IM Certification & Coaching Provider Training Manual

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WELCOME

Discover the scientific evidence behind IM & learn hands-on practical application for addressing critical brain timing skills in order to improve outcomes in the areas of cognitive, communicative, motor, sensory, and academic performance in conditions like ADHD, Autism, Dyslexia, Stroke and TBI.

The ability to synchronize motor movements with a steady auditory beat is fundamental for academic performance & the development and rehabilitation of cognitive, communicative, sensory, & motor skills. Published studies have consistently demonstrated the direct link between auditory-motor synchronization and temporal processing, or the coordinated communication between critical neural networks involved in attention, auditory & phonological processing, reading fluency & comprehension, cognitive speed, working memory, executive functions, and fine/gross motor coordination. Many of these studies have implicated poor timing & rhythm in individuals with ADHD, Autism, Dyslexia, Auditory Processing Disorder, Aphasia, Parkinson's, Schizophrenia, and other neurological conditions. Interactive Metronome® (IM) is a highly effective and engaging assessment & training tool that uniquely combines the concept of a musical metronome with a computer-based, patented software program to precisely measure & train a person's timing & rhythm in order to improve performance at home, school, work & play.

Join us for this stimulating on-demand certification course that includes an in-depth discussion of the evidence and rationale for use of IM as it relates to students and patients encountered in academic and therapy settings. Participants will complete 8 certification coaching modules delivered in rich video format with supplemental readings and direct, hands-on training for use of the Interactive Metronome® technology. Completion of this course leads to full Interactive Metronome® Certification and contact hours (pending successful completion of a written exam following each module).

TARGET AUDIENCE:

This course welcomes the following professionals:

- Speech and Language Pathologist
- Speech and Language Pathology Asst
- Audiologist
- Occupational Therapist
- Certified Occupational Therapy Asst
- Educator
- Physical Therapist
- Physical Therapy Asst
- Athletic Trainer
- Licensed Medical, Rehabilitation or Mental Health Professional
- Music Therapist

INSTRUCTIONAL LEVEL:

Introductory

LEARNING OUTCOMES:

Upon completion of this course, participants will be able to:

- Discuss the relevance of timing & rhythm as it pertains to functional abilities in home, work, school, and social settings;
- Cite published research that provides evidence for the efficacy of training timing & rhythm to improve cognitive, communicative, behavioral, sensory, motor, and academic performance;
- Appropriately select students and patients for Interactive Metronome® assessment/training;
- Competently administer and interpret IM assessments in order to develop individualized IM training plans;
- Develop measurable goals for IM training for students and patients encountered in academic and therapy settings;
- Execute IM training with appropriate selection of software settings and cues;
- Measure progress & academic achievement through appropriate interpretation of IM assessment & training data and use of other commercially available standardized tests.

*NOTE: *This course covers information that pertains to licensed therapists and therapy assistants. COTA and PTA professionals must practice IM under the supervision of a licensed OT or PT.*

SPECIFIC LEARNING OUTCOMES FOR SPEECH-LANGUAGE PATHOLOGISTS AND AUDIOLOGISTS:

Upon completion of this course, participants will be able to:

- Discuss the relevance of timing & rhythm as it pertains to functional cognitive & communicative abilities in home, work, school, and social settings;
- Cite published research that provides evidence for the efficacy of training timing & rhythm to improve cognitive, communicative, behavioral, sensory, motor, and academic performance;

- Appropriately select students and patients for Interactive Metronome® assessment/training;
- Competently administer and interpret IM assessments in order to develop individualized IM training plans for the treatment of speech/language and cognitive/communicative disorders;
- Develop measurable goals for IM training for students and patients encountered in academic and therapy settings;
- Execute IM training with appropriate selection of software settings and cues;
- Measure progress & academic achievement through appropriate interpretation of IM assessment & training data and use of other commercially available standardized tests.

*NOTE: *This course covers information that pertains to licensed therapists and therapy assistants. SLPA professionals must practice IM under the supervision of a licensed SLP.*

INSTRUCTIONAL METHODS:

LECTURE ON STREAMING VIDEO WITH PPT PRESENTATION, DEMONSTRATION, CASE STUDY, PHOTOS, VIDEOS, LABS WITH HANDS-ON PRACTICE

CEUS OFFERED:

0.85 AOTA (OT/COTA) – Equivalent to 10.625 NBCOT PDUs

PT/PTA & Other Disciplines Not Listed Above: If your discipline or state is not listed above, you may submit paperwork to your state board or association for CEUs if they allow you to do so. Please check with your state board/association prior to registering for this course.

This is not a co-sponsored or cooperative course offering. Interactive Metronome®, Inc. is the organization responsible for creating the content & awarding AOTA CEUs.

INSTRUCTOR:

April Christopherson, OTR/L has been an Occupational Therapist for almost 20 years and has worked with diverse populations in a variety of settings – including home health, private clinic and in-patient rehabilitation. She is the owner of MaxAchieve, Inc. in Colorado Springs, CO where her current clientele range from pediatrics to adults to high performance athletes, both stateside and internationally. She believes in a whole, team approach to the client – including various medical professionals and therapists plus the use of functional neurology and metabolic/nutrition counseling. She also works exclusively with the Shandy Clinic in Colorado Springs, CO providing solutions to families with children suffering from Autism, Asperger's, ADHD, and other diagnoses. April has worked as a legal consultant and as an expert witness throughout the United States. April was granted her degrees in Occupational Therapy and Psychology from St Ambrose University in Davenport, IA in 1991.

Instructor Financial Disclosure(s): April is the author of course materials that focus on the clinical application of Interactive Metronome® technology, for which she has received honoraria from Interactive Metronome®, Inc. She does not receive royalties or any other form of compensation for the continued publication and use of educational materials she has authored. April is also an instructor for Interactive Metronome®, for which she receives a fee for teaching each course and reimbursement of travel expenses from Interactive Metronome®, Inc. April does not sell or receive compensation for the sale of Interactive Metronome® products.

Instructor Nonfinancial Disclosure(s): April periodically contributes blog posts to www.interactivemetronome.com that are clinical in nature. She does not receive compensation for this. April uses the Interactive Metronome® in clinical practice at MaxAchieve, Inc.

COURSE CONTENT DISCLOSURE

The Interactive Metronome®, Inc. has developed and patented a licensed technology trademarked as the Interactive Metronome®. (U.S. Patents #4,919,030; #5,529,498; #5,743,744; #6,719,690; other U.S. and foreign patents pending) Interactive Metronome®, Inc. is the sole source of the following products: Interactive Metronome®, Gait Mate® and IM Home. Because there are no other like-kind products available, course offerings will only cover information that pertains to the effective and safe use of the above-named products.

APPROVED PROVIDER of CONTINUING EDUCATION by The American Occupational Therapy Association, Inc.

Interactive Metronome®, Inc is an AOTA Approved Provider (#4683). This introductory course is offered for 8.5 contact hours/ 0.85 AOTA CEUs (Classification Codes - Domain of OT-CLIENT FACTORS; Domain of OT-ACTIVITY DEMANDS; OT Process-INTERVENTION). The assignment of AOTA CEUs does not imply endorsement of specific course content, products, or clinical procedures by AOTA.

PLEASE CONTACT US WITH ANY QUESTIONS, COMMENTS, OR CONCERNS THROUGHOUT YOUR CERTIFICATION:

Support Hours: Monday through Friday , 9:00 a.m. - 5:00 p.m. EST

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ICONS

Throughout the book, you will find icons representing various kinds of information. These icons serve as an at-a-glance reminder of their associated term.

START:
The start of a section

STOP:
The end of a section

TIME:
The amount of time it will take you to complete a section

WATCH THIS:
Indicates the beginning of a section you need to watch

READ THIS:
Indicates the beginning of a section you need to read

DO THIS:
Indicates the beginning of a hands-on portion

POST TEST:
Indicates that you must take the post test in order to move on

MODULE 1
THE IMPORTANCE OF TIMING & RHYTHM: AN OVERVIEW OF THE EVIDENCE

70 MINUTES

LEARNING OBJECTIVES:

- Overview of Interactive Metronome® technology
- Importance of Timing & Rhythm
- Review of IM & Supporting Research Studies

LOG YOUR ACTIVITY TIME HERE!
In each Module evaluation, you will be asked to log the amount of time it takes you to complete each course activity. This information will be used to ensure that the course CEUs have been calculated accurately. Please use this space provided to log your start time.

VIDEO START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 56 MINUTES

START

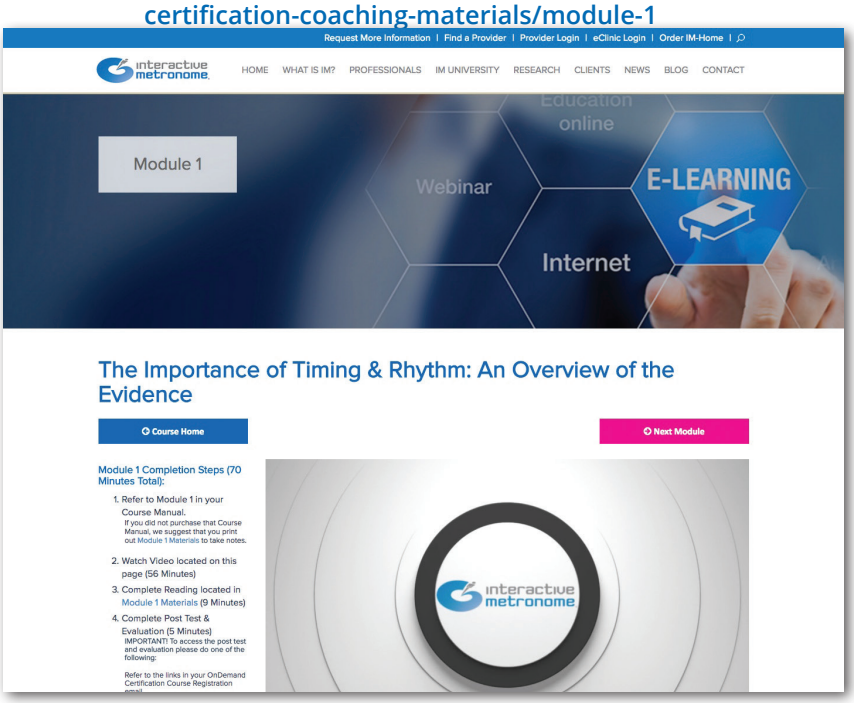
GATHER NEEDED EQUIPMENT & MATERIALS

You will need the following to complete Module 1:

- Computer with Internet connection
- Pencil to take notes

WATCH THE VIDEO
56 minutes

Access the Module video here:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-1



NOTES

IM Has Three Goals

1. Improve neural timing & decrease neural timing variability (jitter) that impacts speech, language, cognitive, motor, & academic performance
2. Build more efficient & synchronized connections between neural networks
3. Increase the brain's efficiency, performance & ability to benefit more from other rehabilitation & academic interventions

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Who Benefits from IM?

- Attention Deficit/Hyperactivity Disorder
- Autism Spectrum Disorders
- Auditory Processing Disorder
- Sensory Processing Disorder
- Language-Learning Disorders
- Dyslexia and Other Reading Disorders
- Executive Function Disorder
- Cerebral Palsy
- Stroke
- Traumatic Brain Injury/Concussion
- Brain Tumor
- Parkinson's
- Multiple Sclerosis
- Sports & Performance Enhancement

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PRECAUTIONS

SEIZURE

- Stress, fatigue, & stimuli that are auditory, visual, vestibular, &/or rhythmical can elicit seizures in individuals with epilepsy.
- Avoid known triggers if using IM with an individual who has epilepsy, & proceed only with physician's approval.
- There are no documented cases of IM contributing to seizures in epileptics, but it is possible if seizures are not medically controlled.

IMPLANTED PACEMAKER & DEFIBRILLATOR

- When worn on the head, headphones **do not pose a health risk** to individuals with implanted pacemakers & defibrillators. All headphones (wired and wireless) contain a magnetic substance called neodymium for the purpose of sound reproduction which may cause electromagnetic interference with these implanted devices **if the headphones are placed within 3 centimeters of the surface of the chest.** Keeping the headphones at least 3 centimeters away from the surface of chest is considered safe, at which point experts say there is *no longer any electromagnetic interference*. Individuals with implanted pacemakers & defibrillators should avoid draping headphones around the neck to avoid direct contact with the chest.

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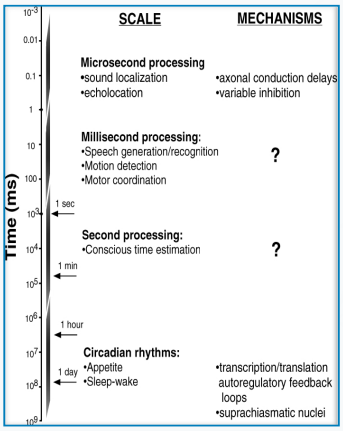
NOTES

Neural Synchronization



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Rhythm Lab

Video

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Rhythm Lab

- **Metronome Beat – regulated tempo**
- **Base Beat – "Home Beat" of the music**
- **Polyrhythms**

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NOTES

Why Is This Important?

SCIENTIFIC AMERICAN

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"Elements of music have been used effectively….for various therapeutic needs. These elements include melody, harmony, tempo, dynamics, timbre, form, and rhythm. The organizing factor in all music is rhythm; therefore, rhythm serves as a timekeeper in the therapeutic application of music for motor rehabilitation goals and is foundational to auditory-motor synchronization. Auditory rhythmic cueing refers to an auditory sound stimulus with a fixed inter stimulus interval (such as the output from a metronome)."

-Hardy and LaGasse

From, "Rhythm, movement, and autism: using rhythmic rehabilitation research as a model for autism.

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Auditory-Motor Synchronization **Impacts Auditory Processing, Language & Motor Skills (Tierney & Kraus, 2013)**

- Ability to tap in sync (*to the millisecond*) with an auditory beat is directly correlated to consistency of auditory brainstem response to sound, ability to read, & phonological awareness
- Ability to tap in sync with an auditory beat directly correlated with degree of neural jitter (noise in the system)
  - more trouble synchronizing = greater neural jitter
  - less trouble synchronizing = less neural jitter
- Children with speech-language-reading disorders have co-occurring fine & gross motor impairments & much more difficulty with timed, rhythmic mvmt compared to those that develop speech-language-reading normally (*trouble tapping in sync with the auditory beat*)
- Shared neural pathways for motor and auditory processing

www.brainvolts.northwestern.edu

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NOTES

Rhythmicity and Brain Function

- **Brain areas engaged in music perception and production overlap with non-musical networks**
  (Thaut, 2005; Patel 2011)
- **Auditory rhythm activates motor areas of the brain including the pre-motor cortex, supplementary motor areas, pre-supplementary motor areas, and the lateral cortex**
  (Bengtsson, et al 2009)
- **Rhythmicity plays a critical part in learning, development, and performance.**
  (Thaut et al, 1999a, 2009; Molinari et al 2005)
- **Rhythmic synchronization is an effective tool for rehabilitation for patients with Parkinson's disease** (Miller et al., 1996; McIntosh et al., 1997; Rochester et al., 2009), **TBI** (Hurt et al., 1998; Kenyon and Thaut, 2000), **stroke** (Roerdink et al., 2007, 2009; Hayden et al, 2009), **and Huntington's disease** (Thaut et al., 1999b)

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IM DEMO

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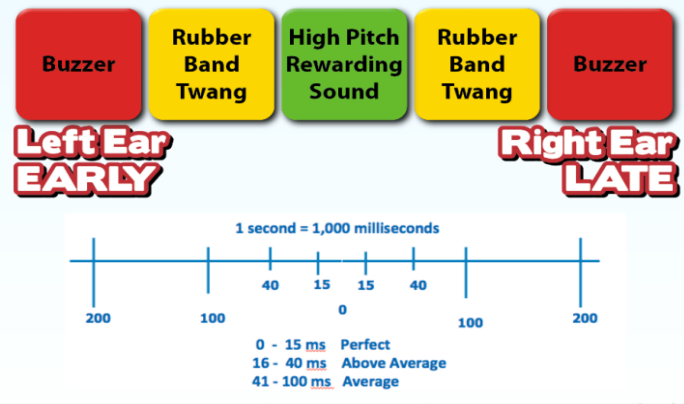

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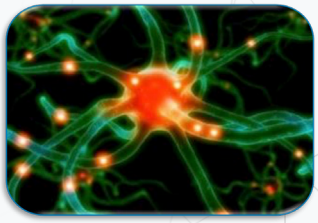
NOTES

What just happened?

