INTRODUCTION FOR EDUCATORS

iLs programs are currently realizing success in a variety of educational environments including public, private and residential schools. The following text is intended as an introduction to iLs for educators considering implementation in their school or district.

iLs programs provide a unique training of the auditory, vestibular (balance), and visual systems. The goal of iLs is to develop the building blocks of learning, i.e. those neurophysiological systems which play key roles in our ability to receive, process, and express information. The program is natural, safe, and an effective complement to cognitive-based education programs.

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"Our centers consistently see excellent results with iLs with regard to attention and learning problems. iLs works at a neurological level so it's a great complement to the behavioral, cognitive and medical approaches we use at Hallowell Centers… Even the best therapy only works if you actually stick with it, so the fact that iLs is not only effective but is fun and can be done at home makes it extremely appealing."

Edward Hallowell, MD, child and adult psychiatrist, author of Driven to Distraction and other books on ADHD

Benefits

- iLs addresses the root cause, not just symptoms, of many learning, attention and behavior problems.
- Schools' average scores benefit from improvement of those most needing help.
- Classrooms become more manageable and teachers are more likely to reach curriculum objectives.
- iLs' neurophysiological, brain-based approach improves processing abilities, thus enhancing the efficacy of the cognitive-based and multi-sensory programs.

Training

- Successful completion of either the iLs Practitioner Training (1-day course) or the self-paced distance training is required. Registration for training is done online at www.integratedlistening.com/training.
- We recommend at least 2 individuals from each school be trained. Trainees need not be teachers; support staff, paraprofessionals or volunteers can monitor listening sessions.
- The cost of training is $250 per individual, or $200 if one registers 21 days prior to training. Group training pricing is also available.
- The distance course can be taken from anywhere at any time. After completing the distance course, trainees may attend the 1-day course at no additional cost. The distance course process is as follows:
    - Trainee registers online
    - iLs mails study materials to trainee after receiving payment/registration.
    - Trainee completes the reading and takes a written quiz.
    - Upon completing the quiz, trainee sends it to iLs by fax (303-399-3418) or email (info@integratedlistening.com). A webinar conference date is then scheduled to review the test material and go over questions.
    - After the trainee demonstrates they have read the material and have a satisfactory understanding, Practitioner Certification is granted and the trainee is able to purchase iLs equipment.

Program Structure

- iLs sessions are 1 hour in length, 3-5 times per week; if necessary, sessions can be split into 30-minute sessions.
- Programs vary in length, but are typically 40 sessions; the average program length is 8-12 weeks. Programs for children on the autism spectrum are a minimum of 60 sessions.
- Students wear headphones simultaneous to performing movement activities; the movement activities require 15 minutes of each hour session.
- The number of students in a program depends upon the number of iLs units purchased, space, staffing, and time within the school schedule.

Equipment

The iLs Focus is an iPod-based system that can be customized for different students' specific needs. Training must be completed prior to ordering the equipment.

- **160 GB iPod housing 4 programs, each designed for specific areas of difficulty:**
  1) **Sensory Motor- 60 hours**
  2) **Reading/Aud Processing- 40 hours**
  3) **Concentration/Attention- 40 hours**
  4) **Optimal Performance - 40 hrs**
- **Custom-fitted air/bone conduction headphones**
- **Processed music is primarily classical**
- **Integration Kit and Playbook for visual motor and balance activities performed while listening**
- **Re-chargers for amp and iPod (8 hour charge)**
- **Beltpack - adjustable for all sizes**

Each unit includes all the components itemized above.

- 1 iLs Focus unit - $1395
- Training - $200 per person 'early registration' fee (requires registering 21 days prior to training)

Implementation Costs - Example:

Two Focus units - $2790
Training Costs for 2 - $400
Total cost - $3190
Cost per child (16 children/2 units) - $199 each

Guaranteed Satisfaction: iLs guarantees satisfaction with the performance of our equipment and our programs. Based on consistently strong results in the areas of learning, attention and processing, we are proud to guarantee the cost of equipment to schools and clinics implementing iLs programs. iLs will refund direct costs of the equipment to those who are not satisfied with the performance of our programs or our equipment.

Please note, the guarantee pertains solely to the efficacy of iLs. It does not apply to complications a school might encounter due to scheduling, program organization, etc.

Creative Program Funding

While iLs cannot claim expertise when it comes to identifying funding sources, we are pleased to share with you successful experiences from other schools with whom we have worked.

