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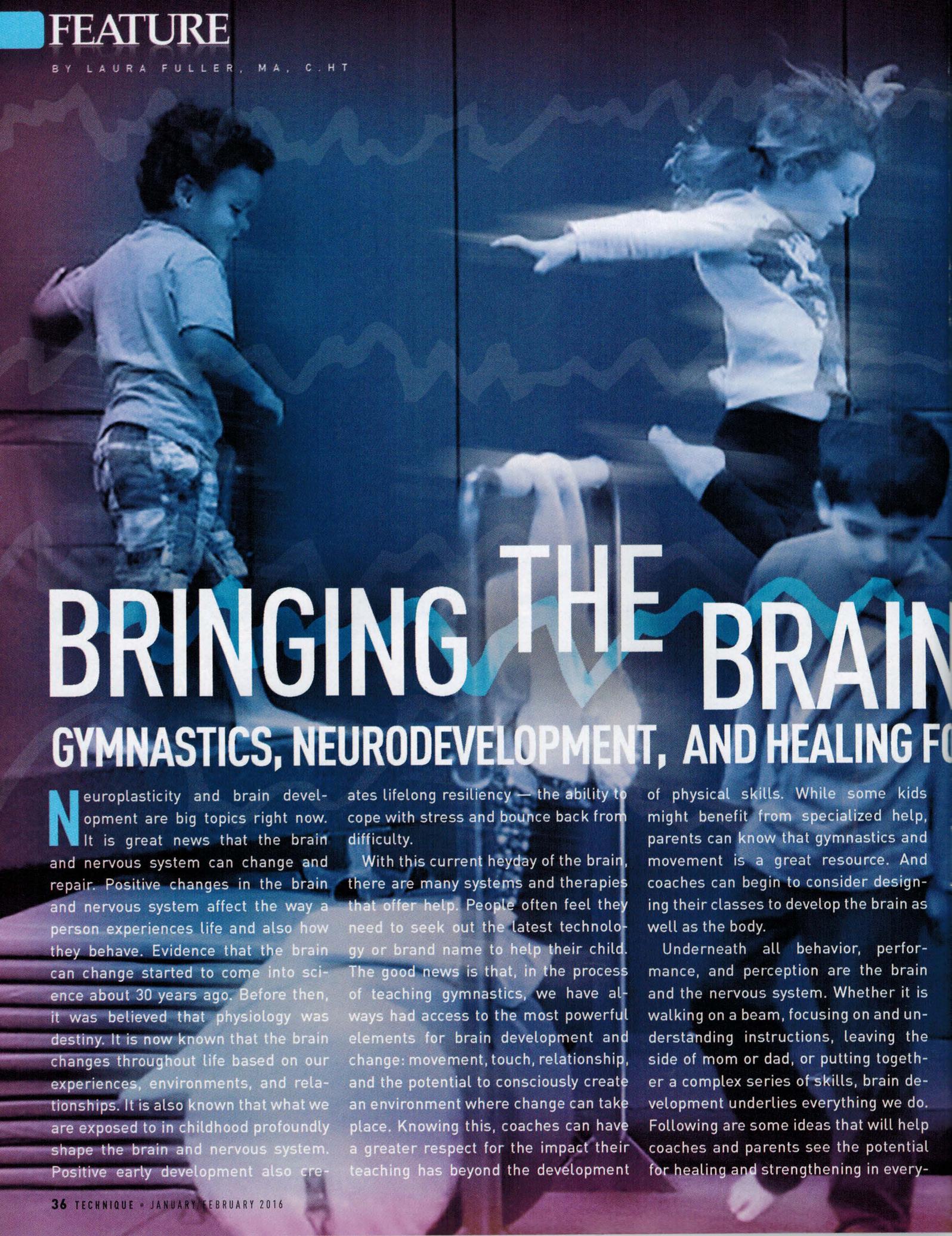
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# BRINGING THE BRAIN

## GYMNASTICS, NEURODEVELOPMENT, AND HEALING FOR

**N**europlasticity and brain development are big topics right now. It is great news that the brain and nervous system can change and repair. Positive changes in the brain and nervous system affect the way a person experiences life and also how they behave. Evidence that the brain can change started to come into science about 30 years ago. Before then, it was believed that physiology was destiny. It is now known that the brain changes throughout life based on our experiences, environments, and relationships. It is also known that what we are exposed to in childhood profoundly shape the brain and nervous system. Positive early development also cre-

ates lifelong resiliency — the ability to cope with stress and bounce back from difficulty.

