# ATTENTION AND MEMORY TRAINING STRESS-POINT LEARNING & REHABILITATION INTRODUCTION AND OVERVIEW

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#### **Course Description**

This hour presents an overview of Stress-Point Learning & Rehabilitation (SPLR): What is the stress-point? How do we use it? What are the goals of training? Who are we training? How basic stress-point learning & rehabilitation training principles are used to improve learning, visual and gross motor, attention, working memory, and performance and executive function.

## **Goals and Objectives**

- To present an overview of the course
- To define "stress-point"
- To demonstrate using group tasks

## **Course Outline**

## I. Overview

Stress-Point Learning & Rehabilitation (SPLR) was developed by optometrist Robert C. Pepper's approach uses rhythm, movement, and multi-tasking perceptual and processing exercises to improve learning, decision-making, and performance. Patients read from charts and learn to do tasks of increasing complexity as they bounce on a small trampoline.<sup>1,2</sup> The goal is not just to increase the speed and accuracy of eye movements and visual information processing but also to improve motor intelligence, attention, memory, self-directed motivation, emotional control, communication, self-confidence and, of course, learning. Other, non-trampoline, Pepper stress-point techniques will also be taught.

## II. Finding the Stress Point

The practitioner begins with easy tasks that are practiced until done with ease and grace taking care to keep the patient interested and motivated by guiding the process and making subtle changes to the challenge. The goal is to help patients organize the timing and alertness of their mental processing. This increases their self-confidence and organizes them for much greater challenges to come. For example, a trampoline session starts with the patient spelling a simple word while looking at it. The letters are called out in time with their bounces. Through careful coaching the final task for that session might be to spell a five-word sentence backwards from memory, a much harder task requiring much more attention and organization. To find the stresspoint, the practitioner carefully adjusts the speed, word length, total number of words and/or instructional set to find a task within the patient's reach but requiring slightly greater mental/perceptual competence.<sup>3</sup> One that after several failed attempts, they improve and can stay focused and motivated to continue working until they can master at high level of performance. Finding and adjusting the challenge is an art and a major teaching goal of this course.

## III. Process-Oriented Therapy

In their effort to succeed, a patient's learning blocks and negative behaviors usually hidden below their stress-point threshold, are revealed. Once out in the open, the frustration, avoidance, attention deficit, poor recovery, dependency, confused helplessness and other embedded negative stress-point habits, as well as the strong ones, are identified. Once exposed, negative learning habits can be addressed and replaced by positive ones.<sup>4</sup>

With each success, more complex tasks are chosen according to the student's unique set of learning needs. Soon the stress-point threshold rises and the student is able to work at higher levels of demand. This allows positive behaviors to be rehearsed and embedded to an automatic level. As the task demands are increased to match the new stress-point, new more subtle learning problems appear and this new information directs the practitioner to formulate the next tasks. This is a process-oriented approach based on the feedback as new tasks probe and rehabilitate weak areas and strengthen strong areas.<sup>6</sup>

Particular problems, such as letter reversals in spelling, for example, require tasks that encourage directionality and sequencing awareness such as spelling a sentence backwards or reversing spelling forward or backwards when signaled by the practitioner. Eventually the tasks are done without looking, spelling forward and backward from memory to increase visualization, memory and attention. As harder tasks are mastered, awareness sharpens and ability grows. Thus learning deficits diminish and performance levels rise.

#### IV. Teaching for Mastery

Completion of an exercise requires more than calling out correct letters at the right time. Students are held to the task until their brain is so well organized that a flow-state is mastered. Learning to rise to the occasion, give up old patterns, release self-conscious control and to flow through the experience from beginning to end becomes the new habit. In flow the voice becomes fuller, confident, and more precisely on the beat. The eyes, face and body look alert and aligned with present action. The strategy is to activate the flow-state, strengthen it while working through learning impediments that block it. In this open and flowing state, breakthrough learning and new brain connections occur. Students integrate new abilities into a unified whole rather than by narrowing their focus to create just another splinter skill. The practitioner's job is to carefully choose the tasks that help students attain and increase flow strength. With a success-oriented, nonjudgmental attitude, the teacher coaches the students' awareness and strategies. Students learn to confront real world challenges enthusiastically and objectively.<sup>7</sup>

#### V. Group SPLR Experience

Using several group SPLR tasks that require attention and vigilance, members of the class will experience their how their attention, memory, emotions and self-confidence changes as they work together to master a stress point challenge.

# **INTRODUCTION TO STRESS-POINT TRAINING PRINCIPLES**

#### **Course Description**

It is important to understand that the SPLR approach is not a series of exercises to be rushed through as quickly as possible. Rather, it is the application of a dynamic set of principles designed to improve visual/cognitive/emotional/executive skills to increase learning, performing and producing in challenging real world environments. The following is a brief summary of some basic Stress-Point Training principles.

#### **Goals and Objectives**

- To introduce and demonstrate SPLR principles for optimal training
- To introduce process vs. product attitude of therapists and patients

- To discuss Pepper's five questions and demonstrate them in action
- To demonstrate stress-point principles and techniques using audience members on the trampoline

#### **Course Outline**

#### I. Flow-State Learning

One guiding principle and ultimate outcome is flow-state consciousness.<sup>7</sup> Flow happens when a person is fully involved in overcoming a stress-point challenge. It is self-rewarding act so that the process itself becomes the goal and a magnet for learning new skills and engaging greater challenges. The ultimate SPLR goals are for patients to effectively self-direct their learning by becoming aware of changes in their state of mental readiness and awareness and to self-direct their learning. If challenge is too low, they sense the need to increase the demand and If challenge too great, to avoid fatigue or frustration by recovering the flow state by altering the task appropriately. Flow tends to occur when a person faces a clear set of goals and rules that make it possible for the player to act without questioning what should be done, and how. (See: *Finding Flow*, Mihaly Csikszentmihalyi 1997, http://www.psychologytoday.com/print/2507) This is an active, engaged mental state where senses are fresh, instinct guides action, and the past, present and future merge into the conscious NOW. Optimal learning is an altered state of consciousness and achieving this state is a goal of our training.

#### II. Process vs. Product Attitude:

In SPR, the process of how one learns is emphasized. The training is focused on guiding patients to efficiently self-direct their attentional effort. Parents and teachers often train students to be more concerned about the product (the perfection of the end result) rather than the process (the quality of the effort). Being so focused on the reward, they fear failing and appearing to be stupid. When facing new challenges they become anxious and frustrated even before their first attempt. Rather than rise to the challenge, they lose confidence and motivation and find excuses to escape. The practitioner knows they are on the right track when the patient begins to enjoy the activity for its own sake, and to know that what matters is not the result but the control one is acquiring over one's attention. The patient knows this too. **The development of self-confidence is much too important to be left to chance.** 

## III. Pepper's Five Questions

When learning a skill or set of information, five important questions must be affirmed if you really want to use it in the real world: 1) Can I do it? 2) Can I do it well? 3) Can I do it well every time (whenever I want to and for as long as I want to)? 4) Can I accept change – do it well at different speeds, with different information, in different circumstance (in front of an audience)? And finally, 5) Can I do it in the flow state (creatively, artistically, inventing, and experimenting on the go)? Can I transfer this new ability to solve problems in new situations? Most people feel success if they can answer yes to question one. Unfortunately educators and parents stop too soon. They don't teach beyond competence and children grow up with underdeveloped brain power.

## IV. Rhythmic Learning on the Trampoline

The trampoline is fun and children love bouncing. It's like a big metronome with the jumper as the pendulum. As applied in SPR, rhythmic learning primes the brain to be more open to incoming information, develops precise, rapid and graceful neural processing, and organizes an action plan for goal attainment. (See: "Entrainment of Neuronal Oscillations as a Mechanism of Attentional Selection". Peter Lakatos, et.al., *Science*: 4 April 2008: Vol. 320. no. 5872, pp. 110 - 113 ". . .when attended stimuli are in a rhythmic stream, delta-band oscillations in the primary visual cortex entrain to the rhythm of the stream, resulting in increased response gain for task-relevant events and decreased reaction times.)

#### V. Training Recovery of Attention Requires Expressive Learning

When reading or working silently, attention problems are hidden and unnoticed. When your attention wonders, your mind leaves the scene and you aren't there anymore to notice. Unless the learning mode is active and outwardly expressed, you aren't immediately aware of when your mind wonders. You may not realize it until long after, too late to make a speedy recovery. For example, when you listen to a lecture, watch a movie or read silently, you might be daydream without knowing and won't remember what just occurred. Most education, unfortunately, is passive.

Error detection neurons in the Anterior Cingulate Cortex are able to sense mistakes even before they happen. Appropriate stress-point training works to awaken and refine this neural network to speed the recovery process. Recovery is the key to improving learning ability. Catching yourself early enough to recover before you make an error ('precovery'), trains a broad range of neural networks across many parts of the brain.

#### VI Warm Up

When a mistake is committed, go back to the beginning and start again. This rehearsal allows the brain to become organized and able to perform more effectively when attempting new material.

# **PATIENT EVALUATION**

#### **Course Description**

This hour presents a demonstration of how to evaluate patients using stress-point trampoline probe tasks. The 10-15 minute behavioral evaluation is performed with parents present. This approach offers several advantages. 1) The patient's strong and weak learning behaviors are clearly expressed in their attempts to achieve at the stress-point. 2) These are pointed out in a running narrative and recorded. Thus allowing the parent/patient to see first hand, the relevance of your therapy to the patient's needs. 3) The parents or patients see the therapy in action and can appreciate its relevance to their needs. 4) Working with the patient give the opportunity to see if there is a fit between you and the patient. 5) You can get a sense of the prognosis and an initial rough estimate of the number of sessions required.

Several test protocols will be demonstrated with running narrative describing changes in visual attention and performance when individuals are challenged to perform at levels of challenge just above their normal operational range.

#### Goals and Objectives:

- To present and demonstrate a SPLR behavioral protocol for evaluating patients.
- To show how to find the stress-point and how to improve visual executive skills.
- To learn how to describe stress-point learning behaviors and to counsel patients and parents about areas of potential growth and benefit.

