

# **The Masgutova Method of Neuro-Sensory-Motor and Reflex Integration: Key to Health, Development and Learning**

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Infant reflexes are protective stereotypical motor responses by the brainstem to internal or external stimuli. The widely accepted traditional thinking on these movement patterns in infants is that they exist up until about age three, when they normally disappear, having become "inhibited" through normal maturation. Some psychologists, physiologists, developmental optometrists, occupational therapists and educators understand the role of retained reflexes in learning difficulties, vision problems and other developmental disorders. Few professionals, however, offer interventions that specifically target them as a key to healthy development. Those who do are primarily oriented toward reflex extinction or inhibition.

The Masgutova Method of Neuro-Sensory-Motor and Reflex Integration has its origins in a different way of thinking. Svetlana Masgutova, Ph. D., a Russian psychologist currently working in Poland and the US, has based her method on the work done from the 1920's to 1950's by Russian physiologists I. Pavlov and I. Stechenov; neurophysiologists, A. Uhtomsky, N. Bernstein and P. Anokhin; and psychologist L. Vigotsky. These scientists/researchers placed reflexes in the frame of both higher and lower nervous system activity. They saw in infant reflexes not only a protective or survival response to stress or danger, but also the neuro-physiological foundation for physical, emotional and cognitive development.

"The first infant movements do not disappear; they continue to work in union with higher nervous system formations..."

L.S. Vigotsky, Russian psychologist, 1930

Through her own research on over 3,000 children over the past 20 years in Russia, Poland, USA and Canada and her practical experience with more than 27,000 clients worldwide, Dr. Masgutova has expanded her conceptual understanding of these phenomena and developed her own sensory-motor integration program:

## **Reflexes have a dual purpose, protection and development.**

As automatic involuntary unconscious responses to stress and danger, they serve as protective or survival mechanisms. The grasp reflex, for example, causes an infant to "hang on for dear life" when it senses a loss of support. Equally important, reflexes are the fundamental neurological building blocks for motor and cognitive development. In reflexive movement patterns we recognize the very beginnings of a process that, as it matures, leads to the possibility of skillful, controlled and intentional behavior. The dexterity and artistry of a virtuoso violinist begins in the grasp of his tiny fists around his mother's fingers during his first hours of life. In the case of the musician, the grasp reflex is neither extinguished nor inhibited. It is integrated into mature movement patterns with all their complex and subtle variations.

Even more, a fully integrated reflex becomes part of an internal posture, aptitude or skill we refer to when we use the image of a movement pattern metaphorically. Thus maturation and elaboration of the grasp reflex will enable readers of this article to "grasp" the exciting

possibilities open to professionals who embrace this concept of neuro-sensory-motor and reflex integration and its implications for treatment.

Dr. Masgutova proposes integration of infant reflexes as an intervention to promote:

- Healthy protection/survival reactions
- Healthy self regulation
- Gross and fine motor skills development
- Transition from reflex patterns into intentional movement and motor skills
- Refinement of controlled, skillful, intentional movement
- Enhanced memory, attention, focus, perseverance
- Motivation and confidence
- Maturation of social skills
- Academic achievement
- Mature cognitive development

### **Positive and negative protection**

To describe the role of reflexes in the functioning of both typical and challenged children, Dr. Masgutova refers to “positive” and “negative” protection. When a startled infant cries for help or a toddler points with his toes, reaching for the floor, as his father puts him down, the reflex systems are functioning in a positive way. The involved reflexes have matured neurologically and sensory perception functions well: the brain stem “recognizes” stimuli and organizes protective motor responses with no disturbance to reasoning ability and overall development.

Natural activation of a reflexive motor response begins with a build up of tension in the involved muscles and ends with the release of that tension in movement. Over time, if we restrict a reflex movement, because of restraint, fear, or a command to “hold still and pay attention,” it may lose its connection with the original sensory stimulation and may not manifest as an appropriate motor response. However, the muscle tension remains in the body. In other cases the sensory-motor connection may be too strong, resulting in excessive motor reactivity or too weak, resulting in low muscle tone.