With this current heyday of the brain, there are many systems and therapies that offer help. People often feel they need to seek out the latest technology or brand name to help their child. The good news is that, in the process of teaching gymnastics, we have always had access to the most powerful elements for brain development and change: movement, touch, relationship, and the potential to consciously create an environment where change can take place. Knowing this, coaches can have a greater respect for the impact their teaching has beyond the development

of physical skills. While some kids might benefit from specialized help, parents can know that gymnastics and movement is a great resource. And coaches can begin to consider designing their classes to develop the brain as well as the body.

Underneath all behavior, performance, and perception are the brain and the nervous system. Whether it is walking on a beam, focusing on and understanding instructions, leaving the side of mom or dad, or putting together a complex series of skills, brain development underlies everything we do. Following are some ideas that will help coaches and parents see the potential for healing and strengthening in every-

thing that is done. The following are suggestions to help the coach bring the brain to class and the parent to help see the depth of what is going on behind simple and playful things. Using these techniques will help you build better gymnastics and greater confidence for all kids. It may allow you to draw in kids that might otherwise fall through the cracks.

### GYMNASTICS AND THE BRAIN

Brain development improves gymnastics abilities and gymnastics development improves the brain. Movement links to certain parts of the brain, increasing blood flow and, with repetition, builds up brain regions, strengthening the pathways that connect them and increasing myelination. It is easy

because of the age groups involved. Structures of the brain do not reach basic development until age 10 to 12 and are not seen as matured until age 25. This not only includes the students, but also many coaches and parents! You can also consider how this becomes relevant with the peak ages of your particular sport. This is significant because high levels require peak brain ability as well as body ability and because, after an athlete finishes their gymnastics career, we want the brain that was built to serve their life in general.

### HEALING, SHIFTING, OR CATCHING UP

Everyone's brain can use some help from time to time. That may be one reason why movement feels so good. Natural brain development

can be supported through movement for all kids, however it can also be used to help kids with deficits or imbalances to heal, shift and catch up. Bringing the brain to class in-

volves two basic understandings:

1. Movement development can also develop the brain and
2. The power of the environment and relationships.

### HOW TO BRING THE BRAIN TO CLASS

The following is a list of elements that teachers can consider in planning classes and that parents can use to understand more deeply what is happening beneath the surface and what the teacher is working for. Just like a workout should be planned for a balance of physical components — like locomotor movement, still poses, jump-

ing, handstanding, free movement, controlled movement, flexibility, and strength — consideration should be given to the development and balancing of the brain as well. It is important for parents and teachers to keep in mind the possibility of healing and growth. Development of the brain — just like development of a muscle — is not easy and may not be immediate but it is possible and it is worth it.

- Begin with a Brain and Sensory Lens. This is about the way you see things and will effect how you respond and what activities you choose. Start to look at behavior and ability as clues for what is going on in the brain and nervous system. This changes everything and moves you from a perspective of reward and punishment to one of being able to hear the communication and fulfill the needs. Do we judge the child who pushes to be at the front of the line for their moral failing or bad parenting? Or do we consider that the brain region that manages priorities may not be developed enough to allow them to make that choice?
- Sensory Systems and Brain Regions. The Proprioceptive system lets a person know where their body parts are in relation to each other. The Vestibular system is responsible for balance. Together, these allow us to sense where we are in space and feel movement. These are highly involved in gymnastics and also are commonly underdeveloped. Kids who land on their knees or want to rough house with classmates are likely seeking proprioceptive input to orient themselves. You can

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# TO CLASS FOR TEACHERS AND PARENTS

to take for granted how many processes are involved even in simple things. Did you know that a cartwheel involves moving forwards, sideways, backwards, upside-down and includes all three splits, plus the visual, auditory, and sensory processing involved? If this learning can be made accessible to those who it doesn't come naturally to, it reaches out into life in powerful ways. For example, the eye tracking, proprioception, motor planning, and left-right integration involved in jumping side to side can improve reading and comprehension.

It is especially important to consider brain development in gymnastics

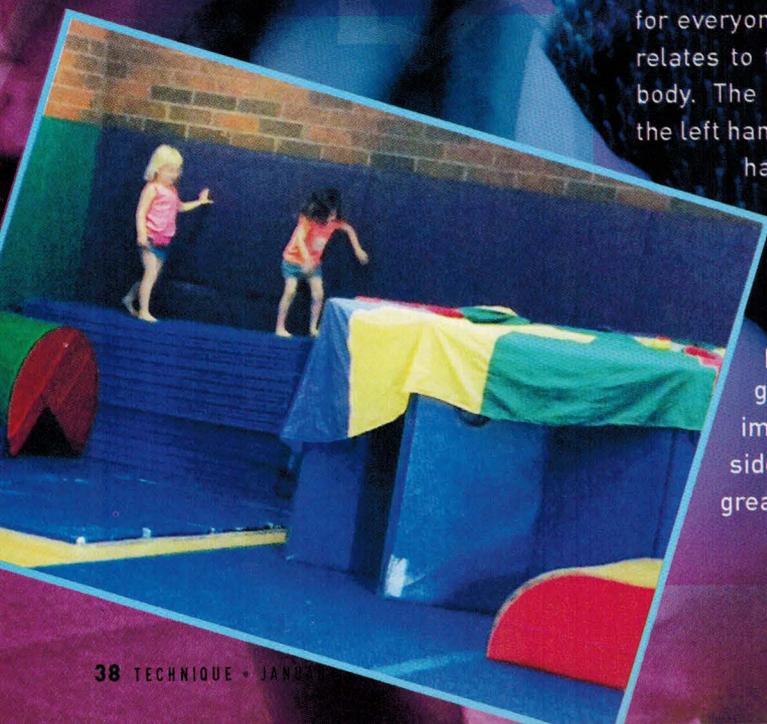
add tunnels, vantage points, and safe crashing into your class — crashing actually helps with flight!

