WELCOME!

Reflex Integration and Why Movement Matters

Building the foundation for well-being, with reflexes, rhythmic movements and developmental movements

with Sonia Story
www.moveplaythrive.com
Child with Challenges

Many Children Struggle with

• frustration
• lack of focus
• impulse control
• difficulty learning, speaking, socializing
• intense emotional outbursts
• sensitivities to touch, sound, light, motion, smells
• inability to be still

Many children are not physically or neurologically ready to accomplish the tasks we ask of them—i.e. they do not have the brain maturity required
Why are Neurodevelopmental Movements Unique?

- Neurodevelopmental movements are the innate, involuntary movements that emerge in womb life and infancy.
- Neurodevelopmental movements are the ‘template’ that builds the neuro-sensory-motor system (NSM system).
- Most of these movements originate in the brainstem.
- Reflexes, Rhythmic Movements and Developmental movements.
- The brain RECOGNIZES these movements.
- This NSM system is the foundation for sensory processing and future learning, social, emotional and physical skills.
Dr. Bruce Perry—applying the principles of neurodevelopment to clinical work with traumatized children

Trauma can alter a child’s brain in enduring emotional, behavioral, cognitive, social and physical problems

Therapeutic experiences can help with the healing, recovery and restoration of brain function—as long as they are in alignment with a neurosequential model in alignment with the sequence of normal development.

Music and movement activities that provide patterned, repetitive, rhythmic stimulation of the brainstem are very successful


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Change from the Inside Out

Many strategies for helping children involve trying to create change from the outside in

- Drugs for focus and behavior changes
- ABA-for behavior
- Seating discs for focus
- Remedial reading, math, tutoring, aides
- Timers, ‘wait’ cards, for sitting still
- Exercise bands to fidget with
- Weighted vest to help with focus, sitting still

Neurodevelopmental movements create change from the inside out. The brain, nervous system, sensory and motor systems mature naturally through movement.

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3 Main Ideas to Remember

Poor Sensory Processing can be highly STRESSFUL and uncomfortable.

We need to:
• Calm
• Organize
• Mature
the brain and sensory systems.

If our movement is not calm, organized and mature, then our BRAIN and sensory processing systems are not calm, organized and mature either. We can use movement to calm, organize and mature the brain and sensory systems.

- Neurodevelopmental Movements provide the foundation for calm, organized and mature sensory processing which leads to skills such as:
  • Attention/Focus
  • Learning ease
  • Impulse control
  • Visual and auditory skills
  • Memory
  • Emotional maturity
  • Physical strength and posture
Neurodevelopmental Movements are fundamental to building our structural alignment, core strength—and brain maturity

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
Sitting Then
Sitting Then
Sitting Now
Sitting Now
Standing Then
Standing Now
Standing Now
Kathleen Porter

- Photo credits


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- Which children will have movement that is calm, organized, flowing, mature?
Example Change from the inside for sleep, anxiety and sensory issues

Anxiety is lowered in children who do balance exercises

Gabriel—Sleep is greatly enhanced by rhythmic movement, reflexes and play.

Example: Dylan, Brushing teeth

Before and After Video shows disorganized effortful movement changing to organized, smooth movement
—Carol E. Marusich, OD, MS, FCOVD

Integration of Primitive Motor Reflexes: Why Should I Care? DVD
Definition of a Reflex

- 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
- Some reflexes are lifelong, postural reflexes
Importance of Reflex Integration

• **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.
Poor posture and Un-integrated Reflexes are a sign of brain immaturity

- The degree to which reflexes are un-integrated can vary greatly from mild to severe.
- Reflex activity that is not integrated can adversely affect quality of physical, cognitive, social and emotional function.
- “Locked” in the system.
Possible Challenges with Un-integrated Reflexes

- Reflexes are the building blocks of the neuro-sensory-motor system—without the foundation there can be learning, social-emotional, and behavioral challenges.

- Keeps the “survival brain” (brainstem) active—child is more likely to have impulse control issues and emotional reactivity issues.

- Nervous system is immature and in a ‘raw’, vulnerable state.

- “Fight or Flight” response is triggered leading to chronic stress, health challenges.

- Sensory Processing Disorders.

- Body parts do not move independently—brainstem “static”.

- 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.

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### Possible Causes of Un-Integrated Reflexes

- **Lack of Movement**—Plastic car carriers, walkers, jumpers, swings, baby seats, "Boppy" pillow and other propping devices. Lack of time spent on belly.

- **Injury, Illness, Trauma, Chronic Stress, Exhaustion**—stressful pregnancy, birth or infancy—includes C-Section birth

- **Electromagnetic Frequencies**—cell phones, cordless phones, Sonograms (Ultrasound)—interfere with womb reflexes and development

- **Environmental Toxins**—heavy metals, endocrine disruptors, GMO foods, hidden MSG in food, aspartame and other food additives, plastics, pesticides, herbicides, fragrances and other neurotoxins.

- **Dietary Imbalances or sensitivities**—Improper gut flora, leaky gut.