- **Five neurological functions exercised at once:**
  1. Controlled Attention & Concentration
  2. Working Memory
  3. Sensory Integration
  4. Motor Planning/Sequencing for Coordination & Functional Motor Control
  5. Synchronization of timing in multiple brain regions for increased neural efficiency & performance



- **Neuroplasticity…"What is fired together, is wired together"**

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IM vs Gaming/Music/ Brain Fitness

IM

- **Research supports the use of IM to improve timing**
- **Measurable**
- **Objective**
- **Real Time Feedback**
- **High Repetitions**

Gaming/Music/ Brain Fitness

- **Video games don't measure timing**
- **Feedback is not given to the ms timing range**
- **Improvements are game specific only**
- **Little to no bilateral or lower extremity work**
- **Low repetitions**

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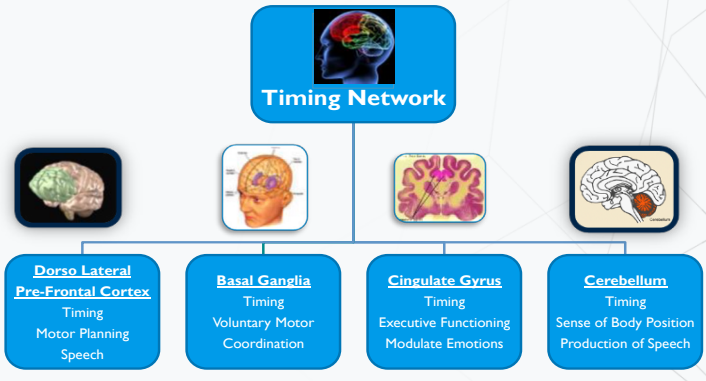
IM Training Synchronizes Neural Networks



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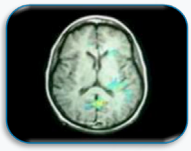
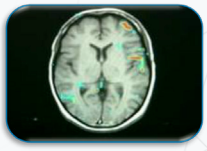
NOTES

IM Neuro-Imaging Study

Presented at 65th Annual American PM&R Conference

Alpiner (2004). Results from this pilot fMRI study show IM directly promotes neural efficiency, with bilateral activitation of multiple parts of the neuro-network. *Repetitive auditory-motor training, specifically IM, holds promise for neuroplasticity of higher and lower brain centers.*





CINGULATE GYRUS

Allows Shifting of Attention
Cognitive Flexibility

BASAL GANGLIA

Integrates Thought and Movement

MEDIAL BRAINSTEM

Neuro-Motor Pipeline

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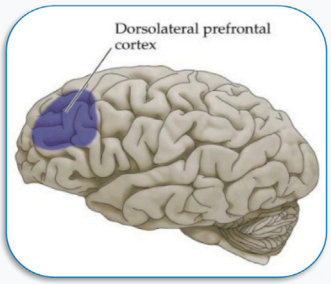
Dorso-Lateral Pre-Frontal Cortex



- **Motor planning**
- **Rich connections to basal ganglia**
  (Hale & Fiorello, 2004; McNab & Klingberg, 2008)
- **Temporal aspects of speech, such as rapidly changing acoustic information**
  (Schirmer, 2004)
- **Controlled executive attention and working memory**
  (Lewis & Miall, 2006; McNab & Klingberg, 2008)
- **Uniquely oriented to time**
  (Buhusi & Meck, 2005; Huey et al., 2006)

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Basal Ganglia

- **Goal-directed voluntary movement**
  (Buhusi & Meck, 2005)
- **Motor planning, sensory performance, and sensorimotor integration**
  (Mauk & Buonomano, 2004)
- **Working memory**
  (McNab & Klingberg, 2008)
- **Controlled executive attention**
  (McNab & Klingberg, 2008)
- **Posture, tone, motor activity, response coordination, sequencing, control of ongoing movement**
  (Hale & Fiorello, 2004; McNab & Klingberg, 2008; Mauk & Buonomano, 2004; Middleton & Strick, 2000)
- **Temporal aspects of speech**
  (Schirmer, 2004)
- **Rich connections to the cerebellum**

Evidence is implicating the role of the basal ganglia in mental-timing functions.
(Buonoman & Karmarkar, 2002; Buhusi & Meck, 2005; Janata & Grafton, 2003; Lewis & Miall, 2006; Mauk & Buonomano, 2004; Nobre & O'Reilly, 2004; Peretz & Zatorre, 2005)

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NOTES

Cingulate Gyrus

- **Responsible for executive, evaluative, cognitive, & emotional functioning**
  (Bush et al, 2000)
- **Error detection, anticipation of tasks, motivation, and modulation of emotional responses**
  (Bush *et al.*, 2000; Nieuwenhuis *et al.*, 2001; Posner & DiGirolamo, 1998)
- **Processing top-down and bottom-up stimuli and assigning appropriate control to other areas of the brain**
  (Posner & DiGirolamo, 1998)
- **Especially involved when effort is needed to carry out a task, such as in early learning and problem solving**
  (Allman *et al.*, 2001)
- **Connections to prefrontal, parietal, and motor cortex, as well as frontal eye fields**
  (Posner & DiGirolamo, 1998)

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Cerebellum

- **Sense of body position (balance, posture, eye movement)**
  (Hale & Fiorello, 2004)
- **Coordinated motor acquisition & temporal aspects of speech**
  (Debaere et al., 2001; Mauk & Buonomano, 2004; Schirmer, 2004)
- **Involved in timing**
  (Buonoman & Karmarkar, 2002; Bushi & Meck, 2005; Lewis & Miall, 2006; Mauk & Buonomano, 2004; Ivry, 1993; Janata & Grafton, 2003; Nobre & O'Reilly, 2004; Peretz & Zatorre, 2005; Rapoport et al., 2000)

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Timing In Child Development

Kuhlman, K. & Schweinhart, L.J. (1999)

- **n = 585** (ages 4-11)
- **Significant correlation between IM timing and academic performance**
  - Reading, Mathematics
  - Oral/written language
  - Attention
  - Motor coordination and performance

HIGHSCOPE®

- **Timing was better:**
  - As children age
  - If achieving academically (**California Achievement Test**)
  - If taking dance & musical instrument training
  - If attentive in class
- **Timing was deficient:**
  - If required special education
  - If not attentive in class

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NOTES

SPEECH & LANGUAGE

Video

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AUTISM

Wan et al. (2010)

White matter tracts involved in
- language and speech processing
- integration of auditory and motor function

Arcuate fasciculus connects the frontal motor coordinating and planning centers with the posterior temporal comprehension and auditory feedback regions.

Stevenson et al. (2014)

Trouble integrating simultaneous auditory & visual sensory information

This timing deficit hampers development of social, communication & language skills.

Dinstein et al. (2011)

Autism has been hypothesized to arise from the development of abnormal neural networks that exhibit irregular synaptic connectivity and abnormal neural synchronization.

Toddlers with autism exhibited significantly weaker interhemispheric synchronization (i.e., weak ''functional connectivity'' across the two hemispheres)

Disrupted cortical synchronization appears to be a notable characteristic of autism neurophysiology that is evident at very early stages of autism development.

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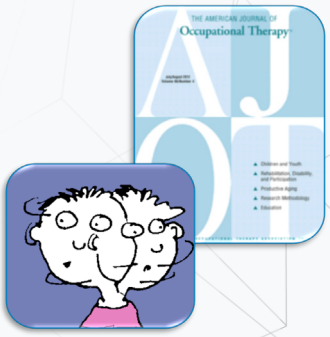
ADHD

Shaffer, R.J., Jacokes, L.E., Cassily, J.F., Greenspan, S.I., Tuchman, R.F., & Stemmer Jr., P.J. (2001). Effect of Interactive Metronome rhythmicity training on children with ADHD. American Journal of Occupational Therapy, 55(2), 155-162.

- **n = 56** *(boys, 6-12 yrs)*
- **Randomly assigned to:**
  - *Control (n=18)* **– recess**
  - *Placebo control (n=19)* **– videogames**
  - *Experimental (n=19)* **– 15 1-hour IM sessions**



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NOTES

ADHD

- **Improvements**
  - Attention to task
  - Processing speed & response time
  - Attaching meaning to language
  - Decoding for reading comprehension
  - Sensory processing (auditory, tactile, social, emotional)
  - Reduced impulsive & aggressive behavior
- **58 tests/subtests**
  - Attention & concentration
  - Clinical functioning
  - Sensory & motor functioning
  - Academic & cognitive skills
- **Interactive Metronome group**
  - Statistically significant improvements on 53 of 58 tests ($p \leq 0.0001\%$)

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SENSORY PROCESSING DISORDER

Video

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Auditory Processing Pilot Study

Etra (2006)

- **n = 8**
- **IM training x 15 hrs**
- **Statistically significant gains** *(SCAN-C):*
  1. Filtered Words
  2. Auditory Figure-Ground
  3. Dichotic Listening: Competing Words
  4. Dichotic Listening: Competing Sentences
- **Greatest improvement in dichotic listening.**
  - "Strongly suggests IM affects auditory processing disorders by influencing neurological organization."

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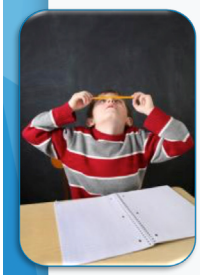
NOTES

Brian



TEST OF AUDITORY PROCESSING SKILLS	PRE	POST
OVERALL SCORES		
Phonological Skills	55th	86th
Memory	50th	63rd
Cohesion	47th	70th

TEST OF EVERYDAY ATTENTION IN CHILDREN	PRE	POST
Sustained-Divided Attention	> 0.2nd	96.7 – 98.5th
Selective-Focused Attention	12.2 – 20.2nd	56.6 – 69.2nd
Sustained Attention	0.2 – 0.6th	30.9 – 43.4th

SOCIAL EMOTIONAL EVALUATION	PRE	POST
RECEPTIVE SCORES		
Identifying Emotional Reactions	20	26
Understanding Social Gaffes	2	20
Understanding Conflicting Messages	6	10
RECEPTIVE PERCENTILE CHANGE	5th	90th
EXPRESSIVE SCORES		
Identifying Emotional Reactions	20	28
Understanding Social Gaffes	2	20
Understanding Conflicting Messages	6	10
EXPRESSIVE PERCENTILE CHANGE	10th	95th

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READING

Incorporation of feedback during beat synchronization is an index of neural maturation and reading skills.
Kraus et al., 2016

- 74 adolescents clapped in sync with an auditory beat (using IM) with and without visual feedback for timing.
- They underwent tests of cognitive and literacy skills.
  - Verbal intelligence via Wechsler Abbreviated Scale of Intelligence (WASI)
  - Working memory via Woodcock Johnson III Test of Cognitive Abilities (WJ – III)
  - Phonological Awareness & Phonological Memory via Comprehensive Test of Phonological Processing (CTOPP)
  - Reading via Woodcock Johnson Test of Achievement (WJ – III)
  - Reading Fluency via Test of Word Reading Efficiency – 2nd Edition (TOWRE-2)
- The brain's electric activity was measured at rest and in response to sound, with scalp electrodes.
  - Cortical Speech Processing via amplitude & latency of cortical auditory evoked potential (CAEP) components elicited by speech sounds
  - Spectral power of intrinsic neural oscillatory power in the gamma frequency band (31-50 Hz) at rest via continuous EEG.

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READING

- Adolescents who could clap more in sync with the beat (to the millisecond) with & without visual feedback had more advanced language skills in the areas of
  - Working memory
  - Phonological processing
  - Reading
- Adolescents who did a superior job at clapping in sync with the beat when receiving visual feedback for timing demonstrated a more mature neural profile on EEG (for resting neural activity and for neural activity in response to speech sounds)
- "These findings show that the ability to incorporate visual feedback while keeping a beat systematically aligns with brain maturity. It stands to reason, then, that training the brain to exploit multisensory rhythm processing could speed up brain maturation and bolster cognitive health."

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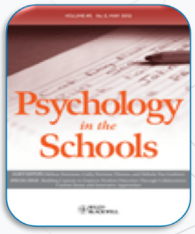
NOTES

READING

McGrew, KS, Taub, G & Keith, TZ (2007). Improvements in interval time tracking and effects on reading achievement. Psychology in the Schools, 44(8), 849-863.

- **Controlled studies**
  - Elementary **n = 86**
  - High School **n = 283**
- **18 Interactive Metronome training sessions (4 weeks)**
- **Elementary:**
  - ~ 2SD ↑ in timing
  - Most gains seen in those who had very poor timing to begin with
  - 18-20% growth in critical pre-reading skills (phonics, phonological awareness, & fluency)
- **High School:**
  - 7-10% growth in reading (rate, fluency, comprehension)
  - Achievement growth beyond typical for age group



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READING

Based upon numerous peer reviewed studies examining the role of timing & rhythm and cognitive performance, the authors concluded Interactive Metronome must be increasing:

- Efficiency of working memory
- Cognitive processing speed & efficiency
- Executive functions, especially executive-controlled attention (FOCUS) & ability to tune-out distractions
- Self-monitoring & self-regulation (META-COGNITION)

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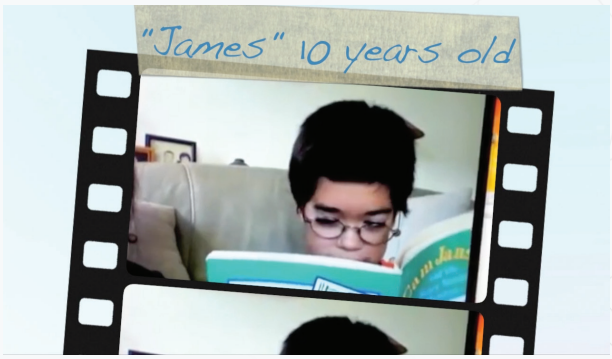
READING



Video

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NOTES

READING

Ritter, M., Colson, K.A., & Park, J. (2012). Reading Intervention Using Interactive Metronome in Children With Language and Reading Impairment: A Preliminary Investigation. *Communication Disorders Quarterly*, Published online September 28, 2012.

- **Controlled study, n = 49** *(7 – 11 yrs)*
  - Concurrent oral & written language impairments
  - Reading disability
  - Lower to middle class SES
- **Control -** Reading Intervention 4 hours per day, 4 times per week for 4 weeks.
- **Experimental -** 15 min of IM training per session prior to reading intervention
- **While both groups demonstrated improvement, gains in the IM group were more substantial (to a level of statistical significance).**
- **Overall IM group improved 2-4 times over the Control Group.**

Measure	Improvement over Control Group
Reading Naturally	3.67 times
DIBELS-6 (literacy skills)	3.29 times
GORT 4 – rate	4.31 times
GORT 4 – fluency	1.8 times
GORT 4 – comprehension	2.6 times

"The findings of this study are relevant to others who are working to improve the oral and written language skills and academic achievement of children, regardless of their clinical diagnosis."

BAYLOR UNIVERSITY

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TRAUMATIC BRAIN INJURY

- **Blind randomized, controlled study**
- **n=46 active duty soldiers with mild-moderate blast-related TBI**
- **Control: Treatment as Usual (OT, PT, ST)**
- **Experimental: Treatment as Usual (OT, PT, ST) plus 15 sessions of Interactive Metronome treatment @ frequency of 3 sessions per week.**

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DVBIC Defense and Veterans Brain Injury Center

TRAUMATIC BRAIN INJURY PUBLISHED RESULTS

ASSESSMENT	SKILLS MEASURED	OUTCOME
DKEFS: Color Word Interference	Attention, response inhibition	Cohen's d= .804 LARGE p=.0001
RBANS Attention Index	Auditory attention, auditory memory & processing speed	Cohen's d= .511 LARGE p=.004
RBANS Immediate Memory Index	Auditory attention, auditory memory & processing speed	Cohen's d= .768 LARGE p=.0001
RBANS Language Index	Confrontation naming, verbal fluency, & processing speed	Cohen's d= .349 MED p=.0001
WAIS-IV Symbol Search	Processing speed, short-term visual memory, visual-motor coordination, cognitive flexibility, visual discrimination, speed of mental operations, & psychomotor speed	Cohen's d= 0.478 MED p=.0001
WAIS-IV Coding	Visual attention, processing speed, short-term visual memory, visual perception, visual scanning, visual – motor coordination, working memory, & encoding	Cohen's d= ..630 LARGE p=.0001
WAIS-IV Digits Sequencing	Auditory attention, working memory, cognitive flexibility, rote memory & learning.	Cohen's d= .588 LARGE p=.021
DKEFS Trails: Motor Speed	Motor speed, executive functions	Cohen's d= .790 LARGE p=.015
DKEFS Trails: Letter Sequencing	Processing speed, working memory, and executive functions	Cohen's d= .626 LARGE p=.0001

Group that received IM + TAU outperformed the control group that received only TAU on 21 of 26 assessments (p=.0001)

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NOTES

Electrocortical Assessment

- 64 channels of EEG
- Capturing resting state and event- related activity
- Event-related potentials only captured when the brain is firing synchronously

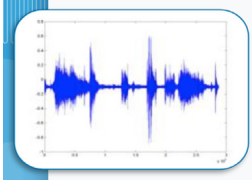
Special thanks to Mark Sebes, Physical Therapy Assistant

IM physiologically changed the brain

Pre and post EEG scans showed IM increased activation and coordination in both the

Emotions, Reasoning, Attention, & Impulsivity

Movement, Orientation, Recognition, Perception of Stimuli, & Sensory Integration

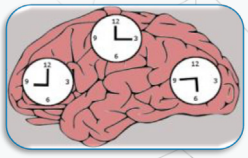


APHASIA

"…fundamental problems in processing the temporal form or microstructure of sounds characterized by rapidly changing onset dynamics."
Stefanatos et al (2007)

"…auditory timing deficits may account, at least partially, for impairments in speech processing."
Sidiropoulos et al (2010)

"…co-occurrence of a deficit in fundamental auditory processing of temporal and spectro-temporal non-verbal stimuli in Wernicke' s Aphasia that may contribute to the auditory language comprehension impairment."
Robson et al (2012)



Interactive Metronome & Motor Learning

- **Four factors of motor learning addressed by Interactive Metronome are:**
  1. Early cognitive engagement
  2. Repetitive practice
  3. Practice of specific functional motor skills
  4. Feedback for millisecond timing to facilitate motor learning

NOTES

HEMIPLEGIA

Beckelhimer, S.C., Dalton, A.E., Richter, C.A., Hermann, V., & Page, S.J. (2011) Computer-based rhythm and timing training in severe, stroke-induced arm hemiparesis. American Journal of Occupational Therapy, 65, 96-100.

