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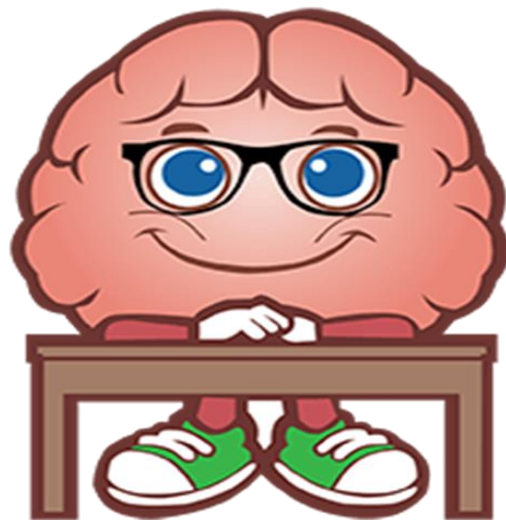
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Primitive reflexes and health



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Content

Primitive reflexes

- **Definition**
- **Development**
- **Reflex arch**
- **Issue of concern**
- **Primitive oral reflexes**
- **Primitive general reflexes**
- **Un integrated reflexes**
- **Retained Primitive Reflexes as a Sign of Brain Imbalance**
- **Causes of Retained Primitive Reflexes**

Primitive reflexes

Primitive reflexes are involuntary motor responses originating in the brainstem present after birth in early child development that facilitate survival. Several reflexes are important in the assessment of newborns and young infants.

These central nervous system motor responses are eventually inhibited by 4 to 6 months of age as the brain matures and replaces them with voluntary motor activities but may return with the presence of neurological disease



