

Web-Based Radio Show

Series on Learning Differences, Learning Challenges, and Learning Strengths:


Motor Planning and Sequencing

Stanley I. Greenspan, M.D.

March 16, 2006

Good morning. This is Dr. Greenspan coming to you from our web-based radio show. Thank you for joining us today. As you know, we've been talking about learning challenges and learning strengths and learning differences. We've been using the metaphor or picture of a learning tree with a tree trunk and branches and root system, with our tree trunk being our basic capacities for thinking and relating and social skills; our branches being the specific academic abilities, like reading, writing, arithmetic, organizational skills; and our root system being the processing foundations – how we comprehend sights and sounds and touch and other sensations and how we plan our actions. We focused first on the tree trunk and now we're on to the root system. For the last two sessions we focused on probably what is the most challenging part of the root system for many children – auditory processing and language. Today we're going to focus on what we call "motor planning and sequencing," and if we have time, aspects of sensory processing, as well, but we're going to start off with motor functioning.


The first question is why this is such an important part of the foundation or root system that enables the tree trunk to grow in a healthy way and enables the branches, which are the academic applications and other learning applications, to flourish. The capacity for motor planning and sequencing has to do with the very essential ability to regulate and execute actions in the world. That's how we interact with our environment – through our motor system. So imagine a child who feels like he can't, and actually can't, control his movements! He wants to point, but instead his hand goes in the opposite direction so he can't show you what he wants. He wants to look at you, but his eyes dart elsewhere and can't see what he'd like to see. We see this in a new baby who may feel attracted to Mommy's voice and wants to find her face so he can smile at her, but instead he's looking in every direction other than where Mommy is because he can't



coordinate his motor actions, i.e., looking, with what he hears – that lovely, lilting, soothing voice. So, this can be a major problem, like in the examples I just gave, or it can be more subtle – a child who can do all the things I just mentioned but can't copy shapes or has a hard time executing the alphabet or can't combine four or five actions in a row or learn new dance steps or learn how to perform in sports, which can obviously lead to social problems, as well as just the more fundamental feeling of insecurity about your body. If you're a child who gets overloaded or overwhelmed by sensations, let's say you're sensory over reactive where you tend to feel that touch or sound or movement overloads you, then you can't trust your body and don't feel secure in executing actions of the world, i.e., for example, you can't diminish the amount of sensory input coming so you feel more helpless and then more anxious. Then your problems escalate and become even more difficult for you. So, motor planning and sequencing is critical.

It's also essential for being able to follow teacher's directions. Often there are three- and four-step directions – to draw something, to put something in one box or another; in learning long division you have to use the page in a certain way involving your fine motor coordination; you need to stand in a line to get ready to go out for lunch, and so forth. Many activities involve executing actions. As you get to higher grade levels writing essays involves sequencing your ideas. What we've found is that the ability to sequence, in other words to understand the multiple steps involved in solving a problem, starts with the simplest motor actions like turning and looking to Mommy's face – it may be more complicated, like figuring out to how to navigate an obstacle course – but it's the same basic ability for sequencing that we then use in sequencing our ideas in writing an essay and making a logical argument. So the ability to plan and sequence actions and, I would add, ideas, that is very much at the foundation of many learning capacities.

Now, there are many elements to this. One has to do with going from very simple actions to more complex actions – from single-step, purposeful actions to two-step and three-step and four-step and five-step actions. We see some children, for example, with autistic spectrum disorders, who can do one- or two-step actions, so they tend to repeat themselves because they can't get into more complicated patterns. So they'll line up the car or just bang a spot on the floor. Other children can do four- or five-step actions, so they'll take the car, move it into the garage, then move it into the schoolhouse, and do four or five steps in a row, making it more interesting, hopefully, for them, as well as for the people playing with them. Sometimes this relates to that




basic ability just to plan and sequence actions. So, one component of this is just going from simple to more complex actions in planning and execution.

Another aspect of this involves coordination and balance because carrying out three- and four-step actions often involves more coordination of the body. If you're going to work an obstacle course of four or five steps, it might involve climbing, balancing, standing on your toes, and a lot of issues that have to do with coordination and balance.


