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MANARA UNIVERSITY

Primitive Reflexes

INTRODUCTION

- Primitive reflexes can be defined as an automatic movement beginning as early as 25-26 gestational weeks mediated via brainstem and are fully present at birth. Their persistence beyond 6 months of age can result in immature pattern of behaviour. With maturation of central nervous system, voluntary motor activities replace the primitive reflexes.
- These primitive reflexes have been classified as normal or abnormal reflexes considering their role in growth and development

- Reflex activity is an unconscious response to a peripheral nervous stimulation. It is a protective mechanism and it protects the body from irreparable damages. Reflex arc is the anatomical nervous pathway comprised of a receptor, afferent nerve, centre, efferent nerve and an effector organ. A receptor on receiving stimuli generates the impulses in the afferent nerve which transmits sensory impulses from receptor to the centre located in brain or spinal cord. The centre after receiving impulses, generates appropriate motor impulses. An efferent nerve transmits motor impulse from centre to effector organ to respond to the stimulus.

- Primary reflexes develop during fetal life. They are responsible for stereotypical and involuntary motor reactions in response to internal and external stimuli.
- Their control centre is located in the brainstem. They facilitate child delivery and help children during their first moments after birth, and enable normal psychomotor development in the first months of life. Reflex activity persists up to several months after birth and should spontaneously disappear (integrate into the nervous system) as higher motor skills begin to develop.

- This takes place when a primary reflex, e.g., the Moro reflex, which is an instinctive defensive reaction and allows the child to take the first breath of life, is replaced by the Strauss (startle) reflex, which can continue for the remainder of a person's life.
- The development of primary reflexes in fetal life is possible due the parallel development of equivalent structures. After birth, primary reflexes are triggered by stimuli from the vestibular system and other sensory channels.

- An example of this is the asymmetrical tonic neck reflex (ATNR), which can be induced by the movement of the head. The tonic stimulus, which is the rotation of the neck, provokes a deflection of the upper and lower limbs on the occipital side of the body, and trunk rotation. On the facial side, the limbs straighten.

- The activity of primary reflexes beyond the biological period of proper occurrence may influence proper sensory-motor development. If primary reflexes are not integrated completely during the spontaneous development of the nervous system, they will be constantly provoked by the same stimuli. These reactions are less strong and stereotypical compared to a new-born.
- However, even a slight degree of reflex activity may result in muscle tensions that appear in the child's body and cause involuntary motor reactions.

- In stressful or new situations, an active reflex will cause a primitive motor response such as a slight muscle tone or visible motion. The response of the body depends on the degree and the number of APRs.
- The tensions and movements generated by the activity of reflexes may hinder functioning and can cause uncertainty about the child's own bodily reaction in various everyday situations (during motor activities such as cycling or physical games with peers). Fear of sudden changes in the environment may cause a child to withdraw and abandon new intellectual and motor skill-oriented challenges.

- Reflex activities can cause learning difficulties in preschool and elementary school. They may also cause difficulties in acquiring age-related mobility skills.
- Early experiences of “standing out” from a group of peers in terms of mobility, manual abilities, and difficulties experienced by a child in learning didactic material can cause frustration and lead to secondary problems. Disorders in sensory-motor development can affect the cognitive and emotional development of a child, and thus the child’s contact with peers and social functioning.

What is the goal of today's course?

To Learn:

The What

Learn what primitive reflexes are.

The Why

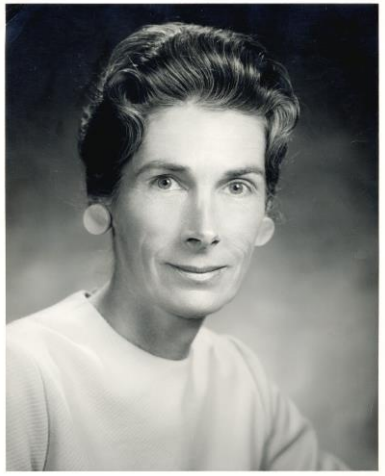
Learn why primitive reflex integration is vital for success.