Primitive motor reflexes begin developing in utero. Under optimal circumstances

reflexes “initiate” during the appropriate stage of the child’s development

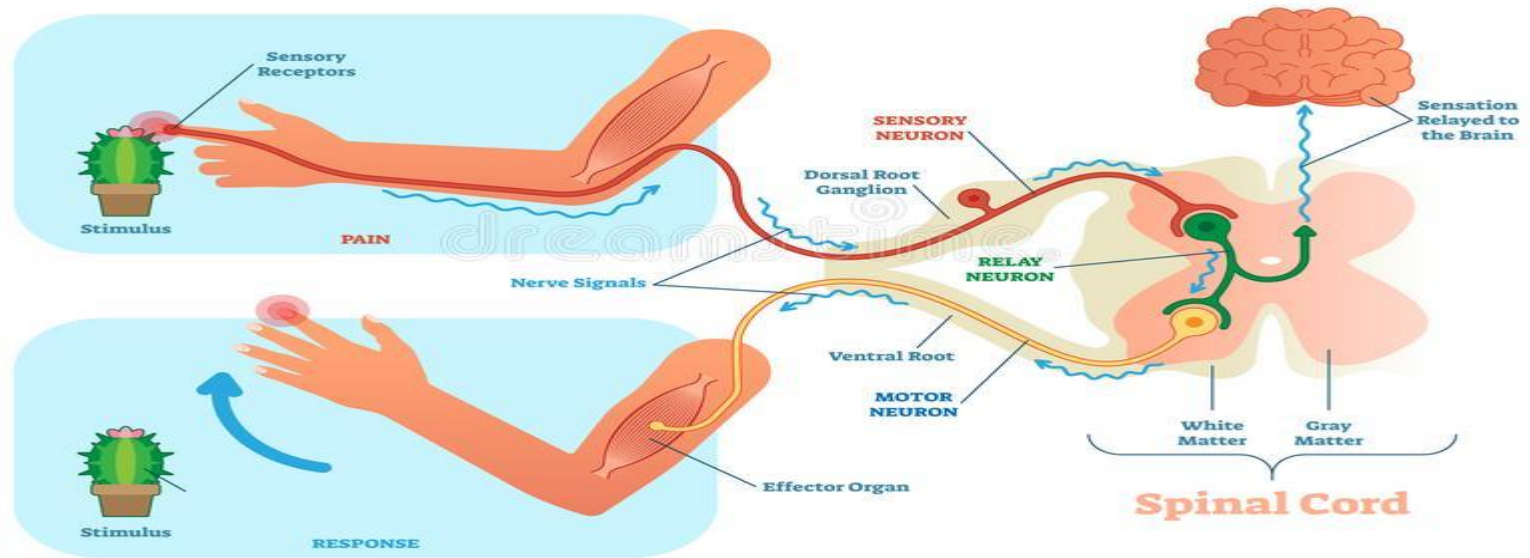


“integrate” themselves as a fully functioning reflex

and then “inhibit” or fall away when it’s time to move on to the next developmental stage.

If the reflexes remain, they interfere with the neurological organization of the brain which causes learning, behavioral, social, sensory and health problems. These remaining reflexes are unnoticed muscle movements in older children and adults that would not normally be noticed if one did not know what to look for. They cause ongoing issues until they are solved through exercises.

REFLEX ARC



A reflex arc is a neural pathway that controls a reflex. In vertebrates, most sensory neurons do not pass directly into the brain, but synapse in the spinal cord.

This allows for faster reflex actions to occur by activating spinal motor neurons without the delay of routing signals through the brain.



Issues of concern



Primitive reflexes are necessary for newborn survival, and abnormal reflexes can be a sign of central nervous system dysfunction.

it is important to understand how to correctly elicit these responses for early diagnosis of possible lifelong complications.

The adult reemergence of primitive reflexes indicates the potential for several brain pathologies. These may be seen in the normal adult but require further exploration if pathology is suspected.

Primitive oral reflexes

There are reflexes that help the infant with feeding. Most of these reflexes “integrate” or “disappear” within the first year of life or shortly thereafter.

Two of these reflexes, the swallowing reflex and the gag reflex, continue throughout the life.



The sucking reflex



is important for coordination with breathing and swallowing. It is observed when the oral region is stimulated or an object is inserted into the mouth and is first seen at 14 weeks gestation.



This reflex is initiated when you place your finger, bottle nipple, or breast nipple in mouth. Suckling is the front to back movement that seals and unseals the back 1/3 of the tongue.

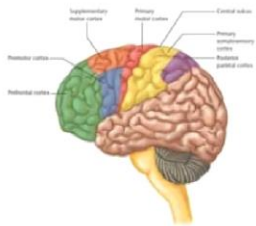


Primitive reflexes are important in the newborn neurological examination.



An absent or abnormal sucking reflex is an indirect indicator of neurological maturity in newborn infants.

Cortical areas involved in motor control



When an abnormal sucking reflex is associated with other signs of CNS involvement, it suggests basal ganglia or brainstem dysfunction



Oral primitive reflexes are necessary for newborn feeding. Lactation specialists and neonatal nurses should understand these reflexes to help identify early problems with infant feeding



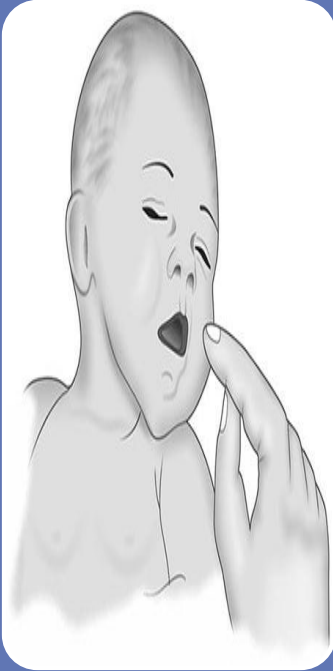
The nursing staff needs to be aware of the reappearance of primitive reflexes in the elderly population.



