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Primitive Reflexes and How they Impact Development
By: Emily Prentice (INPP)

Course Objectives

1) You will be able to explain the basic principles of brain development.

2) You will be able to discuss several primitive reflexes and how their continued presence negatively impacts development in older children.

3) You will be able to identify risk factors in pregnancy, birth and early infancy that contribute to retained reflexes.
My Cousin Jack

My Background

Bachelor’s Degree in Psychology from the University of Central Oklahoma

Certified Midwife’s Assistant with the Oklahoma Midwives Alliance

Post-Graduate Degree in Neuro-Developmental Delay from the Institute of Neuro-Physiological Psychology
My Background

- UNIVERSITY OF CENTRAL OKLAHOMA (2011-2014)
- CHILD BIRTH DOU LA (2013)
- INSTITUTE OF NEURO-PHYSIOLOGICAL PSYCHOLOGY (2015-2016)
- ANNAS HOUSE (2012)
- OKLAHOMA MIDWIVES ALLIANCE & COMMUNITY MIDWIFERY SERVICES (2014-2016)

Brain Development

- Cortex
- Cerebellum
- Brainstem
Movement is Key

“All forms of life share the characteristic of motion - Einstein”

The Developed Brain

Upper level (cortex)  Lower level (brain stem and cerebellum)
Think Holistically

“Children’s difficulties do not exist in specialist departments; they exist within the context of the whole child.”

- Sally Goddard Blythe

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Primitive Reflexes

- Develop in utero
- Help with the birth process and help the infant survive outside the womb
- Disappear during the first year
- Replaced by Postural (adult) reflexes by age 3 ½
Primitive Reflexes

- Provide reliable indicators of the maturity of the central nervous system
- They are very powerful and can interfere with the development and function of the rest of the brain

Moro Reflex

**Stimulus**

Loss of head support, or any sudden change in any of the five senses: light, touch, sound, taste or smell.

**Response**

Activated the sympathetic nervous system (fight-or-flight). The baby takes a breath, the head pulls back slightly, the arms extend out, and then grasp forward.
Moro Reflex

Purpose

- Helps stimulate breathing after birth
- Helps protect baby's airway
- Alerts caregiver to possible danger
- Stimulates the nervous system

Moro Connections

Always remember to think holistically. The brain and all of the body systems function together.
Moro Connections

**Sympathetic**
(fight-or-flight)

Responsible for responding to stress and danger

**Parasympathetic**
(rest and digest)

Responsible for maintaining homeostasis

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Moro Connections

- Arousal system
- Sensory systems
- Immune system
- Digestive system
Moro Reflex

**Symptoms**
- Over-reactive
- Hypersensitive
- Anxiety
- Hyperactive
- Visual-perception problems
- Poor impulse control
- Emotional immaturity
- Motion sickness
- Immune issues
- Stimulus bound
- Controlling behavior
- Inflexibility/dislike of change

**Symptoms (long-term)**
- Generalized anxiety
- Mood swings
- Tense muscles (body armoring)
- Difficulty accepting criticism
- Fatigue (often following a period of hyperactivity)
- Difficulty making decisions
- Insecurity/low self esteem
- Vestibular problems
- Auditory confusion/overload
- Allergies/lowered immunity
- Sensitivity to medications
- Sensitivity to foods (particularly sugar)
Asymmetric Tonic Neck Reflex (ATNR)

Stimulus

Head turns to either side

Response

The limbs on that side extend and the limbs on the opposite side flex

Asymmetric Tonic Neck Reflex (ATNR)

Purpose

- Encourages movement in the womb
- Assists with the birth process
- Helps keep baby’s airway clear
- Early visual and hand-eye training
- Helps break up the two sides of the body
Asymmetric Tonic Neck Reflex (ATNR)

**Symptoms**
- Poor balance and coordination
- Avoiding crossing the midline
- Poor hand-eye coordination
- Difficulty with visual tracking
- Difficulty with reading and writing

