

## Ready to Learn

### The Importance of Motor Development to Learning Readiness

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For more than a decade numerous policies, meetings, articles, studies and debates have been centered on a simple declarative statement —*all children in America will start school ready to learn.*<sup>i</sup> Coined under the Education Summit of 1989's six "National Education Goals," it was the beginning of our nation's commitment to improving educational achievement across the board. Fast forward twenty-two years and thousands of children in spite of our efforts continue to funnel into the American school system each year ill-prepared, causing teachers to devote what is already limited classroom time to playing catch up with students not performing at peak potential. Clearly the system isn't working; the goal remains the same but it is time Americans take a different approach to school readiness and academic achievement. Through breaking down the conventional methods by which we understand the learning process and looking at the physiology of the child we can come to understand why previous initiatives have failed and why more and more children are entering the classroom ill-equipped to learn. Modern brain research can be applied to parenting, teaching, and education policy to improve school readiness and bolster academic achievement.

When it comes to impact on education, neuroplasticity is one of the most important and groundbreaking discoveries about the brain that we have to date. Intelligence is not fixed as we once supposed; rather, it develops and changes throughout our lives. Neuroscientists know and accept the importance of motor development and its effect on learning readiness. **Research gives strong evidence that daily physical movements integrated into the curriculum increases academic scores.**<sup>ii</sup> In one study on perception-motor development and school readiness in kindergartners, the resulting correlation confirmed that variations in perceptual-motor skills explained most of the variations in learning readiness. It also demonstrated the clear linear relationship between independent visual functions and school readiness as well as the additive nature of perceptual-motor skills and their correlation with reading ability.<sup>iii</sup> Or as educator Eric Jensen puts it, "today's children do not get the early motor stimulation needed for basic much less optimal school success."<sup>iv</sup> In order to allow the brain to function normally, we must adapt to the 21<sup>st</sup> century learner and address the physiological deficiencies that are arising in children due to limited physical movement and other detrimental hallmarks of modern society. Much like a car needs a motor, tires and gas in order to run properly, children must be physiologically put together before they can learn.

Many parents and educators fail to realize how important movement is to proper early childhood neural development and subsequent academic and social skills. Crawl time, for instance, is necessary motor stimulation that a child needs to build up cross-lateral integration, rhythmic / timing ability, and visual-motor control via their vestibular system in the inner ear. Many parents believe that once their child has reached each developmental milestone that the child is growing properly and can therefore focus on the next big marker, which is false. The time between each developmental stage is just as important—if not more so—than the marker itself in terms of brain development and sensory integration. Over the past years, the amount of time that infants spend on the floor has declined, however. They spend their time laying back in a car seat, which now can be transformed into an all-too-common carrying device, a grocery cart holder, or even into a stroller. By age 2, a child has spent 500+ hours in a car seat, both in and out of a car.\* As the TV does the baby-sitting in most households, infants' movements are further restricted by placing the car carrier, baby swing, or other holding contraption in front of the TV for hours. All of these "conveniences" add up to lost hours of motor stimulation that would best be spent on the floor allowing the child to develop the proper sensory inputs that are needed to enable the brain to perform sensory-motor integration.

When we look at the next phase of early childhood development the opportunities for motor development don't seem to get any better. Few young children walk to school (or anywhere) today. Parents cannot be sure that their children are safe to play in their own yard. In addition, due to liability concerns that prohibit their use, many schools and parks have removed traditional playground equipment such as teeter-totters and merry-go-rounds that built up large muscle skills and provided vestibular stimulation. As strangely basic as this may seem, unstructured play and movement—i.e. hanging from trees, rolling down a hill, riding a bike—are fundamental to building the neural connections that allow for an individual to properly make sense of the world around them. Thus many more hours of necessary vestibular and motor stimulation are lost to children engaging in indoor activities that mostly take place at a desk, in front of a computer screen, or in front of a television.

Not only are children missing opportunities to develop large muscle skills; they are also lacking fundamental practice in hand-eye coordination and fine motor control. Modern conveniences in clothing design have eliminated many of the day-to-day tasks that children once engaged in that built fine motor skills. Children seldom have the need to tie shoes due to Velcro or even button a shirt or blouse each day with the popularity of pullover t-shirts and zippered jackets. So here we have children who are kept inside and immobile for the majority of their early childhood years not engaging in motor-skill building tasks and yet parents and teachers wonder why children enter school not being able to “sit in their seats”, pay attention, and form letters correctly!

The safety of children cannot be ignored, but parents and teachers must become aware of the importance of movement to the development of the brain and learning readiness. Parents must find ways to make the environment safe so children can spend more time outdoors. Teachers must be aware that sensory-motor integration is fundamental to school readiness, such that all of early childhood and elementary grades should have a mandatory, planned, specific motor stimulation program.<sup>v</sup> Comparative clinical data shows that when students of any age or race or socio-economic level have opportunities to build strong neurological foundations by activating sensory-motor integration processes through the vestibular system, they become positioned to learn with ease and success, and are able to reach a higher potential.

While professionals may differ regarding the specific remedial techniques that should be used in motor stimulation programs, they are in agreement on two fundamental assumptions— 1) that visual-motor adequacy is important to, if not essential to, cognitive development and subsequent academic success and 2) that these visual-motor processes are in fact trainable in most children.<sup>vi</sup> To succeed in school, children and parents alike must understand why it is critical to learn about growth and development, the interweaving of the sensory and motor systems, and what is appropriate physical activity for normal childhood development and school readiness.<sup>vii</sup> It is important to break through the mythical boundaries of what students are capable of and let it be known we have the physical capacity to change our brains and achieve school readiness.

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<sup>i</sup> National Education Goals Panel, 1991

<sup>ii</sup> Hannaford, 1995; Michaud and Wild, 1991; Martens, 1982; *Brain Rules*. John Medina. 2008

<sup>iii</sup> *The Relationship of Perceptual-Motor Development to Learning Readiness in Kindergarten*, A Multivariate Analysis. Harold A. Solon, OD, MA; Rochelle Mozlin, OD, David A. Rumpf, OD. <http://dx.sagepub.com/content/18/6/337>. 1985

<sup>iv</sup> *Teaching with the Brain in Mind*. Eric Jensen. 2005

\* “Critical Windows for School Readiness”, EPSF (Early Prevention of School Failure), 1995

<sup>v</sup> Ayers, 1972; Huston, 1982; Hannaford, 1995

<sup>vi</sup> <http://www.ciera.org/library/reports/inquiry-3/3-002/Report%203-002%20Final.html> 1998

<sup>vii</sup> *Physical Activities for improving children's learning and behavior: A guide to sensory motor development*. Billy Ann Cheatum & Allison A. Hammond. 2000