I. Assessing, classifying and recording negative and positive stress-point behaviors

- A. Gross motor coordination
- B. Attention span & depth of attention
- C. Decreased attention recovery
- D. Avoidance behavior
- E. Frustration behavior
- F. Anxiety
- G. Loss of timing
- H. Communication (inability to listen to instructions)
- I. Loss of consistency
- J. Loss of flexibility
- K. Increased distractibility
- L. Fatigue and loss of stamina
- M. Loss of error recognition
- N. Decreased self-direction
- O. Preservation
- P. Decreased working memory
- Q. Inability to initiate action
- III. Counseling parents and patients
  - A. Describing stress-point behaviors
    - 1. Emphasize strengths and describe weakness
    - 2. Describe in everyday context such as home, school, work or sports
    - 3. Make it practical
  - B. Estimating prognosis and time necessary for improvement
    - 1.Learning curve
    - 2.Retention
    - 3.End point
  - C. Advising parents about how their behaviors at home can aid or hinder the development of effortful attention

IV. Individual demonstrations evaluating audience members or invited demonstration subjects

# <u>GROSS MOTOR – BALANCE, TIMING, CENTERING,</u> <u>DEVELOPMENTAL REFLEXS AND GROSS MOTOR INTEGRATION</u>

## **Course Description**

This section will present principles and motor tasks for detecting and improving gross motor coordination: timing, balance, centering, complex movements and primitive reflex patterns. Techniques range from basic to advanced procedures using specialized movement combinations performed on the trampoline to develop freedom of movement and complexity at a reflex level.

## **Goals and Objectives:**

• To teach gross-motor skill development using stress-point trampoline activities.

- To provide an understanding of stress-point dynamics in the assessment and training of complex movement, timing, centering and balance.
- To teach how to foster motivation and finesse self-imposed negative expectations that limit rehabilitation into attitudes that maximize effortful gains in attention and motor development.
- To demonstrate techniques to insure safe use of the trampoline.

# **Course Outline**

- I. Theoretical neuroscience background
  - A. Gross motor coordination is a foundation for visual and cognitive performance
  - B. Complex motor develops visualization and cognitive skills
  - C. Motor planning and working memory capacity
  - D. Balance and visual centering
  - E. Timing and eye gaze control
  - F. From over-control to automatic through multi-tasking
- II. Centering
  - A. Accessing centering skills on the trampoline
    - 1. Observing inconsistencies in spatial awareness
    - 2. Lack of centering as related to undeveloped anchoring reflex
    - 3. Does centering automatically improve?
    - 4. Exercises for developing a sense of position in space
    - 5. External direction
- III. Timing
  - A. Neuroscience: the brain is a timing device when timing is off, perception, memory and attention are diminished
  - B. Assessment
    - 4. Accuracy in timing
    - 5. Inconsistency in timing
    - 6. Loss of timing due to fatigue and anxiety
    - 7. Loss of timing as a stress-point behavior
  - C. Techniques for training timing
- IV. Balance
  - A. Assessment of balance under normal and stress-point performance
    - 4. Front-back
    - 5. Left-right
    - 6. Torsion
  - B. Training techniques for balance
- V. Complex movement patterns from primitive reflex to complex multi-tasking
  - A. Basic movement patterns
  - B. Differentiation of arm and leg movement
    - 4. Mirror arm movements
      - a. Simple arm movement
      - b. Arm and leg: in-out, front-back, cross leg, 2/2, 4/4
    - 5. Parallel arm movements
      - a. Simple arm movement
      - b. Arm and leg: in-out, front-back, cross leg, 2/2, 4/4

- c. Dynamic change patterns
- 3. Figure eight arm movements
- a. Simple arm movement
  - b. Arm and leg in-out, front-back, cross leg, 2/2, 4/4
  - c. Dynamic change patterns
- 4. Arm-leg flex-extend
  - a. Arm flex-extend (rotate in and out)
  - b. Leg flex-extend (rotate in and out)
  - c. Bilateral arm-leg flex-extend in opposite directions
  - d. Unilateral arm-leg flex-extend in opposite directions L only/R only
  - e. Unilateral arm-leg flex-extend in opposite directions with contra lateral arm simple circle, figure eight.
- VI. Additional gross motor trampoline training: cross crawl, double bounce side jump (right-left hemisphere self-regulation), and seat and knee drops in time.

# MORE PRINCIPLES FOR ACHIEVING OPTIMIAL OUTCOMES IN OPTOMETRIC NEURO-REHABILITATION

# **Course Description**

Based on the model of executive abilities, the ultimate outcome of vision training is to improve a patient's capacity for choosing appropriate goals, planning and organizing actions, adjusting effortful attention, and maintaining focus until goal achievement despite complexity, ambiguity, distraction, fatigue, and commission of error. The therapist is a coach who works to adjust the demand of the task according to dynamic changes in the alertness and self-confidence of the patient. Principles of coaching for optimizing therapy outcomes will be covered in depth.

# **Goals and Objectives**

- To teach how to develop an atmosphere for success
- To understand the importance of taking time to warm up
- To teach how to identify the learning characteristics of a patient
- To demonstrate the concept of flow-state learning
- To demonstrate the stages of success
- To teach the principles of preventing and recovering from fatigue and frustration
- To teach the concept of recovery
- To teach how to select tasks with clear goals, immediate feedback, and self-regulation.

# **Outline**

- I. The principle of success
  - A. How to talk to patients to create an atmosphere of success
  - B. Mistakes are not enemies but friends that let us know when our attention has wondered
  - C. Guide patients to be smart about setting goals and making realistic expectations.
  - D. Change the task to adjust for fatigue or frustration
- II. The principle of the Stress-Point
  - A. Strategies for knowing how to set the demand level of a task

- B. Every training technique is also a testing technique
- C. Start low and gradually increase demand until attention must become effortful
  - 1. Watch for stress-point behaviors
  - 2. Loss of attention
  - 3. Loss of memory
  - 4. Loss of timing
  - 5. Loss of coordination
  - 6. Frustration behaviors
  - 7. Avoidance behaviors
- D. The principle of reversal of performance
- E. Change the task to adjust for changes in the patient's alertness
- III. The principle of Recovery the importance of expressive learning
  - A. If you make an error,
    - 1. Stop immediately
    - 2. Recall the error
    - 3. Describe the error
    - 4. Start again from the beginning
  - B. Steps toward recovery
    - 1. At first they don't notice their error
    - 2. They know there was an error but can't describe it
    - 3. The stop and can describe the error
    - 4. They immediately notice the error, try to recover but fail to do so
    - 5. They prevent the error as it is happening but the effort is so great the make another error on one of the next symbols
    - 6. They recover from making the error and can keep going without a subsequent error
    - 7."Precovery," They notice their mind wondering so quickly that they prevent the error without anyone being aware of it.
  - V. Reflex vs Self-Directed learning
  - VI. Other tools
    - A. Use of voice: say it loud and succinctly
    - B. Distraction: when they get good at the task, train them to succeed even when you try to distract them
    - C. Anchor their success by calling their attention to what they did and how it feels and help them recall how far they have progressed
    - D. Post-failure failure syndrome
    - E. The "One time Charley" patient
    - F. Perceptual blindness following the shock of making an unexpected error
  - VI. Demonstration using laterality training tasks.

# **TRAMPOLINE SEQUENCE CHARTS**

# **Course Description**

Using audience members as patients various training procedures will be demonstrated to improve a patient's capacity for choosing appropriate goals, planning and organizing actions, adjusting effortful attention, and maintaining focus until goal achievement despite complexity, ambiguity, distraction, fatigue, and commission of error. The therapist is a coach who works to adjust the demand of the task according to dynamic changes in the alertness and self-confidence of the patient.

# **Course Learning Objectives**

- To demonstrate the use of charts made up of sequences of symbols to be read in tempo while jumping on a trampoline or using another rhythm device
- To demonstrate techniques for determining the optimal demand for revealing stress-point behaviors
- To demonstrate techniques for determining levels of demand for optimizing effortful attention
- To demonstrate techniques for increasing recovery skills to develop increased attention span and attention coherence
- To teach strategies for using strengths to develop weak functional skills
- To show how each individual presents a unique set of strong and weak areas are revealed in the process training and how these direct the focus of the therapy
- To demonstrate how progress is made through the use of the afore-mentioned principles

# **Course Outline**

- I. Introduction to the training charts (in the handouts)
  - A. Number charts
  - B. Letter charts
  - C. Words and sentences
  - D. Paragraphs
  - E. Picture charts
  - F. Shape, color and Stroop charts

- II. Simple exercises using the charts or chalkboard targets
  - A. Reading forwards (left to right)
  - B. Reading in reverse (right to left)
  - C. Reading columns (up to down, down to up and alternating)
  - D. Turning the chart upside down, top to left, top to right or at angles
  - E. Skipping every other item or every third one
  - F. Hand clapping while reading
    - 1. Clapping on the beat in various patterns without naming objects
    - 2. Clapping and saying on every beat
    - 3. Clapping every other beat but saying (eg. a letter) on each beat
    - 4. Say a letter on every other beat and clap on the beat between the letters
  - G. Loud and soft letters: switching between loud and whisper voice
  - H. Loud on a particular category of symbol (e.g., loud on vowels only)
  - I. Doing all of the above while performing the gross motor movement patterns above
  - J. Alternating between reading forwards and backwards through a chart or sentence (first and last, second and second from end, third and third from end, etc.
  - K. Alternating between two charts (e.g., number and letter charts) or two sentences
  - L.Doing any of the above without looking at the chart to build attention, memory and visualization skills
- III. Advanced techniques using the sequence charts of chalkboard targets
  - A. Substituting for designated items
    - 1. Silence on designated items (vowels, odd numbers, fives, red color, etx.
    - 2. Clapping, or doing a knee or seat drop on designated items while keeping silent
    - 3. Substituting a word on designated items (e.g., girls names, colors, animals, etc.)
    - 4. Substituting a sequence on designated item (e.g., count by two's on each subsequent vowel or spell a word or the letters of the alphabet in sequence when you come to an odd number.).
    - 5. Doing a knee or seat drop on designated numbers
  - B. Substituting for more than one item (e.g., silence on vowels but clap on A's)
  - C. Combine substitution with exercises listed in II (reading a sentence backwards, clapping on every other bounce
  - D. Doing the above exercises without looking at the chart.
  - E.Clap reverse exercise (when the therapist (or the patient) claps the item is repeated and then the direction is of reading the sequence is reversed. This is repeated until ten successful reversals. This heightens attention and flexability.
  - F. Jump-turn on the vowels (or other designated item). First comes a silent jump, followed by a right or left turn and the next item is said on the immediate bounce following the turn. The point is to develop self-direction and to not impulsively execute the turn before the target item instead of taking the silent jump for the vowel and then turning after.
- IV. Methods of recording procedures and progress and for evaluating problem areas that need specific emphasis in the developmental/rehabilitation training will be discussed.