UNIVERSITY OF Cincinnati

- **Pilot study: n=2**
  - Ischemic stroke with R hemiplegia x 23 yrs prior
  - Ischemic stroke with L hemiplegia x 2 yrs prior
- **Substantial results:**
  - ↑ ability to grasp, pronate, and supinate arm & hand
  - ↑ ability to perform ADLs
  - ↑ self-efficacy
  - ↑ self-report of quality of life

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The Effectiveness of the IM with Healthy Aging Adults

Dr. Leonard Trujillo, OTR/L, Eastern Carolina University
Presented at 2016 AOTA Conference

- **N= 15, Healthy Aging adults (60 – 80 yrs.)**
- **Training: 18 sessions**
- **30 – 45 minutes per session**
  - **Never exceeding 275 reps per task**
- **All participants only performed upper extremity exercises and were seated during training for safety precautions**

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Results

Assessment	Overall Improvement
Modified IM Long Form (seated, all upper extremity exercises)	77%
Short Form	31%
Math Fluency (WJII)	23%
Reading Fluency (WJII)	12%
Decision Speed (WJII)	5%
Visual Matching (WJII)	4%
The d2 Test of Attention • Implicates improvements in the ability to stay focused and attend to more difficult tasks and task over time.	16%
Four Step Square Test • Implicates improvements in balance, sped, and confidence in independent ambulation and other daily tasks. This includes ability to dress and bath with confidence.	88% *
The 9 Hole Peg Test • Implicates improvements in fine motor, dexterity, sense of accuracy and confidence in independence in other daily tasks. This includes ability to dress, eat and perform fine motor tasks with confidence.	3%

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NOTES

Significance of this study

- **Most notable gain: Four Step Square Test improved 88%**
- **Implicates improvement in:**
  - **Balance**
  - **Speed**
  - **Confidence with Independent Ambulation**
- **This has significant meaning for adults who are at risk of falling and is a substantial outcome considering all participants only performed upper extremity tasks during training and were seated**

These participants did not perform lower extremity IM exercises nor did they work on standing balance or ambulation, yet a HUGE effect size was seen!

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PARKINSON'S

Daniel Togasaki, MD, PhD

- **n=36 individuals with mild-moderate Parkinson's**
  - **Control Group:** rhythmic movement and clapping to music, metronome, or playing videogames
  - **Experimental:** Interactive Metronome training x 20 hours (rhythmic movement + feedback for timing)
  - "In this controlled study computer directed rhythmic movement training was found to improve the motor signs of parkinsonism."

cause cure cure

The Parkinson's Institute and Clinical Center

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Ongoing IM Research

- **University of New Mexico & University of Washington:** $2M NIH grant to study effects of IM training on cognitive & motor skills in Native Americans with cerebrovascular disease
- **Northwestern University:** Biological underpinnings of IM & link between neural synchronization & language-based literacy skills
- **Department of Defense (DVBIC):** Larger scale replication study on soldiers with mild-moderate blast-related TBI
- **Pittsburgh VA:** Cognitive & language function in schizophrenia

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NOTES

At the end of each Module, you will be asked to log the amount of time it takes you to complete each course activity. This information will be used to calculate the number of CEUs that will be awarded by ASHA & AOTA.

VIDEO END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 56 MINUTES

LOG YOUR ACTIVITY TIME HERE!

READING START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 9 MINUTES

Ongoing IM Research

- **Baylor University:** Reading Rate, Comprehension, & Fluency
- **Brooklyn College, CUNY:** Impact of IM on voice in Parkinson's (IM training prior to Lee Silverman Voice Treatment)
- **East Carolina University:** Camp Lejeune Mild-Moderate TBI (*soldier redeployment*), Wellness/Aging)
- **Creighton University:** Normal aging normative study
- **Department of Psychology, Umeå University, Umeå, Sweden:** Cerebral Palsy

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Supporting Research

The Brain Clock blog provides timely information regarding the human brain clock and applied brain-based neuro-technologies.

www.brainclock.net

MindHub™ is an internet portal that organizes cutting-edge information and resources focused on measuring and improving the performance of the human mind and other domains of personal competence.

The MindHub

www.themindhub.com/research-reports

***Research Bibliography – Appendix A-2**

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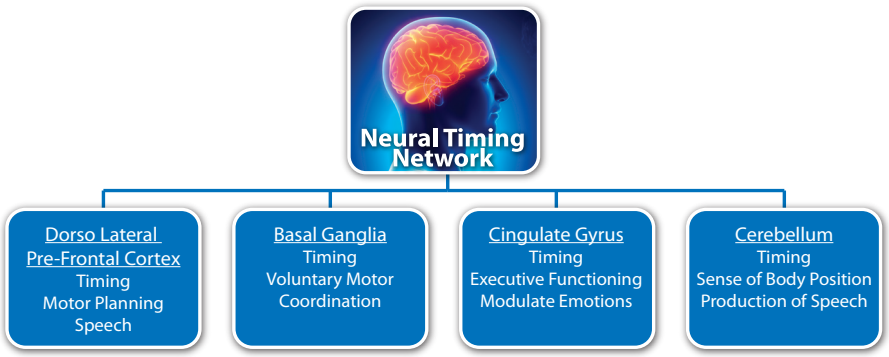
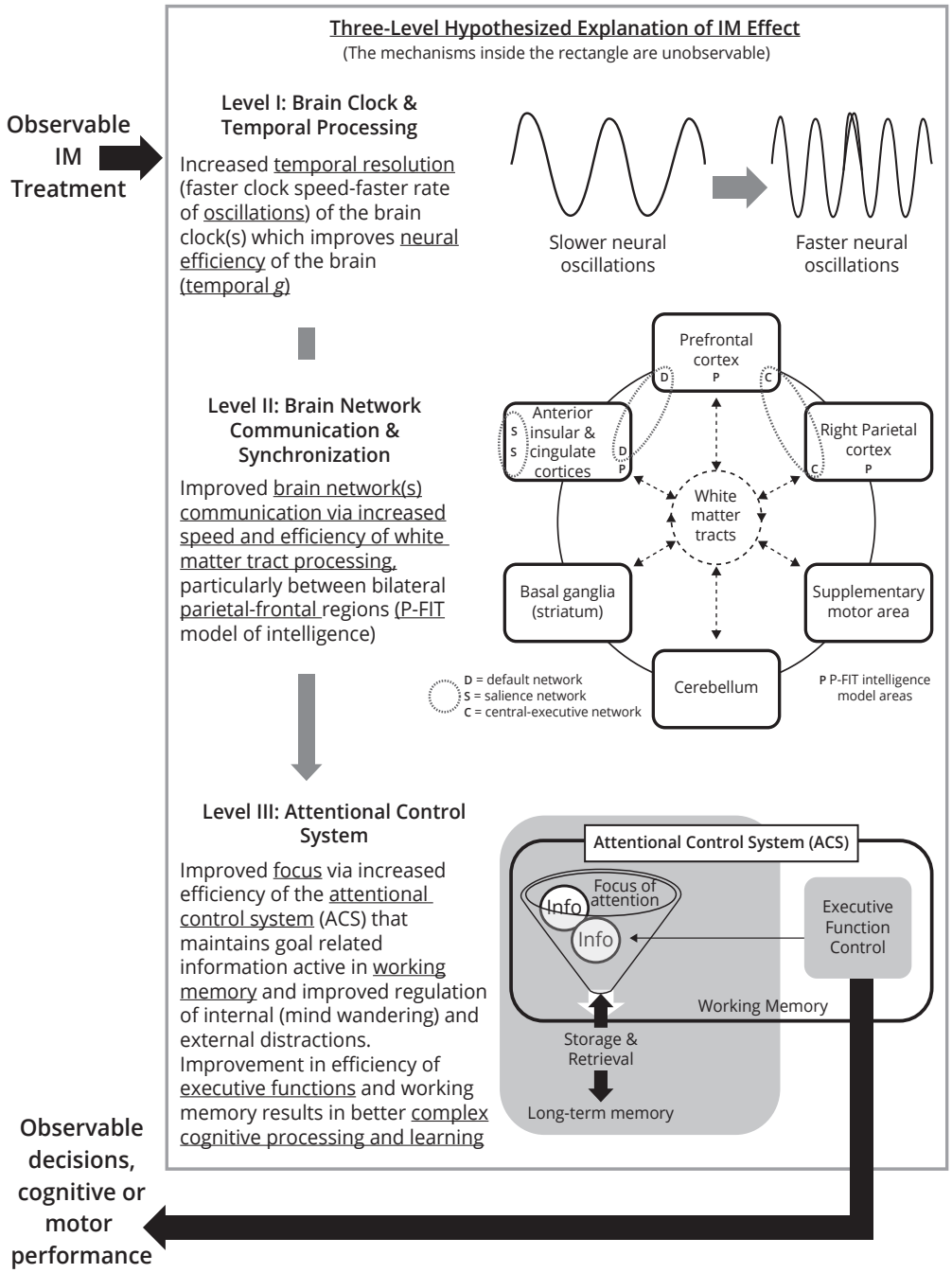
COMPLETE THE ADDITIONAL READING

9 minutes

In scientific literature, timing and rhythm training is referred to as *Synchronized Metronome Tapping*. There is much evidence to support the efficacy of Synchronized Metronome Tapping for enhancing skills like reading, mathematics, speech/articulation, language, social skills, attention, cognitive processing speed, working memory, auditory processing, motor coordination, balance, and gait. Areas of the brain responsible for these skills are part of the **neural timing network**, or what is referred to as our internal clock.



While there is documented benefit associated with incorporating music and rhythm in therapies and academic interventions (i.e., for focus or reading), **no other program or technology measures or provides feedback for millisecond timing.** The patented feedback system of IM is what sets it apart, accelerates outcomes, and helps you exceed expectations! Now, let's explore more of the science behind IM and what is referred to as the "IM Effect."



NOTES

IM TRAINING IMPROVES COGNITIVE PROCESSING & FOCUS

Cognitive focus plays a crucial role in success or failure at school, work, and in almost all aspects of human performance. Yet, few of us receive formal training on how to improve our focus *(or to control our attention).* Contemporary brain research has shed light on the nature of cognitive focus and has provided technology to train and maintain a "focused brain."

The human mind has a limited capacity to engage in laser-beam like focus or controlled attention—up to 20 to 30 minutes maximum. Current research defines focus (or controlled attention) as the ability to direct your attentional spotlight on only the information that is relevant to the task at hand and to information about this task contained in your mental workspace (working memory). Maintaining appropriate focus and keeping the key bits of information in working memory that pertain to successful completion of the task, while tuning out irrelevant distractions, requires constant monitoring and timely feedback to the attentional control center of the brain. When you are focused, cognitive control mechanisms work behind the scenes to constantly monitor performance and immediately detect interference. It is the job of the cognitive control mechanisms to deflect any outside distractions and internally self-generated mind wandering so that you can successfully maintain focus. Focus training can result in the "quieting of the busy mind."

It is believed that IM improves focus by improving the resolution and efficiency of your internal brain clock(s) and temporal processing (i.e., the rate of processing). In turn, this increased neural efficiency, which is hypothesized to result in more efficient brain connectivity, communication, and synchronization via increased integrity of the brains white matter tract communication system, produces more efficient communication between critical brain networks. In particular, research and theory suggests that IM training increases the efficacy of the parietal-frontal brain network, the brain network most associated with general intellectual functioning, working memory, controlled attention and executive functions.

IM training incrementally teaches you to focus exclusively on a target tone and deploy cognitive tools to deflect distractions, most likely through improvements in the efficiency of communication within the parietal-frontal brain regions. It is hypothesized that IM training results in enhanced ability to invoke on-demand-focus or controlled attention. The real-time millisecond feedback received during IM training requires you to develop the ability to block out external distractions and mind wandering—and thus, stay focused. Over time, and with sustained motivated practice, it is possible to train the brain to engage in increased on-demand focus (McGrew, 2012).

One of the most observable outcomes of IM training is better focus or controlled attention (affecting working memory and cognitive performance). Research suggests that this outcome likely occurs due to underlying changes in complex, critical brain and domain-general neurocognitive mechanisms produced by IM training. The effect on domain-general cognitive mechanisms produces results across a variety of performance domains, like reading, auditory processing, organizational skills, and motor coordination/control. This is referred to as the "IM Effect."

THE "IM EFFECT": IM TRAINING IMPACTS DIVERSE AREAS OF ABILITY AND PERFORMANCE

Interactive Metronome® (IM) research has reported positive IM effects for ADHD behavior, speech and language disorders, sports performance (golf and tennis), improvement of gait, reading achievement, stroke, and traumatic brain injury rehabilitation (Beckelhimer, Dalton, Richter and Harmann, 2011; Libkuman and Otani, 2002; McGrew and Vega, 2009; Nelson, 2012; Ritter, Colson and Park, 2013; Shaffer, Jacokes, Cassily, Greenspan, Tuchman and Stemmer, 2001; Sommer and Rönnqvist, 2009; Taub, McGrew and Keith, 2007). The diversity of domains positively impacted by IM technology begs the question—"how can a single neurotechnology produce positive outcomes across such a diverse range of human performance domains?" The only plausible scientific answer is that IM must be impacting a domain-general ("jack-of-all-trades") brain-based mechanism or set of mechanisms.

DOMAIN-SPECIFIC VERSUS DOMAIN-GENERAL BRAIN AND LEARNING MECHANISMS

NOTES

Most all children and adults have learned to ride a bike for recreational purposes. We have over-learned the act of cycling so we can bike with little in the way of deliberate thinking. We do not need to consciously tell each leg to move in a certain pattern, monitor how accurately our legs moved, tell our arms to turn the handle bars, etc. The resources of our immediate memory are free to observe others walking nearby, look at the interesting decorations of a house, talk to our riding partner, think about work, etc.

If a person practiced recreational biking one hour a day for four weeks straight the person may improve his recreational biking behavior. However, one would not expect this recreational cycling practice to transfer to improvement in speaking, reading comprehension, work performance, or golf. This is an example of a circumscribed or compartmentalized set of skills or behaviors that have been over-learned (i.e., automatized) and that are under the control of a set of narrow *domain-specific* (i.e., recreational biking) *brain mechanisms.* Domain-specific mechanisms are specialized brain mechanisms that process only specific kinds of information dedicated to learning about a *particular area of knowledge* (Rakison and Yermolayeva, 2011). Domain-specific mechanisms are important for automatic, efficient human performance in many day-to-day environments but, in general, *improvement via training is typically restricted to improvement within the specific limited set of skills and behaviors.*

On the other hand, a **domain-general** mechanism is one that, if affected, results in changes in performance across multiple and diverse areas of human functioning. According to Rakison and Yermolayeva (2011), **domain-general mechanisms** are "processes that are both knowledge-universal and modality-universal in that the same mechanisms function across a wide range of knowledge areas and inputs" (p.135). Such an underlying brain-based mechanism is a "jack-of-all-trades" that can be applied to a wide range of novel problems and performance (Chiappe and McDonald, 2005). **The only viable explanation for the diversity of the IM effect is the hypothesis that IM is impacting a fundamental domain-general brain-based cognitive mechanism, network, or set of mechanisms and networks.**

More support for the concept of a **domain-general brain mechanism** is the finding that a variety of clinical disorders have been associated with poor brain clock timing and temporal processing. These include ADHD, dyslexia, age-related deficits and declines (e.g., Alzheimer's), motor coordination and production disorders (e.g., apraxia, cerebral palsy, gait disorders), Parkinson's disease, schizophrenia, speech and language disorders (e.g., dysfluency, aphasia, apraxia), traumatic brain injury (TBI), and autism (McGrew and Vega, 2009).