The How

Learn how to identify if a child may have retained primitive reflexes.

The Next Step

Identify the next step for you to take to integrate primitive reflexes.



What are primitive reflexes?

We are all born with primitive reflexes!

- At birth, primitive reflexes are present to assist in survival - most develop in utero. These involuntary movement patterns are designed to keep the newborn alive and help with development throughout infancy.
- The kicker here is that these primitive reflexes do not stay forever; they should integrate - go away or mature - some around 12 months of age, some closer to two or three years old.
- When a primitive reflex integrates, it makes way for new, more mature movement patterns and higher-level learning to develop.
- **If a reflex does not integrate, development may be hindered, and the infant may not gain higher-level skills.**

HOW DO THEY NATURALLY INTEGRATE

- **Primitive reflexes are not meant to remain in the body forever.**
- **Once they integrate, more mature and voluntary movements appear.**
- **Primitive reflexes typically integrate naturally - through movement, or what we now call "developmental milestones."**
- **Developing head control, tummy time, rolling, crawling, etc. - these are all examples of natural movement that will assist in natural primitive reflex integration.**

What if primitive reflexes do not integrate ?

- Each primitive reflex comes with its own set of movements and leads to new and different developmental milestones. If a specific reflex is retained, it may affect a specific area of development.
- Additionally, many reflexes are directly related to another. Therefore, if one reflex is retained, we can assume that others may also be retained.

We call these 'retained primitive reflexes'

What if primitive reflexes do not integrate ?

We call these 'retained primitive reflexes'

- If a primitive reflex does not integrate naturally, this is an indication of structural weakness or immaturity within the CNS (central nervous system).

Retained (not integrated) primitive reflexes can interfere with the development of more mature, voluntary movement patterns including:

•Postural reflexes - balance, ability to move safely through environment.

•Bilateral coordination - ability to coordinate arms and legs.

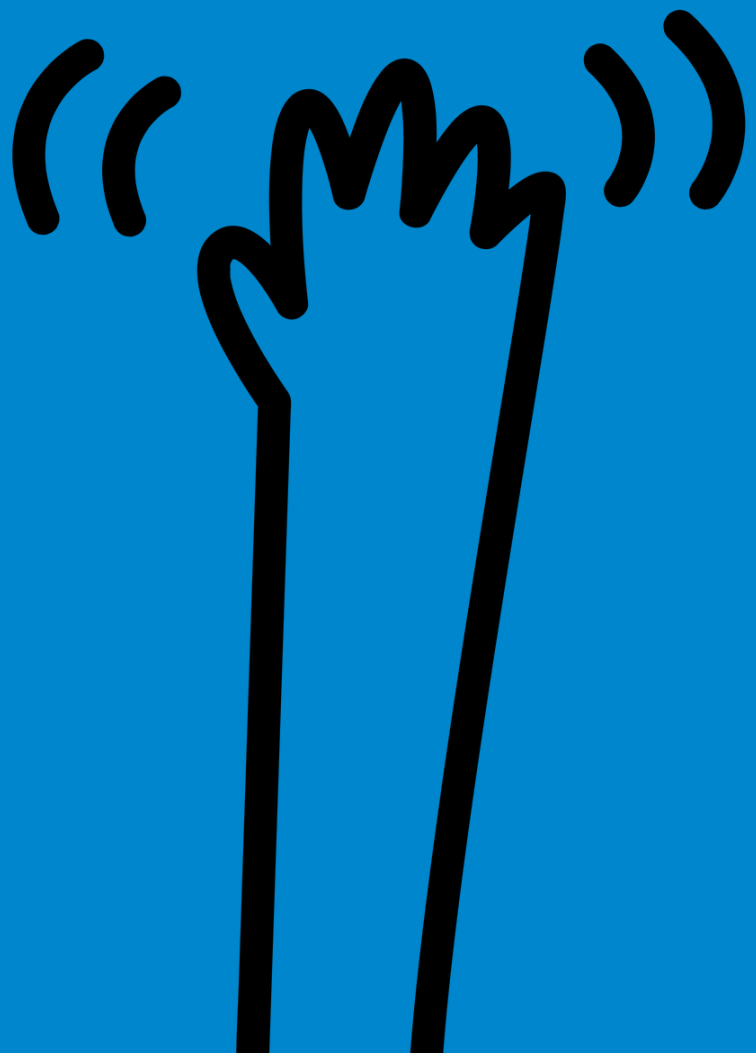
What if primitive reflexes do not integrate ?