# MATH, SPELLING, MEMORIZING, LATERALITY AND ORIENTATION

# **Course Description**

Specific procedures will be described and demonstrated for teaching patients stress-point techniques for decreasing the time and pain of rote memorizing of vocabulary, spelling, arithmetic tables, speeches and other lists. This approach improves homework grades, test scores, self-confidence and the retention of learned information for work or study. Ongoing practice continues to improve the speed, accuracy and ease of learning even in normal home, school, and work learning environments. Techniques for learning laterality and orientation in space will also be demonstrated.

# **Goals and Objectives**

- To demonstrate techniques for awareness and understanding of computational relationships
- To demonstrate methods of learning to spell words and lists of words
- To demonstrate memorizing lists of words for vocabulary and list learning
- To demonstrate memorizing sentences paragraphs and longer sequences

# **Course Outline**

- I. Counting and working with numbers
  - A. Simple counting in time to the jump: by ones to ten, by twos, threes, etc. forward (1, 2.10) or backwards (10, 9, ..1); substitute silence, turns, knee drops, words, etc. for one or more numbers
  - B. Using number charts, add or subtract one or more to any number in a category (those containing a 5 or all odd numbers) or add one to all numbers in the top line, two to the second line, etc.
  - C. On the chalkboard write math problems with numbers missing (e.g., 1+\_\_ = 5) or two lines of numbers that must be summed according to a designated sequence, etc.
  - D. Using number arrays adds direction and memory sequencing to arithmetic skills
- II. Rote memorization of spelling words

A. Write word on the board. Erase letters, one by one with the patient filling in the missing letters until they can name the whole word

B. Practice this first forwards, then backwards and in other complex ways as demonstrated before.

C. Aid process by substituting dots or underlines for the subtracted letter to support visualization

- D. Increase demand by substituting a different letter for the subtracted letters
- E. Use distraction method to increase demand even more
- F. Switch back and forth between present and previously learned spelling word(s)
- G. Practice at faster and slower speeds using metronome or different size trampolines
- III. Memorizing vocabulary, language and other lists
  - A. Write a single word Write a single word and learn the spelling and pronunciation using previous technique
  - B. Add another word from the list and repeat step one
  - C. Repeat for each of the words on the list

- D. Read the list in forwards sequence as written on board, then backwards
- E. Erase words, one by one, with the patient repeating the list by filling in the missing words until they can name the whole list from memory forwards, backwards and in other complex ways as demonstrated before.
- F. Always work until flow or fluency
- IV. Rhetoric: Learning to speak sentences, paragraphs, lines and speeches using SPR
  - A. Proceed as above to memorize words, sentences and longer sequences
  - B. Practice procedures that add meaning and emotion to recitation
  - C. Each session learn a new sentence or paragraph. Add to previous speech. Work for poise and fluency, meaning and emotion.
  - V. Methods of training directional awareness and reflexes
    - A. Using arrow charts
    - B. Jumping forward, backwards, left, or right according to a sequence of arrows.
    - C. External map exercises for improving perception of spatial relations
    - D. Jump-turn sequences Left-Right exercises for working memory.

# **WORKING WITH TBI AND STROKE**

## **Course Description**

Advanced procedures and strategies will be discussed and demonstrated for increasing perceptual awareness of time and space, information processing skills and executive functioning in the rehabilitation of low performers (developmental delays), recent and past head trauma and stroke. Discussion will include working with stroke, TBI, and enhancing physical and cognitive skills in older patients. A great deal of patience and special sensitivity is necessary in choosing appropriate goals, planning and organizing actions, adjusting effortful attention, and maintaining focus until goal achievement despite complexity, ambiguity, distraction, fatigue, and attitude in these populations.

# **Goals and Objectives**

- To discuss when to use SPL strategies to retrain lost abilities vs. finding substitute means (crutches and aids) to achieve functional independence
- To show how each individual presents a unique set of strong and weak areas and stresspoint behaviors that are revealed in the process of the training. As these are exposed, they become the focus of the therapy
- To discuss how to avoid and recover from a catastrophic posture response, an collapse of coherent perception and action following violation of stress-point
- To demonstrate how progress is made through the use of the afore-mentioned principles

# **Course Outline**

## I. Introduction

Patients who have suffered brain trauma, developmental delay, have low vision, or are in beginning stages of age-related cognitive loss may require shorter sessions, frequent breaks and more total therapy sessions. The therapist can decide to attempt to retrain a lost ability and/or to find substitute ways to allow the patient to do certain activities in spite of having lost the ability.

(e.g., teaching an ARMD patient how to re-aim their fixation to a preferred retinal locus vs. teaching them to use a magnifying lens or CCTV). The therapy must be incremental, creative and emotionally sensitive. It's important to allow additional time for the therapy to work as many patients can surprise you by how far they can progress

- II. Working with head injury or stroke victims
  - A. Carefully access trampoline safety issues
    - 1. Possible re-injury due to acceleration/deceleration
    - 2. Balance support Can they trampoline alone or with spotters
    - 3. How to use spotters
    - 4. Ways of using the trampoline without standing
    - 5. Choose/invent non-trampoline ways to work
    - B. Avoiding fatigue and frustration
      - 1. It's better to prevent fatigue than to reverse it
      - 2. Early signs
      - 3. Ways to avoid
      - 4. Ways to reverse
      - 5. Ask the patient
    - C. Other considerations
      - 1. Be extra careful to give clear instructions and clear up all confusion
      - 2. Take time to warm up
      - 3. Approach the stress-point window more slowly
      - 4. Quickly reduce the demand when necessary
      - 5. Rock out the confusing areas
      - 6. Learn the ending first then start at earlier and earlier points
      - 7. Stay at task level by using different sequences before increasing demand
      - 8. Be patient. Progress is often much slower
      - 9. Explain why you are doing the procedure, it helps motivate
      - 10. Point out their progress, often you see it before they do
      - 11. Keep your expectations high, you'll be surprised at what is possible
      - 12. Promise little, expect everything
- III. Demonstrations using SPLR tasks of above principles

# **SWINGING BALL, FLANNEL BOARD, TACHISTOSCOPE**

# **Course Description**

In addition to the infinite training opportunities afforded by the use of the trampoline for increasing visual/cognitive/executive functioning, Pepper's SPLR approach also employs several common vision rehabilitation devices used in unique ways. Depending on time and physical limitations of the seminar venue, though all will be described, only some of these techniques will be demonstrated and taught in depth. In the process of this presentation, attendees will learn how applying SPLR principles can expand the benefits when applied to all vision therapy approaches.

# **Goals and Objectives**

- To describe ways SPLR principles can be applied using common VT equipment
- To demonstrate some of these in depth using audience members as students
- To discuss Pepper's 'IMPART' model of perception and learning through meaningful movement

# **Course Outline**

- I. Swinging Ball and Dowel
  - A. Physical movement patterns
    - 1. Patient bunts ball learning to hit it to swing precisely 12", 16", 20", and 24"
    - 2. Patient bunts ball learning to hit it at chest level and at 18" above and below
    - 3. Patient repeats 1 and 2 while balancing on a balance board.
  - B. Information processing
    - 1. Patient spell words written on chalkboard timed to ball bunts
      - a. Spells forwards, backwards, skip vowels, etc. while looking
      - b. Spells as in a. without looking
      - c. Does above change voice volume or bunt force
    - 2. Patient and partner hit back and forth alternating spelling as each bunts

# II. Flannel Board Technique

A. Equipment

Flannel Board to discover and improve visual discrimination deficits (direction, size, shape & form). Equipment includes three 20"x30" flannel covered boards and two identical sets of 16 different geometric shapes cut out of flannel. The practitioner and patient have a board and the practitioner holds the third board to hide his board from view of the patient.

# B. Procedure

1. Practitioner hides his board and places one of his shapes on it

2. Practitioner alerts the patient and then quickly removes and replaces his board to allow the patient a quick look

3. Patient attempts to place on his board, the identical shape in the same position and orientation.

4. More shapes are added and flashed until errors in shape, size, orientation or position occur.

5. Stress-point principles for increasing the patient's awareness and perceptual organization will be presented.

# III. Tachistoscope

Demonstration of Pepper's trampoline tachistoscope techniques

- A. Words, numbers, shapes, arrows photos are flashed just as patient performs a seat or knee drop. After the seat or knee drop, the patient rebounds to their feet, makes a silent bounce and on the following bounce, the patient says the item that was flashed by the tachistoscope.
- B. As tachistoscope skills increase, more complex slides are flashed.
- C. Multisensory distracters are used to embed these skills at a deeper level.
  - 1. Words
    - a. Repeating words: The practitioner shouts a word just as the seat drop and

flash occur. The patient rebounds and after a silent bounce repeats the same word. On the next bounce reports what was flashed.

- b. Category words: A color, vegetable, fruit, animal, car brand, etc. is shouted just as the seat drop and flash occur. The patient rebounds and after a silent bounce says word from the same category. On the next bounce reports what was flashed.
- c. Opposite words: The patient responds by saying the opposite of the shouted word.
- d. Direction or position words: Left, right, forward, back, window, chalkbord, etc, is shouted and patient follows the direction by moving or turning appropriately after the free bounce before reporting the flashed item.
- e. Sequence words: Patient spells, reads sentence, counts, etc., of a memorized or read sequence in the above manner.
- 2. Continuing math problem procedure is attempted. As above, but practitioner says a math problem (sign [+, -, x, <sup>7</sup>/.] and number). The patient gives the answer following the silent bounce and then says the flashed item. this answer is remembered and used as the first number of the next problem.