The convergence of research by mental timing scholars studying normal cognitive processes and research implicating the inefficiency of temporal processing in a variety of clinical disorders is consistent with the notion of a domain-general master internal brain clock (or systems of clocks). There is strong support for the hypothesis that IM training improves the resolution and efficiency of our internal brain clock(s), and therefore improves temporal processing (or the rate of processing). In turn, this increases neural efficiency. It is thought that greater neural efficiency results in more efficient brain connectivity, communication, and synchronization via increased integrity of the brains white matter tract communication system, producing more efficient communication between critical brain networks. In particular, research and theory suggests that IM training may be increasing the efficacy of the parietal-frontal brain network, the brain network most associated with general intellectual functioning, working memory, controlled attention and executive functions.

NOTE: *More comprehensive information can be found at www.interactivemetronome.com. Click on RESEARCH, then under The Science, click on Three-Level Hypothesized Explanation of the IM Effect, McGrew 2012). The proposed model draws from a broad and diverse set of contemporary research from multiple disciplines, such as cognitive psychology, neuropsychology, neuroscience, neurology, molecular psychology, biological psychology, the psychology of music, and the study of human intelligence. Additional research is needed to verify the current explanatory model, evaluate its utility to explain positive IM effect research in multiple domains, and to suggest necessary revisions and extensions.*

NOTES

IM IMPROVES MOTOR CONTROL AND COORDINATION

The neurological process of motor acquisition and the mastering of movement has been studied extensively. Understanding this process and how IM may affect this process builds the foundation of our practice and knowledge of the **IM Effect**. Recent studies have shown that multiple areas of the brain are involved in the acquisition and mastery of movement. "One important component of human motor learning is the assembly of different movements into sequential action.

Sequences of movements can be learned at multiple levels of representation. Functional imaging studies and transcortical magnetic stimulation (TMS) have begun to distinguish the separate neural systems that are involved in the cognitive, perceptual, motoric, and temporal aspects of learning" (Grafton et al., 1998). "In the past, motor areas of the brain were thought to be distinct from areas that control cognitive functions. However, over the last few years, those lines have blurred significantly and it is now recognized that areas such as the cerebellum and the basal ganglia influence both motor function and non-motor function" (Leisman and Melillo, 2010). It has also become apparent that it's not enough for different areas of the brain to be involved in motor learning but that the timing and quality of signals within the neural network of these areas are essential for effective motor control. "Because movements involve changes in muscle length over time, motor control and timing are inextricably related. Most movements involve the coordinated activation of agonist muscles to initiate motion and antagonist muscles as a brake. These activations require accurate timing on the order of tens of milliseconds. Indeed, pathologies that disrupt the timing between agonist and antagonist actions lead to dysmetric or inaccurate movements". "All sensory and motor processing ultimately relies on spatial-temporal patterns of action potentials" (Mauk and Buonomano, 2004).

Regions of the brain recruited during skill acquisition vary depending on the exact timing relative to performance of the training movements (Censor and Cohen, 2011). IM uniquely ties these inherent motor-involved areas of the brain together, and with timing and sequence training improve the process of motor performance and mastery. Willingham describes four processes that support motor-skill learning. He states that motor-skill learning should be differentiated from motor control. Motor control refers to the processes that support the planning and execution of movements. Motor skill learning refers to the increasing spatial and temporal accuracy of movements with practice. He goes on to say that recently, a number of researchers have proposed that motor-skill processes may grow directly out of motor-control processes; in other words, motor skill may be nothing more or less than the increasingly efficient operation of motor-control processes (Willingham, 1999).

Timing is essential for effective motor control. "There is a striking neuroanatomical overlap between the areas consistently recruited by timing tasks and those traditionally implicated in the processes of motor selection and preparation. These two processes also overlap from a neurochemical point of view, with the dopaminergic D2 receptor system being implicated in both timing and motor function" (Coull et al., 2011). The inherent nature of the Interactive Metronome® system with a "timing" based motor response and temporal processing of sensory information with movement has the potential to develop motor control and then through repetition and organization, develop motor skills.

Motor control refers to the mechanisms underlying skilled behavior, including neural, physical, and behavioral mechanisms (Sage, 1984). Motor control is the study of the nature and causes of movement and involves the human's ability to fixate the body (postural control) and to move the body (balance) (Berg-McCormack and Riske-Perrin, 1997). It involves organization of the central nervous system (CNS) so that individual muscles and joints become coordinated and sensory information from the environment and/or the body used to control movement, allow people to select a movement for a specific goal (Heuer & Schmidt,1988). Motor control arises from interactions among cognitive, perceptual, and motor systems within a person and from interactions of the person with the task and the environment (Shumway-Cook and Woollacott, 1995).

The motor control system is dependent on feedback and timing to improve its efficiency. There are two types of feedback: intrinsic and extrinsic (Schmidt, 1991). Intrinsic feedback is the sensory information provided internally to a person as a result of movement. This includes somatosensory information from joints, as well as visual and auditory information. Extrinsic feedback is from an external source, such as a therapist or equipment (i.e., biofeedback). Extrinsic feedback can be given concurrently with the task or at the end of the task (terminal feedback) (Schmidt, 1988). Feedback increases the rate of improvement of a new task, enhances performance on tasks that are over-learned, and increases the frequency of reports that tasks seem less fatiguing and are more interesting with feedback than without feedback (Sage, 1984). Practice and feedback are considered to be the two most important factors in skill acquisition (Schmidt, 1988; Schmidt, 1991; Sage, 1984; Shumway-Cook and Woollacott, 1995).

Repetition and improved efficiency of the motor control pathways "free up" the active working memory and cognitive resources for planning and more complex motor tasks such as writing, playground activities, driving and sports performance. Practice can be purposefully repetitive when the intent is to try to repeat a movement directed at improving one's skill in order to increase efficiency and effectiveness and decrease the likelihood of undesirable outcomes (Ezekiel, et al., 2000). Following their initial acquisition through training, motor skills are consolidated into a more stable state, resistant to interference (Brashers-Krug et al. 1996).

Interactive Metronome® has all the key ingredients to facilitate motor control and learning, by activating the areas of the brain involved in motor performance and engaging the timing centers of the brain. Through repetition and feedback, the efficiency and effectiveness of the communication between these areas of the brain are improved. Long-term potentiation and the myelination of the white matter tracts between these areas of the brain is therefore elicited, and the process of motor control and learning automated.

CANDIDATES FOR IM TRAINING

Individuals of all ages, from infants to the elderly, benefit from improving timing and rhythm to facilitate development and rehabilitate cognitive, communicative, sensory, and motor skills. Scientists have studied the brains of individuals with several common conditions and have determined that impaired temporal processing (or poor synchronization of neural networks in the brain) underlies many of the observable symptoms of these conditions: ADHD, Autism, Dyslexia and other reading disorders, Auditory Processing Disorder, Tourette, and Parkinson's.

Timing & rhythm degrades as we age affecting sensory, motor, and cognitive abilities. In particular, impairment in temporal resolution results in reduced ability to process rapid events impacting safety, driving, decision-making speed, processing speech (especially in noise), memory, and other abilities. With training to improve timing and synchronization, measurable gains are observed in cognitive and perceptual skills compared to individuals who do not undergo such training (Anderson et al, 2012).

ABILITIES IMPACTED BY NEURAL TIMING & SYNCHRONIZATION

COGNITIVE ABILITIES

- executive functions
- attentional control
- initiation
- behavioral self-regulation
- self-monitoring
- self-correction
- problem-solving
- attention
- focused
- shifting
- selective
- divided
- working memory
- cognitive processing speed
- cognitive stamina
- planning, organizing and sequencing
- time-management

NOTES

SPEECH & LANGUAGE SKILLS

- auditory processing
- receptive language
- expressive oral and written language
- reading comprehension and fluency
- articulation and speech intelligibility
- phonological processing
- motor speech (apraxia)
- thought organization

BEHAVIORAL SKILLS

- conversational skills
- eye-contact
- reciprocal social interactions (timing, turn-taking, humor)
- impulse control
- aggression
- hyperactivity
- disinhibition
- affect and vocal inflection

SENSORY PROCESSING

- sensory over-responsivity
- sensory under-responsivity
- sensory-seeking behavior
- sensory discrimination
- sensory-based motor skills
  - *praxis*
  - *posture*

MOTOR SKILLS

- motor planning and sequencing (praxis)
- coordination
- balance
- gait
- posture
- functional mobility
- ADLs and IADLs
- handwriting
- functional use of hemiplegic limb(s)
- functional use of prosthetic limb(s)

ACADEMIC PERFORMANCE

- reading rate, fluency and comprehension
- mathematics
- attention to relevant information, to class work, and to teacher during instruction
- comprehension of verbal instructions and class lectures
- thought organization and attention to spelling and punctuation for writing
- thought organization for oral presentations
- timely completion of assignments and tests
- sequencing and organizational skills

ATHLETIC PERFORMANCE

- coordination
- mental processing speed and decision-making
- real-time monitoring of cognitive and physical actions
- ability to apply intense focus for extended periods of time
- ability to filter out internal and external distractions
- mental and physical endurance

LOG YOUR ACTIVITY TIME HERE!

READING END TIME

_____ AM/PM

TOTAL VIDEO ACTIVITY TIME (IN MINUTES)

_____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 9 MINUTES

TAKE THE ONLINE POST-TEST & EVALUATION FOR MODULE 1

5 minutes

To view the course materials for this Module visit:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-1

CONTACT US WITH ANY QUESTIONS

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NOTES

DON'T FORGET TO REFERENCE YOUR NOTES FOR THE TIME LOGGED ACTIVITIES IN THIS MODULE, WHICH WILL BE ASKED IN THE EVALUATION.

MODULE 2
GETTING YOUR IM EQUIPMENT READY FOR USE

50 MINUTES

LEARNING OBJECTIVES:

- Setting Up Your IM Equipment
- IM Software Controls

LOG YOUR ACTIVITY TIME HERE!
In each Module evaluation, you will be asked to log the amount of time it takes you to complete each course activity. This information will be used to ensure that the course CEUs have been calculated accurately. Please use this space provided to log your start time.

VIDEO START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 32 MINUTES

START

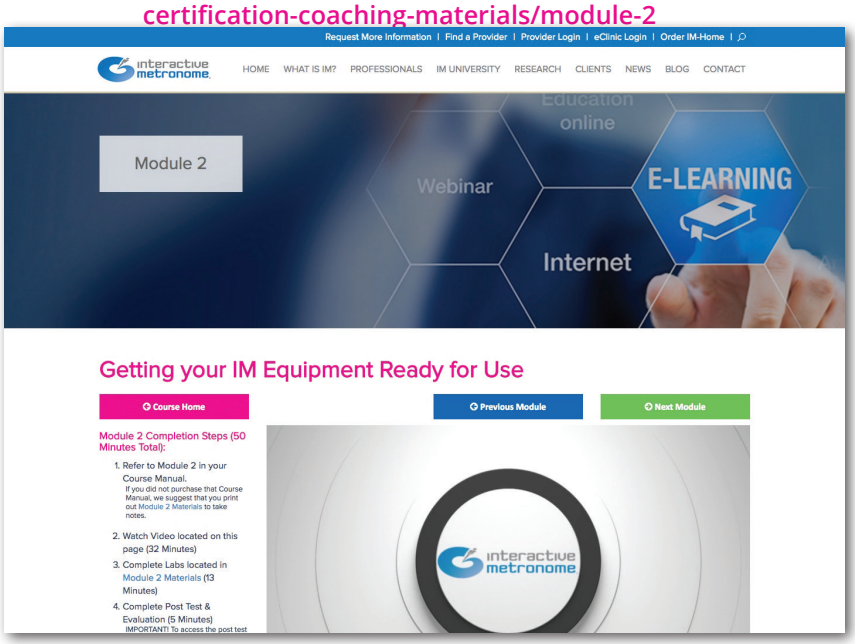
GATHER NEEDED EQUIPMENT & MATERIALS

You will need the following to complete Module 2:

- Interactive Metronome® equipment & software
- Computer with Internet connection
- Pencil to take notes

WATCH THE VIDEO
32 minutes

Access the Module video here:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-2



COMPLETE THE LABS
13 minutes

LAB 1: INSTALL THE IM SOFTWARE

(Skip this lab if your IM software is already installed)

If you have not done so already, install the IM software on the computer(s) to be used for IM training.

WINDOWS OS

Minimum Requirements:

- Operating System - Windows 7: Service Pack 1
- Processor – Intel Core 2 or better, AMD Athlon II or better
- Processor Speed – 1.8 GHz or better
- RAM – 2 GB or more
- Internet Connection – 56 Kbps modem or faster
  NOTE: *Only the IMPro Universe eClinic features require an internet connection.*

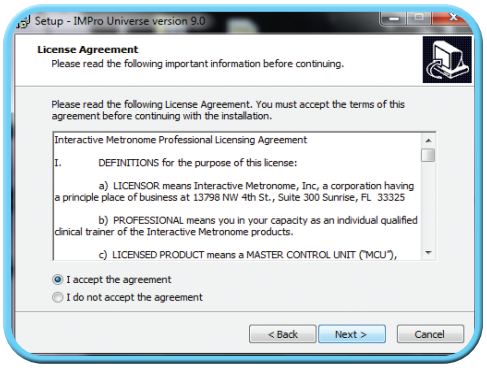
Preferred Requirements:

- Operating System - Windows 8 or Windows 8 Pro
  NOTE: *Windows RT is not compatible with IMPro Universe*
- Processor – Intel Core "ix" Family (i3,i5,i7), AMD Phenom 2 or better
- RAM - 4 GB or more
- Internet Connection - DSL or Broadband
  NOTE: *Only the IMPro Universe eClinic features require an internet connection.*

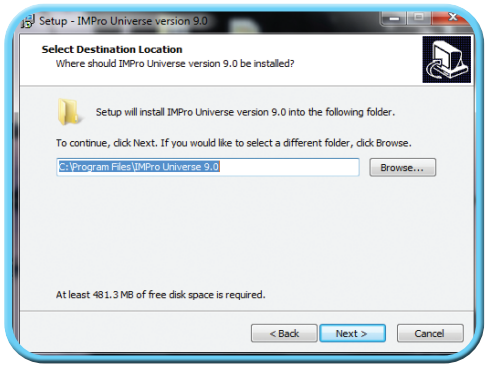
1. Turn on the PC and log in using administrative user security permissions. Make sure no applications are operating.
2. Download the IM Pro Universe software from the email you received from IM Technical Support.
3. An installation screen will automatically appear. If it does click next.

If it does not appear automatically, click on start in your taskbar and then select "Computer". Find the appropriate disc drive and double-click the icon to open the installer.

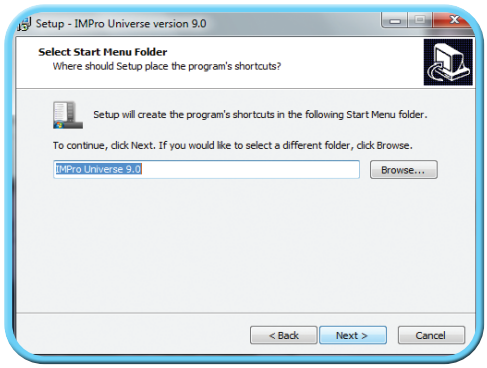
4. Accept the User Licence Agreement. Click **Next.**



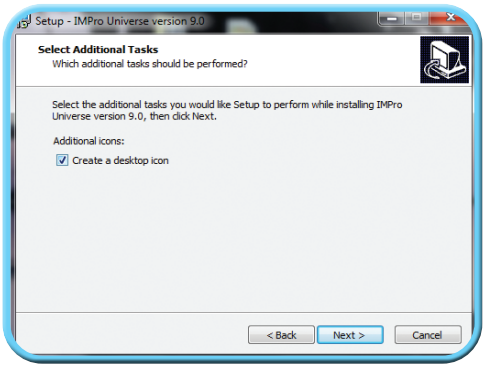
5. Confirm where IMPro Universe should be installed. Click **Next.**



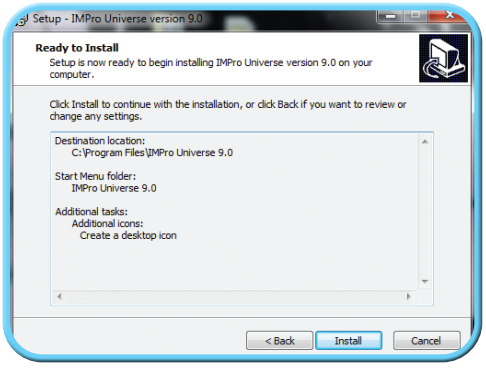
6. Confirm if you want to create a shortcut in your Start Menu. Click **Next**.