Stimulus Funds

Some schools have applied for and received federal AARP funds (through their district and state). If you wish to pursue this approach, just ask us and we will send you a sample application of a school which recently was awarded funds to purchase 15 iLs Focus systems. The application is short and simple, but it worked!

Internal Fund Raising

Some private schools have been creative in raising monies to purchase iLs equipment. One example is a small private school which charged parents $299 per child to participate in the iLs program. Here's how it worked:

1- The school invested in 4 trainings and 4 iLs systems, a total cost of ~ $6,000.
2- Parents were invited to attend a 1-hour presentation on iLs, presented by a parent familiar with iLs (using a short Power Point presentation and brochures provided by iLs).
3- At the end of the presentation, parents decided if they wanted to register their child for the program. 25 parents signed up, bringing in revenue of $7,500.
4- As other parents witnessed the results of the first iLs group, they signed up for the following semester's iLs program, allowing the school to purchase more equipment and expand the program.
5- The school is currently putting the entire student body of over 100 students through the iLs program. It requires significant organizing and cooperation, but the parents and teachers are very pleased with the results.

Considerations for School Implementation

- A relatively quiet room without a lot of student traffic is preferable.
- One unit can only be used by one child at any given time; however, many children can use the same unit throughout the course of a day.
- One monitor can oversee more than one child at a time.
- Monitors of the program need not be teachers or therapists, any responsible adult can be trained to use the equipment and monitor children in their sessions.
- Note: programs for those on the autism spectrum are 60 sessions long, whereas the other programs for children are 40 sessions in length.

HOW iLs INLUENCES LEARNING ABILITY

Introduction: Often, our educational interventions are putting a roof on a weak foundation. The acquisition of reading, writing, math and other academic skills is dependent upon a normally-developed nervous system. Communication between the brain's two hemispheres and integration of sensory input from the eyes, ears and motor systems must be intact for adequate response to intervention (RTI). However, efficient processing doesn't occur in an immature nervous system. By providing appropriate auditory, visual and vestibular stimulation, iLs helps the nervous system develop. This ability of the brain to change in response to stimulation is known as "neuroplasticity." iLs builds a solid foundation for learning and communicating through repeated, gentle stimulation of systems which are key to effective learning and communication:

Regulation - The vestibule in the inner ear plays a key role in our balance as well as our ability to modulate sensory input. In terms of learning and behavior, vestibular and proprioceptive (see below) input tends to help children and adults become more regulated. Once regulated, they can more easily attend to higher brain functions such as reading, writing and expressive language. The balance activities and bone conduction stimulation of the iLs headphones provide different types of vestibular stimulation in each session. **Impacted Skills**: sensory and emotional regulation, coordination, balance, focus, sports

Auditory Processing – iLs processes classical music to emphasize different frequencies per therapeutic objectives. The goal is to train the ear and the brain to analyze and process sound more quickly and accurately. For example, the iLs Sensory Motor Program for those with autism and/or sensory processing challenges emphasizes a range of low frequencies which influence balance, rhythm, coordination and body awareness. The iLs Reading/Auditory Processing Program focuses on the mid-range frequencies of the English language to train one's sense of pitch discrimination. As a result of repeated listening, the vestibulo-cochlear system improves its ability to transfer auditory information to the brain. Additionally, the bone conduction delivery in iLs headphones provides a unique stimulation to the vestibular system. **Impacted Skills**: pitch discrimination, auditory processing, reading, mood, concentration and balance.

Visual Processing – iLs Playbook activities include visual tracking and visual perception activities in every session. The simultaneous exercising of these skills with balance and auditory training seems to have an exponential effect on reading and other related skills. **Impacted Skills**: reading, hand/eye coordination, balance, sports

Focus – By improving the sense of one's own body - where it is, how to control it, how to move it – to the point where we don't need to think about it, we are freeing up the

brain to focus on higher order activities. Children and adults who improve their proprioceptive abilities are able to approach learning and communication tasks in a more relaxed and regulated manner. iLs' movement program focuses on building proprioceptive abilities with specific exercises in each session. **Impacted Skills**: attention, calm, athletics, coordination, daily movement, confidence

