



If you'd like to schedule an appointment at one of our clinics, we'd love to support your child's next steps.

Visit our website by clicking [here](#) to find a clinic near you and book your appointment today.

Exercises

Parietal Lobe 	Information Processing 	Babinski 	Rooting 	Palmar 
Moro 	Cerebellar 	Ocular 	Vestibular 	Vestibulo-Ocular 
Postural 	Balance 	Proprioception 	Core Muscle Development 	Symmetric Tonic Neck Reflex 
Tonic Labyrinthine Reflex 	Asymmetric Tonic Neck Reflex 	Spinal Galant 		



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Parietal Lobe

Primary Functions

- Sensory Processing: Interprets touch, temperature, pain, and pressure sensations
- Spatial Awareness: Helps understand where your body is in space and in relation to objects
- Visual-Spatial Processing: Assists in understanding maps, diagrams, and navigating environments
- Body Awareness: Maintains awareness of body parts and their positions
- Language Processing: Contributes to reading, writing, and mathematical calculations

Signs of Underdevelopment

- Sensory Integration Issues: Difficulty processing multiple sensory inputs simultaneously
- Over or under-sensitivity to touch, temperature, or pain
- Problems with tactile discrimination
- Spatial Awareness Challenges: Poor coordination and balance
- Difficulty with direction and navigation
- Bumping into objects frequently
- Academic Difficulties: Struggles with mathematics and geometry
- Poor handwriting skills
- Reading comprehension issues

Underdevelopment of the parietal lobe can affect:

- Motor Planning: Difficulty organizing and sequencing physical movements
- Personal Care: Challenges with dressing, grooming, and self-care activities
- Social Interactions: Problems understanding personal space and body language
- Learning: Struggles with abstract concepts and visual-spatial tasks



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Parietal Lobe Exercises



The above QR code can be scanned and used to access the parietal lobe exercises, or click [here](#).

Perform the exercises highlighted by your provider for the prescribed number of repetitions **2x/day**.

1. Battleship
2. Directionality (left and right arrows)
3. Graphesthesia
4. Home plate game
5. Simon says
 - a. First 6 weeks- only the right side of the body
 - b. After the first 6 weeks, add in the left side of the body



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Information Processing

Information processing in the brain involves multiple cognitive systems working together to receive, analyze, store, and respond to incoming data.

Key Components

- Sensory Reception: Information enters through sensory organs
- Attention: The brain filters relevant information from background noise
- Working Memory: Temporary storage and manipulation of information
- Long-term Memory: Storage of processed information for future use

Importance of Information Processing

- Learning and academic performance
- Social interaction and communication
- Decision-making and problem-solving
- Motor coordination and spatial awareness

Visual Processing Issues

- Difficulty with reading and writing
- Problems with spatial awareness and navigation
- Challenges with hand-eye coordination
- Trouble recognizing objects or faces

Cognitive Processing Challenges

- Slower response times to stimuli
- Difficulty following multi-step instructions
- Problems with organization and planning
- Challenges with memory retention Increased mental fatigue

Common Causes of Processing Difficulties

- Neurological conditions or injuries
- Developmental disorders
- Stress and anxiety
- Sleep deprivation



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Information Processing Exercises



The above QR code can be scanned and used to access the ocular exercises or click [here](#).

Perform the exercises highlighted by your provider for the prescribed number of repetitions in the video **2x/day**.

1. Closed, open, flat
2. Slap tap
3. Saccade dots



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Sensory Reflexes

Palmar Reflex

The palmar reflex in a baby is present to assist the baby in grasping objects when placed in the baby's hands. Full integration of this reflex happens by 3 months of life. In a baby, the palmar reflex is connected with sucking movements. When this reflex is not integrated, it can lead to speech difficulties due to poor development of independent muscle control in the mouth. When a patient's palmar reflex is present after the first 3 months, they may experience some of the following symptoms: poor fine motor and manual dexterity, poor handwriting, poor pencil grip, weak immune system, speech difficulties, difficulty processing ideas onto paper, constant need to touch and hold things, mixed dominance, and poor memory for details.

Rooting (sucking) Reflex

The rooting reflex is present in a baby to assist in feeding. When a baby's cheek is stroked, the reflexive response is for the child to turn their head to find a nipple or bottle so that they can eat. This reflex should be integrated by 4 months of life. When it is not integrated within the proper time, the child may experience some of the following symptoms: chewing on clothing frequently, speech issues, difficulty swallowing and chewing, involuntary tongue or mouth movement, hypersensitivity around the mouth, drooling, oral fixations, messy eating, and may dislike certain textures.