We call these 'retained primitive reflexes'

- Instead of mature, voluntary movement patterns, a child with retaimovementned primitive reflexes may develop abnormal patterns which can result in clumsiness. This can affect a child's ability to participate in social activities such as recess and sports.

Because primitive reflexes are the foundation for higher-level learning, if one or more is retained, potential challenges can occur in:

•Learning - challenges sitting and attending in class; challenges with ocular motor skills which affects reading and writing; challenges with establishing a hand dominance.
•Social skills - high anxiety and decreased self-confidence; decreased language and communication skills.



What causes a primitive reflex to not integrate?!

Not a lot of definitive research has been done to determine exactly why primitive reflexes may be retained.

However, there have been some potential factors identified:

- Trauma during pregnancy
- Trauma during and/or after birth
- Exposure to toxins, drugs, tobacco in utero
- Stroke in utero
- Caesarean section delivery

Not a lot of definitive research has been done to determine exactly why primitive reflexes may be retained.

However, there have been some potential factors identified:

- Premature birth
- Prolonged jaundice
- Problems with feeding within the first 6 months of life
- Developmental motor delays
- Minimal floor time as an infant

Not a lot of definitive research has been done to determine exactly why primitive reflexes may be retained.

However, there have been some potential factors identified:

- **There is no definitive answer to WHY a primitive reflex may not integrate naturally.**

  However, there may be contributing factors.

  During pregnancy:

  Hyperemesis or severe morning sickness

  Severe viral infection during the first 12 weeks or between 26-30 weeks

  Alcohol / drug use / smoking

  Radiation

  Severe stress

Not a lot of definitive research has been done to determine exactly why primitive reflexes may be retained.

However, there have been some potential factors identified:

- **During the birthing process:**

Prolonged labor

Placenta previa

Use of forceps or "vacuum"

Breech

Cesarean

Cord wrapped around infant's neck

Fetal distress

Premature / post-mature (2 weeks early or late)

Not a lot of definitive research has been done to determine exactly why primitive reflexes may be retained.

However, there have been some potential factors identified:

- **In newborns and infants:**

Low birth weight (under 5 pounds)

Incubation

Prolonged jaundice

"Blue baby"

Feeding challenges in the first 6 months

High fever, delirium, or convulsions in the first 18 months

Adverse reactions to any of the inoculations

Delayed walking or talking (later than 18 months

Not a lot of definitive research has been done to determine exactly why primitive reflexes may be retained.

However, there have been some potential factors identified:

- **Additionally, if a child is placed in "containers" for the majority of their waking hours, they are unable to participate in natural movement-based activities resulting in delayed milestones and potentially retained primitive reflexes.**

Certain diagnoses may also contribute to retained primitive reflexes.

There is no "fault" to be had, no blame to give. Only knowledge and the tools to help!

- Trauma during pregnancy
- Trauma during and/or after birth
- Exposure to toxins, drugs, tobacco in utero
- Stroke in utero
- Caesarean section delivery
- Premature birth
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This is not an exhaustive list, but simply some potential factors that have been identified in correlation with retained primitive reflexes.

These factors, however, are not a guarantee that a child's primitive reflexes will be retained.