The sucking and snout reflexes were associated with an increased risk of malnutrition in nursing home residents and put them at greater risk of aspiration pneumonia

The rooting reflex

When the infants cheek is stroked or bringing an object into the infant's visual field.



Turning the head toward the stimulus and start sucking

When corner of the mouth is touched lower lip is lowered and the tongue move toward the stimulus

When the finger slide away ,head turns to follow it

This helps the infant locate the breast for nursing

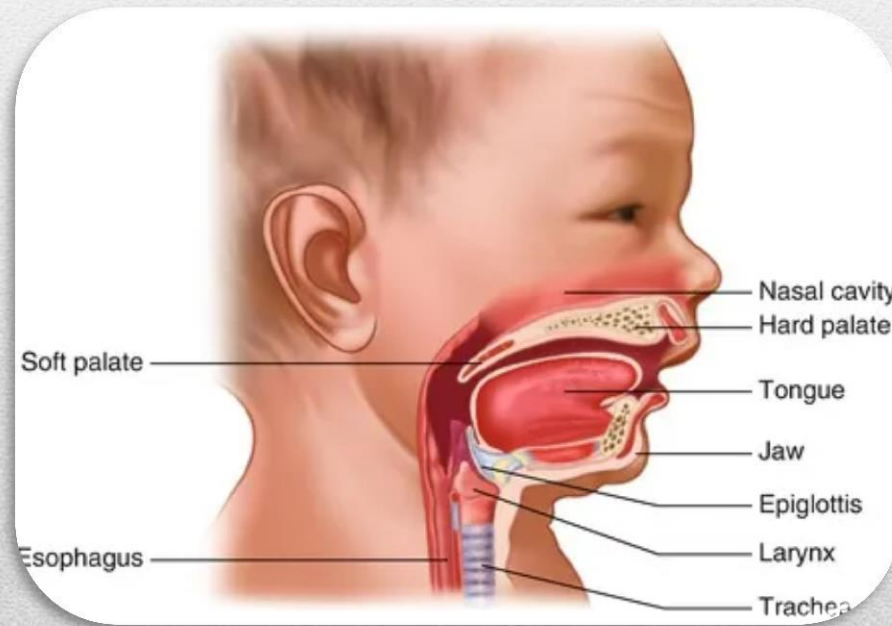
The rooting reflex assists in the act of breastfeeding.

Retention of the rooting reflex beyond four months may result in difficulty with solid foods, poor articulation, and thumb sucking.



Swallowing Reflex

The swallow is initiated when food, liquid, or saliva reaches infant's throat. Infant comes under control of this reflex and it continues as an important reflex throughout lives.



The gag reflex

Protects the baby's airway from swallowing items that are too large.

infant's gag reflex is located in the front of the tongue and "moves" back to the back $\frac{1}{4}$ of the tongue with experiences in the mouth. The gag reflex continues throughout lives.



The general body reflex

Moro reflex



acts as a baby's primitive fight/flight reaction and is typically replaced by the adult startle reflex by four months. The Moro reflex is a protective response to the abrupt disruption of body balance and is elicited by pulling up on the arms with an infant in the supine position.

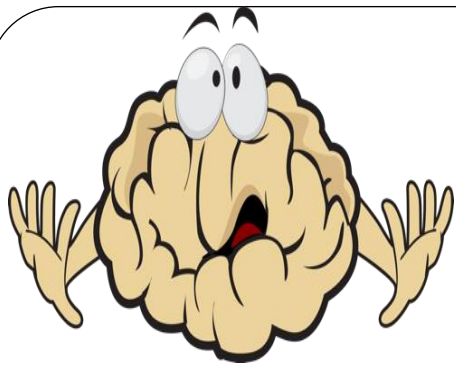
It is a response to a sudden loss of support and involves three distinct components:

spreading out the arms (abduction)

pulling the arms in (adduction)

crying (usually)





It is distinct from the startle reflex but unlike the startle reflex, the Moro reflex does not decrease with repeated stimulation

The startle response is a largely unconscious defensive response to sudden or threatening stimuli, such as sudden noise or sharp movement, and is associated with negative affect

Absence of the Moro reflex in newborn infants is abnormal and may indicate an injury These include a birth injury, problems with the brain, or general muscular weakness.

