MNRI® METHOD
GLOSSARY OF TERMINOLOGY

Abdominal reflexes – Contractions of the abdominal muscles on stimulation of the abdominal skin.

Abduct or Abduction – Movement of a limb away from the midline of the body. Abduction of both legs spreads the legs apart. This is achieved by an abductor muscle.

Accommodation reflex – The coordinated changes that occur when the eye adapts itself to near vision; constriction of the pupil, convergence of the eyes, and increased convexity of the lens.

Acoustic reflex – Contraction of the stapedius muscle in response to intense sound.

Adduct or Adduction – Movement of a limb toward the midline of the body. Adduction of both legs brings the legs together. This action is achieved by an adductor muscle.

Archetype Movement Patterns - Archetype movement patterns provide the structure upon which most of the primary movement patterns develop. Integration of the archetype movement patterns can greatly facilitate the integration of primary movement patterns.

Core-Limbs Flexion-Extension – This is the earliest motor pattern. It consists of the movements and postures arising from the links between Center-Periphery and Periphery-Center. This pattern developmentally accesses all the lower and middle parts of the brain before integrating higher neurological connections.

Cross-Lateral Movement – This pattern helps develop the movements crossing the body midline that coordinate the contra-lateral motions of the limbs. This movement creates coordination between the limbs of opposite sides of the body crossing the midline.

Homolateral Movement – This pattern activates the movements of one limb or two limbs on the same side of the body. This movement pattern serves as the basis for accessing one brain hemisphere at a time, brain hemisphere dominance, asymmetrical hemisphere specializations, and accessing the left hemisphere for development of speech dominance and control mechanisms.

Homologous Movement – This pattern is a symmetrical, simultaneous bilateral motion of the body limbs. These “team” mirror movements of arms and legs serve as the foundation for taking, pulling, pushing, raising, etc. This pattern activates independent bilateral hemispheric functioning and functions that coordinate the communication between brain hemispheres.

Intentional/Differentiated Movements – This pattern presents intentional movements which help us to develop goal-oriented and controlled movements and abilities. This is the basis for reaching for an object, and later the formation of the skills used in learning, sports, dancing, music, art and many professional pursuits.

Mouth-Spine Rotation – This is a whole body motion, in which the baby’s head is turning to search for food and is activated by mouth sucking-searching reflexes, which initiate spine rotation. This pattern activates the back brain, the midbrain and RAS, and the neo-cortex.

Trunk Extension – This pattern serves to develop the body stretching mechanisms and movements and supports formation of whole body coordination. This pattern activates connections between the back brain and cortex and relaxes the tension of the protective reaction of the back brain system.

Auditory Figure Ground – Describes a situation in which a child cannot pay attention in the presence of background noise.

Brain stem reflexes – Reflexes regulated at the level of the brain stem, such as pupillary, pharyngeal, and cough reflexes, and the control of respiration; their absence is one criterion of brain death.

Centering reflex – Is this the same thing as vestibulo-ocular reflex, eyes stay centered with movement of the head.

Central Nervous System

Amygdala – Center of emotions. Sends signals to hypothalamus and medulla to activate autonomic system fight or flight response.

Basal Ganglia – Controls cognition. Aids movement coordination and voluntary movement.

Cerebellum – Receives input from sensory nerves, vestibular, auditory and visual systems. Controls fine motor coordination, balance, muscle tone, and basic aspects of memory and learning.

Cerebral Cortex – Responsible for advance thought, language, reasoning, perception, and action. Interprets sensory impulses and touch sensation. Directs and manages planning and organization.

Hippocampus– Consolidates memories. Aids navigation and spatial control.

Hypothalamus – Controls autonomic functions, emotions, endocrine functions and motor functions. Controls pituitary gland by secreting hormones, allowing control over many body functions. Maintains homeostasis. Regulates food and water intake, and sleep wake cycle.

Medulla Oblongata – Controls autonomic functions including heart rate, breathing and blood pressure. Reflex center for coughing, sneezing, and swallowing.