# PEPPER STRING THRUST & ROTATOR

# **Course Description**

In addition to the infinite training opportunities afforded by the use of the trampoline for increasing visual/cognitive/executive functioning, Pepper's SPLR approach also employs several common vision rehabilitation devices used in unique ways. Depending on time and physical limitations of the seminar venue, though all will be described, only some of these techniques will be demonstrated and taught in depth. In the process of this presentation, attendees will learn how applying SPLR principles can expand the benefits when applied to all vision therapy approaches.

# **Goals and Objectives**

- To describe ways SPLR principles can be applied using common VT equipment
- To demonstrate some of these in depth using audience members as students
- To discuss Pepper's 'IMPART' model of perception and learning through meaningful movement

# Course Outline

- I. Pepper String Thrust
  - A. Using a Brock string and beads for esotropia
    - 1. Moving the bead near and far, the patient finds their biocular fixation distance
    - 2. The patient describes what they see (one bead and string (one bead and part of two strings, two beads one string . . .)

3. The practitioner stands close behind the eso with one hand placed in front of the shoulder on the side of the weaker eye and the other hand behind the opposite shoulder. As the practitioner attempts to rotate the patient's torso by gently pulling back with the front hand and pushing forward with the other, the patient is to try to keep from being rotated by matching the torque, pushing forward against the backward pulling hand and back against the other hand. The practitioner dialogues with the patient about visual changes they notice as the force of the

rotation is varied by delicate degrees. Generally the patient reports that the weaker string appears brighter and stronger as if the patient's effort and attention increase the bi-ocular or binocular organization. This may not occur right away, patience and persistence is required. Eventually when the practitioner quickly releases the pressure, the eso releases into slightly more exo and the bead can be moved slightly farther away. Repeating the procedure many times the strabismus diminishes.

4. Once the strings are equally strong and without suppression areas the far end of the string can be moved into various positions as the patient fixates the bead and reports loss of binocularity as they follow the up, down, left, right circular movement. Positions of weak binocularity are gently "rocked out" through shoulder thrust and patient organization.

#### II. <u>Rotator</u>

- A. A hand turned rotator fashioned with four hooks mounted at the cardinal positions. Tags made with different colors, pictures, numbers, words, shapes, arrows, etc. are hung from the hooks. Example: a red, blue, green or orange tag is hung on the hooks. A dot or star stick-on is pasted at the center of the rotator. The patient faces the rotator with the colored hooks in place: red above, green below, orange to the left and blue to the right of the center.
  - 1. Patient starts by looking at the dot or star in the center.
  - 2. Practitioner names a color.
  - 3. Patient pauses for 2 seconds and then moves eyes to the color mentioned.
  - 4. If correct, patient holds fixation on the color, a new color is called, the patient pauses for 2 seconds and saccades to that color.
  - 5. Self-Directed. Steps 1-4 are repeated with the following change: the patients call the color themselves, make a 2 second pause and move to the color.
  - 6. Move to the opposite. All the above is repeated but the saccade is to the opposite of the item called.
  - 7. Rotation. Steps 1-6 are repeated as the practitioner slowly turns the rotator to change the target positions. Target color is called, patient pauses 2 seconds before saccading to its present position. Patient pursues fixation on this target until next color is called, etc.
  - 8. Change arrays, multiple simultaneous arrays (e.g., north, south, east, west, with above colors), or number arrays with continuing math problem (e.g., a single digit number is assigned to each color, when color is called: patient pauses, moves eyes to color and a moment of landing adds that color's number to the ongoing problem).

# **THE PEPPER CONCENTRATION PROFILE**

#### **Course Description**

The Pepper Concentration Profile (PCP) has application in education, sports, business and interpersonal relations because it reveals a patient's unique pattern of attention and motivation as he or she works over time. The PCP was designed to diagnose and train the patient's ability to see differences and similarities as they derive meaning from the environment. Patients sort visual cue cards according to subtle differences in size, form, distance, direction or color saturation.

Like most tests, the PCP measures the total error score and the time taken to complete the test, but more importantly, PCP records details about changes in speed, accuracy and behavior minute-by-minute throughout the course of the test. This shows WHEN a patient will most likely lose concentration and WHAT types of errors of judgment are most likely under stressful conditions.

## **Goals and Objectives**

- To understand the equipment, instructions, and procedures In using PCP
- To demonstrate giving the test and interpreting the findings to audience members
- To demonstrate the test's validity and consistency as relates to patient behavior
- To teach how to interpret results and how it is used in therapy

## **Course Outline**

I. Equipment

A. Cards – The 3x3" cards come in decks of 40 cards, each with a visual graphic pattern printed on front and a number on back. There are 15 decks for testing size, distance, direction, form, or color saturation decimation. The patterns in each deck look very similar but closer look reveals that there are ten unique sets of four identical cards. Cards with the same pattern have the same number on back.

B. Two plastic holders – a display stand and a sorting tray with slots to hold the cards. The slots are numbered 1-5 across the top row and 6-10 in the row below. The stand holds the example cards and the tray receives the sorted cards.

C. Score sheets to record the patient's name, the date, the test card deck, stress factors applied in any, behavioral observations, data analysis and a record of the time and slot each card was placed, whether it was placed correctly or in error giving a graphic picture of perceptual organization over the time frame of the test.

D. A watch that measures minutes and seconds.

## **II. Testing Procedure**

- A. A deck is selected according to the level of the patient.
- B. The example cards are on the stand in their appropriate slots 1-10.

C. The remaining 30 cards are shuffled and handed, face up, to the patient. The patient matches the top card to one on the stand placing it in the corresponding slot on the sorting tray. Each of the 30 cards is matched and placed in the tray.

D. Instructions - "These example cards look almost alike but each is different. Compare your card to these in the stand. Find the one it matches, place it on this tray in the corresponding slot. Sort all your cards but compare with these cards on the stand and not the ones on the tray. There are 30 cards to sort but just 10 slots in which to put them. When you are finished there will be several cards in each slots. Work to make the fewest errors in the shortest time. Take as long as necessary to find the matching card, but once you touch the card to the holder you must leave it there." When satisfied that the patient understands, the practitioner notes the time and gives the signal to go.

## III. Recording on the PCP score sheet.

A. Card placement. The patient night place the first card in slot #3 and the second in slot #6, etc. As each card is placed, the practitioner records the slot number until all 30 cards are placed. The practitioner must pay close attention to be accurate.

B. Time recording. After every minute, a line is drawn under the last placement number to show the number of placements per each minute. As the final card is placed, the time in seconds is noted, added to the total minutes, and recorded on the sheet.

C. Recording behavior. The practitioner notes changes in behavior (Became frustrated, distracted).

## IV. Scoring

The numbers on the back of the cards placed in slot 1 are recorded. The correctly placed cards are the 1's, all others are incorrect. These are identified and marked in the list of card placements previously recorded. After all the slots are recorded, analyzed, located and marked, the pattern of when the errors occurred and number of placements per minute is the concentration profile.

V. Interpretation

Each person approaches challenge in a unique pattern. The profile shows how quickly and accurately the patient works during each time period of the task revealing a unique "learning fingerprint," that occurs over and over again through their lifespan. Most people are not aware that they have this pattern but when they learn to feel their loss and to be aware of when they are most likely to lose it, they have the opportunity to learn how to plan and act to achieve maximum productively and minimum stress, fatigue and frustration. Some start tasks before hearing the rules or understanding the game plan. They stumble, flounder and fall as they try to organize on the run. Some pause, looking for the whole picture. Others make a dash to complete the task as soon as possible regardless of accuracy. Some work slowly, deliberately plodding from point to point. Some discipline themselves to maintain consistency, feeling comfortable only within their self-imposed pattern, whether or not that rigid framework allows them to be accurate or creative. Some start well but lose interest before the task is done. Some are so slow to self-organize that they "waste" valuable time floundering before they're actually able to begin.

# <u>COURSE REVIEW IN THE CONTEXT OF</u> <u>EXECUTIVE FUNCTION, NEUROSCIENCE AND EMOTIONAL</u> <u>COMPONENTS OF GOAL DRIVEN BEHAVIOR</u>

# **Course Description:**

The ultimate goal for visual training is to improve the quality of our patients, creative output, and ease individual's ability to select appropriate goals and then to marshal working memory, attention, and inhibitory control for the purposes of planning, adjusting and executing actions to achieve that goal. Frontal cortical dysfunction, depending on the exact location of the deficit, leaves specific cognitive abilities and general intelligence largely intact but greatly impairs planning, self-monitoring, attention, memory, and responsiveness to impending reward or punishment. This presentation will cover the theoretical basis to give sufficient background for understanding and applying clinical principles and specific training procedures for development/rehabilitation of executive skills by selecting tasks with clear goals, immediate feedback, and self-regulation. As a result, visual attention, eye movement skills, and visual memory gain efficiency, stamina and fluency.

# **Goals and Objectives**

• To review principles and procedures for developing/rehabilitating visual attention, eye movement skills, and visual memory in the context of improving executive functioning.

- To review and expand on concepts of fluid or executive skills in the context of neurooptometric rehabilitation.
- To discuss how emotion and stress-point behaviors impact self-regulation, effort and attention in the achievement of self-directed goals.
- To review the neuroscientific basis of frontal, limbic and cerebellar networks related to executive functions and visual processing.

# **Course Outline**

I. Defining Executive Function

A. Executive function unites working memory, attention, and inhibitory control for the purposes of planning and executing goal-directed actions.

B. Frontal cortical dysfunction, depending on the exact location of the deficit, leaves specific cognitive abilities and general intelligence largely intact but greatly impairs planning, self-monitoring, attention, and responsiveness to impending reward or punishment.
C. Executive skills include effortful control: the ability to inhibit a predominant short-term reward impulse when instructed to engage in a subdominant long-term goal (i.e., to be told to wait to eat a cookie or to unwrap a present).

