

Just because you don't know something doesn't mean it cannot exist



Unfortunately, **many people are unaware or choose to ignore the fact that primitive reflexes that have persisted beyond their appropriate developmental timeframe negatively affect our daily lives.** Many parents are unaware of why their child cannot sit still for two minutes, why they have a bowel movement only every fifth or sixth day, or why they have involuntary movements, clumsiness, etc. The list could go on.

Infantile reflexes, also known as **primitive reflexes**, are **involuntary motor responses of the brainstem** to stimuli experienced by the baby. Most of them appear after birth during early childhood development. They promote the child's survival, initiate and enhance sensory perception, and thanks to their "work," appropriate muscle tone develops.

Primitive reflexes provide the initial impetus for a child's development and maturation. **Once they have fulfilled their role, they are inhibited (stopped) due to the maturation of the cerebral cortex.**

Voluntary motor activities take over the role of reflexes. For example, the baby no longer just flails their arms but reaches out for an object they want to grasp. Primitive reflexes should be inhibited by the age of 2-3 at the latest.

The maturation of the child's cerebral cortex involves the release of neurotransmitters. These are chemical substances released by neurons that affect the functioning of other neurons, either by enhancing, reducing, or completely inhibiting their activity. **The primary inhibitory neurotransmitters involved in cortical inhibition are gamma-aminobutyric acid (GABA) and glycine.**

GABA is the most abundant **inhibitory neurotransmitter** in the brain, and it exerts its effects by binding to GABA receptors on the surface of neurons. This binding reduces their excitability. **GABA is synthesized from a substance called glutamate**, one of the brain's primary **excitatory neurotransmitters**. Maintaining a **balance** between these two neurotransmitters is essential for maintaining **healthy levels of neuronal activity**.

Glycine is another **inhibitory neurotransmitter** primarily found in the spinal cord and brainstem. It also binds to receptors on the surface of neurons and plays an important role in **inhibiting infantile reflexes** and **regulating muscle tone**.

Other neurotransmitters, such as **serotonin** and **dopamine**, can also regulate the activity of inhibitory neurons and contribute to the forming of reflexes and other motor behaviors.

Therefore, the complex interactions between excitatory and inhibitory neurotransmitters are essential for proper brain function and the regulation of motor behavior, **including the cortical inhibition of primitive reflexes**.

In many cases, certain diseases draw attention to fundamental biological phenomena.

For example, in recent years, numerous publications have suggested a correlation between the reappearance of primitive reflexes and problems affecting the frontal lobe. This year (2023), a published study reported that these release signs correlate with frontal lobe pathology, including Alzheimer's, multiple sclerosis, and schizophrenia. In schizophrenic patients, more frontal release signs (primitive reflexes) were observed compared to their unaffected siblings and the control group.

Another research finding, published in 2010, associates the reappearance of the grasp reflex with abnormalities in the frontal lobe. According to the authors, the re-emergence of certain infantile reflexes, including the grasp reflex, can be an early sign of Lewy body dementia. This is supported by a longitudinal study that reports the presence of the grasp reflex, glabellar reflex, and palmomental reflex two years before the onset of dementia symptoms. Some authors suggest that the latter two reflexes can also be considered early indicators of Parkinson's disease.



Why am I writing about the reappearance of infantile reflexes in relation to neurological problems?

The explanation is simple. These reflexes are released from inhibition (i.e., they reappear) because cortical activity weakens due to structural or functional problems in the brain. Cortical inhibition is responsible for preventing the elicitation (i.e., appearance) of infantile reflexes. Therefore, a decrease in cortical activity leads to the reappearance of these reflexes.

What is crucially important is that in early childhood, the process happens in reverse, which holds the key to **understanding the connection between the presence of primitive reflexes and issues such as learning difficulties, behavioral disorders, bedwetting, or even the emergence of autistic symptoms.**

If infantile reflexes are not triggered in an appropriate quantity or quality, cortical inhibition may not fully develop or may only partially develop. After the age of 2-3, the activation of infantile reflexes indicates immaturity in certain areas of the cortex. The reason why primitive reflexes persist and exist is that the cerebral cortex relies on the stimulus-response connections provided by these reflexes, which have an impact on the respective cortical regions.

I am sure that numerous studies are needed for clarity and to provide the most appropriate interventions for children and adults who experience difficulties in various aspects of their lives due to existing or re-emerging infantile reflexes.

I have conducted research and currently collaborate with two foreign universities on the issue. The studies I am involved in focus on examining the relationship between ADHD, ASD, speech development issues, dementia, and the presence of primitive reflexes.