If a child experiences a retained Moro reflex beyond 4 months, he may become

over sensitive and over-reactive to sensory stimulus resulting in poor impulse control

sensory overload, anxiety and emotions

social immaturity

motion sickness

poor balance, poor coordination, easily distracted

unable to adapt well to change, and mood swings.



Asymmetrical tonic neck reflex (ATNR)

The asymmetric tonic neck reflex is performed by manual rotation of the infant's head to one side. The infant will extend its arm to the side of the rotated face and flex the contralateral arm. This reflex serves as a precursor to hand-eye coordination and should stop by six months.



Palmar grasp reflex

When an object, such as an adult finger, is placed in an infant's palm, the infant's fingers reflexively grasp the object. Placement of the object triggers a spinal reflex

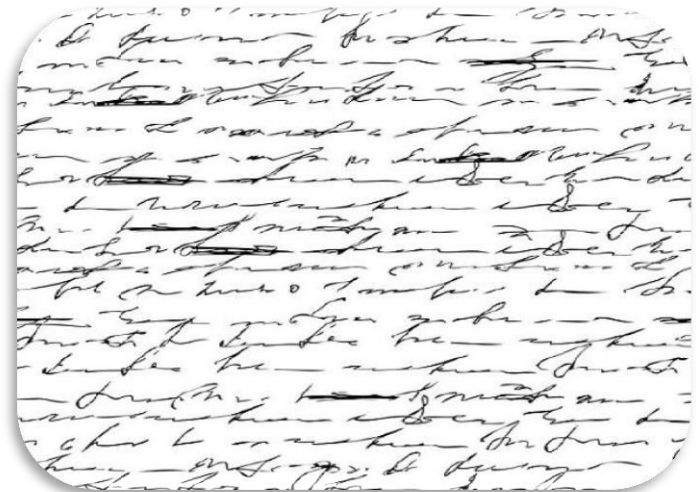


If the palmer reflex is retained, a child may have difficulty with fine motor skills

stick out tongue while writing



exhibit messy handwriting



Plantar reflex

The Babinski reflex is a sign of neurological abnormality (e.g., upper motor neuron lesion) in adults.[20]



The Babinski reflex

involves the stimulation of the lateral foot resulting in dorsiflexion of the great toe and fanning of the other toes



Walking/stepping reflex

The walking or stepping reflex is present at birth, though infants this young cannot support their own weight. When the soles of their feet touch a flat surface they will attempt to walk by placing one foot in front of the other. This reflex integrates around 2 months as infants start attempting to walk after this reflex disappears



Step
reflex

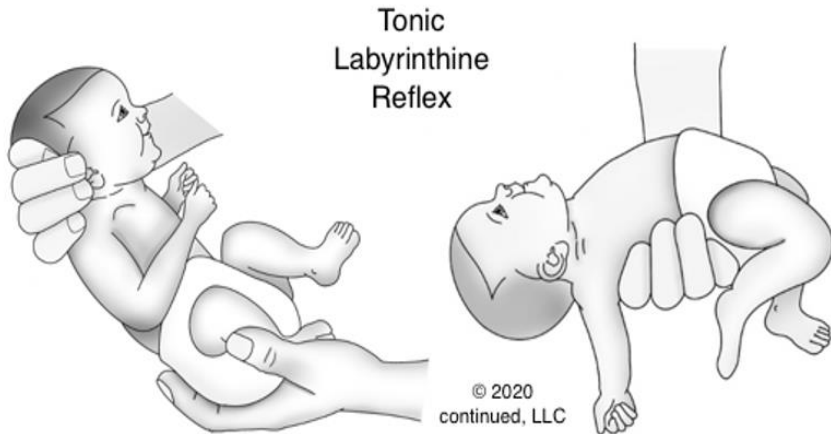
Stepping Reflex



Tonic labyrinthine reflex (TLR)

is the basis for head management and helps prepare an infant for rolling over, creeping, crawling, standing, and walking.

