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Out-of-this World Sensory Integration Therapy

"Astronaut Training" takes special needs students into another space.

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By Peggy L. Gurock, OTR/L, FAOTA and Noah D. Gurock

Every Friday morning, 7-year-old Michael, leaves his classroom at ECLC of New Jersey, and enters another world.

It's a world of darkness. It's a world that sparks creative imagination, a world of spinning and of looking for flashing lights. A world of eerie but calming sounds. To Michael, it's a world where he is transported into something almost like being in outer space.

But in reality, it's a world of a therapy that is meeting his sensory needs and changing the way he deals with the reality of living here on earth.

The therapy is called "Astronaut Training", a fast-growing Sensory Integration protocol developed about 20 years ago by Mary J Kwar, MS, OTR. The goal of the protocol is to improve visual-auditory-vestibular integration, by simulating and integrating all three senses. And the technique simulates the serenity of outer space.

Kwar, who has been in private practice for nearly 35 years, has always had an interest in the vestibular system, how it relates and interacts with the visual and auditory systems in our bodies and how a deficit in one affects the others. The vestibular system, she explains, is our internal guidance system, designed to tell us precisely where and how we are oriented in space under all conditions without having to consciously think about it.



"The Astronaut protocol is a specific, neuro-anatomically based therapeutic procedure which is designed to precisely activate each of the five linear and rotary vestibular receptors bilaterally when vestibular function has been found to be under or over-responsive to movement.

"A lot of children have histories of ear infections, which is one way that the vestibular system can shut down," Kwar said. "If the vestibular system is not doing its job then neither the auditory system nor the visual system can work effectively. They are both dependent on the vestibular system."

She was studying strategies of activating the vestibular system to get the best results for her clients when one day she was discussing her research with a friend who was working in the U.S. Space Program. "He was so surprised," Kwar said. "He said, 'What you are doing is exactly the same as what we are doing in the space program. But we have very sophisticated equipment'."

Moving, Looking, Listening

So Kwar decided to call her therapy program "Astronaut Training: A Sound Activated Vestibular-Visual Protocol." It involves moving, looking and listening activities designed to "treat the vestibular system and auditory system of the most fundamental level in the most precise

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while sitting or lying on an "Astronaut Board" (a cloth covered disc with an outer space motif) with a child's eyes closed

while "outer space" music is played in the background and the room is darkened to simulate outer space. Other therapy activities in the protocol have the therapist move a penlight across the child's face both slowly and quickly to track the child's eye movements. Also, there is what Kawar calls "catching a falling star" where two children stand back to back, reach their arms up overhead and as far back into extension to create a scooping movement. Then they bring their arms forward and through the legs to touch their partner's hands. There is also the exercise called the "twirling robot," where a child stands with arms extended, turns counter-clockwise without losing balance or becoming excessively dizzy. Then they do it in the other direction. And then there is "moonboot dusting", where two children face each other with arms extended at shoulder level. Each one bends down while rotating their torso to touch the partner's right foot with the right hand.

Kawar said she has found that the activities excite the children she treats. She often begins a therapy session by asking the kids, "How'd you like to go on a space ride? Where should we blast off to today?" And after the session is over, she'll say, "Did you see any moon rocks today?"

Vestibular Regulation

"Most kids that are cognitively aware have heard about going into space," she said. "You are basically distracting them from just plain spinning by engaging them in a dialogue about a game. The movement to activate the full complement of vestibular receptors is very similar to what they do for the astronauts in the space program.

"The music helps the child subliminally. The space sound gives them not cognitive awareness but gives them unconscious awareness of the space they are in."

"Regulation of vestibular system processing enhances support for all sensory-based functions including postural control and balance, oculomotor control for processing visual information, auditory processing for communication, and level of arousal and attention for self-regulation. The vestibular system is our anchor, our gravitational reference point, to keep us consistently informed of where we are in relation to the people, objects, and events in our world."

And, Kawar said, "I turn it into a game -- a space game."

But does the "Astronaut Training" protocol work?

ECLC's Brandi Springer, OTR, is a big fan of the program. The children at this New Jersey special needs school are involved in the "Astronaut Training" program. The younger ones (mostly ages 7-10) get the training every day, the older ones (ages 11-14) two or three times a week, either in groups of individual sessions for ten minutes at a time, depending on each child's IEP (Individual Education Plan).

Ideal Candidates

"Taylor" is just one of ECLC's success stories. She is a 14-and-a-half-year-old hemiplegic whose left side is affected and neglected her right side as well. She had constant "nystagmus" -- her eyes are constantly moving. When she began the "Astronaut Training" program she could not write legibly or hit keys on a computer keyboard. After two years of the protocol her nystagmus stopped. She could now locate keyboard keys and could do near-point copying. "Her deficit lessened," said Springer. "She became aware of her right side. And her mood eventually changed."

As for Michael, who always just gazed at the ceiling and refused to look at someone speaking to him, he now looks at the speaker and is able to concentrate and look at a iPad. Said Springer, "He really benefits from it."

So who is a candidate for "Astronaut Training"? According to Kawar, "Any child who has poor sensory processing and poor motor control. The clumsy kid, the child who has an attention deficit, autism, a child who has CP, any kind of trauma or developmental compromise."

Kawar believes children who have reading problems -- often they are overshooting and undershooting -- may have underlying vestibular problems. And, she said, anyone who has a learning problem should be looked at in terms of SI (Sensory Integration) processing.

Keep on Moving

"Moving tongue, eyes, all parts of the vestibular system, orienting our head, are all orchestrated

by the vestibular system," Kawar explained. "Movement is basic to everything. If our movement system isn't giving us that efficient, consistent information, it's going to compromise everything that we do."

The "Astronaut Training" protocol has become one of the most popular continuing education courses for occupational therapists. Kawar estimates that she and colleague Sheila M. Frick, OTR, have trained more than 10,000 occupational therapists through their company Vital Links since they published their first handbook on the protocol in 2005. The course is given around the country and lasts two days. But Kawar said despite the popularity and success of the program, there needs to be more standardization for practitioners. "We find a lot of people have taken the course and we are very meticulous about how we train them. But people walk away from the course and do what they think they are supposed to be doing. There are a lot of problems in terms of implementation."

One of the solutions, she said, is certification. "We are working on that." You Might Also Like...



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Strategies for Success

OTs can help children with sensory issues prepare for challenging scenarios.

Peggy L. Gurock, OTR, FAOTA, staff occupational therapist at Trinitas Children's Therapy Services, Springfield N.J., has been a school-based occupational therapist for more than 30 years. Noah D. Gurock has been a television news producer for WWOR-TV in Secaucus, N.J., and Fox News. Together they have written and produced TV news and magazine stories about occupational therapy for more than 25 years.

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