Pons – Aids arousal and sleep. Assists in controlling autonomic functions. Relays information between cerebrum and cerebellum.

Reticular Formation – Controls functions such as sleep, arousal and vomiting.

Thalamus – Provides motor control. Receives auditory, somatasensory and visual sensory signals, and relays
information to the cerebral cortex.

Chain reflex – A series of reflexes, each serving as a stimulus to the next one, representing a complete activity.

Consensual Reflex – Pupil of the eye constricts when light hits the opposite eye.

Convergence-divergence – Describes the ability of the eyes to work cooperatively to maintain focus as objects move closer to the head and further away from the head.

Corneal reflex – Also known as the blink reflex. Closure of the lids on irritation of the cornea.

Directionality – The ability to understand directions (up/down, front/back, left/right) as they relate to function.

Dorsal Cavity – The Dorsal body cavity is divided into two other general areas:

- The *Cranial cavity*, which is enclosed by the skull and contains the brain, eyes, and ears. Eight fused cranial

bones together form the cranial cavity including the frontal, occipital, sphenoid, ehtmoid bones

and two each
of the parietal and temporal bones.
- *Spinal canal*, which is enclosed by the spine and contains the spinal cord.

Dysgraphia – Graphia (writing) is the ability to perform tasks associated with letter formation. Often used as a synonym with writing.

Dyscalculia – A specific learning disability related to learning or comprehending mathematics.

Dyspraxia – Difficulty in planning, sequencing, and carrying out unfamiliar actions in a skillful manner. Poor motor planning is the result of dyspraxia. Praxis is the ability to interact successfully with the physical environment; to plan, organize, and carry out a sequence of unfamiliar actions; and to do what one intends, wants, and needs to do in an efficient, satisfying manner. It is a broad term which actually includes:
Ideation – the thought, planning an idea in the mind, ability to visualize the activity
Motor Planning – making a plan for the action
Execution – actually doing the activity or "executing" the action

Echolalia – The automatic repetition of vocalizations made by another person.

Eye Tracking – Refer to the definition for the *Optokinetic reflex*.

Eyes Staring Reflex (Freezing) – When experiencing fear paralysis, the eyes open wide, the lateral muscles are abducted, the pupils become defocused and eye movement stops.

Fascia – A connective tissue sheath consisting of fibrous tissue and fat which unites the skin to the underlying tissue. Hyperextension -- Extreme extension of a limb or body part.

Flexor – A muscle that bends a limb.

Gaze Reflex – Saccades, smooth pursuits, and convergence are eye movements that serve to direct the gaze toward selected objects.

Gravity Reflex – A stable set of brain and body responses to terrestrial Gravity as a result of changes in body structure, body position in space, and movement.

Gustatory sensory system – The formal name for the sensory system of taste.

Head Righting – The ability of an individual to orient to the vertical position in order for the individual to move around in space.

Hypersensitivity or Hyposensitivity – The overly responsivity or under-responsivity to sensory information or input through the mouth (tactile), nose (olfactory), eyes (visual), skin (tactile), balance (vestibular), movement (proprioception). Hypersensitivity results in tendency to be fearful and cautious or negative and defiant. Hyposensitivity results in a tendency to crave intense sensations or to withdraw and be difficult to engage.

Hypertonic, Hypertonia, Hypertonicity – An increased tension of the muscles, causing an abnormally rigid muscle tone, hampering proper movement.

Hypo – Means below or deficient. For example, hypothermia is a subnormal body temperature.

Hypotonic, Hypotonia, Hypotonicity – A decreased tension in muscle tone, essentially an underdeveloped muscle. A lack of muscle tone inhibits proper movement because the muscle is too soft to support the body.

Integration – 1) The act of being able to integrate or bring together sensory motor functions in useful, functional level of performance. 2) The act of organizing in the body the developmentally appropriate primary reflex pattern.

Light reflex – 1) Cone of light. 2) Contraction of the pupil when light falls on the eye. 3) A spot of light seen reflected from the retina with the retinoscopic mirror.