- **Vaccine Trauma**—physical trauma in early infancy can trigger, FPR and Moro Reflex

- **Trauma**—later in life can re-activate dormant reflexes even if they were integrated
The first 2 years of life are crucial for formation of nerve nets that link up the brain. This process does not happen by itself. The brain needs stimulation from the senses for branching off and myelinization to occur. The stimulation the brain receives from being touched, rocked and by rhythmic baby movements in the first year of life is fundamental for future maturing of the brain.
Rhythmic Movement Training

RMT is a combination of rhythmic movements and primitive reflex integration movements derived from the movements babies do in the womb and early infancy.

Infancy is the time in our lives when the brain grows the fastest.

Brain growth is driven by neurodevelopmental movements.

- Kerstin Linde
- Harald Blomberg, MD
- Moira Dempsey
History and Results

Rhythmic Movement Training

- Mary Gazca, dissertation for Master’s Degree, St. Catherine University
- Rebooting Development with a Rhythmic Motor Intervention, May 2012
- Evaluative online survey of 1695 individuals using RMT for 3 months minimum with children with developmental disorders

<table>
<thead>
<tr>
<th>Reducing Distractibility</th>
<th>Increasing Attention/focus</th>
<th>Increasing Ability to complete tasks</th>
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<tbody>
<tr>
<td>85.8% agree</td>
<td>92.1% agree</td>
<td>86.8% agree</td>
</tr>
<tr>
<td>Reducing sensitivity to sound</td>
<td>Reducing sensitivity to touch</td>
<td>Reducing sensitivity to motion</td>
</tr>
<tr>
<td>57.2% agree</td>
<td>77.3% agree</td>
<td>76.3% agree</td>
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</tbody>
</table>

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## History and Results

### Rhythmic Movement Training

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<table>
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<tr>
<th>Improving Balance</th>
<th>Improving Motor Coordination</th>
<th>Integrating Primitive Reflexes</th>
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<tbody>
<tr>
<td>89.6% agree</td>
<td>92.3% agree</td>
<td>93.1% agree</td>
</tr>
<tr>
<td>Relaxing muscle tension</td>
<td>Reducing anxiety</td>
<td>Reducing aggression</td>
</tr>
<tr>
<td>94.8% agree</td>
<td>87.5% agree</td>
<td>78% agree</td>
</tr>
</tbody>
</table>

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Rhythmic Movements for Brain Connectivity

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

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

The Cerebellum is responsible for smooth, rhythmic movement and is active in the process of making learning automatic.

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Effects of Rhythmic Movement Training™

- Rhythmic Movements stimulate & integrate the sensory systems

- Rhythmic Movements develop & mature the brain

- The Magic of Brain Connectivity—Impulse control, attention, emotional maturity, sitting still—brain maturity, is required for all of these. RMT matures the brain by building connections!

- Healing the brainstem allows other therapies to ‘take hold’.
Research Summary

Retained Reflexes go Hand in Hand with ADHD


- “Results indicated that boys diagnosed with ADHD had significantly higher levels of reflex retention than non-diagnosed boys.”

- Results also indicated direct and indirect relationships between retention of reflexes with ADHD symptoms.
Research Summary
Retained Reflexes go Hand in Hand with Learning Challenges


  • “It was found that ATNR persistence was significantly associated with level of attainments in reading, spelling and mathematics . . .”

• Barbara Rider, 1971, University of Kansas—

  • “Significantly more abnormal reflexes in the learning disabled group than the normal group.”

• Miriam Bender, University of Purdue—

  • STNR was present in 75 percent of a group of children with learning disabilities, but not present in any of the children without a history of learning disabilities.
Research Summary 3
Does Neurodevelopmental Movement Help? YES!

  
  “It was found that the movement intervention programme had a very significant impact on reducing the levels of ATNR persistence . . . Associated with very significant improvements in reading and mathematics, in particular.”

Double Blind, Placebo Controlled Study:

  
  The greatest improvement in reading occurred in the experimental group that received the reflex integration training. Writing speed also improved in the experimental group.
Fear Paralysis Reflex

Early Uterine Reflex—ideally integrated before birth

- **Fear Paralysis Reflex**
  - Stimulated by fearful or unexpected events such as:
  - Restraint of movement; sudden noise; separation from mother, sudden change of environment

Movement Pattern—Frozen rabbit, deer in headlights, animal ‘playing dead’
- Freezing reaction, immobility, panic
- Abnormal decrease in heart rate and breathing and or breath holding
- Sometimes a rapid withdrawal from touch; tightening of jaw and eye muscles; sometimes rapid blinking or curling into a frozen fetal position.
Fear Paralysis Reflex

- **Possible Challenges with Un-Integrated FPR**
  - Underlying anxiety, fears, phobias or constant overwhelm
  - Low tolerance to stress or change
  - Perfectionism, frustration, emotional outbursts
  - Loss of focus, difficulty making eye contact
  - Extreme shyness, fear in groups/extreme self-consciousness, low self esteem
  - Motor paralysis in stress
  - Rigidity, inflexibility, challenges with transitions
  - Obsessive, oppositional or aggressive behavior
  - Elective mutism
Moro Reflex—Startle Response