Babinski Reflex

The Babinski reflex is a reflex response on the feet when the outside of the foot is firmly stroked. This reflex should be integrated between the first and second years of life. This reflex may be tied to a delay in walking in a child. When this reflex is present, the patient may experience some of the following symptoms: poor balance, difficulty thinking and speaking in a fluid rhythm, running awkwardly, low back pain while walking or standing, walking on sides of feet or flat-footed, toe-walking, easily sprained ankles, and hip rotation.



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Sensory Reflex Exercises

Babinski



Rooting



Palmar



The above QR codes can be scanned and used to access the sensory reflex exercises or use the link below for the highlighted reflex.

These reflex exercises can be performed with a Z-vibe or some type of vibrational tool to elicit the reflex. These reflex exercises can also be performed with a finger, paintbrush, or pen without the ink.

Perform the exercises highlighted by your provider for the prescribed number of repetitions **2x/day**.

1. **Palmar**. Click [here](#) to access the video.

- a. Sensory integration
- b. Paper crumpling

2. **Rooting**. Click [here](#) to access the video.

3. **Babinski**. Click [here](#) to access the video.

- a. Sensory integration
- b. Object pick up

Recommended tools (your provider will highlight the tool needing to be purchased)

1. **Z-vibe** (can be purchased on Amazon using this QR code or click [here](#))



2. **Rezzimax** (can be purchased using this QR code or click [here](#))



3. **Other** _____



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Moro Reflex

The moro reflex is present in a baby so that they involuntarily react to stimuli such as touch, sound, light, or the feeling of dropping. This reflex is present to help the baby survive by alerting caregivers of perceived threats and protects the child from dangerous environmental stimuli. When this reflex is elicited, the baby may respond by clenching fingers, extending extremities, quick flexion of extremities, crying, anger, sympathetic nervous system response, fight or flight responses, quick inhalation, startling, or freezing. The moro reflex is connected to every sense and is the foundation of all other reflexes. This reflex can be elicited through loud sounds and bright lights. The moro reflex should be integrated by around 4 months of life. When this reflex is not integrated within the proper time, it causes the individual to be in a constant fight or flight state, which can lead to many other complex health issues. Symptoms that may be present when this reflex is unintegrated include:

- Sleep disturbances
- Easily triggered
- Emotional outbursts
- Poor balance and coordination
- Poor stamina
- Poor digestion
- Weak immune system
- Sensitivity to light, movement, sound, touch, and smell
- Motion sickness
- Difficulties with vision, reading, and writing
- Difficulties with adapting to change
- Cycles of hyperactivity followed by extreme fatigue
- Easily distracted
- Difficulty catching a ball
- Difficulties with visual perception
- Difficulty with social skills
- Low immune system



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Moro Reflex Exercises



The above QR code can be scanned and used to access the moro reflex exercises or click [here](#).

Perform the exercises highlighted by your provider for the prescribed number of repetitions **2x/day**.

1. Slow ROM for Moro
2. Over the ball
3. Manual Moro
4. Starfish



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

The Cerebellum

The cerebellum, meaning "little brain," is a crucial part of the brain located at the back of the head, just above the neck. While small in size, it plays a vital role in movement, balance, and cognitive functions.

Key Functions

- Movement and Coordination: Controls precise movements and helps synchronize body parts
- Balance and Posture: Works with the vestibular system to maintain stability
- Motor Learning: Assists in learning and perfecting new movement patterns
- Cognitive Support: Influences attention, focus, and emotional regulation

Signs of Cerebellar Dysfunction

- Motor delays and clumsiness
- Balance difficulties
- Coordination problems
- Speech development issues
- Focus and emotional regulation challenges



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Cerebellar Exercises



The above QR code can be scanned and used to access the cerebellar exercises or click [here](#).

Perform the exercises highlighted by your provider for the prescribed number of repetitions in the video **2x/day**.

1. Supine cross-crawls
2. Standing cross-crawls
3. Figure 8's
4. Finger to nose
5. Heel to shin
6. Balance beam walking
7. Playing catch while standing on an unstable surface
8. Rhomberg, semi-tandem, tandem
9. Bosu ball activities
10. Bobo board- see below

Additional balance and postural reflexes games using the bobo board we use in the office. The QR code can be used to purchase it or click [here](#). Use code Infinity10 to get 10% off.





INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Ocular Development

Oculomotor skills are the complex set of eye movement controls essential for visual tasks, managed by three cranial nerves (III, IV, and VI) working in conjunction with the brainstem, cerebellum, and visual cortex. These skills, which include fixation, saccades, pursuits, and convergence/divergence, continue developing through adolescence and are crucial for academic performance. Poor oculomotor function can lead to difficulties in reading, focusing, and visual attention, often manifesting as symptoms that might be mistaken for other learning disorders. The development of these skills can be significantly impacted by retained primitive reflexes, particularly the Tonic Labyrinthine Reflex (TLR), Asymmetrical Tonic Neck Reflex (ATNR), Symmetrical Tonic Neck Reflex (STNR), and Moro Reflex, which can interfere with proper visual tracking and focus if not properly integrated during development.

In the office, we work on retained primitive reflexes before we can work on ocular development. This is because when the primitive reflexes are not integrated, they compete with the more mature postural and motor control systems (balance centers) needed for fine-tuned oculomotor skills. This reflects incomplete maturation of the central nervous system, particularly in the brainstem and cortical areas.

Signs of Primitive Reflex Retention in Oculomotor Tasks

- Poor visual tracking of moving objects and skipping or re-reading lines when reading.
- Poor convergence ability leading to double vision or reduced visual attention at near.
- Difficulty with saccadic movements, like shifting focus across words or between the board and desk.
- Fatigue or headaches during tasks requiring sustained eye movements.



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Ocular Exercises



The above QR code can be scanned and used to access the ocular exercises or click [here](#).

Perform the exercises highlighted by your provider for the prescribed number of repetitions in the video **2x/day**.

1. Dot the O's metronome/without metronome
2. ET Touch
3. Mirror Head Turns
4. Notice the Room
5. Pointer in the Straw
6. Pencil Push-Ups
7. Eye Stretch Dome



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

The Vestibular System

The vestibular system, one of three major balance systems alongside vision and somatosensory systems, primarily functions to inform the brain about a person's head position in space. Working together with external feedback from vision and somatosensory systems, this internal balance mechanism is crucial for maintaining equilibrium. The vestibular system consists of peripheral components (semicircular canals to sense velocity and the utricle and saccule to detect gravity) and central components (including vestibular nuclei in the brainstem and parts of the cerebellum). When the vestibular system is impaired or damaged through inflammation, developmental issues, or structural abnormalities, it can lead to symptoms like dizziness, poor coordination, and impaired spatial awareness. This is particularly notable in conditions like autism, where studies indicate up to 70% of individuals with autism experience vestibular processing difficulties, often accompanied by motor coordination and sensory processing challenges.

General Vestibular and Sensory integration observations related to vestibular dysfunction:

- Posture: head tilts, rotation, etc.
- Difficulty maintaining balance
- Dysfunctional movement patterns
- Lack of spatial awareness/proprioception
- Difficulty with motor coordination
- Sensitivity to motion
- Avoidance of activities
- Sensory seeking for vestibular input
- Impaired fine motor skills and handwriting
- Complaints of dizziness or vertigo



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Vestibular System Exercises



The above QR code can be scanned and used to access the vestibular exercises or click [here](#).

Perform the exercises highlighted by your provider for the prescribed number of repetitions in the video **2x/day**.

1. Walking with head turn back and forth
2. Jumping with 180 degree rotation
3. VOR in horizontal and vertical directions
4. Romberg, semi-tandem, and tandem stance
5. Obstacle course with various surfaces
6. Seated/standing head circles
7. Ankle sways and circle sways
8. Ball circles in standing
9. Bounces on exercise ball with visual fixations
10. Laser maze
11. Rolling over exercise ball
12. Rolling on the floor
13. Balance board
14. General vestibular exercises



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Vestibulo-Ocular Reflex (VOR)

The Vestibulo-ocular Reflex (VOR) is a crucial neurological mechanism that develops in early childhood, enabling stable vision during head movement by triggering equal but opposite eye movements. This reflex, which begins developing in infancy and matures throughout early childhood, helps your child maintain the stability of their vision and their ability to understand and interact with objects and images in the space around them. This allows them to keep their body's orientation and spatial awareness within their surroundings. This is done by the brain's ability to coordinate the signals between the vestibular system in the inner ear and the muscles that control eye movements.

Signs of Underdeveloped or Dysfunctional VOR:

- Difficulty tracking moving objects or reading while moving
- Poor balance and coordination
- Motion sickness or increased sensitivity to movement
- Challenges with hand-eye coordination
- Difficulty maintaining focus during physical activities
- Delayed motor development milestones
- Visual processing issues
- Dizziness or disorientation during quick head movements
- Poor spatial awareness
- Difficulty with activities requiring head and eye coordination



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Vestibulo-Ocular Reflex (VOR) Exercises



The above QR code can be scanned and used to access the VOR exercises or click [here](#).

Perform the exercises highlighted by your provider for the prescribed number of repetitions in the video **2x/day**.

