LearningRx

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- **CBIS**
- **Board Member - National Association of Cognitive Skills Trainers**
- **BSA/CPA**
- **MBA**

Kevin Pasqua
- **CBIS**
- **BSME**
- **MBA**
- **Board Member – Brain Injury Alliance of Wisconsin**
- **Board Member – Badger Association of the Blind Properties**
- **Guest Lecturer at Carroll University**

Awards andRecognition

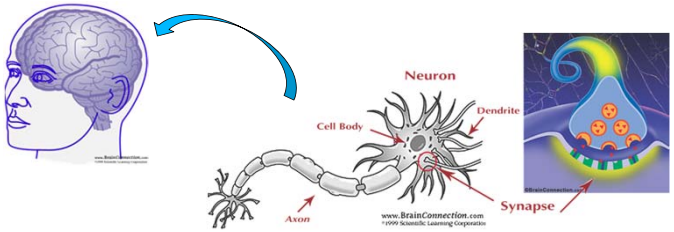
- LearningRx Excellence in Customer Service – 2014, 2015
- Autism Society of Southeastern Wisconsin approved resource
- Wisconsin DWD – DVR Approved Service Provider

LearningRx train the brain. get smarter. guaranteed.

Introduction

The brain is the main organ of control.

- It makes it possible for us to think, communicate, act, behave, move about, and create.



- Neurons: the **billions and billions** of tiny brain cells making up the nervous system – the wiring we need to learn!

(Source: American Academy of Certified Brain Injury Specialists)

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The Changing Brain

"[The brain] responds to use and disuse by either growing and remaining vital or decaying, and thus, for the first time, we are learning to see mental weaknesses as physical systems in need of training and practice."

—Dr. John J. Ratey, Harvard Medical School, *A User's Guide to the Brain*

"The idea that the brain can change its own structure and function through thought and activity is, I believe, the most important alteration in our view of the brain."

***The Brain That Changes Itself* by Norman Doidge**

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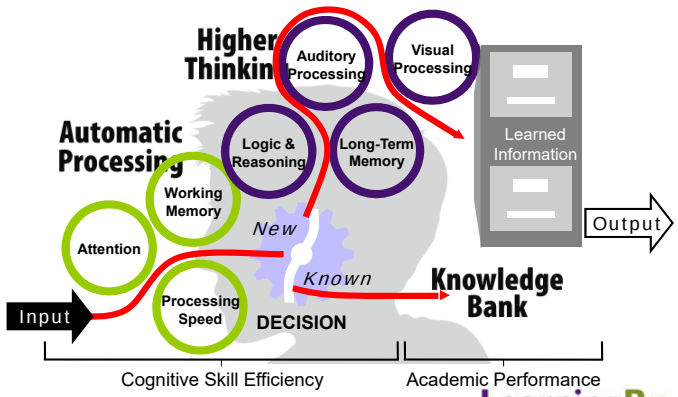
Learning Model

(*Cattell-Horn-Carrol theory of intelligence)



LearningRx Training Modality

One on One
1 trainer
1 student

Intensity
4 to 5 hours per week
3 to 4 sessions per week
Sustained effort

Sequenced
Foundational functions first
Always attention
Always processing speed

Targeted
Customized to the individual
Based on WJII and self report

Continuous Feedback
Positive
During the exercise
Track progress each session

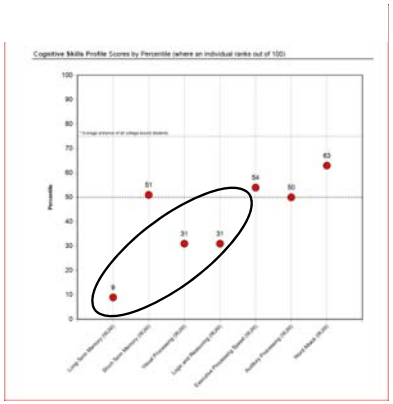
Loading
Increasing difficulty
Increasing complexity
Appropriate to the individual

Case Study – 20 year old - TBI
6 months after post acute care

- **Difficulty with sustained mental effort**
- **In-ability to stay on task**
- **Impulsive; poor attention to detail**
- **Living at home**
- **Easily distracted**
- **Difficulty with organization**

Step 1 – identify the root cause

Initial Assessment Results:



Severe Weakness:
- Long-Term memory
- Visual Processing
- Logic and Reasoning

Percentile: comparison to aged peer group. Relative function compared to the norm.

