



## OPTIONS CENTER EDUCATION TOPIC



### **The Brain Gym® Option for Hyperactivity, ADD, Sp. Ed., L.D. and FAS**

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I met Rosie, the eldest of two daughters, when she was 9 years old. She was sexually abused by her father who was imprisoned six months later for child sexual abuse. Her mother was verbally abusive to her and dressed her in sexy outfits with lots of make-up. Rosie was highly disruptive, verbally abusive (swearing constantly to everyone), and labeled hyperactive and ADD. She could not read and was unable to track evenly with her eyes.

As she started doing Brain Gym®, her abusive behavior to classmates and teachers markedly decreased and she became a pleasant child to be around within a few weeks. Within a month, her reading and reading comprehension had improved greatly, and by the end of the school year she was reading and writing at grade level and, more importantly, had a clearer, more positive perspective of herself and her life.

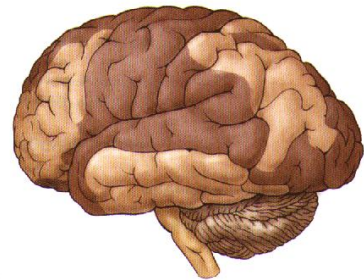
Rosie, like so many of the children I have worked with, has been greatly assisted by Brain Gym®, simple movements that integrate and strengthen the connections between the two hemispheres of the brain, particularly the frontal lobes.

To understand the core issues affecting these children we have labeled "Hyperactive, Learning Disabled, Attention Deficit Disorder, Emotionally Handicapped and Fetal Alcohol Syndrome" children, I have lumped them under SOSOH (Stressed Out, Survival-Oriented Human). In each case the following behavior patterns tend to exist:

- Hyperactivity.
- Attention Problems.
- Disruptive.
- Learning difficulties.
- Inability to control one's behavior in alignment with social norms.
- Marked discrepancy between seemingly high verbal skills and an inability to communicate effectively.
- Erratic, non-graceful or poorly controlled movements.

I feel these all relate to progressive nerve connection development in the brain and the link-up with the frontal lobes. According to the current evidence, the frontal lobes are involved with motor function, the control of one's own behavior (through inner speech and formal reasoning), and the development of altruism<sup>1</sup>.

Movement, originating from the frontal lobes, activates myelination of fiber networks all over the brain. Myelination is the build-up of a fatty layer around the nerve fibers, allowing for faster nerve transmission and protection against damage and dissolution<sup>2</sup>. The more times a nerve network is activated, the greater the myelination. This process establishes base networks (patterns) of information on which to elaborate further learning. Periodically, a chemical is released which dissolves unmyelinated nerve fibers. Therefore, if a nerve fiber or network is not used, it is lost<sup>3</sup>.



Movement starts early in facilitating the learning process. Don Campbell and Joseph Chilton Pearce note that in utero, a fetus will move a specific muscle in its body in response to each specific phoneme in the mother's speech. These 50 phonemes are the smallest units of language and provide the basis for all language development throughout life<sup>4-5</sup>.

Movement tends to anchor this early information. The more movement and activation as the child grows up, the more patterns are established, upon which to build further learning and language skills.

Unfortunately, as a UNESCO study shows, physical activity has decreased by 75% in urban American children between the ages of 3-17<sup>6</sup>. These same urban areas are experiencing radical increases in SOSOH. Schools, in an attempt to stuff more cognitive courses into the curriculum, have almost virtually eliminated movement from the school day. I see a direct correlation between decreasing SAT scores, and the lack of movement in schools and the advent of TV and video games as America's chief sources of entertainment.

To understand the other frontal lobe function -- control of one's behavior -- let's delineate the development of inner speech. Dee Coulter states that prior to age 7 or 8 a child needs to speak out loud to hear themselves think or to understand what they are reading. This appears especially noticeably at age 4 or 5 with vocal stream of consciousness processing. Language centers in the brain are beginning to develop elaborate connections with the known world, sensory/motor patterns discovered in childhood, and the emotional/cognitive brain. Verbal processing decreases as speech and thought processes move internally usually by age 8 in an inner dialogue we call inner speech (controlled by the frontal lobes)<sup>7</sup>. Called inhibition, inner speech tends to help a child regulate their own behavior to fit social norms. Through inner speech, full attention toward an idea, concept or appropriate behavior patterns are processed at a much faster rate than verbalization would allow.

The brain becomes a fascinating circus, feeding in all available information from past experience to lay the basis for infinite future possibilities. This inner dialogue is then thought to develop (through use and myelination of the frontal lobes) into Piaget's stage of high level formal reasoning and altruism.

Zametkin's study shows that 2-5% of all youngsters are hyperactive, usually beginning before the child reaches school age<sup>8</sup>. Interestingly, Pearce and Coulter describe age 4 as the time when myelination really elaborates in the neo-cortex and behavior can be regulated by self-verbal commands. These SOSOH children may not be developing and myelinating those areas that control their own behavior.

