

The Effects of MNRI® on a Child with Autism

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My goal in this article is to evaluate the effect of MNRI® therapy on a child with autism and with epilepsy. I hope to raise awareness with other specialists in the helping professions of the importance of MNRI® when working with children's reflexes. I will share my success in improving a child's neurological development with MNRI® which demonstrated fast, stable, and optimal motor development and behavioral changes. The changes seen below are shown first, after six months of initial treatment, then again, after two years of extensive treatment.

Case Study

Ian was a sweet 38 month old boy when I first saw him on Sept. 5, 2011 for a comprehensive evaluation. His medical history was significant for autism and epilepsy. Ian had been on the Ketogenic diet (3.5:1 ratio) for the past year which had been very successful in controlling his seizures. He continued on the diet for 2 years. Ian wore glasses for near sightedness and did not have verbal language. He received individual physical therapy, speech therapy, and ABA in his home. He had a sister that very much wanted to play and interact with her brother.

Muscle Tone: Ian had generalized hypotonia in his trunk and extremities and difficulty holding his head up in prone, on all fours, and when pulled to sit.

Postural Control: Ian demonstrated poor postural control due to generalized hypotonia. When sitting in a chair, he typically slouched causing him to slide forward. This position made it difficult for him to use his upper extremities for good coordination and motor control. He did not readily engage in activities requiring him to raise his arms above shoulder level for more than a few seconds.

Muscle strength: Ian had weak muscle strength throughout his body. His head lagged when pulled to a sitting position so he had difficulty with movement and transitioning from floor to sit to stand. He did not have the strength to climb a step. His facial muscles were very weak producing a flat effect with very little facial expression.

Gross motor: While lying on his stomach, he was only able to prop himself on his forearms and raise his head to 30 degrees for less than a minute before fatiguing. When he reached out for a toy, he often collapsed on his other arm. He also would only reach for a short duration, about 2 seconds. He was able to roll from side to side and to his back but it was very slow and required quite a lot of work. He would roll to his sides but rarely roll all the way over to his stomach or back. He was not able to raise his arms and legs together or push his trunk off the floor. He needed assistance to get into an all fours position. He needed moderate assistance to get to



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sitting position, and could still lose his balance backwards. He could hold it with assistance but was not very interested in moving forward in this position. He was not able to get to stand from the prone position without maximal assistance and was not able to balance in a kneeling or half kneeling position. He would bear weight on his legs when assisted to stand. He walked unassisted on flat surfaces around the living room and kitchen but was unable to climb a small step or go up and down stairs without moderate assistance.

While lying on his back he seldom reached for toys held above his head. He looked at it and followed it for only about 25 degrees side to side, then turned his head slightly to follow the object; his eyes had difficulty working together. He was not able to raise himself off the floor in this position. He attempted to lift his head but not consistently.

Visual-Motor Integration: Based on the Peabody Developmental Motor Scales (PDMS), Ian demonstrated significant delays in his visual-motor integration skills with an age equivalent at the 9 month level and a percentile ranking of 1%. He was able to track an object horizontally and vertically past midline but had difficulty differentiating his eye from head movements when visually tracking. During desk activities, he could not sustain visual eye contact in his lower visual field when engaging with objects but he typically felt around the table for objects rather than look directly at the object. Visual attention improved with musical toys and when objects were held higher up in his visual field. He did not engage in midline play with both his hands together, instead, he used one or the other hand. He would, however, transfer objects from one hand to the other. He was able to clap his hands but imitative clapping is inconsistent. Ian was able to place 7 cubes in a cup with initial demonstration and tactile cueing. He was not currently inserting basic shapes into a form board, building a 2-3 cube tower, or imitating vertical or horizontal crayon strokes.