Training Plan
Goals: Independence, ability to return to college
Training : 100 – 150 hours
Frequency: 3X/Week
Target: Severely weak skills
Re-Assess: Every 50 hours of training

Attention

- **Sustained Attention –** ability to sustain mental performance on a mental operation requiring the continued use of information
- **Divided Attention –** the ability to hold information in immediate awareness while performing a mental operation on that information
- **Selective Attention -**

The inability to stay on task for long periods of time, to ignore distractions, and maintain focus will limit other cognitive skills!

Short Term/Working Memory

- Working Memory: the ability to apprehend and hold information in immediate awareness and then use it within a few seconds.

Mental performance (learning, executing a task) suffers if information cannot be retained long enough to be handled properly.

Processing Speed

- **Processing Speed**: is the rate at which the brain handles information. It is the ability to perform automatic cognitive tasks, under pressure while maintaining focused attention.

If processing speed is slow, the information held in working memory may be lost before it can be used, and the individual will have to begin the task again.

Long Term Memory

- **Long Term Memory**: the ability to store information and fluently retrieve it later in the process of thinking.

If the ability to store and recall information is poor, wrong conclusions and incorrect answers will result. Will effect testing, ability to learn new tasks, and reading comprehension.

Visual Processing

Visual Processing: the ability to perceive, analyze, synthesize, and think with visual patterns, including the ability to store and recall visual images. (Minds Eye)

When visual processing is poor, tasks like math and comprehension, which require seeing the concept in the mind, are difficult. Reading is not interesting

Logic and Reasoning

Logic and Reasoning: logic and reasoning: the ability to reason, form concepts, and solve problems using unfamiliar information or novel procedures.

- Can I see the big picture
- Executive function: do I know where to start and organize

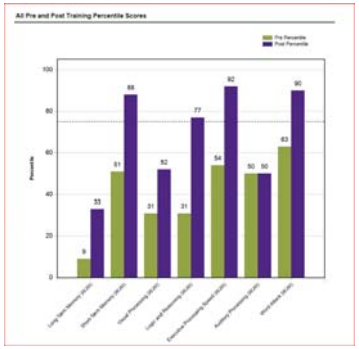
If these skills are not strong, activities such as problem solving, math and comprehension will be difficult. Learning new information and concepts is difficult.

Auditory Processing

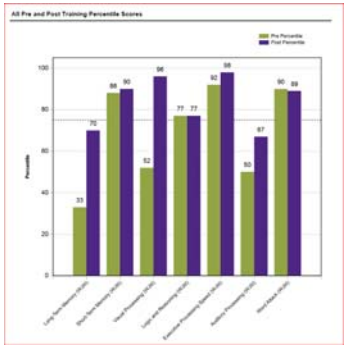
Auditory Processing: the ability to analyze, blend, segment, and synthesize speech sounds; crucial underlying skill for reading and spelling. Includes the knowledge and application of sound codes in order to pronounce unknown words. (Fluency and Fluidity)

If blending, segmenting, and sound analysis are weak, sounding out words when reading and spelling will be difficult and error-prone.

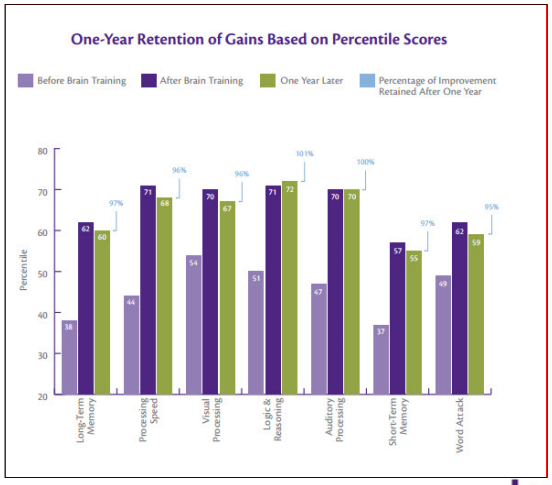
WJIII after 50 hours of training



WJIII after 100 hours of training



- Sustained reading for hours at a time
- Started a greeting card business
- Enrolled in the fall semester MATC



Based on LearningRx 2014 Results Report.

Brain training is designed to target skills for improvement at the sub-conscious level for lasting results.

One year post training results demonstrate +/- 5% retention of gains.

Data: 6000 students over 2 year period, average training 60 hours. As measured by the WJ III: LearningRx assessment results

When to train?

A cognitive weakness can be seen as...

Taking too long - requiring too much effort, and ending up in too much frustration every time there is a challenge.

Failing to engage in an important activity unless prompted

Memory problems, ability to learn, retain, and use information.