So, how does stress play into this developmental picture? During stress, levels of adrenaline increase, sending blood to the muscles to prepare for fight or flight<sup>2</sup>; the eyes become peripheral and fixed (unable to track across a page of writing because it is not as important for survival as knowing what's going on around you); and increased neural function occurs in the survival areas of the brain (away from the neo-cortex, so we tend to react rather than reason).

Paul MacLean describes these survival centers of the brain as:

1. The Brain Stem, Sensory/Motor or Reptilian Brain for self-preservation survival. This hard-wired, genetically encoded, unemotional center deals with the outer material world and develops from conception to a little over the age of one with proper motor-sensory stimulation. It deals directly with food getting, mating, shelter, territoriality, and security with the material world.
2. The Emotional/Cognitive, Limbic, or Early Mammalian Brain deals with material world/emotional relationships and species survival. It is dependent on the Reptilian brain for expression and develops into the terrible 2's as a child experiences the brain range of gross emotions necessary for the development of subtle emotions and reason later on. It gives rise to short- and long-term memory and allows for emotional relationship survival (bonding and care of the young). In relationship with the body, it controls the immune system<sup>10</sup>.

With regards to the Limbic brain and stress, Zametkin's study shows that hyperactivity is exhibited by boys 8 times more often than girls<sup>8</sup>. Freize's study states that we more often expect boys to get their own emotional/relationship needs met<sup>11</sup>. Without having an emotional model, or stimulating the Emotional-Cognitive brain with emotional relationships, myelination may not progress enough to allow proper development into the neo-cortex for higher level thought, skilled movements and controlling self-dialogue.

When children are heavily stressed out in dysfunctional homes or school situations that don't honor their unique learning style and developmental readiness, it makes sense they would exhibit the behaviors/reactions ascribed to SOSOH. This has been the case with children I have worked with and I believe these reactions are not out of conscious understanding, but rather out of survival and the need to have their basic human needs met. With survival being their primary goal, the higher centers of thought and regulation may just not develop, though the potential is there.

Sharon Wegschneider-Cruse describes the Mascot survival role in a dysfunctional family as being similar to what I've lumped into SOSOH. Mascots tend to play the clown vying for either positive or negative attention in an attempt to drain off family or social tension by their actions. She sees this as being due to great confusion in their lives where they hear or experience violence but are told everything is fine. Their behavior/reactions are geared to gain love and attention in any way possible. This may mean being physically abused, but at least it provides the basic human need for touch. Mascots tend to have the illusion of being crazy, are not able to trust their own intuition, and exhibit lack of confidence and self-esteem<sup>12-13</sup>.



As a counselor, working with children (K-8) under the SOSOH label, I found these patterns tend to fit *at least* 95% of the cases. Realizing that survival is the priority of each of these children, it is incongruous to ask them to do high level deductive reasoning and rationally control their behavior without first making them comfortable in the learning situation, relaxing the survival drive and bringing attention to the neo-cortex.

I have watched major changes occur when I've used Brain Gym (Educational Kinesiology) with these children. Brain Gym is a series of specific brain integrative movements designed to bring attention to fully activate the neo-cortex of the brain (away from the survival centers), to stimulate myelination across the corpus callosum between the two hemispheres, and activate visual, auditory and kinesthetic functioning for ease of learning<sup>14-15</sup>.

## Physiology

In attempting to understand the physiological changes brought about by Brain Gym, I came across the following:

Studies showed a decrease in dopamine (a neurotransmitter substance in the brain) in hyperactive people. Dopamine, found to regulate normal movements in the frontal lobe of the brain has been used with Parkinson's Disease to control shaking and erratic movements<sup>16</sup>.

Snyder & Childers (1979) discovered the opioid peptides (enkephalins) produce various behavioral changes, one being hyperactivity. Enkephalins are produced under stress and pain to numb the system<sup>17</sup>. Hyperactive children may be in so much stress and pain that they secrete enkephalins to suppress the anxiety and become "spaced out."

Other studies showed that alcohol affects the frontal lobes of the brain, accounting for the uninhibited behavior experienced when a person is drunk. In Fetal Alcohol Syndrome (FAS), there may already be damage to the frontal area in utero<sup>18</sup>. This may not allow for proper development and myelination of that brain center without specific stimulation. It was also interesting to note that Donovan found hyperactivity to be connected with genetic factors, specifically alcoholism<sup>19</sup>.

In yeast overgrowth syndrome (often stimulated by stress), high sugar in the diet is processed in the body into alcohol by the yeast, which again affects frontal lobe functioning.

