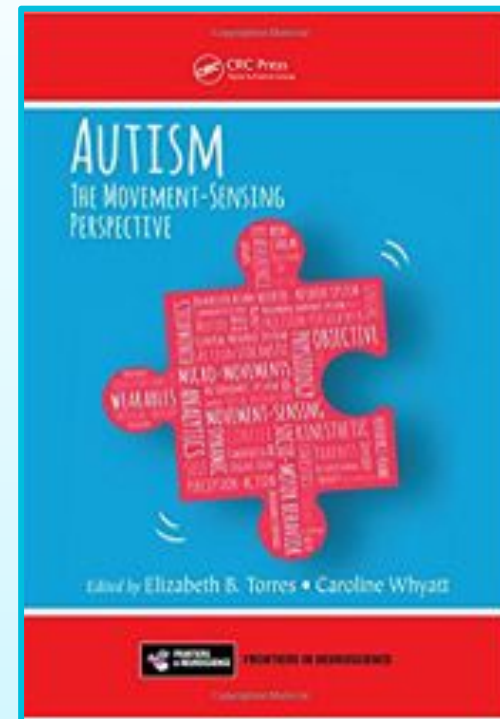
Jacob, age 6

After 4 months of rhythmic movement and reflex integration, Jacob, age 6, who was non-verbal with only moaning vocalizations, began saying clearly things like: “May I please go to the bathroom.”



Autism: the Movement-Sensing Perspective

- ① Movement-Sensing
- ① Therapeutic interventions ideally should build on core principles of neurodevelopment.
- ① Elizabeth Torres and Caroline Whyatt, Editors



Moro Reflex

Another Hidden Key to Sensory Challenges

- Startle reflex, brainstem
- Begins in Utero
- Continues after birth
- Alerts Caregiver
- Arouses survival mechanisms
- Fight or Flight response
- Increases adrenaline, cortisol
- Should be integrated by 4 mo. Is reactivated with trauma, illness, injury
- Lack of integration = many challenges in functioning



When Moro reflex is retained

- Sensory processing challenges
- Poor impulse control
- Poor focus, learning challenges
- Poor digestion
- Sleep challenges
- Speech challenges
- Inability to be still
- Anxiety/Depression
- Emotional-Social challenges
- Lack of core strength/weak muscles



Help for Anxiety and Phobias



- ◎ Boy—7 years old, with Trisomy 21 (Down Syndrome), photo and description from his mother. (Some English is corrected. English is second language)

Changes in the client before and after session:

Less impulsive actions

More focus and attention

Better body coordination

Before he couldn't hold bubbles as he had a fear of them since he was 2 years old. Even if someone else plays with bubbles he leaves the room immediately, but after 2 sessions of rhythmic movements he was able to play with bubbles on his own. When I asked him "Do you love bubbles?" he said, "Yes". He was surprised too that he could play with them

Tried Reflex Integration Before?



- ◎ Most effective neuro-sensory-motor integration includes:
- ◎ Individualized approach, joy, play, connection
- ◎ Innate Rhythmic Movement
- ◎ Innate reflexes, *primitive and postural*.
- ◎ *It is not enough to just crawl or repeat movement patterns!*
- ◎ *It is not enough to have a “sensory diet” and/or behavior therapy*

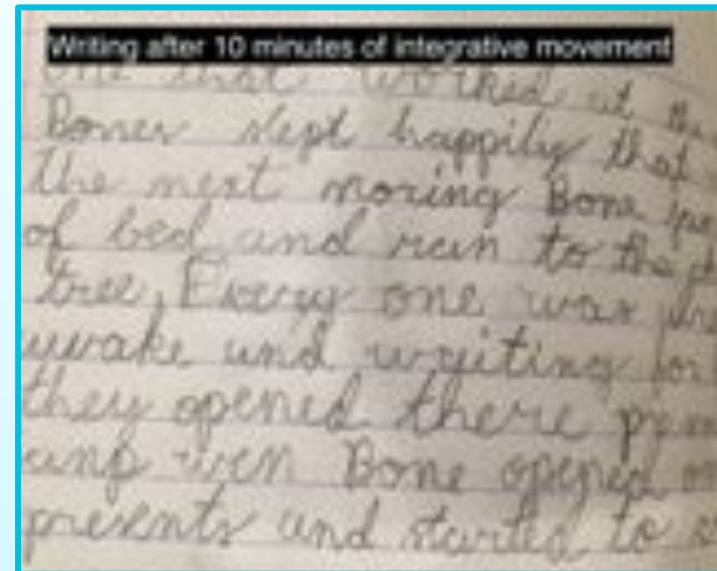
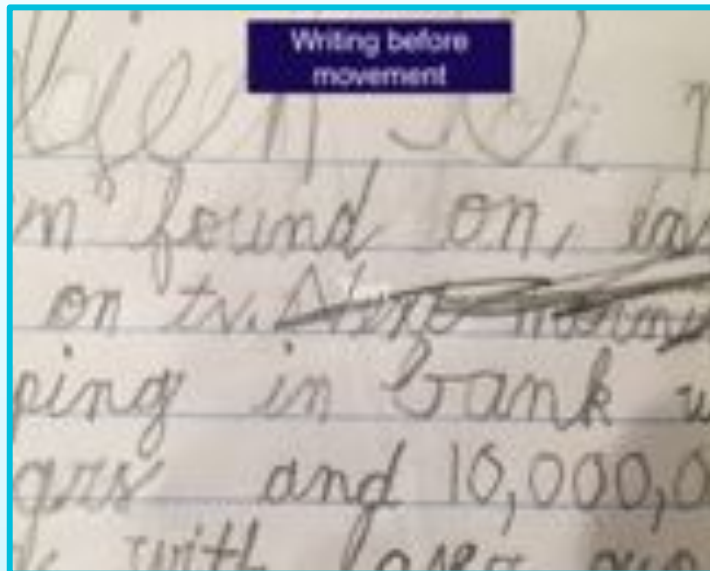
Supporting Research



