

# Primitive Reflexes

## What are Primitive Reflexes?

Primitive reflexes are automatic stereotypic movements directed from the brainstem and require no cortical involvement (thought). They are needed for survival and development in the womb and in the early months of life. However, as higher more sophisticated centers of the brain begin to mature, these primitive reflexes become a nuisance and must be abated in order for proper neurological organization of the brain to develop.

## What happens if Primitive Reflexes don't go away?

If the Primitive Reflexes are retained past the first year of life (at the very latest) they can interfere with social, academic, and motor learning. Basically, the perception of our inner and outer environment and our response to it may be disturbed; that is, conscious life may be disturbed. Children with learning disorders, ADHD, Autism Spectrum, and various other neurodevelopmental disorders are known to have retained primitive reflexes contributing to their symptoms and level of dysfunction.

Each reflex is associated with one or more of the Sensory Processing Systems: Auditory, Taste, Tactile, Smell, Visual, Vestibular, Proprioceptive and/or Interoceptive. Therefore, if retained, a child/person may experience dysfunction within one or several of the sensory processing systems. This can lead to what is known as *Sensory Processing Disorder*.

## Causes of retained Primitive Reflexes

Children born via cesarean section, trauma, toxicity exposure, anesthetics, etc. are more at risk at having retained primitive reflexes. Other causes may be: insufficient tummy time as an infant; lack of, or little, creeping or crawling; early walkers; head injuries; excessive falls; and chronic ear infections.

# Primitive Reflexes

## Names of Primitive Reflexes & What they mean:

### The Moro Reflex



This reflex is also referred to as the 'Startle Reflex'. When you fail to support or hold your baby's neck and head or if your baby becomes startled by a loud noise, bright light or sudden touch, the arms of your baby will thrust outward and then curl in as to embrace themselves. This reflex should disappear between 2-4 months of age.

If retained, the child/adult may be hypersensitive to other senses and may over-react to stimulation and be in constant 'fight or flight'. This will lead to over activity of the sympathetic nervous system and the Adrenal Glands. Due to the constant demands on the adrenal glands, they may become fatigued and a child/person may suffer with allergies, asthma, depressed immune system, and chronic illnesses.

Other observable social/learning problems associated with a retained Moro reflex are: unable to focus on one thing at a time, poor impulse control, emotional immaturity, withdrawn or timid, easily distracted, difficulty playing ball games, aggressive, anxious, and/or highly excitable.

Associated sensory systems: auditory, tactile, visual, vestibular, and proprioceptive.

# Primitive Reflexes

## The Rooting Reflex



When you stroke your baby's cheek she will turn towards you, usually looking for food. This is very useful when learning to breastfeed your baby. This reflex should be gone by 3-4 months of age.

Observable social/learning problems associated with a retained Rooting reflex include: poor articulation, tactile sensitivity around the face, messy eaters, and poor manual dexterity.

Associated sensory systems: tactile and proprioceptive

## The Palmar Reflex



This reflex is also referred to as the 'Grasp reflex'. It is demonstrated by placing your finger or an object into your baby's open palm, which will cause a reflex grasp or grip. If you try to pull away, the grip will get even stronger. This reflex should be gone by 2-3 months of age.

Observable social/learning problems associated with a retained Palmar reflex include: poor manual dexterity, poor pencil grip, difficulty with writing, intertwined speech and hand movements which can lead to difficulty with speech.

Associated sensory systems: tactile and proprioception

# Primitive Reflexes

## Asymmetrical Tonic Neck Reflex (ATNR)



This reflex is also referred to as the “fencer position”. To elicit this reflex, while your baby is lying on his back, turn his head to one side. This should cause the arm and leg on the side that he is looking toward to extend or straighten, while his other arm and leg will flex. The ATNR prepares the baby for future transitional movements like turning from back to front and vice versa. It also helps to later develop hand-eye coordination and activities that require crossing the mid-line of the body. It is also thought to be involved in the birthing process and if weak in utero, it may lead to the baby becoming stuck in the birth canal. It is reinforced by the natural birthing process. This reflex should be gone by 4-6 months.

Observable social/learning signs of a retained ATNR include: possible scoliosis, poor handwriting, difficulty expressing ideas in written form, difficulty with eye tracking, difficulty with hand-eye coordination, difficulty with tasks that require crossing the mid-line (reading/writing), difficulty with tasks that require both sides of the body. Every time the head turns, the arm may follow it and the fingers open. Therefore, it takes a lot of effort and concentration to try and hold the hand still while writing when the head has to move to look at another paper or the white board. The older child or adult may complain of chronic or recurrent shoulder or neck injury/pain; often times always on the same side.