Another component of this we call rhythmicity and timing. It's most obvious when you're dancing to music or marching to music because there, obviously, you're trying to be in rhythm with what you hear. But almost all movement starts off with rhythmic actions. If you look at a baby *in utero* that baby is moving in a certain rhythm. If you look at a newborn just moving his arms and legs you'll see a certain rhythmicity to the simplest movements. If you watch very carefully you'll notice that as Mommy talks to a newborn baby, the baby starts moving in rhythm with Mommy's voice. So rhythmicity and timing seem to be an early and very important way in which an infant, both before being born and after, begins to organize his motor actions and his nervous system. It progresses from rhythmic actions just within oneself, moving one's arms and legs rhythmically, moving in rhythm with another person, coordinating one's movements and voice or other sensations coming in from oneself and presumably the larger world, as well, to purposeful actions. So, rhythmicity and timing seems to be a very important foundation and it continues with us. So even when we're very purposeful and doing five- and six-step actions, there will be a rhythm and timing to those actions. Great athletes or great dancers you'll see do things that are more rhythmic or in a way that has a certain timed sequence to it; it's not chaotic. You see people with more problems in their motor systems – they're a little less predictable in their rhythmicity and timing and we'll observe that as smoothness, we'll observe that as grace, but if you analyze grace and smoothness, if you look at Fred Astaire you'll see that it had a lot to do with rhythmicity and timing. We've done studies on rhythmicity and timing as part of our research on the Interactive Metronome, an electronic device developed by Jim Cassily to improve rhythmicity and timing skills, showing that it's highly correlated with academic performance and musical performance and other skills, including the ability to plan and sequence actions, confirming our hypothesis.

Also, the ability to integrate the left and right sides of one's body is connected to our ability to plan and sequence our actions because many actions require coordination of



the left and right sides – catching a ball, for example, is one very good example of that. So we have a number of parameters of our motor system that we want to help our children develop as part of a healthy root system, going from simple to more complex sequences of actions, balance and coordination, rhythmicity and timing, to mention a few that are very critical, as well as integrating the left and right sides of our body.

Now, I'm going to describe a series of activities that caregivers and teachers and therapists can embark on with children to improve their motor planning and sequencing skills, to improve this important root system. It goes without saying that this is very important to assess when looking at children with learning challenges or learning differences or even learning strengths because children vary on this important ability. Some children are so gifted verbally you may not notice that they have a problem with motor planning and sequencing, but it's actually making them work harder with their verbal skills and they could be even more proficient in learning if we strengthen this important component of the root system. For other children this is at the heart of their problems. They may be diagnosed with ADHD or ADD – with attentional problems – but the underlying basis for it may be a motor planning and sequencing problem because if you get lost on the way to the bathroom because you can't plan four actions in a row under automatic pilot it looks like you're inattentive and you *are* inattentive, but it's because you can't sequence your actions easily, not necessarily because you have a primary deficit in attention, *per se*. So, we need to understand this, both even in gifted children as well as in children who have obvious challenges in a number of areas. Most important is to strengthen them. It's also – before we talk about these exercises – important to recognize that some children have low muscle tone and have relative weakness due to a variety of possible causes in early development in one side or another side of the body. They may have some asymmetry, in other words – differences between the left and the right. In an extreme case they may have mild forms of cerebral palsy that are not obvious, but what's important here is to recognize that there are gifted occupational and physical therapists, as well as pediatric neurologists and physical medicine specialists, who can help in designing a program for children with low muscle tone or asymmetry or those with obvious sensory or motor challenges, and it's very useful to have a consultation when questions arise to understand the full nature of the challenge and to receive the guidance of a talented professional in these disciplines. Often it's a team approach, where a number of professionals may be involved in helping the family develop an approach for the child.




What follows are some exercises that should be considered for all children and that can be often useful, in addition to (or overlapping with) many of the recommendations made by specialists who'll be designing a special program by getting to know a particular family and child and the particular challenges. So here are some of the exercises that often are helpful and should be considered.

The first I'm going to describe as under the heading, *The Evolution Game*. We call it the Evolution Game because we literally mimic human evolution in terms of movement. This is a fun warm-up activity for almost all children. For children who have challenges at any of the stages in evolution in this game I'm going to describe, we want to focus on that particular exercise until the child shows some relative competency in it – until the child is able to master it. So that becomes a very important dimension. The Evolution Game starts off with getting down on the floor and wiggling like a little worm or a reptile – a little snake. So it involves wiggling along the floor or just rocking back and forth, getting the body moving. When we do this we try to do it in a rhythmical and timed way – we can do this to music, as well. So we play a little game where we're both little wiggly worms – it could be Mommy or Daddy and little Junior – and we're wiggling and trying to go from one place to another, just wiggling on the floor. You'll see in doing that you're using your arms and your legs and often the left and right sides of your body, but you're really focusing on your tummy and trunk muscles and getting that central core strengthened a little bit, which is very helpful for children with low muscle tone or coordination difficulties, and gets us into some action patterns as wiggly little worms.