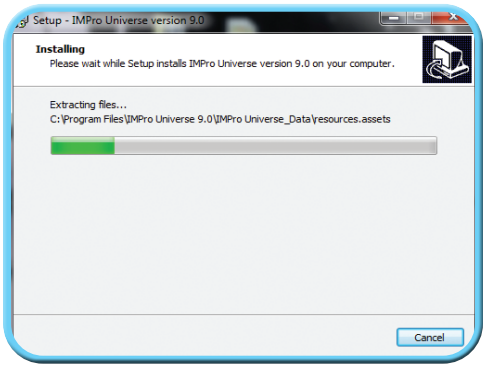
7. Confirm if you want to create a desktop icon. Click **Next.**



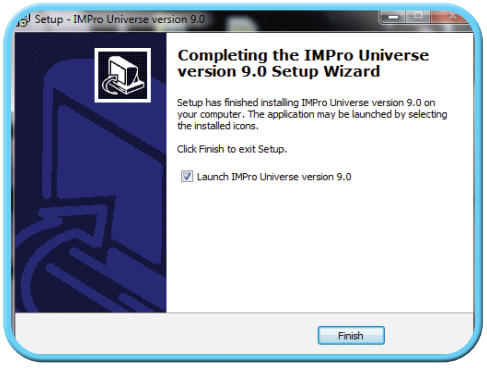
8. Verify all your installation settings are correct. Click **Install.**



9. IMPro Universe will now install.



10. Once installation is complete click **Finish** and IMPro Universe will open.



MAC OS

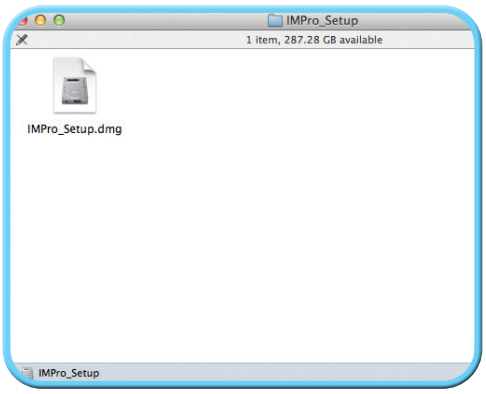
Minimum Requirements:

- Operating System - OSX 10.6
  NOTE: *iOS devices are not compatible with IMPro Universe*
- Processor – Intel Core 2 or better
- Processor Speed – 1.8 GHz or better
- RAM – 2GB or more
- Internet Connection – 56 Kbps modem or faster
  NOTE: *Only the IMPro Universe eClinic features require an internet connection*

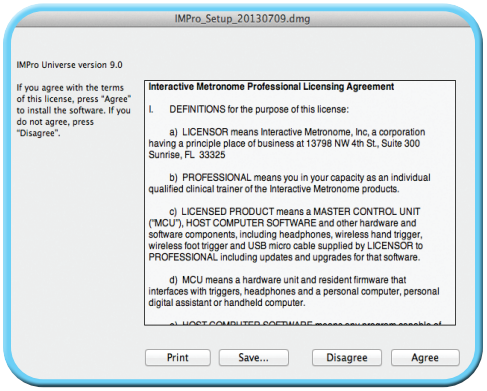
Preferred Requirements:

- Operating System - OSX 10.8
  NOTE: *iOS devices are not compatible with IMPro Universe*
- Processor – Intel Core "ix" Family (i3,i5,i7)
- Processor Speed – 2.2 GHz or better
- RAM - 4 GB RAM or higher
- Internet Connection - DSL or Broadband
  NOTE: *Only the IMPro Universe eClinic features require an internet connection.*

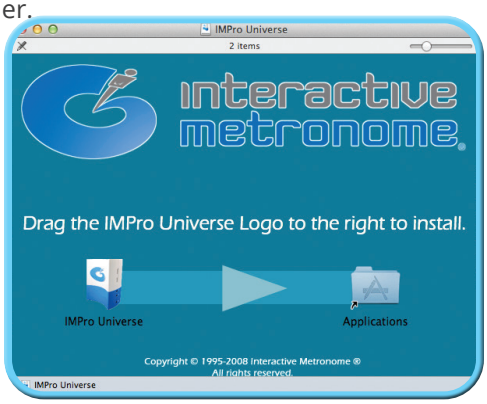
1. Turn on the MAC and log in. Make sure no applications are operating.
2. Download the IM Pro Universe software from the email you received from IM Technical Support.
3. A window will automatically appear. Click on the .DMG file



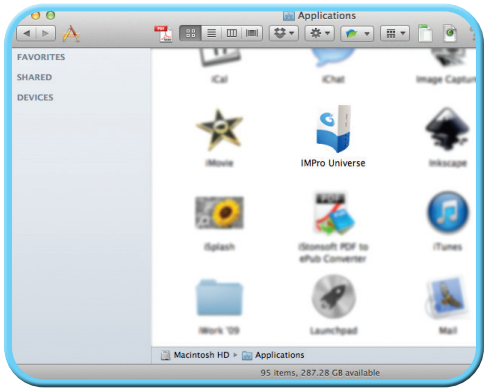
4. Agree to the Professional Lisence Agreement to continue install



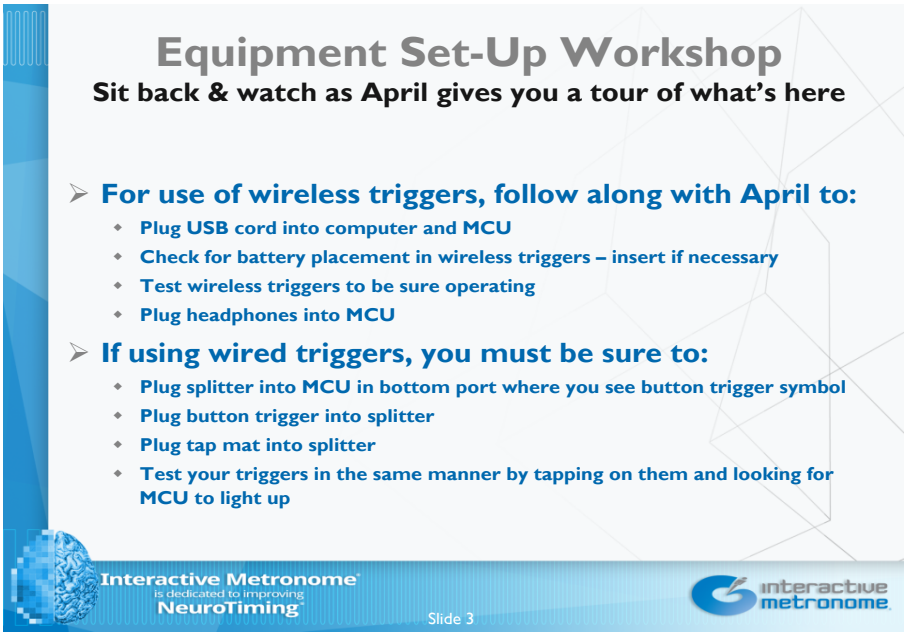
5. Drag the IMPro Universe Logo to the Applications folder.



6. Find IMPro Universe in the Applications folder and double-click to open.



RESUME VIDEO



LOG YOUR ACTIVITY TIME HERE!

LAB END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 13 MINUTES

LAB 2: SET UP YOUR IM EQUIPMENT

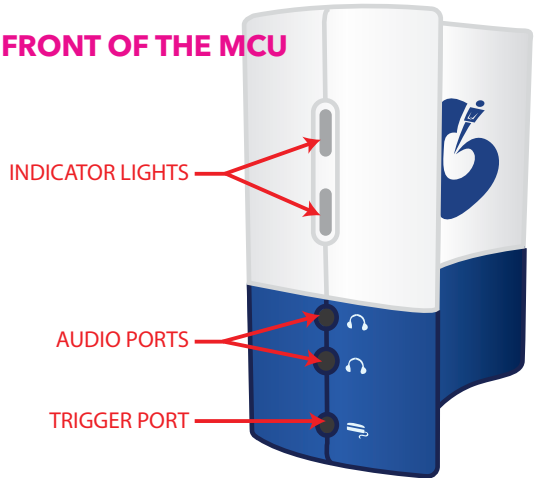
(Skip this lab if your IM equipment is set up and your triggers have batteries already installed)

1. **LOCATE THE MCU**

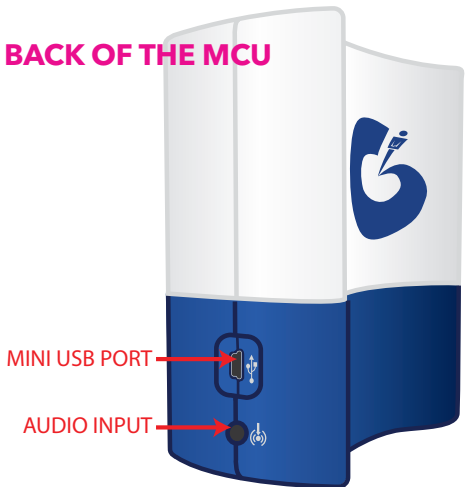
The front of the MCU has:
- 2 Indicator Lights
- 2 Audio Ports
- Wired Trigger Port

The back of the MCU has:
- 1 Mini USB Port
- Audio Input

FRONT OF THE MCU



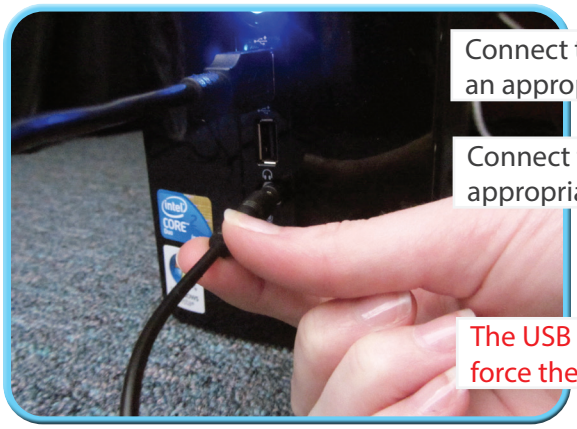
BACK OF THE MCU



2. CONNECT THE MCU TO THE COMPUTER

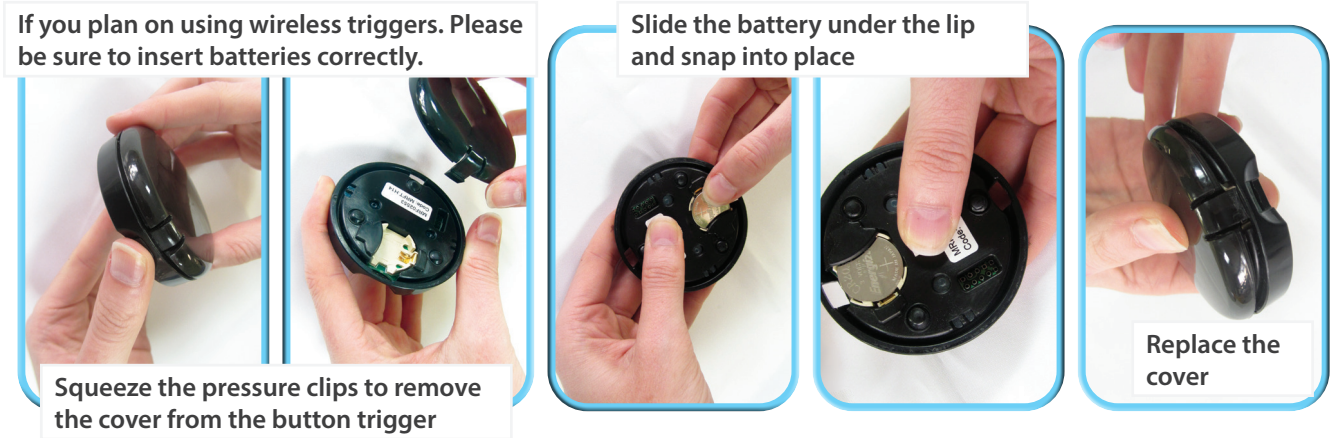
- Connect the USB & audio cables to the MCU

- Connect the USB & audio cables to the computer

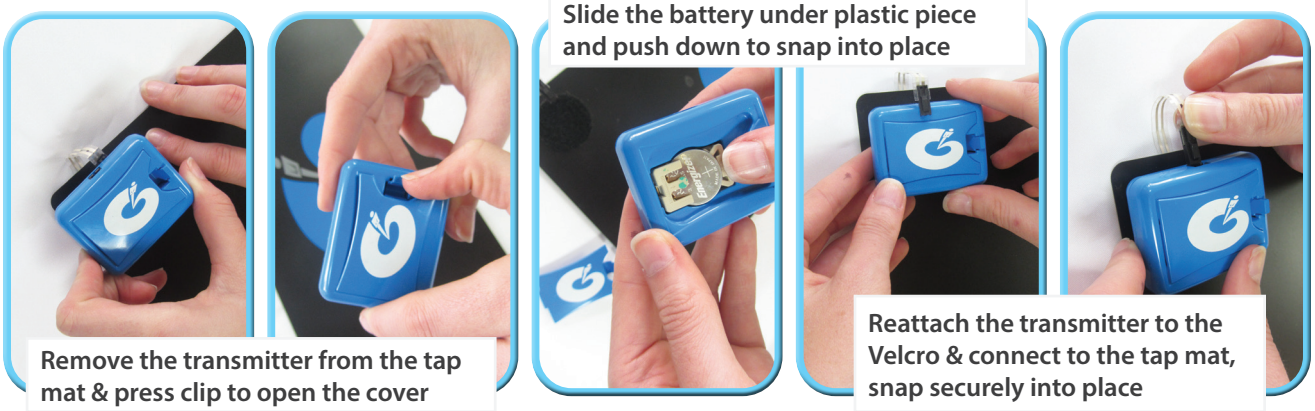


3. INSERT BATTERIES FOR WIRELESS TRIGGERS

- Place batteries in wireless button trigger and test



- Place batteries in wireless tap mat and test



Your wireless triggers are now ready to use

Test that your triggers are working properly!

Click the button trigger, your MCU should blink a red light

Tap the tap mat, your MCU should blink a white light

4. CONNECTING WIRED TRIGGERS (OPTIONAL)

Connect the splitter to the front of the MCU in the trigger port

Connect the button trigger to the splitter

Connect the tap mat to the splitter

Your triggers should look like this

The lights on the MCU will blink RED when the button trigger is pressed and blink when the tap mat is touched.

5. PLUG IN HEADPHONES

Plug the headphones into one of the audio ports marked with a picture of headphones 🎧 on the front of the MCU

DO NOT FORCE THE HEADPHONES IN!

6. IM STATION NOW READY TO USE

When both indicator lights are blue MCU is ready to use.

NOTES

RESUME VIDEO

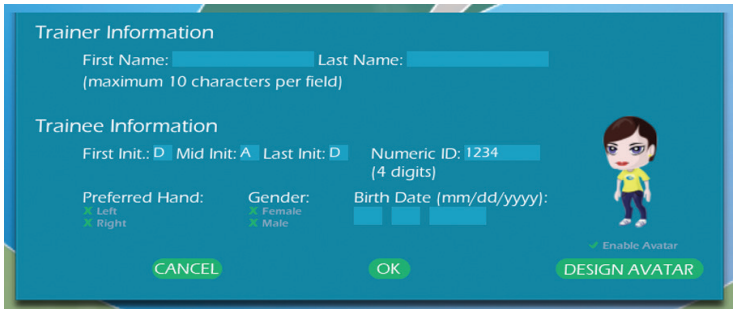
LAB 3: CREATE A NEW TRAINING FILE

1. After you have successfully installed the IM software & set up your hardware, double click on the desktop IM icon to open the software in preparation for this lab.

2. With the IM program open, verify that the MCU is connected by locating the "IM Indicator" box at the bottom center of the IM program. Within seconds of opening the program, the words should change from "MCU not connected" to "X Hours Remaining on MCU" (see image below). Before any training can take place, the MCU must be connected.