Associated sensory systems: auditory, vestibular, visual, and proprioceptive.

# Primitive Reflexes

## Tonic Labyrinthine Reflex (TLR)



With this reflex, tilting the head back while lying on the back causes the back to stiffen and even arch backwards, causes the legs to straighten, stiffen, and push together, causes the toes to point, causes the arms to bend at the elbows and wrists, and causes the hands to become fistled or the fingers to curl. This reflex prepares the baby for movements of rolling over, crawling on all fours, standing and walking. The presence of this reflex beyond the newborn stage is also referred to as abnormal extension pattern or extensor tone. Inhibition of the tonic labyrinthine reflex is a gradual process involving the maturation of other systems. This reflex should be gone by three and a half years of age.

Observable social/learning problems associated with this reflex include: difficulty keeping the head in a flexed position, trouble paying attention when sitting at a desk and/or reading, poor posture, poor balance, motion sickness, dyspraxia, toe walkers, hypo or hyper-tonus (muscle tone), dislike of physical education (PE), poor sense of rhythm/timing, oculo-motor difficulties (reading/writing), orientation and spatial difficulties.

Associated sensory systems: vestibular, proprioceptive, auditory, and visual.

# Primitive Reflexes

## Spinal Galant



This reflex is demonstrated by holding or laying the newborn on their stomach and stroking along one side of their spine. The normal reaction is for the newborn to flex sideways toward the stimulated side. This is one of the reflexes tested in newborns to help rule out brain damage at birth. Stimulation down both sides of the spine at the same time simultaneously activates a related reflex that will educe urination. Like the ATNR, it is thought that the Spinal Galant is important in the birthing process and it facilitates movement of the hips as the baby descends into the birthing canal. This reflex should be gone by 3-9 months of age.

Observable social/learning problems associated with a retained Spinal Galant reflex: unable to sit still ('ants in the pants' child), possible scoliosis, poor concentration, poor posture, hip rotation on one side when walking, chronic digestive issues, and bed wetting beyond age of 5 years.

Associated sensory systems: auditory, tactile, and proprioceptive

## Symmetrical Tonic Neck Reflex (STNR)

This reflex is also referred to as the 'Crawling reflex'. A normal response in infants is to assume the crawl position by extending the arms and bending the knees when the head and neck are extended. The reflex disappears when neurologic and muscular development allows independent limb movement for actual crawling. This reflex should be gone by 9-11 months of age.

Observable social/learning problems associated with a retained STNR: poor posture, tendency to slump when sitting, sits in a "W" position with their knees, Simian (ape-like) walk, poor eye-hand coordination, messy eater, clumsy child, difficulties with readjustment of binocular vision (child cannot change focus easily from blackboard to desk), slowness at copying tasks, poor swimming skills.

Associated sensory systems: vestibular, proprioceptive, and visual



# Primitive Reflexes

## Additional Reflexes

The above reflexes are only a few of the primitive reflexes that are present during infancy and should be inhibited in order for more sophisticated areas of the brain to develop. These reflexes represent some of the more prominent and important ones for proper social, academic, and motor development.

## Research

The results of reflex/motor activity interactions in 177 normal infants are evaluated. The asymmetrical tonic neck reflex, tonic labyrinthine reflex-supine, and Moro reflexes were assessed for each child at birth and at intervals up to 12 months. Ages of rolling prone to supine, rolling supine to prone and sitting alone were elicited from parents. The effects of the primitive reflexes on early motor activity were assessed, and statistically significant correlations were demonstrated between decreased reflex activity and the emergence of motor milestones. The distinctive association of reflex activity with motor function suggests the interaction of several reflexes (a primitive reflex profile) rather than the influence of isolated reflex activity. Such patterns support the hypothesis that decreasing primitive reflex activity is associated with the onset of volitional motor activity in normal infants.

Developmental Medicine & Child Neurology; November 2008.

A link between reading difficulties and control of movement in children was found with the presence of retained primitive reflexes. A new approach to the treatment of children with reading difficulties should include the assessment of underlying neurological functioning and appropriate remediation.