- **Understand Nervous System Discharge:** Regulation of the nervous system is not static. It is like a wave that rises above and below a baseline. When kids are learning something new, they are often pushing themselves beyond their range of familiar activation. This might mean that they are being more calm and focused than they are used to, or that they are being more strong or quick than they are used to. These moments are commonly followed by a moment of discharge. For example, a young child focuses to walk across the beam and then wants to run a circle around the room. This impulse is a good one and will lead to an increased ability to regulate and balance. Consider building this into obstacle courses and plans — add something that runs and flies after something that holds still. Or

plan a moment that is restful after moving fast.

- **Modes of Learning.** We all have a preferred mode of learning — through seeing, hearing, or feeling. Try to find different ways to bring all three into your classes. Some may not listen well to verbal instructions, but will happily respond if they read it themselves. Cognitive understanding is another type of processing that some kids need. Work to de-mystify by breaking down skills into parts and drills, or giving explanations that help them understand.
- **Teach Both Sides.** Brain lateralization means that the two sides of the brain are not exactly alike. Some skills and processes have primary location in one hemisphere, and yet abilities in general can be improved by integration of both sides of the brain and awareness of the whole body. While where each skill is located in someone's brain is not as cut-and-dry as it once was imagined (is different for everyone), each hemisphere relates to the other half of the body. The right brain controls the left hand and moving the left hand activates the right brain. Learning the non-dominant side of basic skills can help develop processing ability in general and also will improve the dominant side tricks. It's also great to have for dance.

- **Sensory Integration.** Any action involves a complex combination of both receptive (what comes in) and expressive (what comes out) skills. Even when the brain abilities are there, challenges can come when they are not accessed in the right combinations. You can put different tasks together (like jumping on a trampoline while counting out loud, or crawling through a maze after doing a flying jump). This helps integrate different parts of the brain allowing for learning more complex skills and more awareness in life in general.
- **Movement Sequencing.** Sequencing ability can be developed through using obstacle courses, teaching dance choreography, and through using creative movement to help develop motor patterns. Sequencing skills — especially including large motor — are often lacking when technology is a focus. The ability to sequence and build diverse patterns can help improve processing and reduce frustration. It is a skill that you can watch develop with practice. Obstacle courses can be used for more advanced kids and bring in the benefit of de-focusing: helping the child to not obsess on one element by moving on to the next one, allowing the non-dominant brain circuits to process and figure it out.
- **Flow Time and Free Play.** A LOT is learned in play — and not just gymnastics. Flow time is something that is sorely lacking for



many kids these days, especially in a relational space (when with others who have flow time too, not just when alone). In addition to the confidence that is built when kids refine their tricks on their own during free play, many important parts of the brain are developing as well. Decision making abilities, spatial abilities, abilities to interpret social cues, ability to cope with frustration when others may not be playing by the same rules, ability to self-regulate, activate (not just sit down and be bored) and rest (not go hard core the whole time until exhausted). In fact, free play may be the most beneficial part of class! It may need to be developed for those who find it overwhelming. This can be helped by giving it in small doses, with limited equipment, and by teaching tools for reading social situation and gauging appropriate force.

- **Creative Movement.** Similar to Flow Time & Free Play, Creative Movement replicates life in teaching students to move through an ever-changing terrain. Immediacy is learned — the ability to assess what is going on and then make choices accordingly. The ability to notice the choices others are making and intuit motivation and planning. The ability to play with emotions. In terms of the brain, creative movement and dance get into realms that are distinctly human. Bringing these elements into class gives the experience that gymnastics is about

life, engagement, meaning, and feeling — not just achieving particular movement goals.