Negative protection is present when a reflex fails to mature and a dysfunctional reflex response continues beyond a time that is necessary or useful. A nonintegrated grasp reflex, for example, results in an inefficient pencil grip. A hyperactive Asymmetrical Tonic Neck Reflex (ATNR) requires one to tighten arm and shoulder muscles to prevent the arm from straightening out when writing on the right side of a paper and creates difficulties in crossing the midline and organizing work in visual or auditory midfield. A child with a retained Symmetrical Tonic Neck Reflex (STNR) has difficulty sitting and may wrap his ankles around his chair legs to prevent his knees from straightening when his arms are bent. All these compensations not only drain energy away from the task at hand, but also impede healthy motor development.

Any kind of stress can trigger negative protection: poor motor development caused by movement deprivation (too much time spent in car seats and other restrictive devices, medical interventions such as casts required by hip dysplasia), difficult pregnancy or birth, illness, injury, emotional trauma, even chronic stress in everyday life. Negative protection manifests as muscle tension, impulsivity and primitive reactions that block self-regulation and skill formation. In highly dysfunctional or pathological reflex development we see more severe symptoms such as stereotypical or chaotic movement patterns, spasticity/hyper-tonicity in the limbs or chronic low muscle tone. Development is arrested and reasoning

processes in the neo-cortex are bypassed as the reflex system, driven by the brainstem, takes control of behavior.

**Research Results.**

In her research on nearly 3,000 children ranging in age from 1 month to 18 years, Dr. Masgutova found significant correlations between poorly integrated reflexes and specific developmental delays. These findings show how incomplete integration of reflex patterns can be linked to many functional and structural challenges.

<b>Dysfunction</b>	<b>Related reflex</b>	<b>Percent of children demonstrating an aberrant reflex</b>
Poor memory	ATNR	78%
Poor transition from concrete operations to logic & abstract thinking	STNR	57%
ADD, ADHD	STNR, ATNR, Spinal Galant, Spinal Pereze	58%
Allergies & food hypersensitivity	Spinal Pereze	54%
Enuresis, poor bladder control	Spinal Galant	72%

**The Sensory-Motor Integration of a Reflex**

To understand the links between reflexes and dysfunction, we need first to see the structure of an integrated reflex system. Each reflex consists of a three-part circuit that permits a motor response to a specific stimulus.

- **Part I – Sensory Stimulation** to the tactile, proprioceptive, visual or auditory system. The afferent nervous system (receptors and nerve fibers carrying impulses from the body to the brain) recognizes a stimulus and transmits it to the brain. We cannot precisely measure the sensitivity or efficiency of this system.
- **Part II – Brain Processing.** This part of the circuit is entirely invisible. We infer that when it functions normally its activity corresponds to inborn genetic programming: the brain interprets signals from the sensory system and activates an appropriate pattern of response oriented either toward protection/survival or toward development. We also infer that it can function in a dysfunctional or pathological way.
- **Part III – Motor Response.** The efferent nervous system (nerve fibers carrying impulses out from the brain to the body) carries a command to the muscles and organs/glands to enact the appropriate reaction or motor response. This can be normal (matured), dysfunctional (hypo- or hyperactive) or pathological (opposite, reversed or absent motor pattern). We use this visible, measurable motor aspect of the circuit to assess reflex development.

The neurophysiology of a healthy nervous system is such that each reflex must integrate on the sensory-motor level; a specific sensory stimulus must cause a corresponding motor or glandular response. This precise link between the sensory and motor aspects of a reflex circuit through brain processing is genetically based and has been ingrained throughout the millennia of human existence.

In the case of poorly integrated reflexes linked to dysfunctions or developmental delays, Dr. Masgutova posits an error somewhere in the three-part circuit.