In the following, I would like to present some research findings related to the topic that reveal the close relationship between existing primitive reflexes and various learning, behavioral, and other problems. Please note that this list is by no means exhaustive. There have been and are currently many more ongoing studies. At the end of this blog post, you can find links to the articles for those who would like to read the full material.

In 2000, McPhillip and colleagues published a **highly valuable study** in **The Lancet**. **They examined the relationship between persistent primitive reflexes and reading difficulties.** A randomized, double-blind, controlled trial found a **strong correlation between persistent primitive reflexes (particularly the Asymmetrical Tonic Neck Reflex, or ATNR) and reading difficulties.** They also recommended continuous and long-term training to maintain inhibition of the already integrated reflex.

In 2004, Taylor, Houghton, and Chapman investigated the relationship between attention deficit hyperactivity disorder (ADHD), attention difficulties, and four infantile reflexes (Moro, the tonic labyrinthine reflex(es), the asymmetrical tonic neck reflex, and the symmetrical tonic neck reflex) in **109 boys aged 7-10**. Among them, 54 were diagnosed with ADHD, and 34 exhibited sub-syndromal coordination, learning, emotional, and/or behavioral difficulties. The results showed that **boys diagnosed with ADHD had a significantly higher presence of persistent infantile reflexes than those without an ADHD diagnosis.**

In 2007, McPhillips and Jordan-Black examined the relationship between the presence of primitive reflexes and dyslexia in a representative sample of **739 children aged 7-9**. The study revealed that the **persistence of the Asymmetric Tonic Neck Reflex (ATNR) significantly predicted difficulties in reading, spelling, non-word reading (interpretation of symbols and pictures), and verbal abilities.** The results led to the conclusion that the persistence of primitive reflexes can influence the acquisition of fundamental learning abilities in many primary school children.

In 2014, Kondraciuk and colleagues examined the infantile reflexes that can be elicited by stimulation of the face and tongue. These include **the sucking reflex, rooting reflex, and other reflexes present on the face.** The researchers described how abnormalities and delayed reactions of oral reflexes **can hinder speech development and cause articulation disorders.** Early recognition of dysfunction and appropriate therapy are key to ensuring rapid and effective development. Late diagnosis can impact the infant's harmonious development, exacerbate existing abnormalities, and increase the likelihood of secondary disorders.

In 2019, Rathnayake published a very important study highlighting the significance of **home-based exercises** that promote the inhibition of primitive reflexes. The study emphasized the importance of regular practice in performing these exercises.

In 2019, under the leadership of Williem Ray, a research team examined the possible correlation between the Moro reflex and anxiety. The researchers found that an intense Moro reflex (startle reflex) could be associated with self-reported negative emotional states. However, they concluded that the presence of the Moro reflex alone is not sufficient to diagnose anxiety. They suggested that testing the Moro reflex could serve as a significant predictor of an individual's state.

In 2020, a study led by Melillo involved **2175 individuals between the ages of 3.2 and 22.04** diagnosed with attention deficit hyperactivity disorder (ADHD). Participants were recruited from 89 different locations across the United States. The subjects of the experiment participated in a 12-week sensorimotor reflex integration program. The study found that **a significant reduction in persisting primitive reflexes was strongly associated with improved performance in mathematical problem-solving and auditory comprehension of text.**

In 2020, Mats Niklasson defended his doctoral dissertation at Bolton University. In his thesis, he highlighted the **importance of the vestibular system's functioning and emphasized the significance of inhibiting persisting primitive reflexes in overcoming learning difficulties and behavioral disorders.**

From 2018 to 2022, I also published on the topic. I investigated the relationship between sensorimotor maturity and auditory and visual subskills. The assessment of sensorimotor maturity included testing eight primitive reflexes. A total of **772 children between the ages of 5 and 8** were included in the controlled study. The results indicated a **significant correlation between children's sensorimotor maturity and their auditory and visual abilities.**

In 2021, Pecuch and colleagues examined **112 children aged 4-6**. They compared the children's motor abilities with the presence of the asymmetric tonic neck reflex (ATNR), symmetric tonic neck reflex (STNR), and tonic labyrinthine reflex (TLR). They found that children with high reflex activity had lower motor efficiency, and as reflex activity decreased, children's motor abilities improved. The study concluded that **inhibiting the reflexes could enhance children's motor skills, perceptual abilities, emotional regulation, and behavior.**

In 2021, Hickey and Feldhacker published the results of a study that examined the relationship between ATNR, Moro reflexes, behavior, and attention in pre-schoolers. The researchers found a **strong correlation between ATNR activity and resistance and defiance, as well as between the retention of the Moro reflex and inattentiveness.** They emphasize the need for further research, but these findings support previous studies indicating the importance of early screening of primitive reflexes to promote balanced behavior in children.