Also called “Infant Startle Reflex”

- Emerges in utero, matured at birth and should be integrated at the age of 3-4 months.
- Stimulation—Sensory input from various sources can trigger a Moro reflex
- Movement Pattern—Rapid opening and upward motion of arms and legs with sharp intake of breath & momentary freeze.
- Arms and legs return to flexed position, breath is released usually with a cry
Moro Reflex

- **Stimulated by Sudden Sensory Input**—loud noise, bright light, sudden change in position, unexpected touch, intense odor

- **Functions of Moro**
  - First fight or flight response
  - Arouse & protect the baby; alert caregiver
  - Plays a part in developing breathing

- **Physiological Responses of Moro and Fight or Flight response**
  - Adrenaline and cortisol are released
  - Increase breathing rate
  - Increase in heart rate
  - Increase in blood pressure
  - Blood goes to limbs and away from digestive organs

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Possible Challenges with an Un-integrated Moro Reflex

- Sensory Issues—Hyposensitivity or Hypersensitivity to some or all sensory stimuli—sounds, light (big pupils), touch, vestibular input/motion, smells
- Continuous stress and overwhelm
- Chronic muscle tension
- Adrenal exhaustion; chronic fatigue
- Poor balance
- Poor stamina
- Social challenges, withdrawal, shyness
- Easily triggered/overreact in anger or emotional outbursts
- Immune and digestive challenges

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Neck Reflexes—stimulated by movement of head

- Examples of Neck Reflexes
Functions of Neck Reflexes

- Ability to adapt to gravity
- Head control
- Development of balance, vision and hearing
- Increases and organizes muscle tone
- Development of proprioception
- Development of vestibular system
- Coordination and posture
- Development of laterality and midline awareness
- Eye-hand coordination
Possible Challenges with Un-integrated Neck Reflexes

- Balance and coordination problems
- Shrunken posture/Fatigues Easily
- Weak muscle tone or tight muscles; over flexible joints
- Visual Challenges—Difficulty judging distance, depth, space and speed, possibly, cross-eyed
- Fear of Heights; Difficulty with stairs, escalators
- ‘W’ sitting
- Stiff jerky movement
- Toe Walking
- Difficulty following directional or movement instructions
- Handwriting challenges
- Poor processing, poor specialization and poor communication between hemispheres
- Messy eater; clumsy, prone to accidents/injury
- Headaches from chronic muscle tension
Tactile Reflexes—stimulated by touch
Functions of Tactile Reflexes

- Vestibular development
- Help with birthing, spine/back/hips movements
- Development of use of hands, mouth, nursing and later, self feeding
- Development of Brain Pathways
- Important for articulation
- Development of pleasure and joy associated with eating and using the mouth
- Develop brain pathways and muscles of the feet for crawling, standing walking, running
Possible Challenges if Tactile Reflexes are un-integrated

- **Spine**
  - Restlessness, hyperactivity
  - Fidgeting, difficulty sitting still
  - Hypersensitivity to touch
  - Bedwetting past 5 years of age
  - Scoliosis when active on one side only
  - Unbalanced walk, leg tension, may hinder other reflexes
  - Rigid lumbar spine in older children & adults

- **Hands**
  - Poor Fine motor skills—Hindrance in ability to use hands—weakness of hand muscles
  - Cramping in hands while writing
  - Movements of hands and mouth are connected
  - Challenges with articulation; speech difficulties; difficulties to perceive sound
  - Compulsive chewing, nail biting, addictions

- **Feet**
  Possible Challenges—difficulty walking, running; foot cramps; balance issues; poor coordination; toe walking; tension in feet, ankles, hips, back; walking on outside or inside edges of feet.
Where To Learn More

• Attend an Online Class—Brain and Sensory Foundations, taught by Sonia Story go to www.moveplaythrive.com for information

• Attend or sponsor a Live Class—Rhythmic Movement Training and/or Brain and Sensory Foundations go to www.moveplaythrive.com

• Visit www.rhythmicmovement.com to find a class and/or RMT provider near you
What you can do now.
Get down on the floor!

- Gentle rhythmic rocking movements—do the type and amount your child prefers.
- Floor play, move like animals
- Especially do games on the belly—such as rolling balls to one another while prone
- Playful developmental movements—rolling, rocking, belly crawling, hands-knees crawling
Playful Developmental Movements
Where To Learn More

Read *Movements That Heal*, by Harald Blomberg, MD and Moira Dempsey—order at [www.rmtsupport.org](http://www.rmtsupport.org)

Read books by Sally Goddard Blythe, *The Well Balanced Child* or *Reflexes, Learning and Behavior*—order at [www.rmtsupport.org](http://www.rmtsupport.org)
Thank you for your interest

• Begin now!

• Tell your community and friends.

• Give your children one of the best gifts—a calm, mature and organized neuro-sensory-motor system.