Peabody Developmental Motor Scales

Raw scores are the total points accumulated by the child on a subtest but it is the standard score that provides a clearer indication of a child’s subtest performance, and these scores can be related to one another. Standard scores are based on the distribution of a mean of 10 and standard deviation of 3. Standard scores of 6-7 are considered below average, 4-5 poor, and 1-3 very poor performance. The percentile rank represents the percentage of the distribution that is equal to or

Assessments:				
Peabody Developmental Motor Scales				
<i>(The first score was at 3.2 years)</i>				
MOTOR SKILLS	Raw Score	Standard Score	Percentile	Age Equivalent
Reflexes	6	-	-	-
Stationary	32	4	2%	9 months
Locomotion	28	1	<1%	6 months
Object manipulation	0	1	<1%	6 months
Grasping	29	1	<1%	7 months
Visual Motor Integration	42	1	<1%	9 months
		Gross motor	Fine Motor	Total
Sum of Standard Scores	6	2	8	
Developmental Quotient	48	46	43	
Percentile Rank	<1%	<1%	<1%	

below a particular score. For example, Ian scored in the <1% rank for stationary gross motor skills, meaning that <1% of the standardization sample scored at or below his score. The age equivalent also referred to as ‘motor ages’ are used only to communicate a child’s competence in a universal language, and are not always the best measure of a child’s performance. Quotients ranging from 90-110 are average. Scores of 80-89 are below average, 70-79 are poor and 35-69 are considered very poor performance. Ian scores in the very poor performance range.

Ian’s Individual Treatment Plan

Masgutova Neurosensorimotor Reflex Integration (MNRI®) was chosen to treat Ian. Based on the results of Ian’s MNRI® assessment, an individualized program was established for him to strengthen and support physical, emotional, and cognitive growth through the work with non-integrated, retained, poorly developed, dysfunctional, and pathological reflex patterns that were identified.

The home work for Ian included exercises from MNRI® re-patterning, several exercises from Tactile Integration (embracing squeeze, stroking of extremities, and joint distraction), Visual-Auditory Reflexes (ear tapping, horizontal eye tracking – slow and fast, digital movement, start and stop), and Oral-Facial Reflex integration (the whole program). These techniques were used 2 to 3 times a week.

His MNRI® Home Program included reflexes performed 5 times per week including Spinal Perez, Spinal Galant, Embracing Squeeze, Leg Cross Flexion-Extension, Robinson Grasp, Hands Supporting, Trunk Extension, Foot Tendon Guard, and Balancing. Reflexes performed 3 times per week included Babinski, ATNR, Grounding,

Hands Pulling, Segmental Rolling, Spinning, STNR with eye tracking, Bauer Crawling, and Fear Paralysis once per week.

A physical therapist/Core Specialist provided the program one time per week and progressed through the program accordingly. His Mother gave the Home Program 5 times a week with excellent follow through.

Below are four examples of reflex techniques used:

The techniques used to stimulate the Robinson Grasp Reflex were for the hypo-active hypo-sensitive reflex. Ian was lying on his back. I put my thumb into the upper one third of the palm of Ian's hand. With my other hand I closed his hand into a fist with his thumb over the ends of his fingers. I rotated my thumb in the direction of the tips of his fingers. I held it closed for 7 seconds and repeated it 7 times. This created sensory-proprioceptive activation in his palm which stimulated a stronger grasp.

The technique used to stimulate Hands Supporting was the same for hyper or hypo active response. With Ian lying on his back I worked with both hands at the same time in three different positions. Ian's hands were at the sides of his body, palms slightly extended and elbows straight. I placed my thumbs at the bottom third of his palms to give the sensory-proprioceptive stimuli with a pulsating cha-cha rhythm. I pressed pulsing against his lower palms for up to 60 seconds. The second position was with his elbows bent at 90 degrees and the pulsing lasted 60 seconds. The third position was with his arms extended with his shoulders at 90 degrees and repeating the pulsing on the lower third of his palm. I repeated this sequence a couple of times.

The technique used for Spinal Galant included four steps with Ian lying on his side. First, I stimulated the sensory-proprioceptive stimuli, stroking with my fingers down along the side of the spine from the shoulder to the sacrum. I repeated this 7 times. Then I pressed firmly but gently his shoulders and hips and held for 7 seconds. Then I pressed his shoulders and hips apart and held for 7 seconds. I repeated this 7 times on one side and turned Ian to his other side and repeated.