Low tone/low endurance – The lack of supportive muscle tone, usually with increased mobility at the joints; the person with low tone has limbs that are floppy, appear to not be attached to the body, and have awkward movement patterns. This lack of muscle tone results in poor ability to act in a sustained state of alert performance.

Meninges – The meninges are the three thin but strong membranes that cover and protect the spinal cord and brain. The meninges are made up of the external layer, the dura mater, the middle layer, the arachnoid membrane, and the innermost layer, the pia mater. Meningitis, a very serious illness, is the inflammation of the meninges, caused by a bacterial or viral infection. These membranes provide a cushion from injury and bathe the brain and spinal cord with cerebrospinal fluid (CSF). An infection of the meninges is known as meningitis and can be life-threatening.

Modulation or regulation – The ability for the nervous system to filter out or let in various forms of sensory information.

Muscle – The tissue of the body, which primarily functions as a source of power. There are three types of muscle in the body. Muscle which is responsible for moving extremities and external areas of the body is called "skeletal muscle." Heart muscle is called "cardiac muscle." Muscle that is in the walls of arteries and bowel is called "smooth muscle."

Mylination – Myelin is an insulating layer that forms around nerves, including those in the brain and spinal cord. It is made up of protein and fatty substances. The purpose of the myelin sheath is to allow rapid and efficient transmission of impulses along the nerve cells. Without this insulation, information from nerves would be transmitted inefficiently which might result in weakness, sensory loss or other neurologic dysfunction. As the myelin sheath thickens, impulses speed up. If the myelin sheath is damaged, impulses slow down, causing diseases like multiple sclerosis. The process of Mylination begins in utero and proceeds from more primitive areas to the brain to more advanced/developed areas of the brain.

Neck righting reflex – Rotation of the trunk in the direction in which the head of the supine infant is turned; this reflex is absent or decreased in infants with spasticity.

Nerve – One or more fibers or bundles of fibers which form a part of a system in the body that conveys impulses of sensation, motion, etc., between the spinal cord or brain and other body parts.

Neuron – A nerve cell.

Neurotransmitter – Chemicals that act as messengers between cells in the brain and nervous system; they transmit impulses across the gap from a neuron to another neuron, a muscle, or a gland.

Opto-kinetic – Opto-kinetic reflexes serve to adjust eye position during slow head movements. This reflex is elicited by moving visual stimuli. The head of the person who is walking moves relative to objects in the environment. The optokinetic system allows the eyes to follow large objects in the visual field.

Open loop reflex – A reflex in which the stimulus causes activity that it does not further control and from which it does not receive feedback.

Palatal reflex – Palatine reflex stimulation of the palate causes swallowing.

Parachute reflex – Refer to the definition for the *Hands Supporting reflex*.

Plantar reflex – Irritation of the sole contracts the toes.

Primary Reflex Patterns –

Asymmetrical Tonic Neck reflex (ATNR) –Lying prone, the infant's head is turned to the side. The limbs will then extend on the same body side to which the head is turned and the limbs on the opposite side will flex.

Babinski reflex – The toes spread when the outer edge of the plantar surface of the foot is gently stroked from the heel to the toe. This touch causes a protective foot-to-body midline motion. This inward rotation is accompanied by the extension of the big toe in the direction of the head and a plantar flexion of the other toes like a fan.

Babkin Palmomental reflex – While the infant is lying on his back, press on the center of his palms with your thumbs. The infant will open his mouth and bend his head forward to his chest. Applying pressure on one palm triggers the head to bend forward, left, or right, to the corresponding side.

Bauer Crawling reflex – When prone and with pressure against bottom of foot, child pushes and moves into a crawl.

Bonding reflex – The bonding reflex is a complex reflex and creates the kinesthetic feeling of integration of the body as one unit. This integration gives the feeling of being protected and cared for. This reflex is activated when an infant is touched on the chest or abdomen as in the position of being held by a parent. The infant will respond to this touch with a close and warm embrace, while rocking side to side.

Core Tendon Guard – The tendon guard reflex is activated when one falls off balance backwards. The toes automatically rise, the body goes rigid, and the eyes open wide with a full field of vision.