# II. Emotion Cognition and Stress

- A. Executive function integrates emotional control networks and higher cognition
- B. Anxiety has a negative influence on the higher order processes of attention, memory, and problem solving.
- C. Executive and strategic-thinking deficits are associated with poor self-confidence of the self as learner.
  - 1. Negative emotional self-appraisal and pessimistic expectations diminish attention, and lead to frustration, avoidance and compulsive negative affect.
  - 2. Favorable emotional appraisals and expectancies lead to higher levels of engagement and persistence in a given task.
  - 3. Therefore, training must include specific training to reverse negative selfattributions that inhibit functional effort and self-direction.
- D. Emotionality or affective style including high vs. low reactivity to emotion-inducing stimuli and approach/withdrawal behavior in response to these stimuli.
- E. Early negative influences on emotionality can limit the development of neurological interconnections among brain structures underlying emotion and higher order cognition. Early intervention can increase interconnections and expand the range of responses.

# III. Review of neuroanatomical centers and networks

- A. The Pre-Frontal Cortex (PFC) plays a leading role in higher-order cognition
  - 1. The PFC is directly connected with the Anterior Cingulate Cortex (ACC), the limbic brain (especially the amygdala and hypocampus), the temporal, parietal, and occipital cortex, and the cerebellar vermis in coordinating and anticipating fluid cognitive functions
  - 1. The PFC is composed of distinct areas. The dorsolateral areas of the PFC are associated with working memory and general intelligence and the ventromedial areas of the PFC are associated with information maintenance
  - 2. Orbitofrontal and ventral medial areas of the PFC are associated with performances involving reward evoking positive or negative emotion
- B. The anterior cingulate cortex (ACC) is active in a wide variety of cognitive and

emotional tasks

- 1. ACC is associated with error detection and performance-monitoring processes
- 2. ACC is also associated with transient mood changes, depression and anxiety disorders
- C. Review of the arousal and the stress response impact on fluid cognitive
- D. Cerebellar cognitive affective syndrome describes impaired executive functioning, spatial cognition and behavioral change due to underdevelopment of cerebellum.
- IV. Implications for vision therapy, demonstration of stress-point behavior patterns.

#### WHAT IS STRESS-POINT TRAINING?

These exercises build attention and memory skills regardless of age, work or level of education. Everyone benefits, even people with learning and reading disabilities, emotional problems or brain injury. With practice and patience, lasting changes take place in the chemistry and physiology of attention. Practice with others or alone, daily or less often. Make this an after school or evening families fun activity. Teachers can teach individual students or groups to attend with more power. Therapists can help patients think more clearly and help them recover lost physical and mental abilities.

#### FINDING THE RIGHT TASK

Effective training requires that task difficulty matches attention skills. Easy tasks give poor feedback because attention lapses don't cause errors. Easy, boring tasks decrease attentiveness, slow thinking, and shrink attention span. Overly difficult tasks disrupt attention and can cause anxiety, anger, frustration, impulsiveness, avoidance, and thwart the processes we are trying to build. Appropriate tasks, challenging but within your grasp, improve attention, confidence, pleasure and create a desire for more. Search for the challenge that matches your ability, one that takes several tries to get right and work for more than barely succeeding. Don't just squeak by. Ask yourself: can I do it well, for a long time, with distractions and pressure, with creativity. The goal is the art of mastery -- certainty, ease, fluency, and flow. Learning how to find just the right level of difficulty when attempting a new challenge is a key element for success.

#### TIMING AND RHYTHM

Attention suffers when timing is off. Learning problems, reading blocks, or poor performance in sports or arts are often due to faults in the brain's timing mechanisms. If the mind moves faster than the eyes, for example, reading suffers. Rhythmic learning organizes the brain, quiets negative emotions and coordinates the senses. This simple demonstration is the essence of the attention and memory training approach --

#### TRY THIS EXERCISE

Clap your hands in a steady rhythm, one or two claps per second. Can you keep the beat? If not, use a metronome or get a helper to clap with you. You can use a trampoline for this exercise. If so clap at the bottom of each bounce. When you can sustain a steady clap rhythm, read these numbers out loud in time with your claps.

## $7\ 4\ 3\ 9\ 5\ 6\ 2\ 9\ 4\ 7\ 2\ 3\ 8\ 6\ 1\ 4$

Some do this easily on their first attempt but others have to work at it. If you can't get fluent success after several attempts, make the task easier. Shorten it by using fewer digits (eight or less) or slow it down by naming the numbers on every other beat. For a harder task: up the speed; read it backwards; lengthen it by going forwards and back three times without stopping. For more complexity try saying only the even numbers while clapping on the odds; adding one to each number; adding the number. Finding the weak links in your attention and habitual negative learning patterns provides an opportunity for self-directed change. Do you reverse, skip or call out wrong numbers? Are you continually distracted by thoughts such as: "this is easy," or "I'll never make it through?" Do you falter at the start or lose focus just before the end? Can you bring your attention back when your mind wonders, or do you tighten, get anxious, and stop, unable to continue? Do you repeat the same type of error? Can you catch yourself or must someone point your errors out?

#### **RECOVERY OF ATTENTION**

The exercises give immediate feedback when attention wonders. Attention problems stay hidden unless responses are actively expressed. Most education is passive. For example, everyone can tell if your mind wonders when you read outloud. Read silently to yourself and pages can go by while you daydream. The eyes move but the brain is out to lunch and you can't remember what you've just read. Quick effective recovery of attention is the key to improving learning ability. Catching yourself as you make an error (recovery) is the best way to improve.

#### POST-FAILURE FAILURE SYNDROME

Making a simple mistake can bring immediate frustration and with it a drop in performance and avoidance. Mistakes happen at the stress-point when challenges exceed ability. Everyone fails but some people can turn up their fire while others have failure phobia or 'post-failure failure syndrome.' Their anxiety about failing shrinks attention causing failure even on tasks they could do easily a moment before. Repeated mistakes are just information, part of the process of learning. It's not such a big deal to make a mistake. Usually the mistake is in picking too hard a task and thinking it will be easy. Learn to think of errors as merely feedback.

#### VARIOUS IMAGES TO BROADEN THE PURPOSE OF STRESS-POINT TRAINING

"...during the next 30 years neuroscience and neurotechnology will produce a "neurosociety" in which "you will eventually be able to continuously shape your emotional stability, sharpen your mental clarity, and extend your most desirable sensory states until they become your dominant experience of reality."

Vision allows us to be active participants in our world, continually moving through it and molding it to our needs and desires.

We are working to change brain function: systems of memory, perceptual categorization, reasoning, planning, evaluation of alternatives, decision-making, voluntary direction of attention, and more generally, rational control of action.

Visual Naming Speed

Fluent reading -- Fluency is not an end in itself but a critical gateway to comprehension. Fluent reading frees resources to process meaning.

For students to develop fluency, they must: Perform the task or demonstrate the skill accurately, and Perform the preskills of the task quickly and effortlessly. Once accurate, fluency develops through plentiful opportunities for practice in which the task can be performed with a high rate of success.

The five questions: Can I do it? Can I do it well? Can I do it well for as long as I like whenever I try? Can I accept change? Can I be creative and expressive as I do it? (Flow state: altered sense of time; one-pointedness of mind, action and awareness merge; loss of self-consciousness, irrelevant stimuli disappear from consciousness, worries and concerns are temporarily suspended; a sense of effortless control; experience becomes worth doing for its own sake; transcendence of ego boundaries, a sense of growth and of being part of some greater entity)

From *William James Talks to Teachers* <u>http://www.des.emory.edu/mfp/james.html</u> The teacher's prime concern should be to ingrain into the pupil that assortment of habits that shall be most useful to him throughout life. To break up bad associations or wrong ones, to build others in, to guide the associative tendencies into the most fruitful channels, is the educator's principal task.

We must make automatic and habitual, as early as possible, as many useful actions as we can, and as carefully guard against the growing into ways that are likely to be disadvantageous. The more of the details of our daily life we can hand over to the effortless custody of automatism, the more our higher powers of mind will be set free for their own proper work.

A teacher "must start with the native tendencies, and enlarge the pupil's entire passive and active experience. He must ply him with new objects and stimuli, and make him taste the fruits of his behavior, so that now that whole context of remembered experience is what shall determine his conduct when he gets the stimulus, and not the bare immediate impression.

## SELF-EFFICACY BELIEFS (Albert Bandura)

Self-efficacy is the belief (whether or not accurate) that one is capable of performing in a competent manner to attain a particular goal, that one has the capabilities to execute the courses of actions required to succeed. Self-efficacy relates to a person's perception of their ability to reach a goal, whereas self-esteem relates to a person's sense of self-worth.

One's sense of self-efficacy can play a major role in how one approaches goals, tasks, and challenges. Self-efficacy beliefs are cognitions that determine whether an effort will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and failures. Self-efficacy influences the challenges that people take on and how high they set their goals. People with high self-efficacy -- that is, those who believe they can perform well -- are more likely to view difficult tasks as something to be mastered rather than something to be avoided, whereas a person with low self-efficacy would harbor feelings of hopelessness.

People will be more inclined to take on a task if they believe they can succeed. People generally avoid tasks where their self-efficacy is low, but will engage in tasks where their self-efficacy is high. People with a self-efficacy significantly beyond their actual ability often overestimate their ability to complete tasks, which can lead to difficulties. On the other hand, people with a self-efficacy significantly lower than their ability are unlikely to grow and expand their skills.

People with high self-efficacy in a task are more likely to make more of an effort, and persist longer, than those with low efficacy.<sup>[6]</sup> The stronger the self-efficacy or mastery expectations, the more active the efforts.

Low self-efficacy can lead people to believe tasks are harder than they actually are.<sup>[8]</sup> This often results in poor task planning, as well as increased stress. Observational evidence shows that people become erratic and unpredictable when engaging in a task in which they have low self-efficacy. On the other hand, people with high self-efficacy often take a wider overview of a task in order to take the best route of action. People with high self-efficacy are shown to be encouraged by obstacles to make a greater effort.

Self-efficacy also affects how people respond to failure. A person with a high selfefficacy will attribute the failure to external factors, where a person with low self-efficacy will attribute failure to low ability.

"Mastery experience" is the most important factor deciding a person's self-efficacy. Simply put: success raises self-efficacy, failure lowers it.