- The sensory organs fail to communicate with the brain.
- The brain fails to communicate with the muscles, tendons and ligaments.
- The brain-body system mixes or confuses the sensory information and the motor response. For example, it triggers the abdominal reflex in response to the stimulus for the ATNR (the child will experience shutting down rather than activation of auditory/visual system), the Babkin Palmomental response for the Grasp stimulus (child opens mouth and palms instead of making fists), or the Hands Supporting reaction for the Hands Pulling stimulus (child pushes you away instead of pulling himself toward you).
- The natural components of the reflex are poorly developed in terms of pattern correspondence, strength, direction, timing and symmetry.
- The reflex pattern is poorly integrated with motor skills and intentional movements.

If the sensory stimulus is not recognized by the sensory apparatus, and as a result is misinterpreted by the brain, or if the outgoing response is misdirected, then the reflex pattern will be inappropriate. A child at the mercy of such irregular motor reactions to sensory stimulation is at risk for developmental delays. Maturation and integration of the reflex with controlled movements and skills will be slow or unreliable, especially in the presence of learning challenges and stress.

### **The Developmental Dynamic of a Reflex**

Professionals working with developmentally delayed children need to understand the importance of fully matured reflexes for optimal motor, cognitive and social development, beyond their role in infants and toddlers. Maturation and integration of the reflex system is especially relevant for building the control, motivation, abstract thinking, creativity and skillful intentional behavior necessary for academic achievement.

Reflexes have a seven phase developmental dynamic that begins in utero or early infancy. In phases one through three the basic pattern is being formed within it's sensory-motor circuit, creating the nerve network for connecting specific stimuli with physiological functioning and protection. During these phases the basic reflex pattern supports the development and myelination of neurological connections in the brainstem, the basis for appropriate and positive protection. The fourth, transitional phase prepares the basic pattern for further elaboration. Variations that emerge during the fifth through seventh phases orient the system more toward growth and are characterized by well-developed nerve networks. During these phases the reflexes begin to integrate with intentional movement. Crawling on belly as an automatic reaction, for example, becomes an intentional choice of crawling toward a favorite toy.

Delay in reflex development or skipping any phase always affects the formation of future skills. Achievement reaches a plateau because the nerve networks necessary for progress have not grown. In this case the child develops dysfunctions or compensations which, not being true patterns, are unreliable in situations of stress or unexpected transition. Every reflex must complete all seven phases from emergence through growth and maturation to integration. This concept is completely different from the traditional understanding of reflex inhibition.

A student who has skipped one of the later phases of the grasp reflex, for example, might be able to write legibly, but will tire easily because of his neurologically inefficient pencil grip. He experiences writing as stressful and avoids it whenever possible. An immature or unintegrated Hands Supporting reflex could result in a poor sense of boundaries (failure to recognize "arm's length") and lack of respect for personal space – one's own and that of others.

Other examples of the relationship between reflex integration and healthy performance throughout life:

- Tendon Guard and Tonic Labyrinthine reflexes: self-regulating processes, vitality and health
- ATNR: proprioception, hearing and memory, audio-visual integration, eye/hand coordination
- STNR and Trunk Extension: postural control, binocular vision, visual accommodation, and binaural hearing
- Spinal Galant: for posture, bladder control, and mood regulation
- Spinal Perezze and Galant: brain detoxification and gross motor coordination
- Grasp and Hands Pulling: manual skills, including writing and drawing
- Sequential Fingers Opening and Closing: differentiation, calculation and other mathematical skills
- Hands Supporting: sense of personal space, social skills

### **Assessment**

For purposes of evaluation Dr. Masgutova examines the only visible, measurable link in the three-part reflex circuit: the motor response. She considers five characteristic components of each reflex.

- **Pattern:** The motor response should be exactly true to the inherent genetically encoded pattern associated with the specific sensory stimulus.
- **Direction:** Each reflex presents a precise sequence of reactions or movements that finish in a precise posture or continue in a specific direction.
- **Timing and dynamic:** The reflex circuit connects sensory input, brain processing and motor response. To fulfill its protective function, the reflex reaction must quickly follow the onset of sensory stimulation. Slow response time can result in injuries or developmental delays.
- **Strength:** The energy and physical strength for movement depend on appropriate tone in the muscle/ligament system. The strength of the muscle response serving the reflex reaction must match the intensity of the stimulus. Hyperactive, hypoactive or absent reactions are inadequate.
- **Symmetry:** Motor reaction in a reflex circuit should be balanced bilaterally. Symmetry should be evident in body structure, the organization of the body and its limbs, the direction of the reflex movement pattern, timing and strength of reaction.