The study done by psychiatrist, Alan J. Zametkin, and colleagues at the National Institute of Mental Health on hyperactivity in adults using PET (Positron Emission Tomography) Scans showed the hyperactive group to have 8.1% less active brain cells than normal adults. The largest reduction of activity was found in the pre-motor cortex and superior pre-frontal cortex of the frontal lobes shown to be involved with control of attention (inner speech) and motor activity<sup>8</sup>.

Brain Gym®, by stimulating motor activity in the frontal lobes, and bringing attention away from the survival centers may actually help to activate, develop and myelinate these areas of the brain allowing for controlled attention, self-regulating behavior and ultimately formal reasoning. The following study with a Special Ed. Class and several case studies will illuminate from where this hypothesis springs. Note the two graphs of 19 Special Education 5<sup>th</sup> grade students. The graph delineates the Brigance Inventory of Basic Skills for Reading, Reading Comprehension, and Math at the beginning and ending of a school year<sup>20</sup>. During that year a basic program was initiated that included Brain Gym® several times during the day for a couple minutes each with individual Brain Gym® work as the learner called for it. In each case, with individual learners, muscle checking was used to decide the specific activity program which varied uniquely from child to child. Note the dramatic changes in Cognitive Skill development considering again, these are certified Special Ed. Students and fit into my SOSOH category.

## Special Education Class

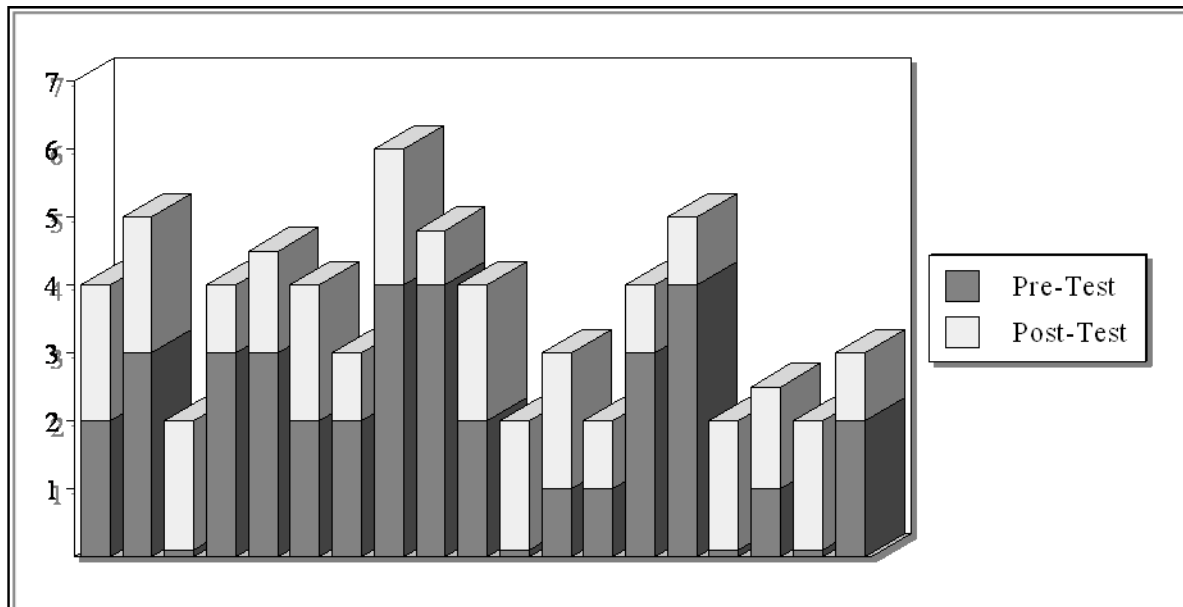
From an observational, anecdotal standpoint, these students were able to:

- relax and have fun in the classroom, enjoying the learning process,
- carry on intelligent conversations about something important to them,
- focus their attention on a task for a long enough period to complete it,
- show care and concern for the other students in the class, their teachers and themselves,
- listen quietly as others shared ideas,
- work well with other students on projects,
- come to an equitable understanding following a fight,
- stand up for themselves in a confident, positive way when being abused by others,
- confidently express their creativity in a myriad of ways,
- appropriately express affection,
- exhibit some use of inner speech for deductive reasoning and control of their own behavior,
- experience success and celebrate the success of others,
- and implant themselves fast within my heart as incredibly wondrous human beings and magnificent survivors.