#### A Meta-analysis of the Effectiveness of Intervention Programs Designed to Support Autonomy Yu-Lan Su & Johnmarshall Reeve Educational Psychological Review, Online First, 24 09/2010

#### Autonomy and the Benefits of Autonomy Support

Autonomy is the inner endorsement of one's behavior; when autonomous, people perceive that their behavior emanates from the self and is self-authored. For example, students are autonomous when they pursue their interests, study to satisfy their curiosity, and volitionally engage themselves in schoolwork. In self-determination theory, autonomy is conceptualized as an inherent psychological need that requires support from environmental conditions and interpersonal relationships for its satisfaction. When people experience autonomy need satisfaction from nurturing environmental conditions, they function more positively and experience greater psychological well-being. In educational settings, students who have their autonomy supported by teachers show educational and developmental benefits, including greater engagement, higher quality learning, a preference for optimal challenge, enhanced intrinsic motivation, enhanced well-being, and higher academic achievement. Similar cause-and-effect benefits have been found in experimental studies for children and adolescents whose parents support their autonomy, for employees whose managers supported their autonomy, and for patients whose physicians and dentists supported their autonomy. The general conclusion seems to be that people benefit when others support their autonomy and that they benefit in ways that are widespread and important to their lives and mental health.

What is Autonomy Support? Autonomy support refers to what one person says and does to enhance another's internal perceived locus of causality, volition, and perceived choice during action (i.e., the subjective experience of autonomy. It refers to the interpersonal sentiment and behavior one person provides to identify, nurture, and develop the other's inner motivational resources—such as the need for autonomy, intrinsic motivation, personal interests, intrinsic goals, and self-endorsed values.

Table 2 Operational definition for each interpersonal condition of autonomy support

1. Provide meaningful rationales

Verbal explanations that help the other person understand why self-regulation of the activity would have personal utility.

2. Acknowledge negative feelings

Tension-alleviating acknowledgments that the request one is making of the other is in conflict with his or her personal inclinations and that his or her feelings of conflict are legitimate (yet not necessarily inconsistent with activity engagement).

3. Use non-controlling language

Communications that minimize pressure (absence of "shoulds," "musts," and "have tos") and convey a sense of choice and flexibility in the locution of behavior.

4. Offer choices

Provide information about options, encouragement of choice-making, and encouragement of the initiation of one's own action.

5. Nurture inner motivational resources

Vitalization of the other's interest, enjoyment, psychological need satisfaction (autonomy, competence, relatedness), or sense of challenge or curiosity during the engagement of a requested activity.

#### Why Teachers Adopt a Controlling Motivating Style Toward Students and How They Can Become More Autonomy Supportive

Johnmarshall Reeve EDUCATIONAL PSYCHOLOGIST, 44(3), 159–175, 2009

Definition, Enabling Conditions, and Instructional Behaviors Associated with Controlling and With Autonomy Support

Controlling	Autonomy Support		
Definition	Definition		
Interpersonal sentiment and behavior teachers provide during instruction to pressure students to think, feel, or behave in a specific way.	Interpersonal sentiment and behavior teachers provide during instruction to identify, nurture, and develop students' inner motivational resources.		
Enabling conditions	Enabling conditions		
Adopt the teacher's perspective.	Adopt the students' perspective.		
Intrude into students' thoughts, feelings, or actions.	Welcome students' thoughts, feelings, and actions.		
Pressure students to think, feel, or behave in a specific way.	Support students' motivational development and capacity for autonomous self-regulation.		
Instructional behaviors	Instructional behaviors		
Rely on outer sources of motivation.	Nurture inner motivational resources.		
Neglect explanatory rationales.	Provide explanatory rationales.		
Rely on pressure-inducing language.	Rely on noncontrolling and informational language.		
Display impatience for students to produce the right answer.	Display patience to allow time for self-paced learning.		
Assert power to overcome students' complaints and expressions of negative affect.	Acknowledge and accept expressions of negative affect.		

#### **THE FLOW EXPERIENCE\***

The Evolving Self by Mihaly Csikszentmihalyi, Harper Collins, 1993

- 1. Clear goals: an objective is distinctly defined; immediate feedback; one knows instantly how well one is doing.
- 2. The opportunities for acting decisively are relatively high, and they are matched by one's perceived ability to act. In other words, personal **skills are well suited to given challenges.**
- 3. Action and awareness merge; one-pointedness of mind.
- 4. Concentration on the task at hand; irrelevant stimuli disappear from consciousness, worries and concerns are temporarily suspended.
- 5. A sense of potential control.
- 6. Loss of self-consciousness, transcendence of ego boundaries, a sense of growth and of being part of some greater entity.
- 7. Altered sense of time, which usually seems to pass faster.
- 8. Experience becomes worth doing for its own sake.

#### FINDING FLOW

Published on *Psychology Today* (<u>http://www.psychologytoday.com</u>) From *Finding Flow* by Mihaly Csikszentmihalyi. Copyright 1997 BasicBooks

The metaphor of flow is one that many people have used to describe the sense of effortless action they feel in moments that stand out as the best in their lives. Athletes refer to it as "being in the zone," religious mystics as being in "ecstasy," artists and musicians as "aesthetic rapture." It is the full involvement of flow, rather than happiness, that makes for excellence in life.

Flow also happens when a person's skills are fully involved in overcoming a challenge that is just about manageable, so it acts as a magnet for learning new skills and increasing challenges. If challenges are too low, one gets back to flow by increasing them. If challenges are too great, one can return to the flow state by learning new skills.

Flow tends to occur when a person faces a clear set of goals that require appropriate responses. It is easy to enter flow in games such as chess, tennis, or poker, because they have goals and rules that make it possible for the player to act without questioning what should be done, and how. In contrast to normal life, these "flow activities" allow a person to focus on goals that are clear and compatible, and provide immediate feedback.

To learn to control attention, any skill or discipline one can master on one's own will serve: meditation and prayer, exercise, aerobics, martial arts. The important thing is to enjoy the activity for its own sake, and to know that what matters is not the result, but the control one is acquiring over one's attention.

Flow is a source of mental energy in that it focuses attention and motivates action.

How can we find a goal that will allow us to enjoy life while being responsible to others? Buddhists advise us to "act always as if the future of the universe depended on what you did, while laughing at yourself for thinking that whatever you do makes any difference." This serious playfulness makes it possible to be both engaged and carefree at the same time. We may also discover the foundations on which to build a good life from the knowledge scientists are slowly accumulating. The findings of science makes us increasingly aware of how unique each person is. Not only in the way the ingredients of the genetic code have been combined, but also in the time and place in which an organism encounters life. Thus each of us is responsible for one particular point in space and time in which our body and mind forms a link within the total network of existence. We can focus consciousness on the tasks of everyday life in the knowledge that when we act in the fullness of the flow experience, we are also building a bridge to the future of the universe.

## **Reference Card**

#### Hand/Arm Work

Circles In Circles Out Parallel to Right Parallel to Left Lazy Eights-1 hand Lazy Eights-2 hands Hands front/backs One hand circle/one Palm in/out Hand to head/ head turn

#### Foot Work

In - Out Forward/Back center bounce Scissor One foot bounce Two foot bounce Quarter turns Cross Over Pigeon Toes/DuckToes

## <u>Charts</u>

Read Left to Right Read Right to Left Read Top to Bottom Read Bottom to Top Silent bounce: every other one Clap : On the black, 1⁄4 Turn: On the vowel On the ducks Or whatever you choose Say the opposite

Student Name \_\_\_\_\_ date \_\_\_\_\_

## **Physical Coordination and Balance Exercises**

Able to do:					
Standard arr	n circles		after	tries	unable
Feet:	together/apa	rt	front to back	Charle	eston step
Parallel arm	circles	after_	tries		unable
Feet:	together/apa	rt	front to back	Charle	eston step
Observation	S:				

# **Clapping Exercises**

Able to:				
Clap every time	after	tries	unable	
Every other time	after	tries	unable	
Every third time	after	tries	unable	
Observations:				

# <u>Maps</u>

Left/right	after	tries	unable
Self directed L/R	after	tries	unable
External Map	after	tries	unable
Observations:			

# **Counting**

Can count forwards to	after	tries	unable
Can count backwards to	after	tries	unable
Can leave outnumber(s)	after	tries	unable
Can clap on number(s)	after	tries	unable
Observations:			

# Number or Letter Chart

Chart	f	ocus:				
Able to comp	leteiter	ns	after		tries	unable
Able to comp	leteline	es	after		tries	unable
Able to comp	lete whole cha	art	after		tries	unable
Student Nam	e			Da	ate	
Words, Sent	ences and Pa	aragra	phs			
<b>Highest Leve</b>	I Obtained:					
Circle:	Short word					
	Long word					
	Two words					
	Short sentend	ce				
	Long Sentend	ce				
Able to:						
Read Forward	d		after		tries	unable
Read Backwa	ards	after _		tries	una	ble
Clap Spaces		after _		tries	una	ble
Silent Vowels	3	after _		tries	una	ble
Silent Vowels	s, clap spaces		after		tries	unable
Reverse Dire	ction after cla	р	after		tries	unable
Self-directed	reverse	after _		tries	una	ble
First/Last lette	er		after		tries	unable
Other variation	ons:					
With foot patt	ern:					
Observations	<u>;</u>					

Student Name \_\_\_\_\_

Date	Gross Body	Chart	Observations
	Coordination	Work	Comments

# Summary of needs

Gross motor	needs work	1	2	3	4	5 skilled
<ul> <li>Directionality</li> </ul>		1	2	3	4	5
• Timing		1	2	3	4	5
<ul> <li>Motivation &amp; Energy</li> </ul>		1	2	3	4	5
<ul> <li>Communication</li> </ul>		1	2	3	4	5
Attention		1	2	3	4	5
Memory		1	2	3	4	5
Error awareness/recovery		1	2	3	4	5
<ul> <li>Emotional control</li> </ul>		1	2	3	4	5
<ul> <li>Consistency/Retention</li> </ul>		1	2	3	4	5

#### ATTENTION AND MEMORY PROFILE

This Attention and Memory Profile offers a yardstick for seeing the progress of training. Without these initial observations, real improvement may go unnoticed. Future improved performance will erase the memory of initial problems. And since the time and energy commitment for this work is motivated by the improvement you and the patient see, this baseline assessment will prove useful. It also tells you which tasks to emphasize. *Never use this evaluation to criticize or shame your child*.

Don't be worry about being perfect in evaluating your child. Although you lack professional training, you can see if movements are smooth or clumsy, timing is accurate, and you can count the tries to succeed at the task.