1. Mirror head turns
2. Walking with head turns to the left and right



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Postural Reflexes and Balance

Postural Reflexes in Child Development

Oculo Head Righting Reflex

The oculo head righting reflex helps maintain the head's position in relation to visual input. When functioning properly, this reflex allows children to:

- Keep their eyes level with the horizon
- Maintain visual focus while moving
- Support proper head control during daily activities

Labyrinthine Head Righting Reflex

The labyrinthine head righting reflex works through the vestibular system in the inner ear to:

- Maintain head position against gravity
- Support proper neck muscle development
- Aid in spatial orientation

Neurological Mechanism

- Visual and vestibular input is processed in the brainstem
- Signals travel through cranial nerves to neck muscles
- The cerebellum coordinates these movements for smooth execution

Impact of Underdeveloped Postural Reflexes

- Poor balance and coordination
- Difficulty with reading and writing
- Problems with spatial awareness
- Challenges in sports and physical activities
- Motion sickness
- Poor posture

The Importance of Balance Development

- Forms the foundation for all motor skills
- Supports cognitive development through movement exploration
- Enhances confidence in physical activities
- Improves academic performance through better body control



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Postural Reflexes and Balance Exercises

Postural Reflexes



Balance



The above QR code can be scanned and used to access the postural reflex and balance exercises or click [here](#) for postural reflex exercises or [here](#) for balance exercises.

Perform the exercises highlighted by your provider for the prescribed number of repetitions in the video **2x/day**.

1. Ankle sways and circle sways
2. U-shaped balance board
3. Balance beam walking
4. Playing catch while standing on an unstable surface
5. Rhomberg, semi-tandem, tandem
6. Bosu ball activities
7. Bobo board- see below

Additional balance and postural reflexes games using the bobo board we use in the office. The QR code can be used to purchase it or click [here](#). Use code Infinity10 to get 10% off.





INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Proprioception: The Brain's Body Awareness System

Proprioception is the brain's ability to sense the position and movement of body parts without visual input. It's often called our "sixth sense" as it provides constant feedback about our body's position in space. Proprioceptive information travels through specialized sensory receptors to the spinal cord and the brain. Strong proprioceptive development is fundamental for physical confidence and body awareness, motor planning and coordination, spatial awareness and navigation, athletic ability and physical performance, and academic tasks requiring fine motor control.

Children with proprioceptive processing difficulties often display characteristic behaviors and challenges:

Physical Movement Patterns:

- Appears clumsy or frequently bumps into objects
- Uses excessive force when handling objects or writing
- Difficulty gauging personal space with others

Body Awareness Issues:

- Seeks intense physical input (jumping, crashing, pushing)
- Difficulty maintaining appropriate posture
- May appear restless or constantly moving

Motor Planning Challenges:

- Struggles with sequencing physical movements
- Has trouble learning new physical skills
- May avoid physical activities due to uncertainty

Daily Task Difficulties:

- Problems with handwriting pressure and control
- Difficulty with self-care tasks requiring coordination
- May struggle with tool use and manipulation



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Proprioception Exercises



The above QR code can be scanned and used to access the proprioception exercises or click [here](#).

Perform the exercises highlighted by your provider for the prescribed number of repetitions in the video **2x/day**.

1. Body Lifts- Start with level 1 and progress through the levels when each level is mastered.
2. Wiggles and Lifts- Start with level 1 and progress through the levels when each level is mastered.
3. Oppositional Walking
 - a. Toes in
 - b. Toes out



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Core Muscle Development

Core muscle development is intricately linked to the central nervous system, particularly the cerebellum, which plays a crucial role in balance, coordination, and motor learning. The midline cerebellum, specifically, is essential for maintaining postural control and coordinating movements across both sides of the body. During childhood development, proper core stability supports the development of both gross and fine motor skills, which in turn affects learning capabilities. Strong core muscles provide the foundation for maintaining proper posture during seated activities, enabling better focus and engagement in learning tasks. This physical stability also contributes to the development of bilateral integration, cross-body movements, and spatial awareness - all crucial components for academic skills like reading and writing.

Signs of Poor Core Development

- Difficulty maintaining seated posture during tasks
- Poor balance and coordination
- Frequent slouching or leaning on furniture
- Difficulty crossing the midline of the body
- Poor handwriting or difficulty with fine motor tasks
- Fatigue during physical activities
- Delayed gross motor skill development
- Difficulty with bilateral coordination activities
- Poor spatial awareness
- Challenges with balance-based activities
- Difficulty maintaining attention during seated work
- Awkward or uncoordinated movement patterns



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Core Muscle Development Exercises



The above QR code can be scanned and used to access the core exercises or click [here](#).

