

## Article

### The Primitive Survival Reflexes

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Have you ever watched your baby become startled, grasp at your hand, or turn his head toward your face? These behaviors are primitive survival reflexes that begin as early as 9 weeks prenatally, and they are fully present at birth. Primitive survival reflexes are movements that are automatic without involving thinking. The reflexes help in the birthing process; they help the newborn adjust to its new environment outside the womb; and the reflexes build a foundation for many later motor and cognitive skills. We use the word *survival* because the reflexes help protect the fetus *in utero* and also help the newborn with its learning and development outside the safe confines of the mother's womb. Integrating these primitive survival reflexes helps the infant with learning and behavior. Movement is critical for developing new skills. There has been some controversy whether the reflexes become integrated or inhibited within the person. We believe that when the reflexes become integrated, the neurological and motor systems are released to be available for more advanced motor and cognitive tasks in the brain.

For example, visually tracking an object, shaping letters with the mouth, or holding a pencil require intentional control of the muscles. When this neurological control of the muscles follows an unconscious reflex instead of following an intention, the movement pattern the infant is asked to perform becomes confusing instead of becoming an automatic learned skill. Learning occurs when basic

physical skills, such as balance and interweaving of both sides of the body (right-left coordination and upper and lower body coordination), become automatic. If the child does not develop automatic motor control, a parent may observe behaviors such as reversals in writing and reading, poor attention, and clumsiness. Although a child shows good potential intelligence, change will not occur until the developmental delay is addressed. Part of addressing the developmental delays is learning to integrate the reflexes.

When we test the primitive survival reflexes, we are measuring the intelligence of movements in a person. If there is lack of integration of these reflexes, there will be interference in the general and specific motor skills of the child. In athletes who still have the primitive survival reflexes, they become proficient with a certain specific motor movement as a splinter skill, but they don't have the flexibility to develop other movements. Lack of integration of these reflexes can also cause vision problems. Usually, the eye movements are very poor, and fixation from near to far is difficult. Visual coordination, hand-eye coordination, and visual memory may be deficient. Because our visual function originates in the brain, the primitive survival reflexes are controlled by a lower part of the brain called the brain stem, whereas the more advanced information-processing skills occur in the cortical or higher brain center.

We routinely test for five primitive survival reflexes: Moro Reflex, Tonic Labyrinthine Reflex (TLR), Spinal Galant Reflex (SG), Asymmetrical Tonic Neck Reflex (ATNR), and Symmetrical Tonic Neck Reflex (STNR). A brief description of each primitive reflex follows.

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## The Moro Reflex

This reflex occurs at 9 weeks *in utero*. It should be integrated at 2–4 months postnatally. It is an involuntary reflex to threat. It is a survival mechanism that is composed of a series of rapid movements of the arms upward away from the body. A retained Moro reflex can cause vestibular (inner ear) problems such as poor balance and coordination. It can also cause poor visual control of eye movements that may cause information-processing problems. A retained Moro reflex can cause biochemical and nutritional imbalances. Specifically, there is a higher incidence of ear and throat infections that lead to lower immunity and allergies. This pattern depletes energy and can cause fatigue and mood swings. The Moro reflex is the earliest to emerge. It forms a strong foundation for future life experiences.

## The Tonic Labyrinthine Reflex

This reflex occurs at 16 weeks *in utero*. It should be integrated at approximately 4 months postnatally. There is a gradual progression of integration from 6 weeks up to 3 years after birth. When the infant is able to lift its head up and down with its neck muscles, it begins to work with gravity. When this movement occurs automatically, there begins an inhibition with the tonic labyrinthine reflex. If the TLR lingers, this can cause poor balance, weak muscle tone, and poor eye movement control, which can cause information-processing problems.

## The Spinal Galant Reflex

This reflex occurs at 20 weeks *in utero*. It is integrated at 9 months of life postnatally. The spinal galant reflex (in conjunction with the asymmetrical tonic reflex) is used in the birthing process by helping the baby work its way down the birth canal. In addition, the spinal galant reflex enables the fetus to hear and feel the sound vibrations in the aquatic environment in the womb. If the spinal galant reflex lingers beyond the 9-month postnatal period, the reflex can interfere with the child's ability to control his bladder. Therefore, one may see bedwetting beyond the age of 5. In adults, some studies suggest that if the reflex is still present, it causes irritable bowel syndrome. Usually, the behaviors seen in school-age chil-

dren include fidgeting in their seat, squirming, wiggling, or difficulty sitting still. Usually, children don't like clothing to fit tightly around the waist. The reflex is always competing with the child's attention and short-term memory because the child is distracted by the need to be in constant motion.

## The Asymmetrical Tonic Neck Reflex

The reflex occurs at 18 weeks *in utero*. It is integrated at 6 months of life postnatally. *In utero*, the ATNR helps the fetus move the head from side to side while swinging the arms and kicking the legs. This pattern helps develop the muscle tone and the vestibular (inner ear) system. The reflex is needed at birth so that the fetus can help "unscrew" itself out of the birth canal. This twisting movement is the first experience of the infant to understand coordinating both sides of the body together (reciprocal interweaving) in a twisting action. This is why children taken by Cesarean section are at a higher risk for developmental delay. Without experiencing this twisting action, they do not get the necessary right-left and upper body/lower body coordination that is needed for developing later skills of crawling, walking, and skipping with the interweaving movement. Lack of integration of the ATNR can lead to problems with balance orientation, both mentally and physically, and a confusion with the relationship of using both sides of the body together.

## The Symmetrical Tonic Neck Reflex

This reflex occurs at 6–9 months of life. It should be integrated at 9–11 months postnatally. This reflex helps the infant learn to rise up on hands and knees. If this reflex lingers too long, it will interfere with the infant's ability to learn creeping and crawling. The STNR relates to creeping. Creeping has been proven to be one of the most important movement patterns that help the eyes to move across the midline of the body. As the infant begins to move from one hand to another, this helps the infant with the control of eye movement patterns and the ability for the eyes to move across the midline of the body. Later when the child is learning to read, he needs to have the skill of eye movement across the middle of the page without losing its place. Studies have shown that children who don't learn to creep

and crawl have a higher incidence of reading and learning problems. Creeping and crawling are essential for visual development.

After our developmental evaluation and conference, we provide the child and parents with a Visual Learning-Thinking Holistic Program that includes the following:

1. A Reflex Integration Program
2. A General Motor Development Program, which includes activities such as balance orientation, interweaving of right and left, upper body and lower body control, rhythm and timing, and other visually guided movement patterns
3. A Fine Motor Development Program, which includes visual tracking, visual localization and fixation, and visual coordination skills
4. Biochemistry testing, analysis, and recommendations

The analysis of a child by our neurodevelopmental optometry practice involves more than an optical correction, visual acuity, and eye health. We are vitally concerned with the child's visual development as it relates to life, learning, and achievement. Our vision represents more than the function of the eyes. Vision is an interrelated process that originates in the brain and includes the primitive survival reflexes, the vestibular (inner-ear) sys-

tem, the motor system, the speech-language system, and the tactile system. These systems begin developing *in utero*, and the child should go through the proper developmental sequence and stages in order for normal development and learning to occur. If stages are rushed or skipped, this leads to interferences in normal development and can cause developmental delays. Our vision and motor systems are very interrelated. As the child development expert, Arnold Gesell, MD, stated: "To understand vision we must know the child; to understand the child, we must know the nature of his vision."

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