In the prone position, the baby will flex the neck and limbs.
In supine position, the baby will extend the neck and limbs.



The tonic labyrinthine reflex (TLR) If retained, the TLR can lead to poor muscle tone, a tendency to walk on toes, motion sickness, and poor balance.

As abnormal reflexes, both the tonic labyrinthine reflex and the asymmetrical tonic neck reflex can cause problems for the growing child.

The TLR and ATNR both hinder functional activities such as rolling, bringing the hands together, or even bringing the hands to the mouth.

cause serious damage to the growing child's joints and bones, causing (subluxation) or (dislocation)

Un integrated reflexes



Reflexes that are not suppressed in infancy are referred to as unintegrated or persistent reflexes. When they persist, they are related to academic struggles.



For example, children with learning difficulties have been found to exhibit persistent primitive reflexes.



In addition, a persistent ATNR has been found to be associated with lower reading and spelling scores and children with reading problems tend to display the tonic labyrinthine reflex more than children without reading problems.



Lastly, a relationship has been found between ADHD symptoms and ATNR persistence and another between ADHD diagnosis and Moro reflex persistence



Persistence of primitive reflexes past 4 to 6 months or absence before this time when they should have been present is predictive of cerebral palsy

Reflex	Purpose	Age Appears	Age Integrates	Signs of Retention
Moro Reflex	Fight or Flight reaction, sympathetic nervous system response	Birth	2-4 months	Hypersensitivity to one or more sensory systems, vestibular deficits (motion sickness, poor coordination and balance), oculomotor and visual-perceptual problems, poor pupillary reactions to light, hypersensitivity to auditory input, allergies and lowered immunity, adverse drug reactions, poor stamina, poor adaptability, reactive hypoglycemia
Rooting Reflex	Autonomic Response to locate food and breast	Birth	3-4 months	Anterior tongue tie, thumb sucking, oral hypersensitivity, poor eating, speech and articulation problems, swallowing and chewing deficits
Palmar Grasp Reflex	Autonomic Flexion of the fingers to grab when the palm is stimulated	Birth	3-6 months	Poor manual dexterity, deficits with pencil grip, poor visual coordination, poor posture during handwriting, poor writing skills, correlated speech and hand movements, dysfunction of the tactile and proprioceptive sensory systems
Asymmetric Tonic Neck Reflex (ATNR)	Assists with movement through the birth canal at delivery and is important for cross pattern movements	Birth	6 months	Decrease hand eye coordination, poor handwriting, uncoordinated gait, poor balance, poor visual motor skills and tracking, problems with math and reading, difficulty crossing midline

Spinal Galant Reflex	Important during the birthing process and helps to facilitate movement of the hips during descending the birthing canal	Birth	3-9 months	Postural issues like scoliosis, misaligned or rotated pelvis, and pain in lower back, bedwetting after potty training, hyperactivity, attention and concentration issues, decreased endurance, chronic digestive issues, decreased lower body coordination, pain and tension in legs
Tonic Labyrinthine Reflex (TLR)	Foundational for postural stability for large muscle groups	In Utero	3 ½ years	Decreased balance, poor spatial awareness, toe walking, hypermobility of joints, weak muscles, poor posture, motion sickness, poor ability to climb, atypical head position (forward or to side)
Landau Reflex	Necessary for postural development	4-5 months	1 year	Poor posture and muscle tone, summersaults are challenging, poor coordination for activities that require upper body and lower body to move together, delayed motor development
Symmetric Tonic Neck Reflex (STNR)	Foundational for crawling	6-9 months	9-11 months	Poor posture in standing, poor seated posture, ape-like walk, low muscle tone, W sitting position common, sloppy/messy eater, poor hand/eye coordination