Perform the exercises highlighted by your provider for the prescribed number of repetitions in the video **2x/day**.

1. Bird Dogs
2. Glute Bridges
3. Side Planks
4. Planks
5. Hands Pulling Sit-Ups



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Symmetric Tonic Neck Reflex (STNR)

The STNR is present to help prepare babies for crawling. It is fully present at 6 months of life and should be integrated by 11 months of life. If this reflex is not properly integrated within the appropriate time, it may manifest itself in the following symptoms:

- Poor posture
- Slouching
- Squirming and fidgeting
- Headaches from muscle tension
- Difficulties with writing and reading
- Difficulty coordinating upper body and lower body movements together
- Lack of coordination and balance
- Vision disorders
- Trouble staying on task
- Ape-like walking
- Low muscle tone
- Messy eating



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Symmetric Tonic Neck Reflex (STNR) Exercises



The above QR code can be scanned and used to access the STNR reflex exercise or [click here](#).

Perform the exercises highlighted by your provider for the prescribed number of repetitions in the video **2x/day**.

1. Cat cows



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Tonic Labyrinthine Reflex (TLR)

The TLR has two positions: the forward TLR and the backward TLR. This reflex helps the baby learn head and neck control and helps the body to differentiate the front and back of the body. TLR is used to help a baby increase muscle tone and practice balance, and it aids in developing proprioception and the vestibular system. The TLR interacts with other reflexes to help a child develop coordination, posture, and correct head alignment. The backward TLR starts to integrate at 6 weeks old until the child is 3 years old. The forward TLR integrates by about 4 months old. The TLR and moro reflex are closely related. When this reflex is not integrated properly, the following symptoms may be present:

- Shrunk posture
- Easily fatigued
- Balance and coordination issues
- Muscle tone too tight or too weak
- Motion sickness
- “W” position when sitting
- Difficulty judging distance, depth, space, speed
- Motion sickness
- Visual, speech, and auditory difficulties
- Poor development of self-identity
- Poor short-term memory
- Toe walking



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Tonic Labyrinthine Reflex (TLR) Exercises



The above QR code can be scanned and used to access the TLR reflex exercises or click [here](#).

Perform the exercises highlighted by your provider for the prescribed number of repetitions **2x/day**.

1. Supermans
2. Ball passes
3. Log rolls
4. Rock and roll
5. Over and under



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Asymmetric Tonic Neck Reflex (ATNR)

The ATNR reflex is a reflex that should be integrated by 6 months of life. The ATNR provides stimulation for developing muscle tone and the vestibular system. If a child did not crawl, that is a warning sign that this reflex may not have been integrated within the appropriate time. If an individual has this reflex present, they will most likely exhibit some of the following symptoms:

- Eye tracking issues
- Difficulty crossing midline
- Difficulty reading and tracking
- Left and right confusion
- School issues
- Balance issues
- Focus issues
- Dyslexia
- Handwriting issues
- When this reflex is not integrated in adults, they can present with chronic
- shoulder and neck issues.



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Asymmetric Tonic Neck Reflex (ATNR) Exercises



The above QR code can be scanned and used to access the ATNR reflex exercises or click [here](#).

Perform the exercises highlighted by your provider for the prescribed number of repetitions in the video **2x/day**.

1. Lizards
2. Quadruped head turns
3. Peanut ball head turns
4. Plank head turns



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Spinal Galant Reflex

The spinal galant reflex is present in a baby to assist the baby in learning to belly-crawl and creep. It is also connected to bladder function. This reflex should be integrated at 3- 9 months of a baby's life. When the spinal galant reflex is not fully integrated within the proper time, an individual can experience the following symptoms:

- Consistent bedwetting past age 5
- Hip rotation
- Poor posture
- Difficulty sitting still
- Scoliosis
- Fatigue
- Poor concentration
- Poor short-term memory
- Irritable bowel syndrome (IBS)
- Chronic back or neck pain



INFINITY
NEUROMOTOR DEVELOPMENT CENTER

Spinal Galant Reflex Exercises



The above QR code can be scanned and used to access the spinal galant reflex exercises or click [here](#).

The spinal galant reflex can be activated using a vibrational tool.

Perform the exercises highlighted by your provider for the prescribed number of repetitions **2x/day**.

- 1.Snow angels
- 2.Sensory spinal galant stimulation

Recommended tools by your provider-

- 1.Z-vibe (can be purchased on Amazon using this QR code or click [here](#))



2. Rezzimax (can be purchased using this QR code or click [here](#))



3. Other_____