Increasing Calm, Reducing Anxiety – The autonomic nervous system (ANS) controls many organs and muscles that work in an involuntary, reflexive manner. The ANS is important in 2 situations: emergencies that require us to "fight" or to take "flight" and non-emergencies that allow us to "rest and digest." The part of the ANS which governs the latter is the Parasympathetic Nervous System (PNS). iLs' auditory program stimulates the PNS through the vagus nerve (afferent fibers in the outer ear). Many children and adults beginning iLs programs are in a state of hyper-arousal, not far from "fight or flight". The gentle stimulation of the PNS brings about a balance of the ANS which is reflected by increased calm and self-regulation. **Impacted Skills**: behavior, ability to focus, the calm state which allows one to better focus on higher cognitive functions

Processing – The cerebellum is 10% of the weight of the brain but it has 50% of the brain's neurons. In computer terms, it's our processor, receiving input from sensory systems and various parts of the brain, and integrating these inputs to fine tune motor activity. Most neuroscientists agree it is involved in motor functions, cognitive functions such as attention and emotional functions such as regulating fear and pleasure responses. The iLs Playbook's repetitive activities are believed to stimulate cerebellar function. Inputs from the visual, vestibular and auditory systems, session after session, train the cerebellum to become efficient at processing multi-sensory information. **Impacted Skills**: motor control, "automaticity" (motor activities becoming automatic), processing cognitive and emotional input

Hemispheric Integration – Receptors in the body deliver sensory information to the brain (and vice versa). If these receptors and the pathways leading up to the brain are not working because they were damaged or did not develop properly, the activity level of the brain decreases and different areas of the brain may not communicate with each other properly. In addition, the right and left sides of the brain must be balanced in order to allow for proper communication to take place between the different areas involved in higher brain function. Cross-lateral activities in the Playbook require the almost constant transfer of information from one hemisphere to the other, "exercising" the bridge that transfers information, the corpus callosum. **Impacted Skills**: processing speed, cognitive functions, emotional health

RESEARCH SUMMARY

The following studies measure the efficacy of iLs in a variety of areas including auditory processing, reading and general academic performance. (These studies are available for viewing on the Research page of www.integratedlistening.com.)

Research in Progress:

1- High Functioning Autism: Single subject design, multiple centers, measuring the efficacy of iLs with 18 children with autism
2- Arousal: Pilot study measuring the effect of iLs on the arousal level of children with SPD, using behavioral and EDR measurements
3- Learning Difficulties: Controlled study measuring the efficacy of iLs in a public school in Washington state
4- Learning Difficulties: Controlled study measuring the efficacy of iLs in a public school in Arkansas
5- MTBI: single subject design, adults with mild traumatic brain injury undergoing iLs therapy at least 3 years post injury

Existing Data:

The following studies measure the efficacy of iLs in a variety of areas including auditory processing, reading and general academic performance. (These studies are available for viewing on the Research page of www.integratedlistening.com)

University-based Controlled Study

A controlled study involving 64 K-2 at risk students was conducted by U of New Mexico researcher Anne Calhoon, Ph.D. Students participated in the Alpha Program,* a program combining iLs with art therapy. **The average improvement in reading over the 3-month intervention was 2 years.**

"Taken as a whole, this analysis indicates that the students in the experimental group have improved in all categories associated with reading. This improved achievement is significantly greater (more meaningful) than the improvements of the control group peers. Overall the picture presented of the students in ALPHA is one that shows immense growth in cognitive, academic, and psychological areas." *J. Anne Calhoun, Ph. D. Educational Psychology, College of Education, University of New Mexico 2006*

Report re: Auditory Processing Disorder

Therapeeds, a private clinic in Ft. Lauderdale, Florida, reports the results of 29 children diagnosed with APD who completed the Therapeeds' H.O.P.E. sensory motor program combined with iLs' receptive and expressive programs. The iLs equipment used was a combination of the iLs Pro, Focus and Expressive Language Program. Among the pre- and post-program tests are the following

- **Vestibular**: Pre-testing indicated 0 of the 29 children had intact vestibular processing skills measured by the PrN and functional skills. Post-testing showed all 29 in normal range.