The technique used for the Leg Cross Flexion-Extension included 4 steps with Ian lying on his back with both legs straight. I gave pressure to the middle of the bottom of one foot and held it for 7 seconds. Next I flexed the opposite leg bringing the knee towards his chest, holding it for 7 seconds. Then I brought the leg straight again in 7 seconds and stretched the whole leg when it was straight for 7 seconds.

Results

The initial observations and post-test data showed significant positive changes. Within two weeks of starting MNRI® Ian was able to hold his head up for 10 seconds to look at a toy in a prone position. By four weeks some of his Tonic Labyrinthine and Head and Trunk Righting Reflex patterns changed, which was evidence of the development of his cerebellum and lower motor neurons. He was able to crawl about 5 feet but his head righting continued to be poor; he was not able to hold his head up while crawling. By six months he had developed better facial expression, which was possible evidence of an increase in the development of the extrapyramidal tracks, cranial nerves, and cerebellum functions. He was laughing and smiling and much more engaged with people, his therapist, and family. This demonstrated functional improvement of the limbic system.

He started developing his ability for expressive speech, verbalizing his first word, "Mama." This indicated development of the Broca cortex area. He was able to move his tongue out of his mouth and around his bottom lip left and right.

He began following 2-step directions without prompts which may have demonstrated growth in the cerebral cortex and functional cognitive development.

In the area of gross motor, he began to roll in all directions and demonstrate more freedom of motion of the horizontal planes of the body. He was more stable and was no longer losing his balance and falling backwards while sitting. We did bridging with his hips and he could hold the wheelbarrow position with extended arms.

He could step down two steps holding the rail without assistance. He needed only moderate assistance for climbing up 2 steps with his hand on the rail (an improvement from maximal assistance). His movements were quicker, more fluid, and precise than before. He was even able to bend forward to walk into an igloo. This is evidence of improvement of his postural control, motor coordination, and motor planning – all demonstrating development of the sensory cortex and pre and post-motor cortex.

His improvements per age development according to the PDMS over a period of six months were:

- stationary improved from 9 months to 11 months of age
- locomotion improved from 6 months to 14 months of age

- object manipulation improved from 6 months to 12 months of age
- grasp improved from 7 months to 10 months of age
- visual motor improved from 9 months to 19 months.

Results after additional treatment:

He increased his visual tracking from 30 degrees to 180 degrees with head movement and he was able to isolate his eye movement from his head movement 30 degrees to both sides from which was previously 0 degrees.

In the area of locomotion, he progressed from 6 months to a 1 year 2 month level. He was getting up and down from the floor by himself with some effort. He could walk up stairs with minimal assistance and down a few steps while holding onto the rail.

With object manipulation, he had been at a 6 month level and progressed to a 12 month level of performance. He interacted with rolling and catching a ball. (Previously he did not engage with these activities.)

With stationary skills, he progressed from 9 months to 11 months. He could balance while sitting and standing. (Six months before he had difficulty balancing while sitting and would fall backwards unexpectedly.) His grasp improved from 7 months to 10 months. He was now also able to be interactive and play with his sister.

After two years of MNRI® and four MNRI® family conferences, and other programs, Ian was now running a mile daily, hanging and crossing the monkey bars with minimal to no assistance, independently rolling both directions, and Bauer Crawling 50 feet. He was also demonstrating an improvement in his emotional and cognitive processing with improved expression of his needs, likes, and dislikes, and improved eye contact with greetings. He could walk up and down stairs holding the rail and a few steps without using the rail. After one MNRI® conference his Mother stated, "Ian has jumped 3 levels in his HPI (give abbreviation) program," and "We were not even doing the [other] programs while at the conference except MNRI® so I know this is what made the difference."