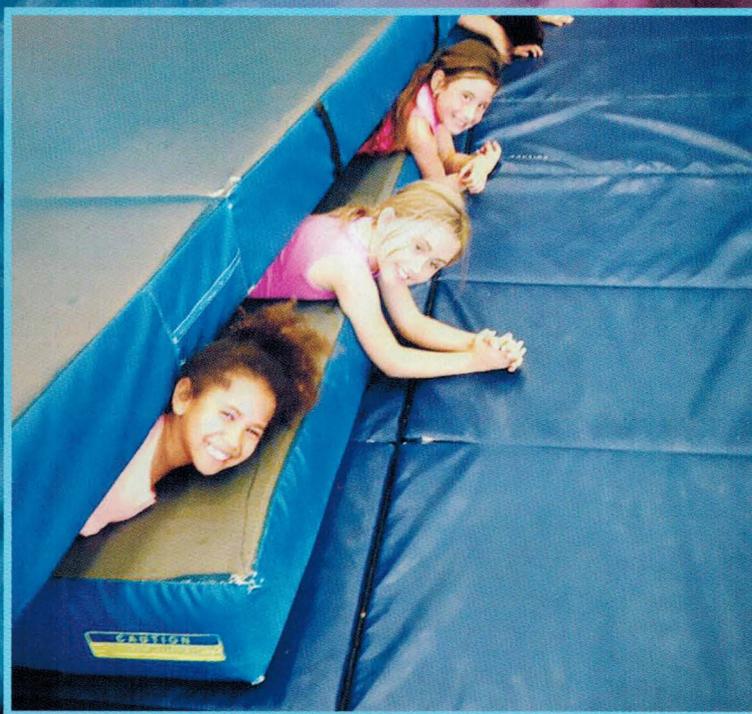
- **Non-Gymnastics Elements.** Rhythm, music, improvisation, theater games, art, writing, breath, imagination, and relaxation — all of these when combined with gymnastics become even more powerful in developing the brain and help with the learning of gymnastics as well. The use of wise touch is also something that can deeply support kids. All of these help integration, regulation, and also begin to bring in the power of emotion and relationship.

#### ATTUNEMENT AND THE GIFT OF ENGAGEMENT

The list above relates to patterning and integrating the brain through movement and they are all good tools to have. The most important element for brain development and change, however, is much more simple. It is the relationship between teacher and student.

Attunement means to come into harmony. It is noticing and responding to the cues of a child, seeing the communications as important, and responding. This does not mean being

perfect nor does it mean responding to every whim (as what is not responded to is equally important) but being truly present and considering what is needed. Engagement involves this deep presence, plus vulnerability and participation. We are relational beings and the brain and nervous system develop through connection with those around us. In creating an environment that will foster brain development, attunement and engagement are the most important elements. It is not the equipment, the music, or the skills. Though those are nice to have, the primary tool is US. One of the greatest gifts we can give a child is connection to a nervous system that is present, engaged, playful, curious, and calm. In this time of smart phones, busyness, and comparison,



and generations of trauma, this sort of engagement is very rare.

While attunement and engagement are basic human abilities, they actually

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need to be taught and supported because they are not the norm. Younger teachers especially should be coached in how to be present and engaged — both moment to moment, and in long-term commitment. They may need support to know what it would mean to get interested and go deeper, rather than dabbling and just doing what is convenient. Parents may need to support each other in supporting the class limits and efforts, noticing how present their child needs them to be, and making sure conversations don't lean to the negative just out of habit.

## COMMUNICATING VALUE

This article is an act of communicating and remembering value. When we understand more deeply, we can have more respect for the form, the students, the teachers and the parents who participate. The word "respect" means "look again" — there is more here than you think (and there is al-

ways more than we think). Just as it is important to teach coaches the value of their presence and how what they teach relates to the brain, it is also important to communicate value to parents. Some parents may come to class without brain development on mind. They may understand that gymnastics can help their child with speech, focus, reading, confidence or self-regulation, but most will have no idea what is happening under the surface of class. Helping parents to see brain development will let them have more respect for the class and for the difficulty and importance of what their child is working at.

It is common for parents and teachers to punish kids for the way their brains are working. These punishments often hinder the exact development that is needed to bring about the desired change. Parents may use gymnastics as a reward for good behavior or for good performance in school. It may be

helpful to parents to see gymnastics as good medicine. Not as a reward, but as something that actually will facilitate the desired change.

Gymnastics is the sport of the super-human and the deeply human. At its best, it is about respecting the needs of the body while at the same time leaning into the edge of what is possible for each individual. Considering brain development brings us in touch with both the super-human and deeply human as it looks at what is needed, how to help, and creates a paradigm where more is possible than ever had been imagined before. More important than any of the science, if we have one job above all, it is to love them. The hope is that this information lets you know how powerful your love can be and gives you a few more ways to love your students well and care for them deeply. You will likely notice that, by bringing the brain to class, you build better gymnastics and better relationships.



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