When is LRx appropriate:

After Post Acute/Post Residency

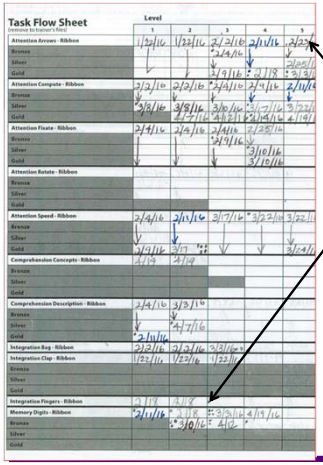
With a specific goal:
- **Independence**
- **Re-enter the workforce**
- **Education**

Age: Minimum 6 years no upper limit

Clinical Controls/Documentation - Session Plan

- *Capitalized Initials:* denotes the exercise.
- *Capital L#:* denotes which level of complexity.
- *Small letters (r,b,s,g):* denotes level of difficulty, ribbon, bronze, silver, or gold.
- *Application:* plan each session based on achievement in the previous session. Always plan the next session at the end of the current session.

Clinical Control/Documentation Task Flow Sheet



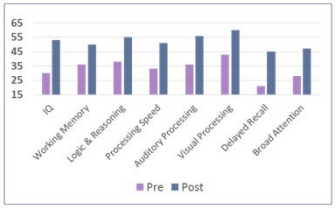
- *Date:* the date the student successfully passed the exercise.
- *Dots:* notes the exercise was attempted but not passed.
- *Usage:* the trainer notes progress on each exercise after each session.

Cognitive Assessment Results by Client-Reported Diagnosis:

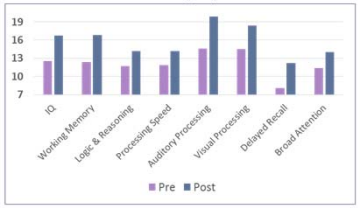
Traumatic Brain Injury

Program: All
Number of Clients: 273
Mean Age: 25.6
Results: The following charts show the changes in cognitive skills for clients who came to LearningRx with a diagnosis of Traumatic Brain Injury (TBI) between 2010 and 2015. The changes in standard scores on the Woodcock Johnson III – Tests of Cognitive Abilities were statistically significant for all skills ($p < .001$) assessed. Overall, the largest gains were seen in auditory processing and delayed recall, followed by working memory and broad attention. The average pretest IQ score was 92 and the average post-test IQ score was 102. In addition, post-training percentiles are within the range of normal functioning, and the average age-equivalent gain in cognitive skill performance was 3.7 years.

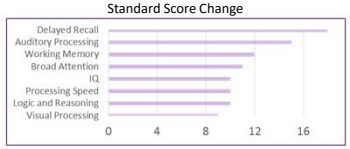
Pre and Post Percentiles



Pre and Post Age Equivalents



Standard Score Change



All changes are statistically significant ($p < .001$)

Working together:

- Wisconsin DWD – approved service provider
- Have worked with disability insurance
- Private Pay
- Combination of the above

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Research …….

- **Van Boven, R (2016) Enhancing Cognitive and Neurobehavioral Functions After Repetitive Traumatic Brain Injuries (rTBI) in Retired NFL Players and Military Veterans. *Recruiting participants.***
- **Neuroscientist Christina Ledbetter, Ph.D., teams with Amy Lawson Moore, Ph.D., and Dick Carpenter, Ph.D. to create a four-month case study with qEEG on the neural correlates and differential effects of ThinkRx cognitive training with twin siblings. (2016 - Results pending)**
- **Carpenter, D., Ledbetter, C., & Moore, A. (2015). LearningRx cognitive training effects in children ages 8-14: A randomized controlled study. *Manuscript submitted for peer review.***
- **Moore, A. (2015). Achievement Outcomes for LearningRx Students: Math and Reading Achievement Before and After Cognitive Training.**
- **Hill, O.W., Zewelanji, S., & Faison, O. (2015). The Efficacy of the LearningRx Cognitive Training Program: Modality and Transfer Effects. *Journal of Experimental Education: Learning, Instruction, and Cognition.* doi: 10.1080/00220973.2015.1065218. Available at http://dx.doi.org/10.1080/00220973.2015.1065218**
- **Gibson, K., Carpenter, D.M., Moore, A.L., & Mitchell, T. (2015). Training the brain to learn: Beyond vision therapy. *Vision Development and Rehabilitation, 1*(2), 120-129. Retrieved from http://www.covd.org/?page=VDR_1_2**