WHO DOES THIS AFFECT

- **Retained primitive reflexes can affect anyone.**

  Children with specific diagnoses may be more likely to retain primitive reflexes, including (but not limited to):

  Down Syndrome
  Cerebral Palsy
  Genetic Disorders

  Children who receive a diagnosis of Autism, ADD/ADHD, ODD, and SPD often show signs of retained primitive reflexes.

  Children who struggle with tummy time as infants, who spend too many waking hours in containers, who experience trauma (in the womb, during birth, after birth), or who are born pre-maturely may be more likely to retain primitive reflexes

Primitive Reflexes that we often see:

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The Moro Reflex

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The Moro Reflex

- The Moro Reflex is present at birth - it is an involuntary movement in response to sudden stimuli.
- You've heard of the startle reflex, right? That's the Moro Reflex!
- The Moro Reflex should be integrated - not present - by six months after birth, at the latest.

The Moro Reflex appears in-utero, at approximately 9 weeks after conception.

It is typically inhibited / integrated by 2-4 months after birth.

The Moro Reflex is an involuntary reaction to a "threat." In fact, the Moro Reflex is thought to cause the first breath of life at birth.

Triggers of the Moro Reflex can be:

Vestibular input (a head position change).

Auditory input (loud or sudden noise).

Visual input (movement, light).

Tactile input (sudden, light touch, etc.).

When triggered, the Moro reflex produces a physical reaction:

Instant arousal along with a rapid intake of breath followed with a breath out (and oftentimes includes a cry).

The "fight or flight" response, which alerts the sympathetic nervous system. This causes a release in adrenaline and cortisol.

Other reactions may include: increased breathing rate, heart rate, blood pressure, and reddening of the skin.

Additionally, the arms and legs will move up and out (abduction), followed with collapsing back in (adduction). This is the "startle" response that is seen in infants.

Why is it important?

- **May assist in taking the first breath of life;**
- **Develop Muscle tone Particularly extensor muscles tone , help to establish the balance.**
- **Regulate the breathing.**
- **Filtration of sensations , that will improve the ability to pick the important input and ignore the not important input.**

- **If the Moro Reflex is retained (meaning, it does not integrate, or go away, naturally), some signs / symptoms may look like:**

An exaggerated startle response to seemingly small triggers.

Hypersensitivity within one or more sensory systems.

In a constant state of "fight or flight.“

A fearful individual - poor socialization.

A need to control situations - may seem manipulative.

Poor flexibility to change.

Lowself-esteem.

Overall anxiety.

Mood swings.

High muscle tone.

Challenges making decisions.

Challenges with vestibular input - constant car sickness / motion sickness, poor balance and coordination.

Challenges with ocular motor and visual perception.

Challenges with auditory discrimination.

Additionally, if an individual has a retained Moro Reflex, their body is constantly releasing adrenaline and cortisol - these are often called our "stress hormones".

They are two of the body's chief defenses against allergies and infection.

If they are in constant use (due to a retained Moro Reflex), they are diverted from their primary functions resulting in:

- Challenges fighting viruses and bacteria.
- Overreactions to certain medications.
- Sensitivities / allergies to food / food additives.

Therefore, an individual with a retained Moro Reflex may also show signs / symptoms of:

- Allergies.
- Poor immunity - sick more often than not.
- Asthma.
- Eczema.
- Frequent ear infections.

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The Moro Reflex

- **EVIDANCE BASED** TESTS OF RETAINED MORO REFLEX FROM OCCUPATIONAL THERAPY POV.

OBSERVE THE PRESNTER.

Clinical Observations:

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The Moro Reflex

1. Short, shallow breath

2. How/where they are breathing

(i.e. holding breath, lack of recovery in response to sudden stimuli)

3. Tonal changes- particularly in extremities in response to change or lack of appropriate tonal changes in response to sudden balance or extreme movement (i.e. falling)

4. Breath/arousal level in response to sounds in environmentlack of recovery or return to baseline

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The Moro Reflex

Watch how the presenter will do each of the activity in detail and listen to the protocol of each of reflex.