- © Infantile Reflexes Gone Astray in Autism Philip Teitelbaum, Osnat B. Teitelbaum, Joshua Fryman, and Ralph Maurer (2004)
- © “ . . . movement disturbances in infants can be interpreted as reflexes gone astray and may be early indicators for a diagnosis of autism. In the children reviewed some reflexes persist too long in infancy, whereas others first appear much later than they should.”

Neurodevelopmental Movement Calms, Organizes & Matures, Brain and Sensory Systems

Before and After—student of Nina Gallwey
Siskiyou School, Ashland Oregon



Neurodevelopmental Movement Calms, Organizes & Matures, Brain and Sensory Systems

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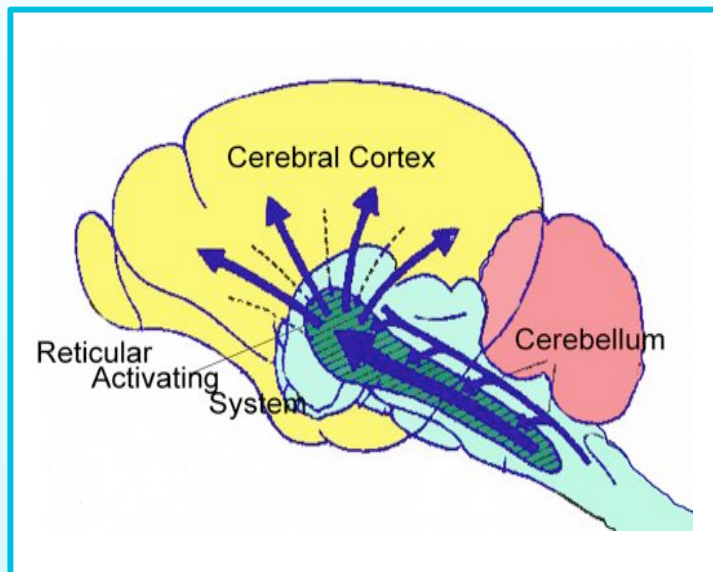
Neurodevelopmental Movement Calms, Organizes & Matures, Brain and Sensory Systems

Before and After—from Kyle, 5 years old.
Submitted by his mother, a physical therapist

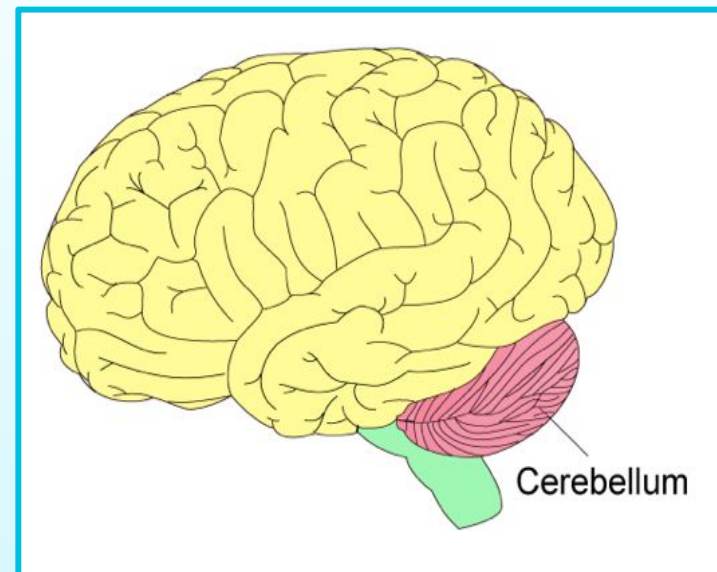


Rhythmic Movements for Brain Connectivity

Stimulation of the RAS and Cerebellum grows the brain & develops the nerve networks to “link up” the brain.



The RAS receives sensory information—tactile, visual, balance, proprioceptive, auditory—and relays it to the Cortex. Responsible for “wakefulness” alertness, attention



The Cerebellum is responsible for many motor and cognitive functions. It is 10% of brain volume and holds nearly 80% of the brain’s total neurons.

What Builds the Brain?

Neurodevelopmental Movements provide most DIRECT and quickest access to the Brain and CNS



Decrease Stress



Increase Learning

Neurodevelopmental Movement

BDNF = Brain Derived Neurotrophic Factor

Why does Neurodevelopmental Movement work?



- ⊙ These are the same movements that develop the brain and sensory systems of all humans in the first place.
- ⊙ The brain recognizes and responds to these innate movements.
- ⊙ Doing neurodevelopmental movement 'reboots' and develops the brain and sensory system at ANY age.
- ⊙ Neuro-movement diminishes the Fight or Flight response



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