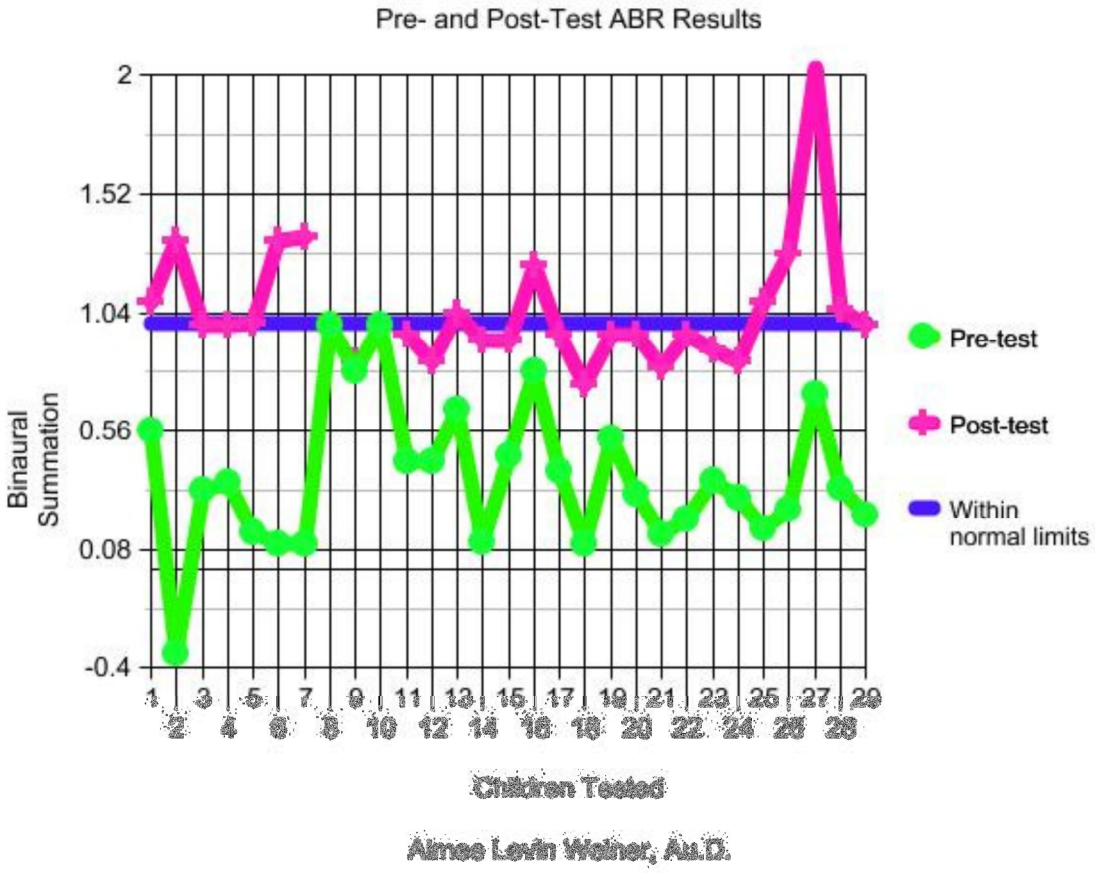
- **Ocular Motor**: Pre-testing showed that 28 of the 29 demonstrated ocular-motor deficits in

the areas of visual pursuits, saccades and convergence/divergence skills. Post-intervention, 25 of the 29 demonstrated intact ocular motor skills.

- **All Auditory Processing Skills**: Post-intervention, 22 of the 29 children had auditory processing skills that were completely within normal limits *in every area*.

- **Medications**: Seven of 29 children began this therapy on medication for attention-related concerns. By the end of the program, the medications for all 7 had all been discontinued.

- ABR Binaural Summation: Pre-intervention ABR tests showed all 29 children had little difference between listening with one ear and listening with both ears (binaural summation). Post-intervention, all 29 tested in the normal range. (see graph on following page)



Elementary School Pilot Study, 2009

A variety of normed, standardized tests were used to assess 20 children with learning difficulties before and after iLs programs. The report includes their pre- and post-program test scores as well as teacher and parent comments. **Teachers involved in the program reported "significant improvement" in 19 of the 20 children.** ("Significant improvement" indicates either being transitioned from special education to regular education, having an IEP removed or overcoming a substantial academic deficit.) The iLs equipment used was the iLs Focus.

Private Clinic Data

Data Summary covering 4 aspects of auditory performance affected by iLs programs: visual/auditory processing speed, selectivity, auditory digit span, and right-ear dominance. The sample size ranges from 30-46 subjects. Programs lasting 3-5 months show **average improvement of 78% in auditory processing, and average improvement of 81% in selectivity (phonetic differentiation).** The iLs equipment used was the iLs Pro. *data collected by H. Armytage, Hillside Health, Australia*

SUPPORTING RESEARCH

The following research supports the neurological basis of iLs. Studies are listed in 3 categories: Music, Motor and Movement/Exercise. The Abstract of each study can be linked to from www.integratedlistening.com/research.