### **Intervention.**

Masgutova Method offers general integration procedures for movement development and specific corrective procedures for dysfunction and pathology in primary movement patterns. It is based on a view of reflexes as elements of sensory, proprioceptive and motor function with a key role in health, development and learning.

Dr. Masgutova's understanding of the three part sensory-brain-motor circuit leads to an emphasis on stimulating neuro-motor and sensory-motor points on the body, stretching the trunk and limbs and rotating the joints. All these procedures relate to the interaction between reflex movement patterns and body structure. Other techniques release congestion and muscular tension throughout the body, stimulate the proprioceptive system, open communication among the muscles, tendons and ligaments, and adjust receptors of deep touch and pressure. Reflexes and archetypal movement patterns are there, part of our natural inheritance as human beings. When we awaken their neuro-sensory-motor connections, they can integrate and become resources for health, self-regulation, learning and development.

Another aspect of Masgutova Method involves corrective procedures to reconnect, strengthen or build new neural pathways by returning to natural reflex motor patterns and their variations. Fortunately it is never too late. Gentle bodywork and easy movements open access to the natural resources and ingrained wisdom of the body.

### **Workshops, Courses, and Clinical conferences**

Masgutova Method has proven beneficial to children and adults with challenges such as cerebral palsy, autism, Aspergers Syndrome, ADD, ADHD, PDD, OCD, DSI, dyslexia, hyperlexia, genetic issues, fetal alcohol syndrome and brain injury. Healthy, mature, even exceptionally talented individuals find the procedures helpful for stress reduction and optimal functioning. Everyone can benefit. Multiple programs address every aspect of movement and its relationship to overall development:

- Neural-Structural Reflex Integration Therapy
- Tactile Integration
- Infant Reflex Repatterning
- Integration of Lifelong Reflexes into Movement Development
- Visual and Auditory Reflex Integration
- Oral-Facial Reflex Repatterning
- Rhythmical Movements
- Archetypal Movements
- Balance Board for Vestibular, Proprioceptive and Spinal Reflex Integration
- Dance Therapy
- Reflex Integration with Pet Therapy (horses and dogs)
- Aquatic Reflex Repatterning
- Creative Art and Reflex Integration

From 1992 to 2007 more than 25,500 children and adults in Russia, Poland, USA and Canada visited Dr. Svetlana Masgutova Institutes or attended workshops to participate in various reflex integration programs. In Poland at Dr. Masgutova's institute and residential camps 633 children and adults have experienced all of the above programs. In the North America over the past decade her teaching workshops and clinical conferences have attracted 2,400 specialists and parents. She has seen over 700 US and Canadian children and adults for individual consultations and reflex integration sessions. In Florida (2006) and California (2007) over 20 families with challenged children and over 50 professionals participated in two-week clinical summer conferences organized by the new Svetlana Masgutova Educational Institute for Neuro-Sensory-Motor and Reflex Integration. Another summer conference is planned for August 2008 in Kelowna, British Columbia.

## **Resources**

For more information or to find a professional licensed in Masgutova Method, visit [www.masgutovamethod.com](http://www.masgutovamethod.com) or contact Mary Rentschler.

Information presented in this article comes from the following sources:

***Integration of Dynamic and Postural Reflexes into the Whole Body Movement System***, Svetlana Masgutova, Ph.D., with Nelly Akhmatova, Ph.D., Svetlana Masgutova and International Neurokinesiology Institute, Warsaw, 2004.

***Neuro-Structural Reflex Integration Therapy***, Dr. Svetlana Masgutova, International Dr. Svetlana Masgutova Institute of Movement Development and Reflex integration, Warsaw. 2006.

Workshops and personal exchanges with Svetlana Masgutova, 2005 - 2007.