Primitive Reflex	Purpose of Reflex	Appears	Should Integrate By:	Signs of Retention
Moro Reflex	Primitive Fight or Flight Reaction	Birth	2 to 4 Months	Hyper Sensitivity, Hyper Reactivity, Poor Impulse Control, Sensory Overload, Social & Emotional Immaturity
Rooting Reflex	Automatic Response to Turn Towards Food	Birth	3 to 4 Months	Fussing Eating, Thumb Sucking, Dribbling, Speech and Articulation Problems
Palmer Reflex	Automatic Flexing of Fingers to Grab	Birth	5 to 6 Months	Difficulty with Fine Motor Skills, Poor Manual Dexterity, Messy Handwriting
ATNR	To Assist Baby Through Birth Canal and Develop Cross Pattern Movements	Birth	6 Months	Poor Eye-Hand Coordination, Difficulty with Handwriting, Trouble Crossing Vertical Mid-line, Poor Visual Tracking for Reading and Writing
Spinal Gallant Reflex	Assist Baby with Birth Process	Birth	3 to 9 Months	Unilateral or Bilateral Postural Issues, Fidgeting, Bedwetting, Poor Concentration, Poor Short Term Memory
TLR	Basis for Head Management and Postural Stability Using Major Muscle Groups	In Utero	3 1/2 Years	Poor Muscle Tone, Tendency to Walk on Toes, Poor Balance, Motion Sickness, Spatial Orientation Issues
Landau Reflex	Assist with Posture Development	4 to 5 Months	1 Year	Poor Motor Development
STNR	Preparation for Crawling	6 to 9 Months	9 to 11 Months	Tendency to Slump While Sitting, Poor Muscle Tone, Poor Eye-Hand Coordination, Inability to Sit Still and Concentrate