MUSIC

MUSIC & PLEASURE/MOTIVATION: V. Menon and D.J. Levitin, 2005, *the rewards of music listening: Response and physiological connectivity of the mesolimbic system*
Brief: Menon and Levitin's fMRI images of subjects listening to classical music demonstrate that music evokes responses in areas of the brain involved in positive reward, motivation, sleep, mood, attention and learning.

MUSIC & DYSLEXIA: Overy, K., Nicolson, R.I., Fawcett, A.J., Clarke, E.F., 2003 Dyslexia 9, 18–36. *Dyslexia and music: measuring musical timing skills*.
Brief: Study connecting dyslexia with timing challenges

MUSIC TRAINING & DYSLEXIA Overy, K., 2003. Ann. NY Acad. Sci. 999, 497–505. *Dyslexia and music, from timing deficits to musical intervention.*
Brief: Study finds that classroom music lessons had a positive effect on both phonologic and spelling skills, but not reading skills, among dyslexic children

MUSIC & STROKE: Sarkamo T, et.al., Brain. 2008 Mar;131(Pt 3):866-76.
Brief: Music listening enhances cognitive recovery and mood after middle cerebral artery stroke. The study reports stroke patients in Finland listened to music for a couple of hours each day, verbal memory and attention span improved significantly compared to patients who received no musical stimulation, or who listened only to stories read out loud.

MUSIC & FATIGUE: Jing L, Xudong W.; J Sports Med Phys Fitness. 2008 Mar;48(1):102-6.
Brief: Study on 30 college students in which music significantly reduce exercise-induced fatigue.

MUSIC & VISUAL RECOGNITION: Pavlygina R.A, Frolov MV, Davydov VI, Milovanova GB, Sulimov AV.; Neurosci Behav Physiol. 1999 Neuroscience of Behavior and Physiology, *Recognition of visual images in a rich sensory environment: musical accompaniment.*
Brief: According to a report in the journal Neuroscience of Behavior and Physiology, a person's ability to recognize visual images, including letters and numbers, is faster when either rock or classical music is playing in the background

MUSIC & INSOMNIA: Lai HL, Good M.; J Adv Nurs. 2005 Feb, 49(3):234-44.
Brief: Randomized, controlled study on 60 adults aged 60-83 with difficulty sleeping. Listening

to 45-minutes of music before bed resulted in significantly better sleep quality in the experimental group, as well as significantly better components of sleep quality: better perceived sleep quality, longer sleep duration, greater sleep efficiency, shorter sleep latency, less sleep disturbance and less daytime dysfunction. Sleep improved weekly, indicating a cumulative dose effect.

MUSIC & REDUCED STRESS: Labbé E, Schmidt N, Babin J, Pharr M.; Appl Psychophysiol Biofeedback. 2007 Dec;32(3-4):163-8. *Coping with stress: the effectiveness of different types of music.*
Brief: Results indicate listening to self-select or classical music, after exposure to a stressor, significantly reduces negative emotional states and physiological arousal.

MUSIC & LEARNING: Jausovec N, Jausovec K, Gerlic I., Clin Neurophysiol. 2006 Dec; *the influence of Mozart's music on brain activity in the process of learning.*
Brief: Controlled study involving 56 individuals concludes that Mozart's music, by activating task-relevant brain areas, enhances the learning of spatio-temporal rotation tasks.

MUSIC & SPATIAL TEMPORAL REASONING: Sarnthein J, vonStein A, Rappelsberger P, Petsche H, Rauscher FH, Shaw GL, Neurol Res. 1997 Apr;19(2):107-16. *Persistent patterns of brain activity: an EEG coherence study of the positive effect of music on spatial-temporal reasoning.*
Brief: The authors "suggest that these EEG coherence results provide the beginnings of understanding of the neurophysiological basis of the causal enhancement of spatial-temporal reasoning by listening to specific music."

MUSIC TRAINING & MATHEMATICAL ABILITY: Schmithorst VJ, Holland SK., Neurosci Lett. 2004 Jan; *The effect of musical training on the neural correlates of math processing: a functional magnetic resonance imaging study in humans.*
Brief: fMRI imaging leads to hypothesis that the correlation between musical training and math proficiency may be associated with improved working memory performance and an increased abstract representation of numerical quantities.