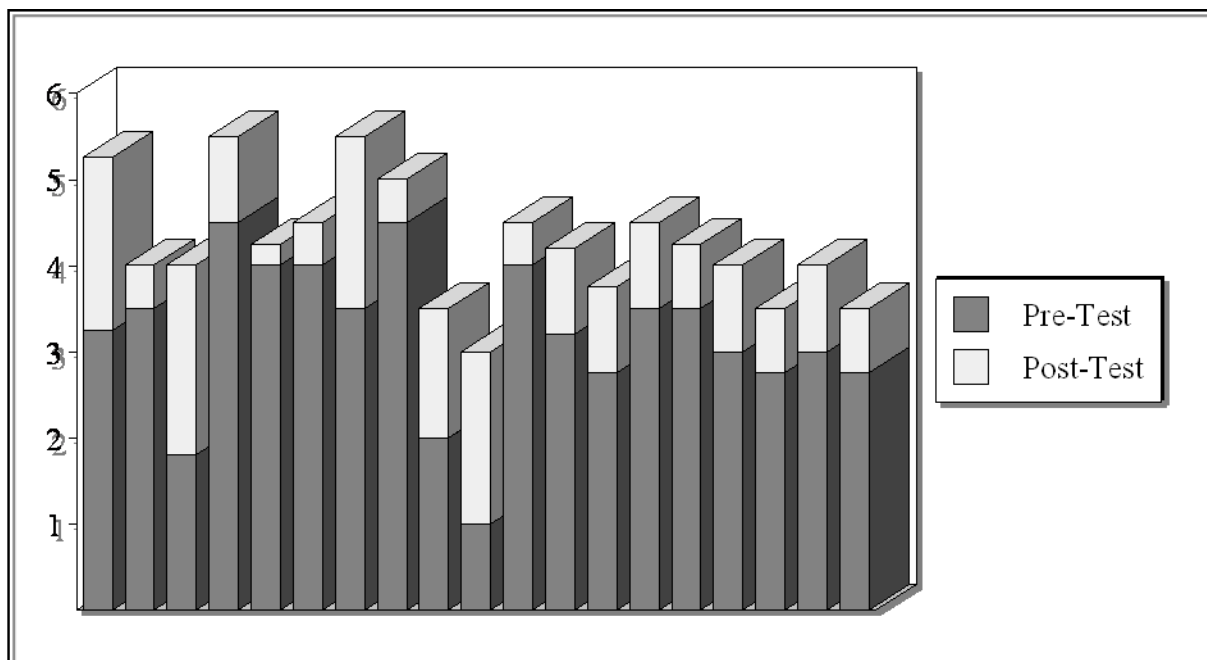
In keeping with the need to first relax the survival priorities, I have found acceptance and unconditional honoring of each individual to be inherent in the Brain Gym® process itself, as well as the all-important supportive touch. The honoring allowed them a greater perspective of self, those around them and altruism toward the world in general. The movements stimulated hemispheric integration allowing a greater ease of learning and a more complete perspective of all the options available for their lives.

## Brigrance Inventory of Basic Skills

### Reading & Comprehension



### Math Scores



## **Case studies**

The following case histories represent only a few of the hundreds of children with similar, yet very specific situations I worked with in my four years of counseling:

### **Joe**

I met Joe when he was an 8<sup>th</sup> grader. He was pre-mature, remaining in the hospital for 6 weeks with no maternal contact. His father raised him from 6 weeks to 5 years old when his mother returned to raise him. Joe is small, a good athlete and has shown the ability to pass course-work. He exhibited extreme hyperactivity, constantly played the clown, was excessively verbal and highly disruptive with little or no inner speech development.

I introduced Joe to some Brain Gym® activities (Cross-Crawl, Lazy 8's for eyes and writing, Thinking Caps and Hook-ups). The changes were immediate, especially if he used Hook-ups whenever he would lose control of his behavior.

Now as a high school senior, he still is a good athlete, is well liked by teachers and classmates, "calm, cool and collected" as he puts it, and is doing at least B & C work in all his classes.

His mother loved and cared for him a lot, though that important early bonding had not occurred. We were able to work with both of them (through the use of Brain Gym®) to establish that all-important bond.

### **Paul**

Paul's mother was heavily into drugs and his father physically abused both he and his mother. He was being adopted by his grandparents at age 8 when I met him. He was very disoriented, physically and verbally abusive to everyone, demanding of constant attention, and having a total lack of attention to a task. Because of the movement/play nature of Brain Gym®, I was able to convince him to do Cross Crawls and Lazy 8's for eyes and writing (to improve his soccer game). His teacher noticed the changes within the next week as he was able to focus on tasks at a much improved level.

I then worked at a deeper emotional level using the Systems Work developed by Linda Hanek, which incorporates Brain Gym®. The shift from the survival role of Mascot to a more healthy, integrated individual was immediate and profound.

Now, at age 10, Paul chooses to use Brain Gym® on a regular basis. He is a star student, a great soccer player, respectful of friends, adults and himself, enthusiastic and curious around learning (especially biology which is his favorite), and able to control his behavior in a positive, productive way.



Although there may be many more issues to address, in my human-to-human contact with these people, Brain Gym® is one of the most elegant ways I have of supporting them experiencing happiness in their lives and reaching their full unlimited potential.

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