Then, as we go up the evolutionary ladder, we become like little lazy alligators or lazy crocodiles and we go from wiggling to crawling, but not really up on all fours yet; we're just simply slithering. So we become slithering reptiles and we slither a little more using a little more of our legs and arms. Sometimes it's helpful for a child who's having trouble doing this to have one parent get behind him and put her hands behind the child's feet, just like we would with the child who's learning to crawl, to give him something to push off as he slithers across the floor. We make it fun by having something the child wants in front of him and we might have a race to see who gets there first – Mommy or Daddy or little Junior. We try to let little Junior win 70 to 80 percent of the time to get the prize.


I should mention when we're doing our Evolution Game or any of these activities that we also want to be strengthening our tree trunk. So in all these activities we're always focusing on engaging the child, getting back-and-forth interactions,



communicating with gestures, and getting into a continuous flow of back-and-forth communication so we're solving that problem together, like slithering across to get that object. If it's a verbal child, we're talking and using ideas and making up a story and a fantasy and trying to get the child's input – does he want to be an alligator or a crocodile? Does he give it a name or a personality and make up a story about that crocodile trying to get across the room? Then when all is said and done, we will find out how the child felt about that exercise or game, so we'll have him connect ideas together and reflect by asking why he liked it or didn't like it and help him elucidate his feelings. If he's a really advanced child we'll get multiple ideas about why he liked it and even get some gray area thinking in terms of how much he liked it compared to other games we play, and so forth and so on. So, we'll go always up our thinking scale, strengthening our tree trunk while we're doing these fundamental motor exercises. We may have a highly verbal child with low muscle tone who needs to work on the basics, motor-wise, but who's very advanced verbally so we're having a very elaborate, creative, and logical discussion with a lot of gesturing while we're slithering across the room pretending to be little alligators.

So after we go from being worms and then being slithery reptiles, we then get up on all fours and become the child's favorite mammal or we can be another animal that uses all fours. It could be a mouse – Mickey Mouse – or we could be mean rats, we could be cute little doggies or sweet little kitty-cats, but whatever animal works, we now get up on all fours and we play crawling games. Again, too, this involves movement, it involves using different parts of the body, strengthening the core muscles of the abdomen and pelvic area and shoulders, as well as getting arms and legs moving in coordination with one another and we're going up the evolutionary ladder. In playing the crawling games we go left, right, backwards, forwards, sideways, so now we're really getting flexible in our movements – we go under things and over things, and through things. We develop obstacle courses, all as part of our crawling game, and some of this we can do with music with an emphasis on rhythmicity and timing. So you can see while we're doing this we're going up the evolutionary ladder, but we're also working on coordination and balance and rhythmicity and timing at the same time that we're doing more complex actions.


Then we go from all fours, having done left, right, up, down, over, under, and through obstacle courses, to walking on two legs – we graduate up. Even for a child who's already walking, we're going back to the basics to strengthen the core. Then we go up to two-legged and now we do the same things – walking forward, backward,



sideways, up and around, through obstacle courses – and we try to start with simple actions – one-step obstacle courses, going over a drawbridge, for example, which may be a balance beam that’s pretty wide and easy to get across to get something, like a prize or a treasure in a treasure hunt game, but we want to design the obstacle course so the child has to go over, under, left, and right. We may want him to have to go around swinging objects, and so forth and so on. Then we also want to increase the number of steps. So the obstacle courses will take two steps or three steps or four steps while we’re walking, and five and six steps – so we keep increasing the number of components that the child has to do up on two feet.

Then we want to go to running, so we go faster and we do the same thing: left, right, up, down, over, under and we do it gracefully. So we want to increase the speed of the running very gradually. Then we want to introduce modulation games, where we run fast, slow, super slow, and medium speed. We also move our hands fast, slow, and super slow or we play the drums in the same way. We want to also combine that with voice modulation games – loud, soft, super soft – so the child is regulating his motor actions while doing more complex motor actions. So we invent games that go from simple to complex; that modulate intensity and speed; and go from, as I mentioned, simpler actions to more complex actions.