MUSIC & SPATIAL-TEMPORAL REASONING: Rauscher FH, Shaw GL, Levine LJ, Wright EL, Dennis WR, Newcomb RL, Neurol Res. 1997 Feb. *Music training causes long-term enhancement of preschool children's spatial-temporal reasoning.*
Brief: Controlled study involving 78 schoolchildren; suggests that music training produces long-term modifications in underlying neural circuitry in regions not primarily concerned with music, such as mathematics and science, which draw heavily upon spatial-temporal reasoning.

MOTOR-RELATED

CEREBELLUM/VESTIBULAR DYSFUNCTION & AUTISM: Ornitz, E.M., 1973, Journal of Autism and Dev Disorders, Vol. 4, No. 3, *The modulation of sensory input and motor output in autistic children*
Brief: Research suggests that a dysfunction of the central connections of the vestibular system with the cerebellum and the brain stem may be responsible for the strange sensorimotor behavior observed in autistic children and may also have implications for understanding the manner in which autistic children learn, since clinical studies point toward a strong motor component to their perceptual processes.

BRAIN STEM DYSFUNCTION & AUTISM: Ornitz EM, Atwell CW, Kaplan AR, Westlake JR.; 1985, Arch Gen Psychiatry, Oct:42(10):1018-25; *Brain-stem dysfunction in autism. Results of vestibular stimulation.*
Brief: brain stem dysfunction in autistic children shown using a vestibular test

DYSLEXIA & AUTOMIZATION OF SKILLS: Nicolson RI, Fawcett AJ., 1990, Cognition, May. *Automaticity: a new framework for dyslexia research?*
Brief: Authors Nicolson and Fawcett suggest dyslexics' deficits in both balance and reading tasks may be symptoms of a more general learning deficit – the failure to fully automatize skills.

CEREBELLUM & ATTENTION: Akshoomoff, N.A., Courchese, E., Journal Cog Neuroscience, Fall 1994, Vol. 6, No.4, pp 388-399; *ERP Evidence for a Shifting Attention Deficit in Patients with Damage to the Cerebellum*
Brief: study shows connection between cerebellum and ability to shift attention between visual and auditory stimuli

CEREBELLUM, ATTENTION & AUTISM: Courchesne, E., Townsend, J., Akshoomoff, N.A., Saitoh, O., et.al; 1994, Vol. 108 Behavioral Neuroscience; *Impairment in Shifting Attention in Autistic and Cerebellar Patients*
Brief: cerebellum is involved in rapid attention shifts; cerebellar maldevelopment in autistic children may account for inability to shift attention

CEREBELLUM & COGNITION: Aakshamoof, N.A., Courchesne, E., Townsend, J., 1997, Int'l Review of Neurobio, Vol 41, pp 575-584a, 585-598,
Brief: This study presents neurobehavioral, neurophysiological, and neuroimaging data to support the hypothesis that the cerebellum plays a role in attentional functions; discusses the idea that the cerebellum is a "master computational system that anticipates and adjusts responsiveness in a variety of brain systems (e.g., sensory, attention, memory, language, affect) to efficiently achieve goals determined by cerebral and other subcortical systems."

CEREBELLUM COORDINATES EYE & HAND TRACKING: R. C. Miall, R. C., Reckess, G. Z., Imamizu, H., 2001 Nature Publishing Group;
Brief: These data provide the most direct evidence from fMRI imaging that the cerebellum supports motor coordination. Its activity is consistent with roles in coordinating and learning to coordinate eye and hand movement.

MOTOR CONTROL & DYSLEXIA Ramus, F., Pidgeon, E., Frith, U. (2002); Inst. Of Cognitive Neuro; *The relationship between motor control and phonology in dyslexic children.*
Brief: Scientists find correlation between coexistence of motor problems and dyslexia; however, they believe the relationship is do not necessarily causal.

DYSLEXIA & CEREBELLUM SIZE: Eckert, M.A., Leonard, C.M., Richards, T.L., Aylward E.H., Thomson, J. and Berninger, V.W. , 2003, Brain, Vol. 126, No. 2, 482-494; Anatomical correlates of dyslexia: frontal and cerebellar findings.
Brief: Controlled study showing neuroanatomical differences among dyslexics. The dyslexics exhibited significantly smaller right anterior lobes of the cerebellum, pars triangularis bilaterally, and brain volume.