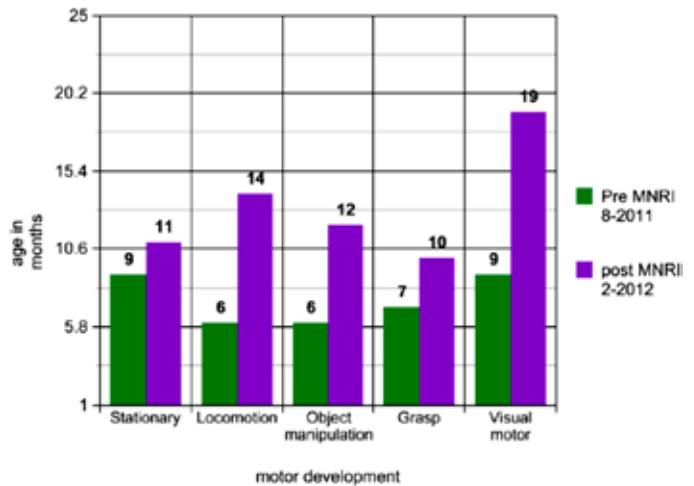
Peabody Developmental Motor Scales

Scores at 3.8 years just 6 months after starting the MNRI program

MOTOR SKILLS	Raw Score	Standard Score	Percentile	Age Equivalent
Reflexes	-	-	-	-
Stationary	36	4	2%	11 months
Locomotion	72	2	<1%	14 months
Object manipulation	2	1	<1%	12 months
Grasping	36	2	<1%	10 months
Visual Motor Integration	82	4	<2%	19 months

	Gross motor	Fine Motor	Total
Sum of Standard Scores	7	6	13
Developmental Quotient	51	58	49
Percentile Rank	<1%	<1%	<1%

Ian's Developmental progress pre/post MNRI® after 6 months



Results of Reflex Patterns Evaluation (after 6 months of MNRI® Therapy)

Table 2. Reflex Patterns Serving for Development of Left-Right Motor Coordination Systems.

	1		2		3		4		5		6		7		8		9		10	
	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	1	2	R	L
Before MNRI Program	9.5	9	5.5	5	4.5	4	4	3.5	4	4.5	8	8.5	5	6	4.5	4	5.5	4.5	5.5	5
Average		9.25		5.25		4.25		3.75		4.25		9.25		5.5		4.25		5		5.25
After MNRI Program	12.5	12	8.5	7	5	4.5	4.5	4	6.5	6	12.5	12	6.5	7	6.5	6	9.5	8	7	6
Average		12.25		7.75		4.75		4.25		6.25		12.25		6.75		6.25		8.75		6.5

Table 3. Reflex Patterns Serving for Development of Superior-Inferior MCS

	11		12		13		14		15		16		17		18		19		20	
	R	L	R	L	1	2	Up	D	R	L	Up	D	Up	D	Up	D	Up	D	R	L
Before MNRI Program	6.5	6	6.5	6	6	6	5.5	6	3.5	4	4.5	4	3.5	2.5	2	3	3.5	3	4	4.5
Average		6.25		6.25		6		5.75		3.75		4.25		3		2.5		3.25		4.25
After MNRI Program	12.5	12	7.5	7	7	8	7	9	5.5	5	5.5	6	6.5	6	7.5	7	7	6	8.5	9
Average		12.25		7.25		7.5		8		5.25		5.75		6.25		7.25		6.5		8.75

Table 4. Reflex Patterns Serving for Development of Anterior-Posterior MCS

	21		22		23		24		25		26		27		28		29		30	
	R	L	R	L	R	L	R	L	Up	D	R	L	R	L	Up	D	R	L	1,2,3	4
Before MNRI Program	8.5	8	5.5	6	5	4.5	4	4	4.5	5	4	3.5	3.5	4	3.5	4	3.5	4	7	5
Average		8.25		5.75		4.75		4		4.75		3.75		3.75		3.75		3.75		6
After MNRI Program	12.5	12	9.5	9	6.5	7	7	8	8.5	7	6.5	6	6	6.5	5.5	5	8.5	7	12.5	
Average		12.25		9.25		6.75		7.5		7.75		6.25		6.25		5.25		7.75		6.25

REFLEXES OF THE BRAIN

Ian's biggest gain was his development in visual motor skills from 9 months to 19 months.

The graphs at right demonstrate the improvement in the level of development of the reflex patterns which also reflect Ian's cognitive gains.