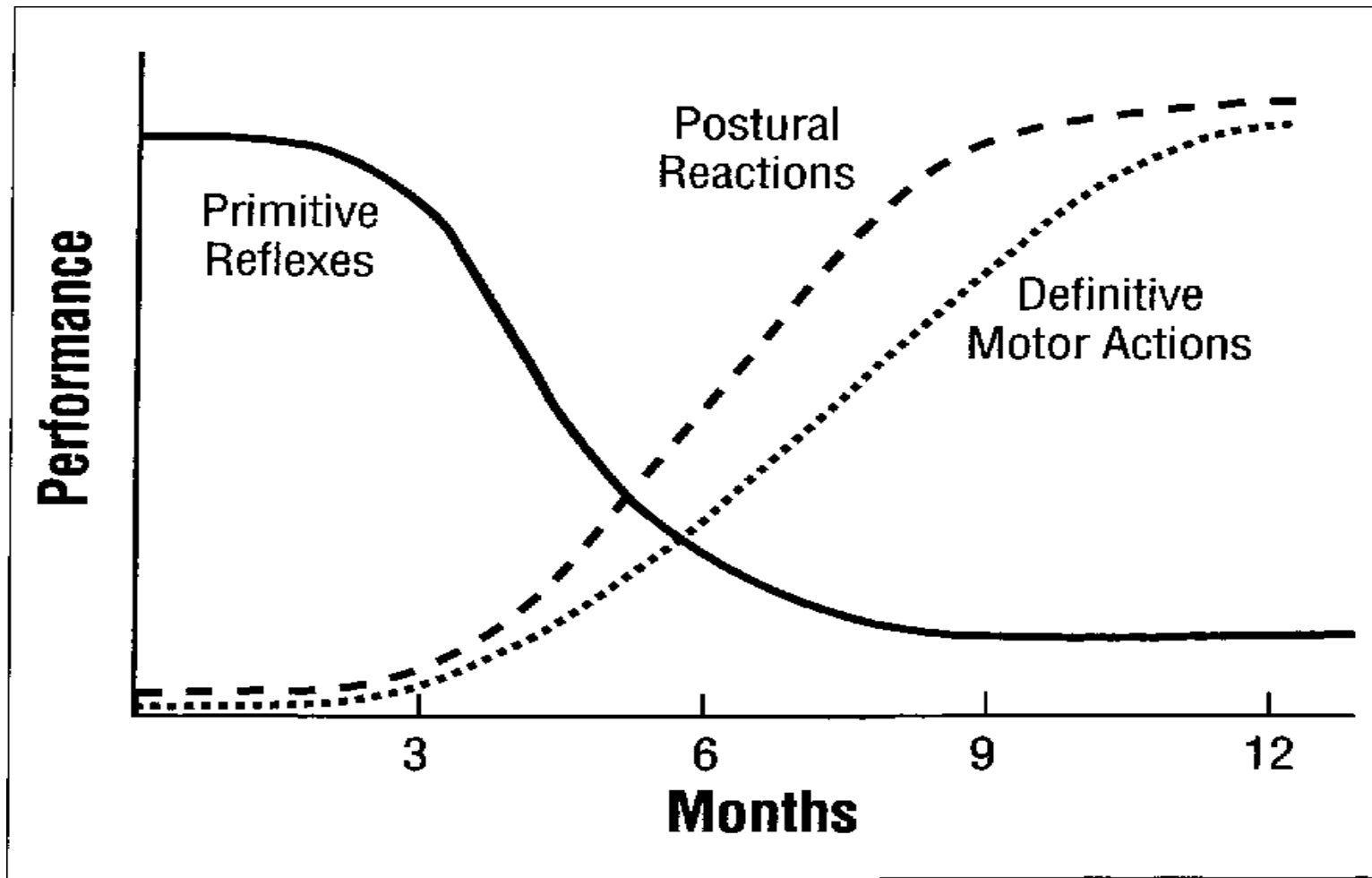
Retained Primitive Reflexes as a Sign of Brain Imbalance

Infant Reflexes that do not Integrate Successfully can Lead to Developmental Delays

Primitive Reflexes are the first part of the brain to develop and should only remain active for the first few months of life

In typical development, these reflexes naturally inhibit in sequential order during the first year, and replacement reflexes, called postural reflexes, emerge.

Postural reflexes are more mature patterns of response that control balance, coordination, and sensory-motor development.



Retained primitive reflexes can lead to struggles related to disorders like

ADHD

sensory processing disorder

autism

and learning disabilities.



The persistence of primitive reflexes contributes to issues such as

coordination

balance

sensory perceptions

fine motor skills

sleep

immunity

energy levels

impulse control

concentration

and all levels of social, emotional

academic learning.

Causes of Retained Primitive Reflexes

Retained primitive reflexes may be the result of:



Stress of the mother and/or baby during pregnancy



Lack of movement in utero



Restricted body movements, such as the infant spending extended time in car seats, carriers, walkers or jumpers



Illness, injury, chronic stress



Other developmental delays

Additional causes can include:



Falls traumas



lack of tummy time



delayed or skipped creeping or crawling



chronic ear infections



head trauma



and vertebral subluxations.

Causes of Retained Primitive Reflexes

**The birth process is a key factor in the integration of these reflexes
Therefore a traumatic birth experience or birth by c-section may
lead to retained reflexes**



Conclusion

Primitive reflexes are involuntary motor responses originating in the brainstem present before and after birth in early child development that facilitate survival. primitive reflexes are necessary for newborn survival, and abnormal reflexes can be a sign of central nervous system dysfunction. These central nervous system motor responses are eventually inhibited by 4 to 6 months of age as the brain matures and replaces them with voluntary motor activities but may return with the presence of neurological disease.

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