CEREBELLUM & AUDITORY PROCESSING: Petacchi, A., Laird, A. R., Fox, P. T. and Bower, J. M. (2005), Human Brain Mapping, 25: 118–128. *Cerebellum and auditory function: An ALE meta-analysis of functional neuroimaging studies.*
Brief: meta-analysis of 15 different auditory studies selected through PET and fMRI literature; results are consistent with the hypothesis that the cerebellum may play a role in sensory auditory processing

FUNCTIONAL & STRUCTURAL NEUROPLASTICITY: Kleim, J.A., Barbay, S., Cooper, N.R., Hogg, T.N., Reidel, C.N., Remple, M.S., Nudo, R.J. 2002, Dept Psychology and Neuroscience, University of Lethbridge, Alberta, Canada; *Motor Learning-Dependent Synaptogenesis Is Localized to Functionally Reorganized Motor Cortex*
Brief: This is the first demonstration of the co-occurrence of functional and structural plasticity within the same cortical regions and provides strong evidence that synapse formation may play a role in supporting learning-dependent changes in cortical function.

MOVEMENT & LEARNING

Hannaford, C., 1995 (Great River Books) *Smart Moves: Why Learning is Not All in Your Head*; Hannaford looks at the body's role in thinking and learning and examines the body-mind-environment (stress) relationships, and how it affects child and adult's normal everyday lives.

Summerford, Cathie, 2000 (Corwin Press), *Action Packed Classrooms, Using Movement to Educate and Invigorate Learners.*

Pica, R., 2004 (Delmar Learning), *Experiences in Movement, Birth to Age 8*; provides teachers with the following tools:-A logical progression of movement skills, including the ABCs of movement, body-part identification, and non-locomotor **...**

Ratey, J., 2008 (Little, Brown and Company), *Spark: The Revolutionary New Science of Exercise and the Brain*; exploration of the connection between exercise and the brain's performance that shows how even moderate exercise supercharges mental circuits to increase regulation, reduce stress, sharpen thinking, enhance memory, "a non-medication approach to ADHD."

AUTISM DATA: New research measuring the efficacy of iLs with children on the autism spectrum has begun and is expected to be completed by August of 2012. To get a more immediate sense of the results iLs Associates are seeing, an informal questionnaire was sent out in early 2011 asking for professionals' feedback in the following 10 areas. The respondents included occupation therapists, physical therapists, speech therapists, educators, counselors and psychologists. **Therapists' responses were based upon their experience with a total of 415 ASD children. The average response is in parenthesis.**

Category	Rating	Comment Summary
Self -Control, Self- Management, Impulse Control	1 ___ 2_ __ 3_(**3.84**)__ 4	Changes in self-regulation, calmer, fewer meltdowns
Learning Attention	1 ___ 2_ __ 3_(**3.90**)__ 4	Many see improvement but still struggle with attention
Sensory Integration/Processing (including auditory)	1 ___ 2_ __ 3_(**3.99**)__ 4	Greatest area of change, almost 100% agreed
Motor/Coordination/Balance	1 ___ 2_ __ 3_(**3.98**)__ 4	Significant changes occur as vestibular and ocular motor functions improve
Social Skills (family, friends)	1 ___ 2_ __ 3_(**3.75**)__ 4	May still be overwhelmed by large groups, but substantial improvements with family and with making new friends are typical
Verbal Communication Skills	1 ___ 2_ __ 3_(**3.82**)__ 4	Substantial gains in expressive language are typical, the only exception being older non-verbal children
Non-Verbal Communication Skills	1 ___ 2_ __ 3_(**3.74**)__ 4	Picking up on curs and responding improves for most; however, many still miss nuances
Mood (anxiety, depression)	1 ___ 2_ __ 3_(**3.55**)__ 4	Significant improvements in overcoming fight-or-flights response; more comfortable in own skin, more self-confident with newfound ability to interact with others successfully
Tolerating Transitions	1 ___ 2_ __ 3_(**3.60**)__ 4	Increased accuracy of perception leads to significant improvement in tolerating transitions
Regulation (sleeping, toilet, eating, digestion)	1 ___ 2_ __ 3_(**3.67**)__ 4	Improvements in eating and toilet training are commonly reported; many children with developmental delays are able to catch up