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Tonic Labyrinthine Reflex (TLR)

**Stimulus**
Head extends or flexes

**Response**
The limbs follow the head and either extend with the head or flex with the head.
Tonic Labyrinthine Reflex (TLR)

Function
- Helps baby get into a good position for birth
- Helps baby adapt to a world with gravity
- Helps develop muscle tone

Symptoms
- Poor balance and coordination
- Visual perception problems
- Motion sickness
- Under or over developed muscle tone
- Poor posture
- Toe walking
- Poor spatial skills
- Vestibular problems
Spinal Galant Reflex

**Stimulus**
Any tactile stimulation to the skin on either side of the spine in the lumbar region

**Response**
Rotation of the hip 45° on that side.

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**Function**
- Encourages movement in the womb
- Helps during the birth process
- Promotes hip flexibility
Spinal Galant Reflex

Symptoms

- Difficulty sitting still
- Hypersensitivity in the lumbar region (tags, waist bands, etc.)
- Some connection to bedwetting

Symmetric Tonic Neck Reflex (STNR)

Stimulus

Head extends or flexes

Response

When the head extends the arms extend and the legs flex. When the head flexes the arms flex and the legs extend
Symmetric Tonic Neck Reflex (STNR)

**Function**

- Helps the infant defy gravity (move from the floor to standing)
- Helps with spine alignment
- Helps with visual accommodation

**Symptoms**

- Poor posture
- Poor body control
- Difficulty with attention and concentration
- Poor hand-eye coordination
- Difficulty with certain visual skills such as vertical tracking and accommodation.
Retained Primitive Reflexes

1. Damage to higher levels of the brain
2. Pathology e.g. Alzheimer’s and Parkinson’s
3. They never properly developed or withdrew during pregnancy, birth and infancy

Retained Primitive Reflexes

The presence or absence of primitive reflexes at certain stages of development provide reliable indicators of how a child’s nervous system is functioning.
Retained Primitive Reflexes

Neuro-Developmental Delay

The continued presence of a cluster of primitive reflexes beyond the first 12 months of postnatal life, with or without, the absence or underdevelopment of postural reflexes beyond 3 ½ years of age.

Risk Factors

- Complications with pregnancy
- Complications with labor and birth
- Problems in infancy
Importance of Pregnancy

- The nervous system is developing
- The nervous system is maturing
- The nervous system goes through a process of reflex development and inhibition

Complications During Pregnancy

- Medical problems
- Sickness
- Injury requiring bedrest
- Extreme stress
- Alcohol or drug use
**Importance of Labor and Birth**

- Stimulates the nervous system and primes it for life outside of the womb
- Use their reflexes in critical ways to assist with the birth process

**Complications with Labor and Birth**

- Difficulty with the birth process/Prolonged labor
- Vacuum or forceps delivery
- Cesarean birth
- Birth trauma
- Prematurity
- Breech presentation
- Loss of oxygen / Low heart tones
- Precipitous labor
Importance of Infancy

- Period of significant brain growth
- Period of significant body growth

Problems in Infancy

- Skipping motor stages such as crawling
- Ear nose and throat problems
- Restricted movement
- Negative reaction to medications or vaccines
Treating NDD

Remember, movement is key! Children perform specialized exercises that stimulate their central nervous system.

- Exercises are individualized and tailored to each child’s individual needs
- Take between 1-6 minutes a day
- They are done every day in the child’s home
- The stay on the same exercise for a minimum of 8 weeks and often much longer
- The whole program takes between 9-36 months

Testing for NDD

Continued

Attention, Balance and Coordination
The A.B.C. of Learning Success

Reflexes, Learning and Behavior
A Window Into the Child’s Mind

Continued
Resources


Janora, A. (2016). International post graduate training course in the INPP method. (PowerPoint slides and lecture notes)


Questions?

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