If your child fatigues or shuts down, continue later. Even a few observations are useful. Video is very useful.

Refer to the book for detailed instructions.

There are no absolutes in this evaluation and no one expects a perfect job.

#### PHYSICAL COORDINATION AND BALANCE GENERAL OBSERVATIONS

Circle descriptions that fit and write other comments or observations.

CENTERING: loses balance; lands all over the surface; tends toward front, back, left, right edge; improves with practice; good centering.

POOR 1 \_\_\_\_ 2 \_\_\_ 3 \_\_\_ 4 \_\_\_ 5 VERY GOOD Comment:

CIRCLES: left, right, both circles distorted; left, right circle smaller; left, right shoulder high, good circles.

POOR 1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_ 5 VERY GOOD Comment:

LEFT/RIGHT WEAKNESS: one side consistently poorer at standard, parallel circles, one foot jumping, complex feet movements

POOR 1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_ 5 VERY GOOD Comment:

WEIGHT DISTRIBUTION: weight tends to be on left, right foot; leans forward, back; even.

POOR 1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_ 5 VERY GOOD <u>Comment:</u> FEET: look awkward; can't point; can't straighten; left/right turns in/out.

POOR 1 \_\_\_\_ 2 \_\_\_ 3 \_\_\_ 4 \_\_\_ 5 VERY GOOD Comment:

BODY TWISTS: while jumping body twists left, right while jumping; straight ahead; only on parallel arm circles.

POOR 1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_ 5 VERY GOOD <u>Comment:</u>

HEAD: tilts toward left, right shoulder, front, back; centered.

POOR 1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_ 5 VERY GOOD Comment:

BODY LEANS: toward left, right shoulder, front, back; centered.

POOR 1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_ 5 VERY GOOD <u>Comment:</u>

#### PHYSICAL COORDINATION AND BALANCE TASKS

Circle descriptions that fit and write other comments or observations.

MOVE ARMS IN CIRCLE TIMED TO BOUNCE

Mirror arm circles after \_\_\_\_\_ tries; not able Parallel arm circles after \_\_\_\_\_ tries; not able Comment:

#### LEG MOVEMENTS TIMED TO BOUNCE

Feet together/apart;	after	tries;	not able
----------------------	-------	--------	----------

Feet front to back; after \_\_\_\_\_ tries; not able

Charleston step; after \_\_\_\_\_ tries; not able <u>Comment:</u>

#### COUNTING TIMED TO BOUNCE

Can count 1-10; after	tries; not able
Can count 10-1; after	_tries; not able
Can leave out four; after	tries; not able
Backwards after	tries; not able
Can clap on four; after	_tries; not able
Backwards after	tries; not able

Comment:

LEG MOVEMENTS/ARM CII Mirror arm circles with Feet together/apart; after	RCLE COMBOS tries; not able
Feet front to back; after	tries; not able
Charleston step; after	tries; not able
Parallel arm circles with	
Feet together/apart; after	tries; not able
Feet front to back; after	tries; not able
Charleston step; after	tries; not able

#### LEFT-RIGHT 90° TURNS WITH EXTRA BOUNCE Non-self direct 0 3 5 10 left/rights; after \_\_\_\_\_ tries; turns wrong way forgets extra bounce Self-direct 0 3 5 10 left/rights; after \_\_\_\_\_ tries; turns wrong way forgets extra bounce <u>Comment:</u>

#### CLAPPING TIMED TO BOUNCE

Clap every time; after \_\_\_\_\_ tries; not able

every other time after \_\_\_\_\_ tries; not able

every third time; after \_\_\_\_\_ tries; not able

Circle your observations:

Comment:

Can't: Doesn't understand even when shown; physically difficult or lack of self-correction, poor balance, anxiety Timing is good, early, late, speeds up, slows down, erratic. Can look you in the eye and clap; Able to answer simple questions (e.g., What's grade, teacher's name, phone #) <u>Comment:</u>

#### **CHART READING EXERCISES**

Circle descriptions that fit and write other comments or observations.

PIG AND DUCK PICTURE CHART

Able to read only \_\_\_\_ line; after \_\_\_\_\_ tries; not able

Able to read whole chart; after \_\_\_\_\_ tries; not able

Comment:

LETTER CHART

Able to go through one line; after \_\_\_\_\_ tries; not able Able to go through all chart; after \_\_\_\_\_ tries; not able Whole chart silent on vowels; after \_\_\_\_\_ tries; not able Comment:

# NUMBER CHARTS

Able to go through one line; after	_ tries; not able
Able to go through all chart; after	_tries; not able
Whole chart silent on black; after Comment:	tries; not able

#### DOUBLE DIGIT

Able to go through one line; after \_\_\_\_\_ tries; not able Able to go through all chart; after \_\_\_\_\_ tries; not able

Whole chart silent on black; after \_\_\_\_\_ tries; not able Comment:

#### WORDS, SENTENCES AND PARAGRAPHS

Highest level obtained: short word; longer word; two words; short sentence, long sentence, paragraph

For highest level, able to

read forward; after \_\_\_\_\_ t ries; not able

read backward: after \_\_\_\_\_ tries; not able

silent on vowels; after \_\_\_\_\_ tries; not able

silent vowels, clap spaces; after \_\_\_\_\_ tries; not able

First and last letter; word; sentence; paragraph

after \_\_\_\_\_ tries; not able

Comments:

#### **GENERAL OBSERVATIONS**

As you work with your child, notice habitual behaviors such as: efforting style, anxiety level, loses place, speeds-up or slows-down uncontrollably. Are instructions misunderstood; are they easily forgotten? Is there a problem at the start of an exercise or in keeping going? Does attention stay intact through the end of the task or does it wander just before the end? Does subsequent learning suffer because of frustration due to earlier failure?

Please circle any behavior that applies. Make an overall assessment of one to five. If you have an observation not listed, please write a description.

COMMUNICATION/UNDERSTANDING - how well does the child understand verbal directions; how many times do you have to repeat \_\_\_\_\_, needs physical demonstrate for instruction, child aware when not understanding, asks appropriate questions, can you understand him/her easily, does/doesn't understand the purpose of this work

POOR 1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_ 5 VERY GOOD

Comment:

ATTENTION - can't get attention focused at start of attempt; starts well and then loses steam; loses attention at the end; how many items in a row can s/he get correct\_\_\_\_\_

POOR 1 \_\_\_\_ 2 \_\_\_ 3 \_\_\_ 4 \_\_\_ 5 VERY GOOD

Comment:

EYES: look down, looks everywhere but straight ahead, vision engaged with task; movements better/worse with visual attention; vision tasks better/worse with movements,

POOR 1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_ 5 VERY GOOD

Comment:

CONSISTENCY: erratic, unpredictable performance; improves with practice, comes back stronger after break

POOR 1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_ 5 VERY GOOD <u>Comment:</u>

FLEXIBILITY: difficulty changing between tasks

POOR 1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_ 5 VERY GOOD <u>Comment:</u>

TIMING - does better at fast, slow speeds; slows-down, speeds-up uncontrollably, stop under stress, comes in too early, too late, upper speed limit, lower limit; one speed or is flexible; circle position not coordinated with jump (bottom not at bottom of bounce); circle speed not coordinated with jump

POOR 1 \_\_\_\_ 2 \_\_\_ 3 \_\_\_ 4 \_\_\_ 5 VERY GOOD

Comment:

DISTRACTIBILITY - is s/he distracted by own thoughts, other people, objects, emotions, can you make him/her lose his/her place, how easily

POOR 1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_ 5 VERY GOOD

Comment:

RECOVERY – doesn't notice errors; notices but can't recover; almost recovers; recovers but falls apart after; quickly, and effectively does s/he come back on target, can s/he recover the flow state, intention recovery

 POOR1\_\_\_2\_\_\_3\_\_\_4\_\_5 VERY GOOD

 <u>Comment:</u>

NEGATIVE EMOTION - anxiety, de-motivation, helplessness, frustration, anger, depression, denial, mistrust, avoidance, does frustration lead to subsequent reduction of ability

POOR1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_\_ 5 VERY GOOD <u>Comment:</u>

SELF-DIRECTION: does s/he initiate plans, strategies, speech, or movements

POOR1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_\_ 5 VERY GOOD <u>Comment:</u>

INTENTION SPAN - how long can s/he stay on one task; always wants to try something new before finishing POOR1 \_\_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_\_ 5 VERY GOOD Comment:

ENERGY AND STAMINA - mark energy level in first, second, third and fourth quarter of the session, can s/he recover and maintain or does s/he fatigue

POOR1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_\_ 5 VERY GOOD <u>Comment:</u>

FLOW -	reaches	fluency	& ease;	appears confid	dent, in co	ontrol and	enjoys the	experience?
POOR1	2	3	4	5 VERY G	OOD			
Commer	nt:							

MEMORY/MEMORIZATION: difficulty remembering instructions; leaves out items; loses maps; can remember only \_\_\_\_\_ items

POOR1 \_\_\_\_ 2 \_\_\_\_ 3 \_\_\_\_ 4 \_\_\_\_ 5 VERY GOOD <u>Comment:</u>



























guide sheet 1

(1-1)









BIG ATE GREAT FUNNY JUSTICE JUST ICE CALIFORNIA MISSISSIPPI THIS GIRL CAN JUMP WELL WHEN WILL WE HAVE FUN WE LOVE TO SAIL ON A SEA OF BLUE THE PLAYERS ATE A TASTY LUNCH IN WASHINGTON WITH A GOOD OLD FRIEND

#### OFNPVDTCH E BAKOEZL Υ **R** X E HWF MBKA Т Ρ **R T O S M** BXF C V Α V S X R D Ρ Ε Т 0 Ρ ΟΕΑ Ν С B Μ Κ F C G R D B Κ Ε Ρ Α Μ F P S Α R X D Μ G Т AXSOG U Μ Ρ B HOSNCTKUZ L

# NUMBER CHART

5	25	13	32	27	39
12	29	8	19	45	2
48	34	11	42	15	37
9	18	33	1	22	4
16	23	41	30	40	43
3	28	14	44	6	47
26	31	38	46	10	20
7	21	36	24	17	35

# BLACK AND WHITE NUMBER CHART



# **ARROW CHART INSTRUCTIONS**

General procedure: Say up (or down, right or left) while moving the arms in the up direction. The word is said and arms move simultaneously, not arms first and then say the direction or say and then move. Both occur simultaneously.