Then we want to go to more advanced skills like hopping, skipping, and jumping and go through the same thing – hopping around things, skipping around things, under things, through things, and we do the same obstacle courses and same things and we can obviously combine running, jumping, hopping, skipping, crawling, slithering now in games together once the child has gone up the evolutionary ladder. Once we get all these motor skills cooking, from wiggly worms to running, jumping acrobats or athletes or dancers, and as you get to the more advanced levels, obviously, you can combine them with the child’s favorite activities, be they dancing or sports or gymnastics or other activities – then we want to begin really making the action patterns more and more complex. So we want to really go to multi-step actions, but always very slowly, always with the child having 70 to 80 percent mastery. Once a child gets under 70% percent mastery they “lose interest” and that’s the child’s way of saying, “This is too hard for me” or “It’s happening too fast.” The child just says, “I’m bored” but when a child says, “I’m bored,” it doesn’t really mean he’s bored, he means it’s too challenging, “It’s too much for me.” So, always read it and listen to it and pay attention to it, but don’t take the child literally because the child means something else. Children basically like to do what’s easy for them; they don’t like to do what’s hard, nor, necessarily should they



because they're not yet old enough to have that self-observing capacity to say, "I've got to tough this out." When we get to a little older age, the early teen years, they can take that attitude and you'll see that when they're preparing for dance or sports or music training, but at the younger ages they tend to go with what's easy, so if you want to teach them new things, set it up so there's a slow enough increase in the challenges so you have at least a 70% success rate and that fuels itself because then the child wants to do the activity because he associates it with mastery. So we always even the playing field. In a competitive game with an adult, for example, maybe the adult plays the game on one leg or while crawling, while the child is running so that he can have a good sense of mastery.


Then we add on another component. Once we have complex motor actions and we've gotten into more complex sequences, then what we want to do is combine that with different kinds of sensory input so the child is no longer just doing motor actions, but is doing auditory motor actions – in other words, listening to directions and following them (and it might involve changing directions) or visual motor actions, where there's a visual cue and then a motor action that follows. So, for example, now the sequence – let's say that we're involved in four- or five-step actions plans involving obstacle courses going under, over, and around things. We may keep changing the direction to the child and make it like a "Simon Says" game, telling the child, "I'm going to say what you have to do and I'm going to say 'Simon Says' or I'll just tell you. Only do it if 'Simon Says' do it and then you have to do it as fast as you can. So if Simon Says, "Over the drawbridge, through the tunnel" or if Simon doesn't say it, just, "Over the drawbridge and through the tunnel" if the child just does it without the "Simon Says," he's out of the game. If he does it when Simon says it, he gets in the game. So it could be, "Drop you hands, touch your knees, Simon says, touch your eyes, touch your head," or more complicated obstacle courses and now he's combining hearing with action, which is very good because now you can combine different parts of the mind and brain together. Then we can do it with visual images – have diagrams and flash the card showing him to clap his hands, roll through or over or under an obstacle and he has to do it quickly as you show him the different visual diagrams and visual images.

As the child learns to read we can have written directions that the child has to follow, both with fine motor and gross motor activities. Now, I've been focusing on gross motor but we use these same parameters as the child gets more advanced and older and learns to make his shapes with fine motor actions – copying circles, squares, rectangles, diamonds, and doing letters. It's always good to have fun with scribbles and



circles and colors to get the child used to using his hands and fine motor. The sequence for fine motor involves the same basic skills, starting off with just getting used to big crayons and big objects making colors and shapes, realizing that “my little hands can hold something that can make something interesting,” like a line or scribble-scribble or interesting colors. From there, let the child just enjoy it for a while and then go to “Look at this!” and play copycat games and make a big circle and put some eyes in and a face. For the child who can’t quite draw, he can show you where to put things in, but as soon as he can, have him do it and let him use the whole page and take pride in whatever he produces because it’s wonderful because he’s taking that little crayon and making something.