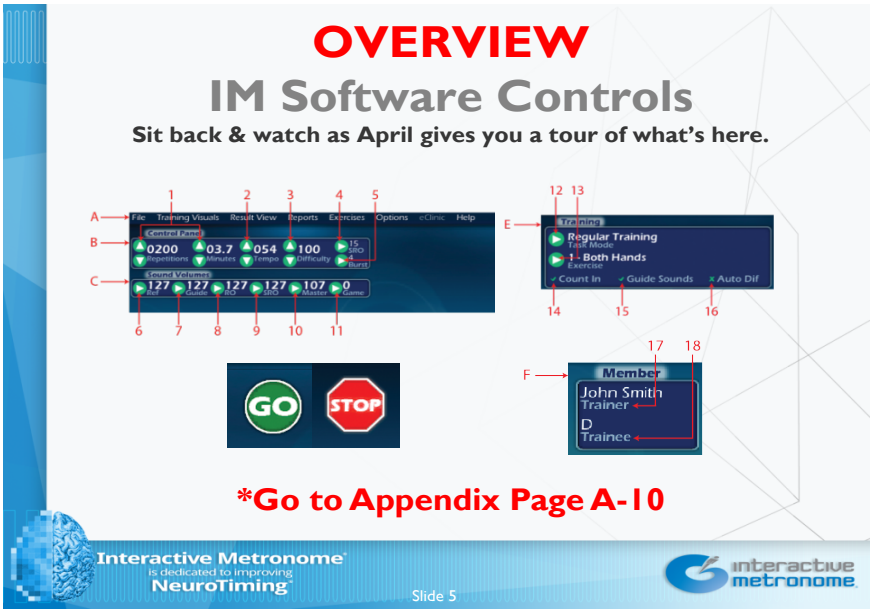
3. Select:
   a. File
   b. New
   c. This Computer

4. A "New File Dialog" window will appear (see image below). Enter the provider's name (in this case, enter your name) where it asks for "Trainer Information." Do not use the space bar when typing in the provider's first and last name or the software will not allow you to save the file. The tab function may be used.



5. Enter your client's first, middle and last initial where it asks for "Trainee Information" (for this training file, enter your own initials). **NOTE:** *If a middle initial is not entered, the IM software will automatically enter an 'X' for the middle initial (i.e., AXV).*
6. Enter a "Numeric ID." This must be four digits, and may not be all zeros. You may opt to use the last four digits of your client's social security number, the year, or some other valid four digit number. For this training file, you may enter 4 digits of your own choosing.
7. Select your client's preferred hand and gender. In this case, you will enter your own information.
8. Enter your client's birth date. For now, enter your own.
9. Click OK.
10. A "New Interactive Metronome® Database" window (see image below) will then appear with the default file name, which is automatically generated from using the first, middle, and last initials appended with the Numeric ID. For example, if the individual's information is entered as shown in the image above, the default file name will be DAD1234.impd. If there is no middle initial, an "X" will be used instead (DXD1234.impd). The provider can change the default file name if desired by clicking on SAVE AS, however it is recommended that providers take appropriate measures to assign file names that protect privacy and comply with Health Insurance Portability and Accountability Act (HIPAA) requirements.
11. Verify that the folder is the desired folder in which to save the new file; otherwise, browse for the folder. Then, click SAVE.
12. Your new file is now open. To confirm this, look at the bottom of the screen in the "IM Indicator" panel. You will see that it says "MCU Connected," the number of minutes remaining on your MCU (i.e., 1126 minutes remaining on MCU), and the name of the file you've just created (i.e. DAD1234). When there is no file selected, it will read "NO FILE OPEN."
13. You will need open your IM software and select this IM training file for each of the remaining modules in this certification course.

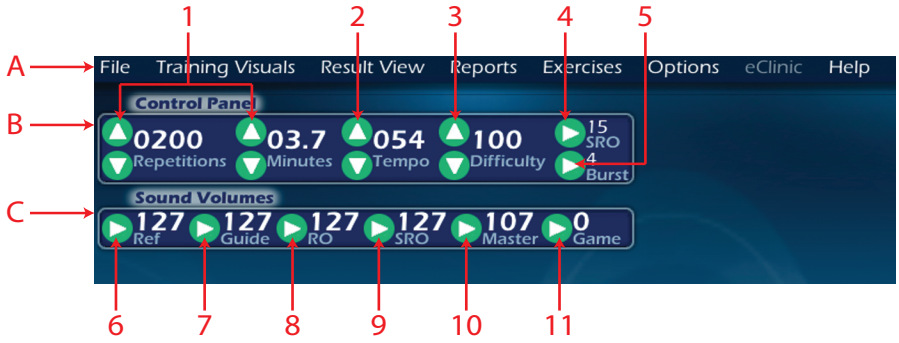
RESUME VIDEO



LAB 4: GET FAMILIAR WITH IM FEATURES

Explore the features of the IM software on your own to better familiarize yourself before we move on. Each of the features is listed below. Read the description for each and locate them in the IM software on your computer.

IM PROGRAM FEATURES



A. **Menu Bar**: Contains lists of necessary and additional functions and settings.

B. **Control Panel**: Displays options and information used during tasks

1. **Counter**: Displays and counts down the number of repetitions and the number of minutes set for a task. When in assessment modes, the number of repetitions/minutes is preset. However, for "Regular Training" and "In-Motion" modes, you can set the number of repetitions or minutes by clicking on the up or down arrows. **NOTE:** *The repetitions/minutes can only be adjusted when a training file is open.*

2. **Tempo**: Displays the rate (beats per minute) of the reference tone. The default setting is 54 beats per minute. When in assessment modes, this is a fixed setting. However, for "Regular Training" and "In-Motion" task modes, this can be adjusted by clicking on the up arrow to increase the tempo or the down arrow to decrease the tempo.

3. **Difficulty**: Indicates the millisecond threshold beyond which your client will hear negative feedback telling him he is Very Early or Very Late. As long as your client stays below this millisecond threshold, he will hear the more pleasing Right-On and Super Right-On guide sounds. To select the Difficulty, the "Auto Dif" must be turned off (no check in box). Difficulty is adjusted by clicking on the up or down arrows on the Control Panel to increase or decrease it.

4. **SRO**: Displays the minimum millisecond score required to achieve a "Super-Right-On" or SRO hit. The default setting is 15 milliseconds (therefore, if you don't change anything your client must hit between 0-15 ms before or after the reference beat to achieve a SRO hit). The SRO threshold can be adjusted as you deem appropriate to make training easier or more challenging. You can choose a SRO threshold between 10 - 50 milliseconds. **NOTE**: *This feature should be used in conjunction with difficulty and/or tempo to achieve the most SRO hits.*

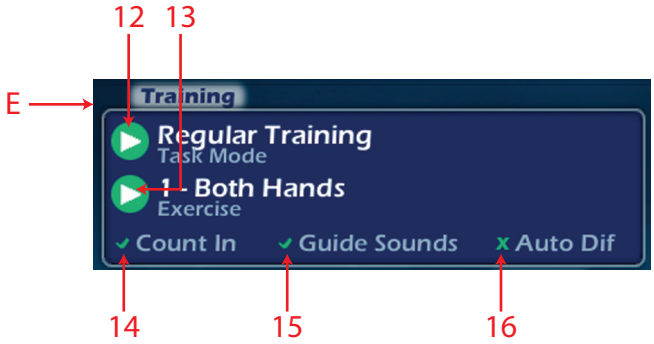
5. **Burst Threshold:** Burst Threshold determines the number of consecutive, or in-a-row, hits your client must make to earn 1 Burst. A burst is earned each time your client hits a designated number of times consecutively in the SRO range. This number is designated by you when you set the Burst Threshold. For example, the default Burst Threshold is 4. Therefore, each time your client hits 4 times in-a-row within the SRO range of 0-15 ms, he earns 1 burst. If he earns 10 bursts over the entire exercise, that means on 10 different occasions during that exercise he made at least 4 SRO hits in-a-row. To adjust the Burst Threshold, click on the arrow on the Control Panel next to Burst. You will then select a threshold between 2 -15 hits. **NOTE**: *This feature should be used in conjunction with difficulty and/or tempo to achieve the most bursts.*

C. **Sound Volumes Panel**: Displays the volume setting for IM tasks.

6. **Ref**: Displays the volume for the **Reference Tone.** The default setting is 127. Use the arrow and slider to set the desired volume.
7. **Guide**: Displays the volume for the **Guide Sounds.** The default setting is 127. Use the arrow and slider to set the desired volume.
8. **RO**: Displays the volume for the **Right On** tone. The default setting is 127. Use the arrow and slider to set the desired volume.
9. **SRO**: Displays the volume for the **Super-Right-On** tone**.** The default setting is 127. Use the arrow and slider to set the desired volume.
10. **Master**: Displays the master volume for the IM exercise**.** The default setting is 107. Use the arrow and slider to set the desired volume.
11. **Game**: Displays the volume setting for the background audio on training visual screens. Use the arrow and slider to set the desired volume.

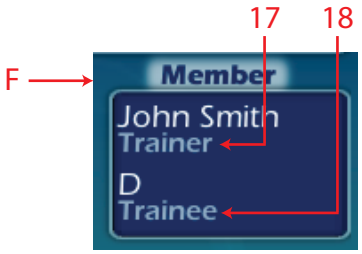
D. **Traffic Light Icon Button:** Starts and stops the selected task. The "F2" key performs the same action. This button will not illuminate if the MCU is not connected or if no file is open.

E. **Training Panel:** Contains options for task mode and exercises.



12. **Task Mode Selector:** Lists and indicates which mode is selected including: Short Form Test, Long Form Assessment, Regular Training, In-Motion, or Attend Over Time.
NOTE: *Selection of Long Form Assessment enables another group of check boxes – Pre, Interim, and Post.*
13. **Exercise Selector:** Lists and indicates which exercise is selected. Each task mode has a different list of available exercises.
NOTE: *When in assessment modes, the sequence of exercises is presented in a set order and automatically advances to the subsequent exercise.*
14. **Count-in:** When checked, adds five "warm-up" repetitions (beats) to the counter. These will not be counted by the program, which will begin recording data on the sixth repetition of the task.
15. **Guide Sounds:** When selected (checked), activates feedback tones in addition to the reference tone. When deselected (no check in box), only the reference tone is heard. When in assessment modes, this is preset. However, for "Regular Training" and "In-Motion" modes, this can be turned on or off.
16. **Auto Dif:** When "Auto Dif" (Auto Difficulty) is selected (box checked), the program continuously changes the "Difficulty" setting during an exercise based on the individual's most recent trigger hits.

F. **Member Panel:** Contains trainer and trainee information.

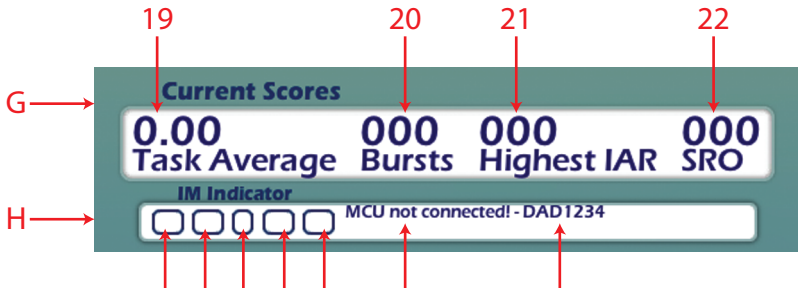


17. **Trainer:** Displays the IM provider's name. If there is more than one provider name in the file (which is possible only with a file created using a version of the IM software prior to IMPro version 6.0), select from the drop-down box by clicking the arrow and then select the desired name.

18. **Trainee:** Displays your client's name. If there is more than one individual's name in the file (which is possible only with a file created using a version of the IM software prior to IMPro version 6.0), select from the drop-down box by clicking the arrow and then select the desired name.

The **Performance Status Area** displays data calculations based on trigger hits recorded during an assessment or exercise. In certain Training Visual screen it also displays indicators related to accuracy of your clients's trigger hits in relation to the reference beat. Hits fall into pre-defined specified areas range from 555 milliseconds before the reference tone (Very Early) to 555 milliseconds after the reference tone (Very Late). A hit falling on zero milliseconds is synchronized exactly with the reference tone.

Performance Status Area



G. **Current Scores Panel:** Contains performance data during the task.

19. **Task Average**: Displays the current millisecond average of your client's trigger hit while an assessment or exercise is in progress.

20. **Bursts**: Counts and displays how many times the current burst rate was achieved during an exercise. For example, if the **Burst Threshold** is set to 4, each time 4 trigger hits in-a-row are within 15 milliseconds of the reference tone, the Burst counter will increase by 1.
NOTE: *You can make changes to the **Burst Threshold** via the control panel.*

21. **Highest IAR**: Counts and displays the highest number of trigger hits in-a-row that were within the selected SRO range during any one uninterrupted assessment task or exercise. Keep in mind, 15 milliseconds is the default SRO setting.
NOTE: *You can make changes to the SRO threshold via the control panel.*

22. **SRO:** Counts the number of "Super-Right-On" hits during an assessment task or exercise.
NOTE: *You can make changes to the SRO threshold via the control panel.*

H. **IM Indicator Panel:** Displays real-time feedback as your client hits the trigger.

23. **Very Early Hit Box**: Indicates that the trigger hit was very early (beyond the maximum millisecond value set for "Early" trigger hits) and displays how far away from the reference tone it was in milliseconds.

24. **Early and "Super-Right-On" Hit Box**: Indicates that the trigger hit was early and displays how far away from the reference tone it was in milliseconds. "Super-Right-on" hits that do not fall exactly on the reference tone, but are early by less than 15 milliseconds, also appear in this location.
25. **Visual Guide**: A set of lines in the square that flash exactly on the reference beat.
26. **Late and "Super-Right-On" Hit Box**: Indicates that the trigger hit was late and displays how far away from the reference tone it was in milliseconds. "Super-Right-on" hits that do not fall exactly on the reference tone, but are late by less than 15 milliseconds, also appear in this location.
27. **Very Late Hit Box**: Indicates that the trigger hit was very late (beyond the maximum millisecond value set for "Late" trigger hit) and displays how far away from the reference tone it was in milliseconds.
28. **MCU Connection:** Displays the connection status of the MCU.
29. **IM Data File:** Displays the file that is currently open for training.

RESUME VIDEO

NOTES

MODULE 2

LOG YOUR ACTIVITY TIME HERE!

VIDEO END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 32 MINUTES

NOTES

TAKE THE ONLINE POST-TEST & EVALUATION FOR MODULE 2

5 minutes

To view the course materials for this Module visit:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-2

CONTACT US WITH ANY QUESTIONS

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Technical Support:
support@interactivemetronone.com

DON'T FORGET TO REFERENCE YOUR NOTES FOR THE TIME LOGGED ACTIVITIES IN THIS MODULE, WHICH WILL BE ASKED IN THE EVALUATION.

NOTES

MODULE 3
IM ASSESSMENTS & INTERPRETATION OF DATA

95 MINUTES

LEARNING OBJECTIVES:

- IM Assessments & Interpretation of Data
- Short Form Test
- Long Form Assessment
- Attend Over Time

LOG YOUR ACTIVITY TIME HERE!
In each Module evaluation, you will be asked to log the amount of time it takes you to complete each course activity. This information will be used to ensure that the course CEUs have been calculated accurately. Please use this space provided to log your start time.