The arms move together with the palms facing in the direction of the named movement. When moving up, the palms face up. Palms face the floor on downward movement. Palms face left on left movements with the left hand positioned above the right. The opposite for movements to the right, palms right, right hand higher. Practice few times to be sure it's correct. Arms move as if under water, smoothly without jerking.

First, try it slowly. Then work for the best speed – as fast as possible without an error. Find the best speed and try to maintain a consistent or regular tempo. As the tasks are made more complex, the best speed should be slower to prevent error. It's not a speed contest but an awareness contest. The goal is to develop a sense of what you need to do to feel confidence and flow as you train your attention to learn fluent performance in the face of complexity. Doing this to a metronome beat, bouncing on a gym ball or jumping on a trampoline can aid this process but doing it with a regulated, self-generated tempo is the highest skill.

The arrows are to be read in sequence, one arrow at a time. Start from the upper-left arrow and proceed as in normal reading. Vary the chart by turning it bottom to top or sideways. The arrows can be read from the bottom-right in backwards order or up or down the columns vertically. Simplify the more difficult tasks by reducing the tempo or doing just one line. Work for automatic performance and to succeed three times in a row without error. Add speed as you get better.

#### TASKS

1) Say the same and move the same. Say and move up for up arrows.

2) Say and move opposite. Say and move down for up arrows.

3) Say the same but move opposite direction. Say up and move arms down

4) Say the opposite but move the same. Say down but move up.

5) Mixed instruction. Alternate by doing 3) on one line and 4) on the next. Alternate every 3) & 4) other or every third arrow.

Notice how attention comes and goes, how it feels when the instruction suddenly falls out of consciousness. It helps to repeat the instruction (say the same, move the opposite) before starting. The rule is to stop and start again at the beginning when an error is committed..



#### **CLAP-TURN SEQUENCES**

Impulsive people start to act before they are ready and without knowing what to do next. No ready-set-go, just go. No looking left and right before crossing. They lack the self-control to wait for the right time, then try to do everything all at once or just freeze in confusion. Are they anxious because they are impulsive or impulsive because they are anxious? We don't know, but off-balance, frustrated and vulnerable to negative emotions their performance and ability to learn new things suffers.

The Clap-Turn Sequences train self-direction (the opposite of impulsivity) along with directionality and working memory. Self-direction relates to motor planning, a sequence of ready-to-go, ready-to-flow future acts, performed with a purpose or goal. Anxiety distorts time and forces premature action. Self-diraction is a trainable brain function. Directionality (knowing left from right) should be instinctive, an automatic act performed correctly without having to think about it. Working memory is the capacity to have ready access to key information while executing an action plan without losing information necessary for successful outcome. Remembering the rules while playing the game, the grocery list, the chores or the directions while taking a journey. Knowing what to wear, what to bring, when to leave, where you are, where you've been, where you're going, how to change course etc., are fundamental to survival and success.

#### BASIC EXERCISE

This is best done on a trampoline of any size. It can also be done jumping on the ground, on a thick, bouncy foam or jump roping. The game is played as follows:

After a few warm-up bounces to get ready, the trainer says "left" (or "right") in a loud distinct voice. It must be called out precisely at the bottom of the bounce. The natural thing is to turn right away but don't turn yet. Instead, bounce one more time facing the original direction. (This is called the "control.") After the control bounce, turn 90° to face left and bounce in the new direction waiting for the next left or right to start the next sequence. The difficulty is to remember to turn after the control bounce rather than before.

The sequence is very specific:

1<sup>st</sup> BOUNCE- call out the command "left" precisely on the bounce;

2<sup>nd</sup> BOUNCE – one bounce without turning –

Then (between bounces 2 and 3) turn 90° to face to the left;

**3<sup>rd</sup> BOUNCE** still facing the new direction and continue bouncing until the next "right" (or another "left") begins the next sequence.

Some individuals need to be shown as well as told what to do. The left and right commands are given in random order. The trainer can make it easier by telling the upcoming direction in advance, reminding about the control bounce and saying, "Ready," just before giving the command. These supports are gradually withdrawn. The goal is to do ten correctly in a row without turning in the wrong direction or turning before rather than after the control bounce. Some people can't stop themselves from turning early. They don't realize that they made an error even when asked. Gradually they start to notice and soon learn to recover after flinching When they can learn to wait they've really learned an important skill.

The next step is for the jumper calls "left" or "right" to initiate the sequence. This is much more difficult because must choose which direction to say, decide when to say it, remember to speak clearly exactly on the rebound, and then to carry out the sequence.

The number of times in a row without error can be increased to twenty or more. Or you can make a contest to set new records. Remember to keep it fun and motivating by following stress-point principles.

#### **CLAP-TURN SEQUENCES (cont.)**

#### **ADVANCED EXERCISES**

TURN THE OPPOSITE – This is the same as above but now saying, "Left," means turning 90° to the right. This requires more attention by the trainer as well as the jumper.

CLAP-TURN' are much more difficult. Two new commands: "Clap-left," and "Clap-right," are added to the mix. "Clapleft," is said quickly as one word timed to the rebound as before. The jumper then takes the control jump, turns 90° left, and makes a single hand clap as they land. On the very next bounce following the clap the count is said. For example, on successive bounces: "Clapright", control jump, turn right, clap, "one" and continue on. The goal is ten correctly saying all of the possible directives: "Left," "Right," "Clapleft," or "Clap-right" in random order. What makes this difficult is that the jump following the turn sometimes requires a number and other times a clap. This takes self-control and self-awareness.

SPELL YOUR NAME - To make the task even more complex, the jumper spells their name (or another word) on the control bounce. The control bounce has so far been silent so saying a letter radically changes the timing and is really difficult. Remembering two sequences, counting and spelling, is also a big increase in working memory. Added onto the other sequences described so far: turning opposite, counting, clap-turn and spell your name (Raymond for me), would be like this: bounce, bounce --"Clapleft," "R," 90° right turn, Clap, and "One," on successive bounces. Then after a few bounces call, "Right," "a," 90° left turn, "Two." and so on until all the letters of Raymond are spelled. Some people can't learn this unless you force them to stop between each sequence to tell the trainer what their next command, letter, and number will be, and then rehearse it Other words can be also be tried such as sports terms or the names of other players on the team or famous sports figures.

CONTINUING MATH PROBLEM – Can be added at any of the levels described above but only after the jumper masters that level. Adding the continual math problem really strengthens their attention. It works as follows: A function (plus, minus, times, or divide by) followed by a number is called out several times during the game (e.g., "plus 3"). The patient proceeds through the left and right turn sequence as above and calls out the answer at the earliest convenient time. The number 5 is usually the start number so that if "plus 3" is called out, the answer is 8. This is a continuing problem. This means that 8 would now be the starting number for the next problem. Calling: "Minus 6," (from 8) would equal "2" and 2 would now be the starting number for the next problem. Following that: "Divide by 2," needs "1" as the answer and 1 is the start number for the next, and so on.

TIMING - When to give the problem is important because some points in the sequence are much easier and than at other times. It is much harder, for example, when calling the problem just as the player is calling "left" or "right" then just after they've made the turn. Don't always ask the problem at the same point in the process but keep the stress-point principle. Work for ten correct turns in a row.

SELF-DIRECTION - Players can also call out the math problem themselves and then answer it after some delay.

These jump-turn sequences were developed as I worked with very advanced piano students. They are very difficult even for them. I use it for all of my patients and take them to their highest level set it aside and come back to it several sessions later to see how much they've retained and how easy it is to get them back to speed and then try to take them to more demanding levels. Any task can be made more and more complex by adding other complications depending upon the jumper's ability and the trainer's imagination.

Relax. Keep breathing. Don't stare.
This exercise teaches anticipation doing one thing while preparing for the next. It is best to start with a helper who names the objects. The goal is to always pause for a second before moving your eyes, to move to the correct target and to not move the eyes while thinking of the next target. A partner can also check for accuracy and timing. The next level of difficulty is self-direction the trainee chooses an object, names it, pauses and then moves directly there. The player must learn to tell when a mistake was made and what the mistake was (moved to soon, took eye off, went to wrong place).
<ol> <li>Look at the star in the center of the page.</li> <li>Without moving your eyes, choose one of the animals (eg., fish). Say it.</li> <li>Pause one second, then move your eyes directly to the fish.</li> <li>Without moving your eyes (keep looking at the fish), name a different animal.</li> <li>Pause before moving your eyes to that animal.</li> <li>Pause before moving your eyes to that animal.</li> <li>Rontinue. The goal is to get ten in a row without error. If this is too many, aim for two in a row, then five and more. As the pressure mounts, so does the anxiety and the chance of impulsive loss of controlmoving too soon; move before naming; go to the wrong object; move eye while waiting for next instruction.</li> <li>Move to the animal in the opposite direction to the one you name go to the fish when you say frog, for example.</li> </ol>
Don't forget to breathe and pause for a second before moving your eyes. Work for ease and total control.
<ul> <li>More complex exercises</li> <li>• What color is a crow?" or "5 + 2 = ?" What day of the week is today." The point at which the question can be during the move, in the pause between the naming and the moving, as the object is being named, during the mental choosing process. Repeat several times during the exercise.</li> </ul>
• Imagine a new map, e.g., up, down, left and right. Say "up", for example, pause for a second then move to the up position. You can also use: north, south, east and west; numbers; fruits; vegetables; boy or girl names;
• Move opposite for one set and the not opposite for the other. For instance, say fish and move to frog, but say right and move to right (bear).
• Rotate one set clockwise by a quarter of a turn. This means fish will be where horse was originally. Now move to new positions of the figures. Try this imagining the rotation: imagine the chart rotated half a turn (imagine the fish is now where the frog is and the bear is where the horse is). Move to the imagined location.
•Try several sets at once by imagining two or all three charts superimposed, One move normal, another move opposite, one rotated 90°, etc.
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SELF-DIRECTION CHART





**SELF-DIRECTION CHART 1** 