For the child who has low muscle tone or has a hard time learning the proper grasp, that’s where an occupational therapist or physical therapist consultation could be helpful to show parents the steps to use in helping the child master the proper grasp of the object. But make it fun, make it enjoyable, and start with simple things with just some lines and some scribble-scribbles and some broad circles and then go into other basic shapes, such as again, the circle, the rectangle, the square, but without worrying how good it is, and then eventually the triangle and the diamond and eventually making letters and doing lots of free drawing and so forth. Some kids will be quicker and some kids do it more slowly, but the idea is to help them enjoy fine motor activities. Things like picking up Cheerios or picking up little cereal pieces with their forefingers and their thumbs are helpful, too, but that’s not as demanding, actually, as the drawing and coloring activities. Sometimes kids can be very good at picking things up but they still take a long time to master the fine motor skills involved in drawing and coloring. So the earlier we get into that, the better, but not beyond the child’s abilities and not in a stressful way – always in a fun, enjoyable way. But there, too, we go in the same sequence – from simple to more complicated and then combining it with copying things they see, following verbal directions, to make squares or circles or triangles and we can make games out of it, like “Simon Says draw a circle or draw a square” or we can show them a picture and say, “Simon Says copy the picture” and then they’ve got to copy the picture. Then we can show them three pictures and we take them away and see how many they can remember. So all of that helps with the auditory motor or visual motor activities. Again, to reemphasize, as we’re doing that while we’re engaging and interacting and getting into continuous flow and making a creative fantasy around it and always asking the child’s opinion about whether he liked it or didn’t like it and how much so when we’re through with the exercise.



Then, obviously, we graduate to more complex games and activities where the child is part of a group so we can, again, involve dance lessons or sports lessons or just going out with Mommy or Daddy and friends and learning to dance and do sports and ride bikes and do other activities. So we can take the ordinary activities and use them seeing which ones improve social skills, which ones improve the child's basic core essential abilities needed to be a skillful child and participating in all kinds of group activities.

I want to talk briefly about some other exercises that are very, very helpful and tend to facilitate motor planning and sequencing. One we talked about was rhythmicity and timing and that starting with newborn infants and even in prenatal development, babies start their motor patterns with being in some rhythmic activity with themselves and then with their world, especially with their caregivers, and then forever after, that is an important foundation for their motor planning and sequencing skills. So, it's very helpful to do extra work on rhythmicity and timing, and lots of music and dancing, marching, singing and having fun with music is very helpful. There's a new technology that I've been involved in the research on called the Interactive Metronome, which provides a computer-based support system for improving rhythmicity and timing by providing certain rhythmic beats through earphones and then there's a series of ever-increasingly complex motor actions that are coordinated with the rhythmic beats and the person gets feedback about how close or far from the beats he is and that helps improve rhythmicity and timing. But there are many activities that can improve this and it's important to be mindful that music, dance, marching, singing, and activities like the Interactive Metronome are all very important and very valuable in improving rhythmicity and timing. When we do a lot of our motor activities it's important to have that parameter considered.


Also, balance and coordination is very helpful. That involves many parts of the brain and mind working together, especially the cerebellum. Here, having, for example, a balance beam and walking across it, then standing on one leg on the balance beam and then standing on one leg with your eyes closed can be very helpful in balance and coordination exercises. Learning to ride a bicycle, obviously, is helpful. Certain dance moves are very helpful, especially ballet. Sports activities involve a lot of balance and coordination. Following is a list of activities that are good illustrations of how to involve children in balance and coordination activities, but there's no substitute for the creativity of the child and the parent.

- Running
- Jumping
- Spinning
- Balancing, using jumping gym equipment
- Perceptual motor (throwing, catching, kicking)
- Balance (walking and standing on the balance beam, standing on one leg while keeping the eyes closed, throwing/catching a ball while walking on it)
- Left-right integration (using both sides of the body together)

So, I'd say start off with some basics, like a balance beam and standing on one leg and just try standing on one leg with your eyes closed and see how long you can balance. Then there are these neat little balance boards, a little bit like a skateboard, where you try to stay in the middle, rather than falling to one side and then the other so all kinds of toys and there are little cushion things you can stand on that are hard to balance. Trampolines are very helpful. Try jumping on a trampoline on one leg, for example. Any time you try to balance without using vision, with your eyes closed, on one leg or up on your toes, it's really improving your balance and cerebella functioning, which seems to be an important component of motor planning and sequencing, generally. Nothing is a substitute for the inventiveness of the child and the parent, but the general principle is to use a balance beam, use one leg at a time with your eyes closed and try standing on the balance beam on one leg with your eyes closed while you throw a ball. Just make it more complicated.


Also, doing things like walking with your eyes closed or hopping with your eyes closed or skipping with your eyes closed, where you're actually reducing sensory coordination and relying on balance and coordination and your imagery of the room are interesting exercises and you can make those into fun games for the children, a little bit like playing Pin the Tail on the Donkey, but having to do it on one leg, hopping, is an interesting exercise. So, hopping, skipping, one-legged Pin the Tail on the Donkey – these are all examples of fun activities that can be part of improving balance and coordination.