VIDEO START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 57 MINUTES

START

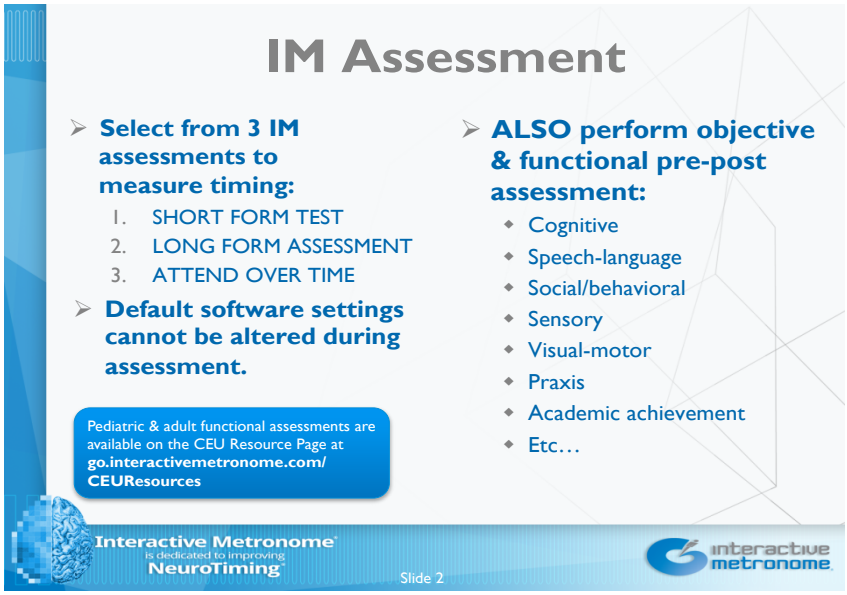
GATHER NEEDED EQUIPMENT & MATERIALS

You will need the following to complete Module 3:

- Computer with good internet connection
- IM equipment (set up, connected to computer and ready to use)
- IM software (open software on your computer)
- IM training file (open the file you created for yourself in the previous module) then minimize the IM software so you can begin the next module.
- Pencil to take notes

WATCH THE VIDEO
57 minutes

Access the Module video here:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-3



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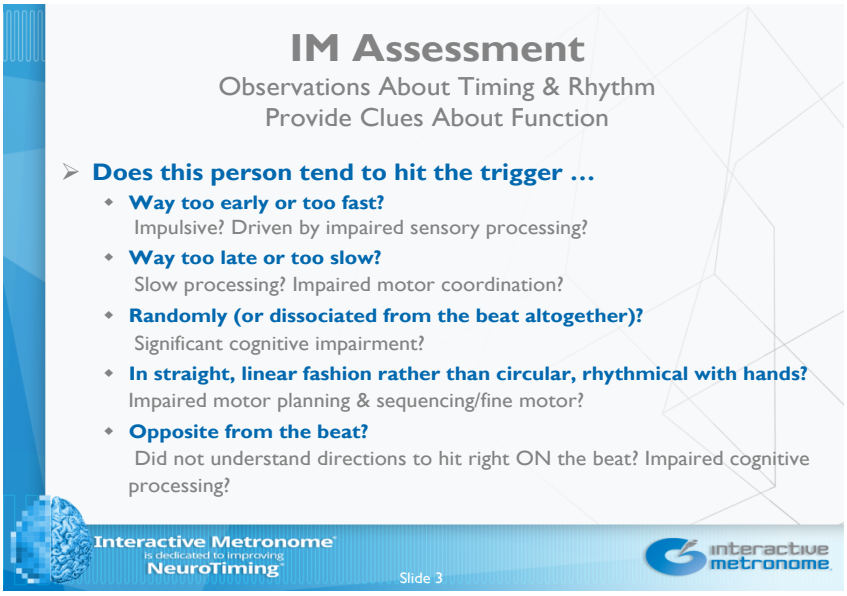
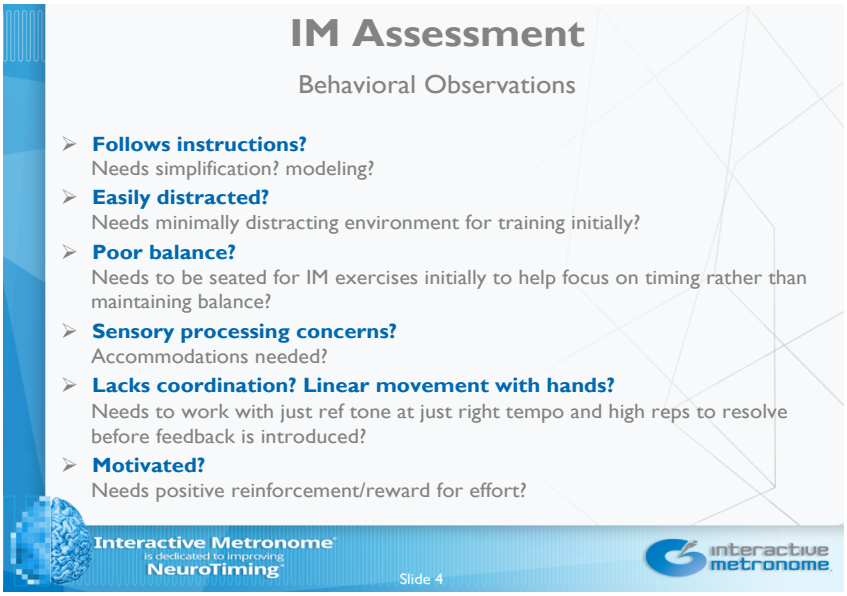
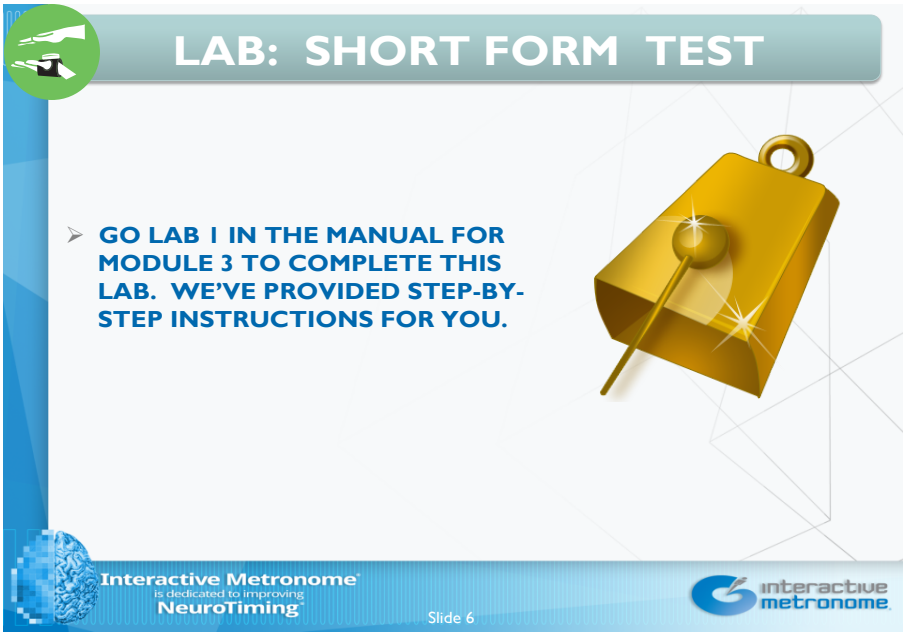




NOTES

MODULE 3



COMPLETE THE LABS
9 minutes

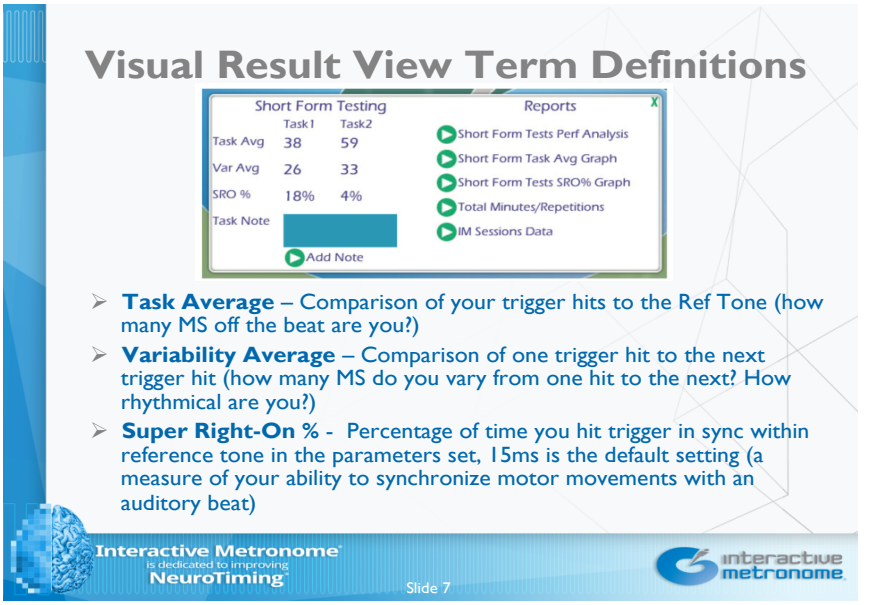
LAB 1: PERFORM THE SHORT FORM TEST (SFT)

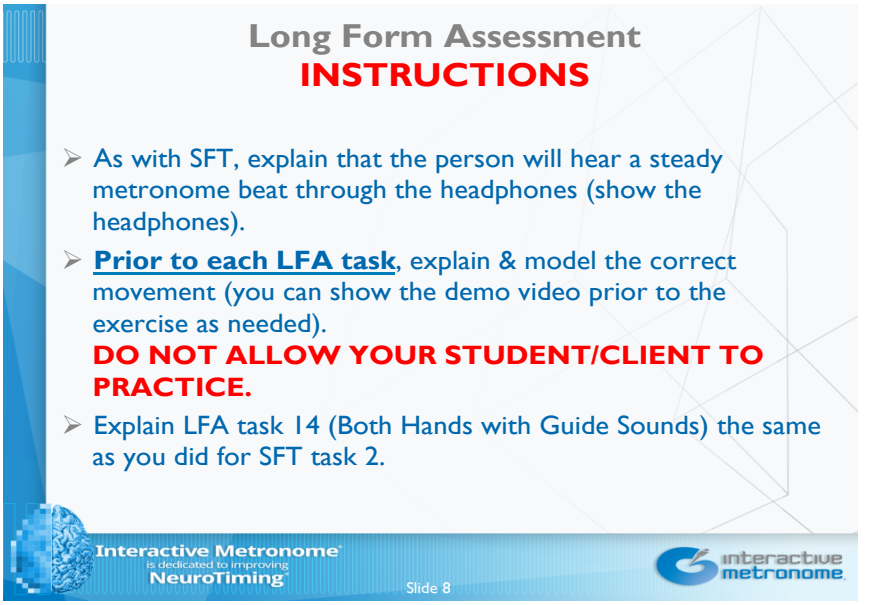
1. Your IM equipment should be set up and ready to use for this lab.
2. Your IM software should have already been installed in the previous lab and should be open on your computer.
3. If you've not done so already, open the IM training file you created during the previous module.
4. When your IM training file is first opened, it should default to Short Form Test. You may also select it by going to the Training box on the top right side of the screen. Click on the arrow for Task Mode to select Short Form Test.
5. Put the headphones on, making sure they are on the correct ear (look for the small L and R on the headphones).
6. Put the glove and button trigger on your dominant hand.
7. Press GO. DO NOT LOOK AT THE COMPUTER SCREEN. Begin clapping in sync with the reference tone for Short Form Test Task 1. You will NOT hear guide sounds during this task.
8. When finished with Short Form Test Task 1, the software automatically advances you to Short Form Test Task 2. Keep your headphones and button trigger on. Press GO. DO NOT LOOK AT THE COMPUTER SCREEN. Begin clapping in sync with the reference tone. This time, you will also hear guide sounds.
    a. Guide sounds heard in the LEFT ear mean you are hitting ahead of the reference tone (or early). Buzzer is very far ahead & rubberband twang means you are closer to the beat, but still ahead of it instead of on it.
    b. Guide sounds heard in the RIGHT ear mean you are hitting after the reference tone (or late). Buzzer is very far after & rubberband twang means you are closer to the beat, but still after of it instead of on it.
    c. High pitch rewarding guide sound heard in both ears simultaneously

means you are hitting in sync with the beat. Your goal is to hear this guide sound and stay in sync as much as possible. When you get off the beat, your goal is to get back on it to where you are hearing this sound again.

9. Once you have completed both Task 1 and Task 2 of the Short Form Test, remove the headphones, glove and button trigger. Resume watching the online video. We will review your Short Form Test results in a few minutes.

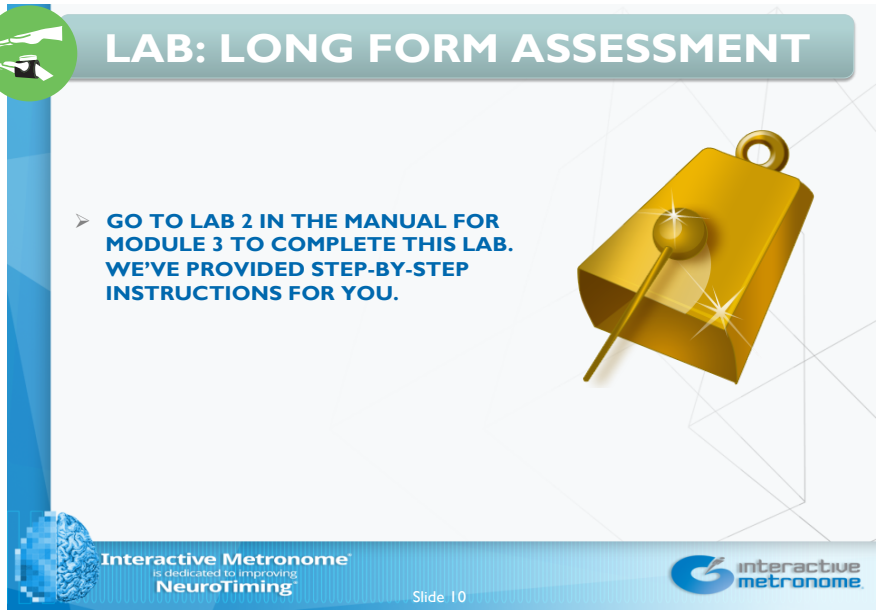
RESUME VIDEO





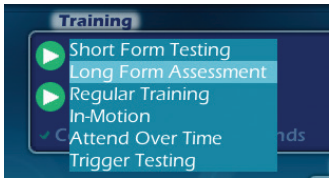
NOTES

MODULE 3

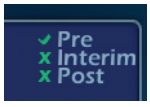


LAB 2: PERFORM THE LONG FORM ASSESSMENT (LFA)

1. With your IM training file open, go to the Training box in the upper, right corner of the screen. Go to the Task Mode Selector and click on the arrow to choose Long Form Assessment.



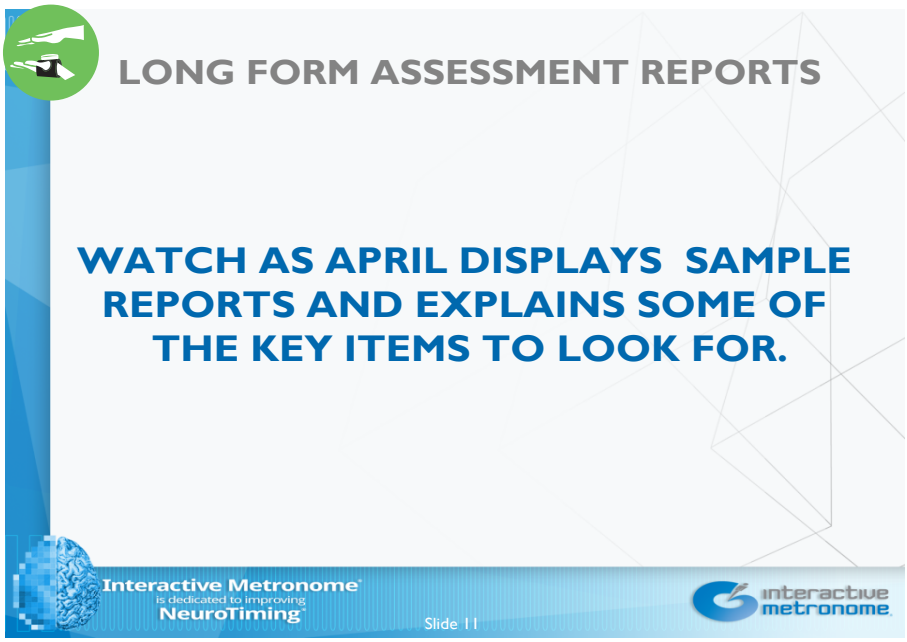
2. Three X's will appear to the right of the Task Mode Selector when Long Form Assessment is chosen to indicate pre, interim, and post Long Form Assessment. Select "Pre" by clicking the X to display a checkmark.
NOTE: *The Long Form Assessment will not respond until one of these options has been selected each time.*



3. Task 1 - Both Hands should be showing in the Exercise Selector (top right box on screen). Put the headphones on, making sure they are on the correct ear. Put the glove and button trigger on your dominant hand for the first task. Press GO. DO NOT LOOK AT THE COMPUTER SCREEN. Begin clapping in a rhythmical, circular motion in sync with the reference tone. You will not hear guide sounds on Tasks 1-13, but only on Task 14.

4. Once each Long Form Assessment task is completed, the software will automatically advance you to the next task. Simply look at the Exercise Selector (top, right box on the screen) to see which task is next, make sure you have the trigger on the correct hand and are using the correct trigger for the task (button trigger for hand and tap matt for lower extremities). If you need help remembering what to do for each exercise, you can click on EXERCISES at the top of the screen for a refresher. To start each task, press GO. MAKE SURE YOU ARE NOT LOOKING AT THE COMPUTER SCREEN.
5. Upon completion of the entire LFA (all 14 tasks), take off your headphones, glove and button trigger and resume watching the video. We will go over your scores in just a few minutes.

RESUME VIDEO



NOTES

LOG YOUR ACTIVITY TIME HERE!

VIDEO END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 57 MINUTES

LOG YOUR ACTIVITY TIME HERE!

READING START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 9 MINUTES.