Flying and Landing reflex – When standing, legs flex when the child is lifted by the hands, and straightened as they reach back for the ground.

Fear Paralysis – When startled, the body goes into protection. Activation of the corneal or eyes staring reflex are indicators of fear paralysis.

Hands Pulling reflex – This reflex is triggered when the infant, lying on his back, is held by the forearms near the wrists, and is pulled toward a sitting position. He will automatically pull himself upright, perhaps into a sitting position.

Hands Supporting Reflex – To trigger the Hands Supporting Reflex, an infant is held under both arms and is placed horizontally in a face down position. At the moment the infant is lowered close to a horizontal surface, their hands automatically reach in the direction of the surface.

Landau reflex – While the infant is in a prone position, he will lift his head, the upper part of the trunk, and his arms. Later, the infant may also be able to lift her legs. In complete Landau, the spine extends backwards as the head reaches upwards, and arms and legs extend while reaching upwards.

Leg Cross Flexion-Extension reflex – When touching the center of the infant's foot with your finger, the opposite leg should first flex with abduction, then adduct, and lastly fully extend.

Moro Embrace reflex – A sudden symmetric spreading of the arms, then un-spreading and crying, caused by an unexpected loud noise or the sensation of being dropped.

Pavlov Orientation reflex – The Pavlov Orientation Reflex is a cognitive reflex and is activated when the infant is faced with a new stimulus. This reflex is often referred to the "what is this?" reflex because it is a response to a new, novel situation.

Robinson Grasp reflex – Touch on the upper area of the palm at the base of the fingers triggers the grasp reflex.

Spinal Galant reflex –The Spinal Galant Reflex is activated when the infant is lying on their side or stomach and is touched on the right or left side of the spine, though not on the spine itself. This causes flexion of the whole body to the side of the touch.

Spinal Pereze reflex – The Pereze Reflex is activated when the child is in the prone position. Moving your fingers upward along the spine from tailbone to the neck causes a backward arching movement of the trunk/torso, flexion of upper and lower limbs, lifting of the head and pelvis, and is sometimes accompanied by crying.

Symmetrical Tonic Neck Reflex (STNR) – The STNR is activated in three positions. In position one, lying prone with the head in flexion, causes the arms to bend and the legs to extend. In position two, kneeling in the "Sphinx" position, head extension causes arm extension and a tendency for leg flexion. In position three, on all fours, head extension causes arm extension and leg flexion.

Thomas Automatic Gait reflex – The Automatic Gait Reflex by Thomas is a forward movement and a lifting of the head caused by the change in the center of gravity line. To activate this reflex, lift the infant to a vertical position by holding the armpits, making sure the feet are on a flat surface. Lean the infant's body slightly forward to trigger spontaneous walking movements.

Tonic Labyrinthine reflex – The Tonic Labyrinthine reflex is activated by the infant's head positions in space. The tone of the front neck flexors and leg flexors increase when the infant is in a prone position.

Trunk Extension reflex – The infant is lifted while being held under the arm pits with toes just touching a hard surface. In this position, the infant's body midline comes together with their gravity line, causing the automatic extension of the head and straightening of the whole body.

Proprioception – The unconscious awareness of sensations coming from one's joints, muscles, tendons, and ligaments; the "position sense." Receptor sites are in the joints and the muscles. This sense underlies one's ability to place body parts in a position in space and to grade movements (i.e. the ability to judge direction of force and pressure.) Even if you are blindfolded, you know through proprioception if your arm is above your head or hanging by your side. The word "proprioception" was coined in 1906 by the English neurophysiologist Charles Sherrington who received the Nobel Prize for Physiology or Medicine in 1932 for research on the function of the neuron and study of reflex action.

Proprioceptive reflex – Initiated by a stimulus to a proprioceptor.

Proprioceptive sensory system –Proprioception is a distinct sensory modality that helps us sense where our body parts are located in relation to each other in space and whether the body is

moving with required effort.