Now, left-right integration – many children have trouble coordinating the left and right sides of their body, especially children with motor planning and sequencing issues. Here, basic activities involve them throwing and catching a ball, kicking, or games that involve throwing, catching, and kicking. The key here, in doing things that require using the left and right sides of the body together, is to make it fun for the child, to make it



natural for the child, and to help the child by being successful at it. The wrong way to do it is to make it into a workout or make it into a “formal exercise,” saying, “We’ve got to now do your left-right exercises” or even forcing the children into sports, like, “Now we’re going to play baseball or football.” The child might like the idea of a game where they have a big nerf ball and they can be successful at something 70 to 80 percent of the time. If they throw it at you and hit you and you don’t catch it, they get a point. If you throw it at them and they catch it, they also get a point, although if they miss it they don’t get a point. You can play a little game of dodge ball with this big nerf ball that’s very soft and gentle and where the child can accumulate make points and there are prizes at the end. You can make up a game and invent a title for the game, called “Nerf Bombs” or “Nerf Balloons,” or whatever, and it could be with balloons, even, where you’ve got to catch floating balloons – start off real simple. So, find out what’s going to be fun and exciting for the children, but where they have to use both hands together, where they coordinate both sides of the body together, and where they use vision and motor actions together, and get started with that. Then just make it more complicated like having a game with big nerf balls where if they can successfully catch it they get a point, and if they successfully kick it they get a point. If they hit you with it, they get another point and if you make it competitive so they win 70% of the time, you’ll have a lot of fun, and it’ll be practicing, basically, hand-eye coordination games, left-right games, all at the same time. So here’s where we get into more rapid use of visual motor, auditory motor, left-right integration, and left-right balance at the same time.

There’s a very popular set of activities under “Brain Gym” that you can find on the Internet that has a lot of left-right games. A lot of dances involve the left and right sides of the body together moving together, so here, again, there’s no substitute for being inventive. The key I want to emphasize is that, in addition to getting evermore complex motor actions, we want to practice things that involve balance and coordination, rhythmicity and timing and left-right integration, and as we do those kinds of activities we’ll be strengthening the whole motor system. You want to have a series of games each day and you want to do them two or three or four times a day and work it into imaginative play and work it into organized games where the child is really having fun with Mommy or Daddy or friends or a teenager who comes over to help little Johnny and Susie enjoy their motor systems during the day. This can be orchestrated by an occupational or physical therapist but it may not involve the expensive time of an occupational or physical therapist. They can set up the program and then have a 13-year old babysitter come over and actually implement the program with your younger



children or Daddy can do it on weekends with a bunch of kids. So it's not just organized soccer, or organized baseball, or organized T-ball, or organized dancing that can work; it's really activities that get the nervous system cooking. Remember, the principles are from simple to more complex motor actions following our Evolution Game. Then, adding a lot of rhythmicity, a lot of coordination and balance, and a lot of left-right integration activities onto it. Then what we want to do as a kind of culmination is to have games that involve all the above together, like a treasure hunt game where there are verbal directions and visual directions, and evermore complex actions, and to solve the treasure hunt you've got to go through obstacle courses and you've got to do everything I've just described – over, under, one-legged, with eyes closed, and get through the Simon Says Monster without getting out of the game. This can be very exciting for a whole group of children to play together – it could be done at birthday parties or it could be done as part of daily routines. So, here's where you want to be very inventive and get children off the couch where "There are no couch potatoes around here!" and into these activities. Then, even in something where we're doing visual-motor exercises it can get very complicated, going from simply catching and throwing a ball, then we're throwing the ball over the child's shoulder where they have to turn (something like catching a football over your shoulder, but it's just a big nerf ball), to facing the person throwing the ball and having to just back up or go to the side – sort of the equivalent of agility drills.

So, basically, what we want to do is come up with evermore complicated games that involve all of the above that I'm describing in the context of lots of relating and back-and-forth interaction and a lot of fantasizing. Then we strengthen the tree trunk and we strengthen the motor planning and sequencing part of the root system while the child's learning how to follow directions and carry out complex sequences at the same time, particularly in our treasure hunt games.

So, there's much more that can be said, obviously, about motor planning and sequencing, but this is a good beginning. Next week we're going to talk about sensory processing and sensory modulation – how to help the child who's over reactive or under reactive to sensation, which is another important part of the root system. Then we're going to go into visual-spatial thinking, as another part of the root system, the following week.

So, we look forward to hearing from you and participating with you next week. Thank you for joining us today.