Summary

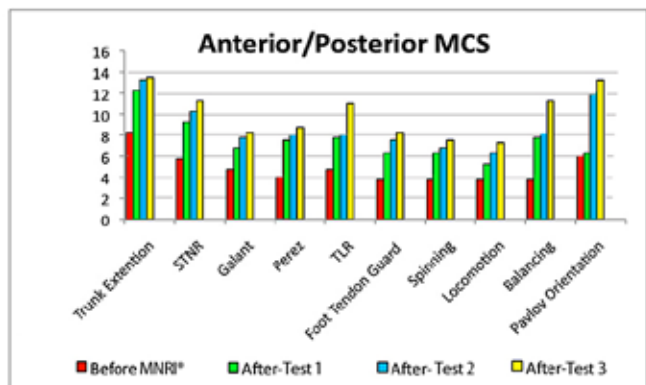
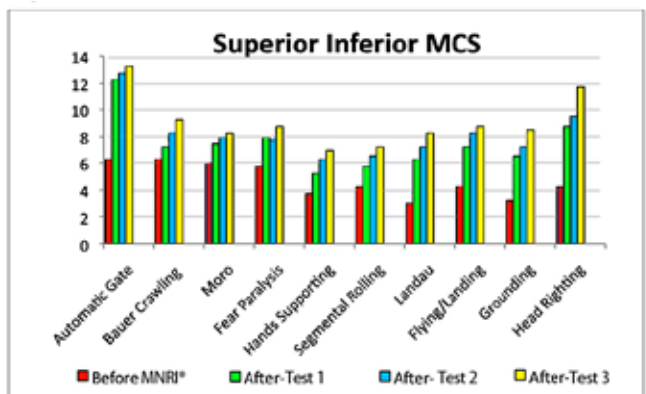
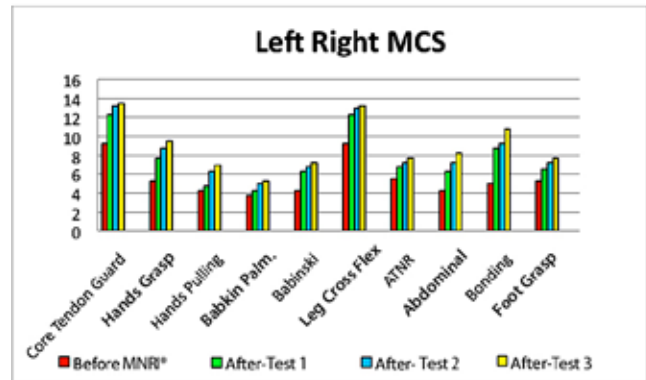
The information we gathered showed how impressive the MNRI® program was even for the first 6 months as the only program used.

His progress in the next year and a half, when other programs were introduced, showed that the MNRI® program was also very complementary with them. Ian's development was very impressive especially because he had had traditional therapy intervention for the first 3 years of his life and had progressed only to an average age of 7.4 months. Then, at 3.2 years old, the Masgutova Method® was added to his therapy and, in 6 months, Ian had a significant jump in development to an average of 13.2 months. His motor, emotional, and cognitive development increased by an average of 6 months.

With the MNRI® program, and then by attending MNRI® family conferences for intensive MNRI® therapy, Ian continued to progress towards age appropriate motor, emotional and cognitive development.

Finally, after two years of MNRI®, four MNRI® family conferences, and other programs added, Ian could then run a mile daily, hang and cross the monkey bars without assistance, roll both directions without assistance, crawling 50 feet, etc. He was expressing his joys and dislikes and making eye contact with greetings and expressing his wants. His parents continue to take him to multiple camps a year and perform the work on a weekly basis because of the great results they see.

Graphs below show Ian's Reflex Pattern Development: May 2011 (Before MNRI®), November 2011 (Test-1), May 2012 (Test-2), and November 2012 (Test-3) on the three body planes.



It has been exciting to be a part of Ian's life and watch his growth and development. His awareness of his surroundings, the people in his life, desire to socialize, and ability to express continues to emerge. Thank you for being a part of the MNRI® family! You are an inspiration to us all. – Diane Whiteside