Pupillary reflex – 1) Contraction of the pupil on exposure of the retina to light. 2) Any reflex involving the iris, resulting in change in the size of the pupil, occurring in response to various stimuli, e.g., change in illumination or point of fixation, sudden loud noise, or emotional stimulation.

Range of Motion – The range through which a joint can be moved, usually its range of flexion and extensions.

Reflex Arc – The circuit traveled by impulses producing a reflex action. A sensory neuron carries a stimulus impulse to the nerve center (spinal cord/brain), where it connects with a motor neuron that carries the reflex impulse back to an appropriate muscle or gland.

Righting reflex – The ability to assume an optimal position when there has been a departure from it.

Saccades – Rapid switch of vision from one object to another.

Scratch reflex – A spinal reflex by which an itch or other irritation of the skin causes a nearby body part to move over and briskly rub the affected area.

Sacrum – Group of five fused vertebrae located just below the lumbar vertebrae of the low back.

Scapula – Shoulder Blade.

Sensory Integration – A neurological l approach to enhancing occupational performance through supporting a more normalized response to sensory input. a. Registration – the ability for the body to register that sensation has occurred

Spinal reflex – Any reflex action mediated through a center of the spinal cord.

Startle reflex – Refer to the definition for the *Moro reflex*.

Stepping reflex – Movements of progression elicited when the infant is held upright and inclined forward with the soles of the feet touching a flat surface.

Sternum – The breast bone.

Stress – Forces from the outside world impinging on an individual. Stress is a normal part of life that can help us learn and grow. Conversely, stress can cause us significant problems. Stress releases powerful neurochemicals and hormones that prepare us for action (to fight or flight). If we don't take action, the stress response can lead to health problems. Prolonged, uninterrupted, unexpected and unmanageable stresses are the most damaging types of stress.

Stretch reflex – Reflex contraction of a muscle in response to passive longitudinal stretching.

Sucking reflex – Sucking movements of the lips of an infant elicited by touching the lips or the skin near the mouth.

Supination – Movement of the forearm into a palm-up position.

Swallowing reflex – Refer to the definition for the palatal reflex.

Tactile sensory system – Information taken into the body through the sense of touch (skin). Can be through the deep pressure receptors (activates discriminative system) or light pressure receptors (activates the protective system).

Tendon – Tissue that connects muscle to bone.

Tendon reflex – Elicited by a sharp tap on the appropriate tendon or muscle to induce brief stretch of the muscle, followed by contraction.

TMJ Leveling (Temporomandibular Joint)

Trapezius – Flat, triangular muscle covering the posterior surface of the neck and shoulder.

Visual-spatial organization – The ability to perceive and interpret what the eyes see. Need to be able to take in information through the sense organ (eyes) and interpret it (occipital lobe) and organize it for use (frontal lobe, sensorimotor areas, etc). Includes depth perception, directionality, form constancy, position in space, spatial awareness (distance between you and objects), visual discrimination, visual figure-ground (between objects). Also includes vertical/horizontal/diagonal perception and plane integration. Essential for success in mathematical performance.

Vestibular-Ocular Reflex – The VOR allows for eye stability (visual fixation) during head movements. The VOR becomes active when the head moves to the left or right, moving the eyes opposite the direction of the head.

Vestibular sensory system – The vestibular apparatus is located in the inner ear. This apparatus contains sensory receptors that respond to the position of the head relative to gravity and to head movements. This information is convened into neural signals conveyed by the vestibular nerve to the vestibular nuclei. The vestibular sensory system contributes to our ability to gain sensory information about head movement and head position relative to gravity, gaze stabilization, postural adjustments, autonomic function and consciousness. Gravitational insecurity (an extreme fear and anxiety that one will fall when one's head position changes); dizziness, vertigo and vomiting; and directionality are all a function of the vestibular system.

Withdrawal reflex – A nociceptive reflex in which a body part is quickly moved away from a painful stimulus.

Zygoma – The cheekbone.

***Glossary Sources**: MedicineNet.com, Medical-Dictionary.thefreedictionary.com, Wisegeek.com, Medlineplus, Healthguide.HowstuffWorks.com, Mosby's Medical Dictionary (8th edition*)