The Lancet; Feb. 2000

The persistence of the ATNR was significantly predictive of attainments in reading. Educational skills may be affected by the persistence of brainstem mediated reflexes that should be inhibited in the first year after birth.

Neuropsychologia; Vol. 45, Issue 4

# Primitive Reflexes

Infants with Cerebral Palsy (CP) have been known to manifest persistence or delay in the disappearance of primitive reflexes and pathologic or absent postural reactions. Moreover, infants with >5 abnormal postural reactions have developed either CP or developmental retardation. The combined examination of primitive and postural reflexes should be considered by the child neurologist as a simple but predictive screening for the early identification of infants at risk for CP.

Pediatric Neurology; Vol. 31, Issue 1

"Primitive Reflexes and Attention-Deficit/Hyperactivity Disorder: Developmental Origins of Classroom Dysfunction" describes an overlap of ADHD behaviors and retained infant reflexes. The boys in the study that were diagnosed with ADHD had significantly higher levels of retained infant reflexes than the boys who were not diagnosed with ADHD. The main reflexes that were retained are called Moro, Tonic Labyrinthine Reflex (TLR), Asymmetrical Tonic Neck Reflex (ATNR), and Symmetrical Tonic Neck Reflex (STNR). The retention of these reflexes also corresponded to lower math achievement than the boys who were not diagnosed with ADHD and had lower levels of retained infant reflexes. It was also discovered that an active Moro reflex inhibits the integration of the other three reflexes.

International Journal of Special Education 2004, Vol 19, No.1.

## Treatment

Through various specific movement and exercise protocols offered at our office, primitive reflexes can be inhibited- allowing for proper neurological development to take place. The long term results of such treatment is better social behavior, improvement in academic and motor learning, and overall improvement in physical health, emotional health, and overall well being. Inhibition of Primitive Reflexes will also help develop a stronger and healthier functioning Sensory Processing system.



# Primitive Reflexes

## Quick Screening Questionnaire

The following questions may help to determine if your child has some retained Primitive Reflexes. This “quiz” should not be used as an official diagnosis; however, if your child presents with a “cluster” of “yes” answers to the following, they should be screened by a trained health professional knowledgeable in the retainment of Primitive Reflexes, their meaning, and recommended treatment.

### Part I: Pregnancy & Birth History

1. Did the mother have a viral infection in the first trimester of pregnancy?
2. Were there any medical problems during pregnancy such as threatened miscarriage, high blood pressure, or excessive morning sickness?
3. Was the mother under severe emotional stress between the 23<sup>rd</sup> and 28<sup>th</sup> week of pregnancy?
4. Were there any complications during pregnancy or delivery; prolonged labor, fetal distress?
5. At any time during the pregnancy/delivery was the child said to be in a breech position?
6. Was there use of forceps or suction delivery?
7. Was a caesarian section performed?
8. Was the child more than 2 weeks pre-mature or 2 weeks late?
9. Were excessive ultra sounds performed during pregnancy?

### Part II: Family & Health History

1. Is there any history of learning difficulties in the family or either parents' family?
2. Has the child been diagnosed with a learning disability?
3. Has the child been diagnosed with ADD/ADHD or Autism Spectrum Disorder?

## Primitive Reflexes

4. Did/does the child suffer from chronic ear infections?
5. Did/does the child have a history of allergies, asthma, or frequent illnesses?
6. Does the child have chronic digestive disorders?
7. Is/was the child a bed wetter past the age of 5 years?
8. Does the child suffer from motion sickness?
9. Did the child suffer from a head injury?

### Part III: Learning & Developmental History

1. Was there lack of, or little, creeping or crawling **on all fours** with this child?
2. Were there any troubles with feeding or latching on in the first 3 months?
3. Did/does this child have difficulty distinguishing right from left?
4. Is, or did, the child have difficulty deciding which hand they would use as their dominant hand?
5. Does the child have difficulties sitting still and/or paying attention?
6. Does the child have difficulty tying shoelaces or doing up buttons?
7. Does the child have reading difficulties?
8. Does the child occasionally reverse letters when writing?
9. Does the child have difficulty writing or is their writing very messy?
10. Does this child have difficulty catching a ball or have poor hand-eye coordination?
11. Does this child seem awkward in P.E., dance, gymnastics, etc?
12. Does/did the child have difficulty learning to ride a bicycle, swim, or swing?
13. Does the child have any speech/articulation difficulties?