In 2021, Sigafoos and colleagues conducted a **significant summary analysis**, known as a meta-analysis, to examine the results obtained from multiple studies.

The results of the studies reviewed in this analysis suggest that primitive reflexes are likely to persist in ADHD, ASD, and possibly several other developmental disorders. Furthermore, **persistent or atypical reflex reactions can be valuable indicators of delayed neurological development, developmental disorders, and learning difficulties. Comprehensive assessments of children's reflex reactions, including the evaluation of primitive reflexes, can provide valuable diagnostic information; therefore, their use should be encouraged.**

The report emphasizes the need to minimize the chances of adverse effects on learning or behavior caused by persistent primitive reflexes.

The authors propose three possible solutions:

1. Preventing the persistence of infantile reflexes;
2. **Teaching individuals to perform home exercises that promote the inhibition of persistent reflexes;**
3. Integrating the unintegrated reflexes.

They strongly recommend further research on the topic.

In 2022, Leisman, Melillo, and their colleagues provided evidence supporting the claim that various aspects of autism spectrum disorder (ASD) are associated with delayed and uneven development of brain networks. They describe how delayed brain maturation in specific networks can lead to a developmental lag in cortical areas while other regions of the brain may undergo intensified development. The study corroborates the **close relationship between retained primitive reflexes and cognitive and motor functions, particularly in the case of ASD**. It also suggests that inhibiting primitive reflexes may result in positive benefits for symptoms of ASD.

It is crucial to know that anyone, anywhere, can engage in exercises promoting reflex inhibition! Let's not forget that parental supervision is essential, especially with young children. What matters for everyone is consistency. It is more beneficial to perform 2-3 exercises every day, than to do 16 exercises once a week or not do them at all. You can read more about this in my book **The Stephens-Sarlós Program** and you can use my **video exercise packages** for treating **ADHD**, **Dyslexia**, **Bedwetting** and other conditions, and for each of the **commonly occurring primitive reflexes**.

Finally. The list, which I wrote above, is not exhaustive. Fortunately, in recent years, more and more research findings are coming to light. **It is vital to conduct research and publish because it propels us forward, opens people's eyes, helps us understand the world, and, most importantly, research results assist us in helping others.**



Sources:

- <https://www.mdpi.com/2076-3425/11/8/967>
- <https://www.sciencedirect.com/science/article/abs/pii/S0140673699021790>
- <https://pubmed.ncbi.nlm.nih.gov/35830652/>
- <https://www.tandfonline.com/doi/full/10.1080/19411243.2021.1910606>
- <https://www.frontiersin.org/articles/10.3389/fpubh.2020.431835/full>
- <https://files.eric.ed.gov/fulltext/EJ852040.pdf>
- <https://pubmed.ncbi.nlm.nih.gov/17030045/>
- <https://link.springer.com/article/10.1007/s40474-021-00232-2>
- <https://search.informit.org/doi/abs/10.3316/informit.803081079389211>
- <https://journals.rcni.com/nursing-children-and-young-people/evidence-and-practice/retained-primitive-reflexes-in-children-clinical-implications-and-targeted-homebased-interventions-ncyp.2019.e1132/abs>
- <https://repository.ukim.mk/bitstream/20.500.12188/24518/1/Persistenceofprimitivereflexesandassociatedproblemsinchildren.pdf>
- <https://www.tandfonline.com/doi/abs/10.1080/19411243.2021.1910606>

- Blomberg, H. & Dempsey, M. (2008). Movements That Heal: Rhythmic Movement Training and Primitive Reflex Integration. East Melbourne, Vic.: Beyond the Sea Squirt.
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6707516/>
- <https://www.frontiersin.org/articles/10.3389/fnbeh.2015.00010/full>
- <https://www.ncbi.nlm.nih.gov/books/NBK554606/>
- https://www.umb.edu.pl/photo/pliki/progress-file/phs/phs_2014_1/188-194_kondraciuk.pdf
- Rashikj Canevska, O.& Mihajlovska M. (2019). Persistence of primitive reflexes and associated problems in children. **Годишен Зборник На Филозофскиот Факултет/The Annual of the Faculty of Philosophy in Skopje**, 72, 513–522. doi:10.37510/godzbo1972513rc
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7664452/>
- <https://www.dissertations.se/about/Mats+Niklasson/>
- https://www.researchgate.net/publication/341988158_Niklasson_M_2020_The_importance_of_grounded_assessments_and_interventions_Towards_a_new_framework_for_Developmental_Coordination_Disorder_Bolton_UK_PhD_by_publication_University_of_Bolton

[Image by vecstock](#) on Freepik

Image by [Freepik](#)

[Image by jcomp](#) on Freepik