NOTES

LAB: LFA & AOT REPORT
Compare YOUR Scores to Indicator Table

- **SELECT**
  - Reports
  - Long Form Assessment
  - LFA Calculations
- **Compare LFA Tasks 1 & 14**
  - Did you find guide sounds helpful?
  - Did you perform worse with guide sounds?
- **Did you appear to be getting better at timing over the course of the LFA?**

NOTE:
AOT score is reported at the bottom of the LFA Calculations Report
We cannot view YOUR AOT reports today. ***Why?*** *(because you didn't complete it!)*

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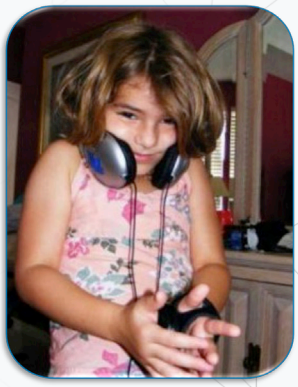
Slide 12
interactive metronome

Assessment Modifications

- **Skip IM assessment (i.e., infant, toddler, low functioning) & go directly to total hands-on IM**
- **Seated**
- **Assist for balance**
- **Skip tasks**
- **Rest breaks**
- **Complete over more than one session**
- **Speakers**
- **Placement/type of headphones**
- **Alternative triggers/switches**
- **Decrease volume**
- **Visual mode (i.e., hearing loss)**



RECORD modifications **FOR LATER COMPARISON**

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Review of Settings and Definitions

- ***REF:*** Reference Tone (Cowbell)
- ***GUIDE:*** Buzzer sound when you're way too early or way too late
- ***RO:*** Rubber Band Twang that tells you when you're within the set difficulty range of training
- ***SRO:*** Reward tone that tells you if you are within the set SRO range.
- ***IAR:*** Highest number of consecutive SRO hits during a task
- ***Burst:*** A setting to help motivate your clients to get SRO hits! Several bursts can be earned during each task. The more bursts achieved, the more neural synchronization is taking place!
- ***Difficulty:*** The setting that determines when your client hears the "Guide" sound
- ***Tempo:*** Beats per minute or speed of the metronome (default is 54 bpm)

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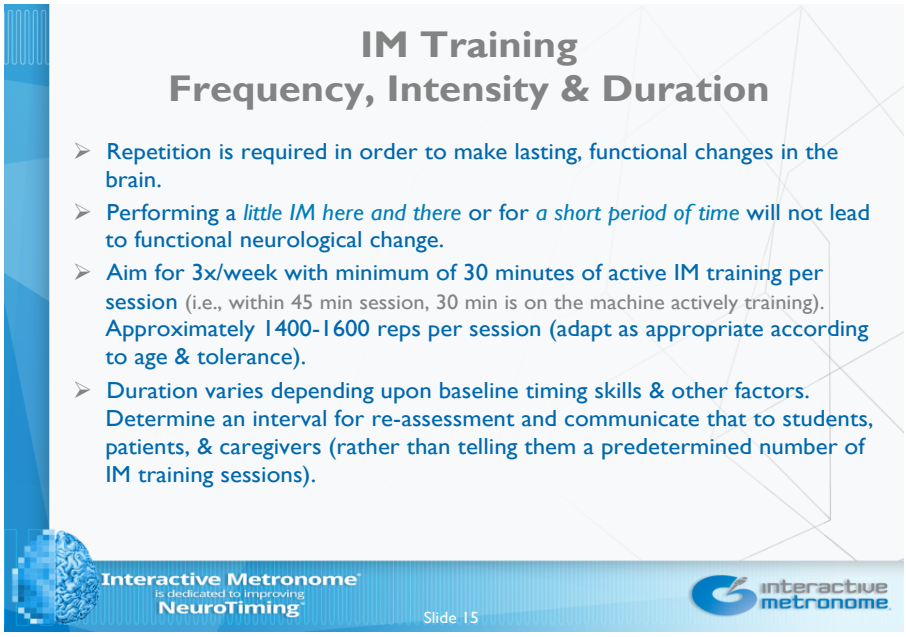


COMPLETE THE ADDITIONAL READING
9 minutes

SCREEN HEARING BEFORE IM ASSESSMENT

Elderly clients, some children, and those individuals who have suffered head trauma have increased likelihood of hearing loss that will impact daily function, cognition, communication, and performance during IM assessment and training. You are strongly encouraged to screen your client's hearing prior to IM assessment. Referral for ENT evaluation and more complete audiological assessment should be made in cases where a pure tone hearing screening is failed.

INTERPRETING SHORT FORM TEST RESULTS

The SF is a very brief screening that can be used in lieu of the Long Form Assessment. It provides you with important information about your client's timing and rhythm in the event that the more complete Long Form Assessment cannot be completed, or when the SF is used as a brief screening or a quick reassessment at the beginning or end of IM training sessions.

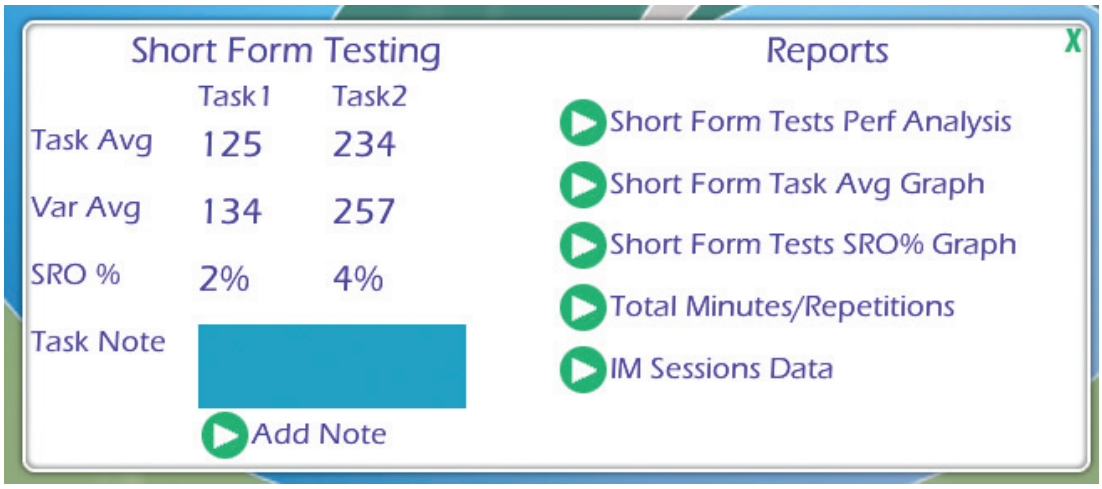
Upon completion of the Short Form Test, note the Task (MS) Averages for SF Task 1 and SF Task 2, and compare them to the Indicator Table based upon your client's age.

INDICATOR TABLE

Age	6	7 to 8	9 to 10	11 to 12	13 to 15	16+
Extreme Deficiency	280+	270+	260+	240+	215+	200+
Severe Deficiency	175–279	170–269	160–259	155–239	150–214	147–199
Below Average	120–174	90–169	80–159	75–154	72 –149	70–146
Average	90–119	65–89	55–79	45–74	43–71	41–69
Above Average	56–89	45–64	38–54	36–44	33–42	30–40
Exceptional	40–55	32–44	28–37	26–35	23–32	22–29
Superior	Below 40	Below 32	Below 28	Below 26	Below 23	Below 22

NOTES

Observe whether your client appeared to perform better or worse on SF Task 2 when the guide sounds were turned on compared to SF Task 1 with just the Reference Tone. If your client performed significantly worse on SF Task 2, this may indicate that your client was somewhat distracted by the guide sounds, had difficulty with auditory/cognitive processing, and/or had difficulty coordinating fine motor movements (impaired motor planning and sequencing).



Upon completion of the SF, you should be able to answer the following questions in order to determine the best course for IM training.

- What is my client's timing tendency? Too fast (hits way ahead of the beat consistently) or too slow (hits after the beat consistently)?
- Does my client *try to synchronize* with the beat when he hears the reference tone? Or is my client hitting opposite of the beat or randomly?
- Does my client do better when the guide sounds are turned on (SF Task 2 is better than SF Task 1), indicating he benefits from the feedback and will do well with the guide sounds turned on early in training?
- Does my client do much worse when the guide sounds are turned on (SF Task 1 is much better than SF Task 2) that may indicate he will do better if guide sounds are introduced more gradually?
    - Did I observe difficulty with motor coordination that may be impacting performance?
    - Does my client appear bothered or distracted by the guide sounds? (demeanor changes, hesitations in performance, stops/starts, etc)
- Does my client appear to have difficulty with motor skills (linear rather than circular clapping, stiff movements, awkward, and/or extraneous movements) as he claps to the beat that may indicate he will benefit from adjustments in IM settings to facilitate better coordination?
- Does my client have weakness on one side of the body that impacts timing and coordination (i.e., hemiplegia)? If so, he will benefit from training with the good extremity first.
- Does my client display any signs of discomfort due to Sensory Processing Disorder? Is the volume comfortable? Does my client tolerate wearing the headphones/glove and trigger?
- Is my client motivated to participate in IM training? How will I reward my client for effort to elicit maximum effort and cooperation?

LIMITATIONS OF THE SHORT FORM TEST

The SF is only a 2 minute quick assessment of timing and rhythm with the hands. It is important to assess attention and processing over a longer period of time and to evaluate timing and rhythm in all of the extremities, therefore whenever possible the Long Form Assessment should be completed instead of the SF.

INTERPRETING LONG FORM ASSESSMENT RESULTS

NOTES

It is important to observe and make notations about the following during the LFA in order to obtain baseline timing data and plan IM training.

INDICATOR TABLE

Age	6	7 to 8	9 to 10	11 to 12	13 to 15	16+
Extreme Deficiency	280+	270+	260+	240+	215+	200+
Severe Deficiency	175–279	170–269	160–259	155–239	150–214	147–199
Below Average	120–174	90–169	80–159	75–154	72 –149	70–146
Average	90–119	65–89	55–79	45–74	43–71	41–69
Above Average	56–89	45–64	38–54	36–44	33–42	30–40
Exceptional	40–55	32–44	28–37	26–35	23–32	22–29
Superior	Below 40	Below 32	Below 28	Below 26	Below 23	Below 22

A. SCORES

1. Compare Task (MS) Averages (see Sample LFA Calculations Report below) for each LFA task to the IM Indicator Table based upon your client's age. The Indicator Table provides a ballpark estimate of where your client's timing should be. As you view the Indicator Table, notice how timing is a developmental skill and gets better with age. Once a person reaches age 16, timing ability tends to level out. So, for clients age 16 and older, you will compare LFA (MS) scores to the Indicator Table column for age 16+. Likewise, for clients that are 5 years of age and younger, you will expect their (MS) scores to be less proficient than a 6 year old. Currently, there is no available data on children younger than 6; however, knowing where a 6 year old should be in terms of timing does help you make an educated guess as to where a 5 year old should be.
2. On which task(s) did your client perform best with regard to timing? These tasks are the best place to begin with IM training.
3. On which task(s) did your client struggle the most with regard to timing? It may be best to introduce these tasks later in IM training once your client gains better attention, processing, motor coordination , and a sense of timing & synchronization.
4. Did your client perform MUCH worse on Task 14 (with guide sounds) compared to Task 1 (without guide sounds)? If your client performed significantly worse when the guide sounds were turned on, this may indicate that your client is struggling with attention, information processing and/or motor coordination. In this case, it would be best to begin IM training with just the reference tone and introduce guide sounds later in a more gradual manner and/or with modified IM settings to make them easier to process.

SAMPLE LFA CALCULATIONS REPORT

Long Form Assessment Calculations

IM Long Form Assessment Date: 6/24/2013
Trainee ID: D
IM Trainer Name: John Smith

Date of Birth: 04/07/2002
Preferred Hand: Left
Gender: Female

Task	MS	Early Hits	Late Hits
1. Both Hands	46	50	5
2. Right Hand	19	41	14
3. Left Hand	21	42	13
4. Both Toes	37	45	8
5. Right Toe	29	39	15
6. Left Toe	29	38	16
7. Both Heels	51	44	9
8. Right Heel	34	39	16
9. Left Heel	44	46	9
10. R Hand/L Toe	60	45	10
11. L Hand/R Toe	45	40	15
12. Bal. Right Foot	31	45	10
13. Bal. Left Foot	57	42	13
14. #1 -w Guide ends	26	45	10
Total Unadjusted	38	601 (78.66492%)	163 (21.33508%)

IM Long Form Assessment Battery Results:
Millisecond Accuracy
a) Hands ms avg. (includes Task 1, 2, 3, 14) = 28
b) Feet ms avg. (includes Task 4, 5, 6, 7, 8, 9, 12, 13) = 39
c) Both Hands ms avg. (includes Task 1, 14) = 36
d) Both Feet ms avg. (includes Task 4, 7) = 44
e) Left Side ms avg. (includes Task 3, 6, 9) = 31
f) Right Side ms avg. (includes Task 2, 5, 8) = 27
g) Bilateral ms avg. (includes Task 10, 11) = 52
h) Adjusted ms avg. ((a + b) / 2) = 34

Long Form Assessment Battery Achievements
Highest In-A-Row: 7, Task = 0
Total Number of IAR Bursts: 5
Percentage within 15 MS: 4%

Optional - Attend Over Time Test
Both Hands 500 reps: Not Taken

B. TIMING TENDENCY:

1. Look at the Early Hits column (see sample reports below for Predominantly Early Hits and Predominantly *Very* Early Hits). Were hits predominantly Early (a higher number compared to Late Hits)? The tendency to anticipate the beat and hit a little ahead of the beat is fairly common and not necessarily an indicator that a person is impulsive. Hits that are consistently WAY AHEAD of the beat (Very Early) may indicate trouble with impulse control. To see whether hits were predominantly Very Early, look at the more detailed Data List View. If your client is clapping way ahead of the beat consistently (Very Early), this may indicate impulsivity.

SAMPLE REPORT: PREDOMINANTLY EARLY HITS

Long Form Assessment Calculations

IM Long Form Assessment Date: 04/02/2013 Date of Birth: 10/14/1967
Trainee ID: A Preferred Hand: Right
IM Trainer Name: Joe Smith Gender: Female

Task	MS	Early Hits	Late Hits
1. Both Hands	64	52	2
2. Right Hand	94	31	
3. Left Hand	64	28	3
4. Both Toes	70	29	2
5. Right Toe	44	27	4
6. Left Toe	64	26	3
7. Both Heels	69	31	
8. Right Heel	72	31	
9. Left Heel	68	30	1
10. R Hand/L Toe	88	31	
11. L Hand/R Toe	82	29	2
12. Bal. Right Foot	88	30	
13. Bal. Left Foot	80	30	
14. #1 -w Guide ends	87	56	
Total Unadjusted	74	461 (96.44351%)	17 (3.556485%)

IM Long Form Assessment Battery Results:

Millisecond Accuracy

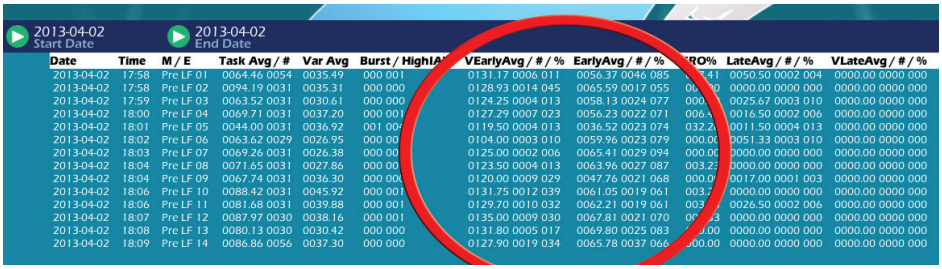
a) Hands ms avg. (includes Task 1, 2, 3, 14) = 77
b) Feet ms avg. (includes Task 4, 5, 6, 7, 8, 9, 12, 13) = 69
c) Both Hands ms avg. (includes Task 1, 14) = 76
d) Both Feet ms avg. (includes Task 4, 7) = 70
e) Left Side ms avg. (includes Task 3, 6, 9) = 65
f) Right Side ms avg. (includes Task 2, 5, 8) = 70
g) Bilateral ms avg. (includes Task 10, 11) = 85
h) Adjusted ms avg. ((a + b) / 2) = 73

Long Form Assessment Battery Achievements

Highest In-A-Row: 4, Task = 4
Total Number of IAR Bursts: 1
Percentage within 15 MS: 4%

Optional - Attend Over Time Test

Both Hands 500 reps: Not Taken



This LFA report above shows a client who is hitting predominantly Early. Upon closer examination of her timing in the more detailed Data List View screen (above image), you can see that the majority of her hits were within 100 ms of the reference tone and are considered Early. It is important to note her hits are not predominantly Very Early. Early or hyperanticipatory hits are typical for most individuals when they first try IM, and they are not an indication of impulsivity.
NOTE: *Data List View is an alternate report in the IM software that breaks performance down even further than the LFA Calculations Report. In just a few minutes, you will get a chance to look up your own LFA scores in Data List View & explore this valuable report.*

NOTES

MODULE 3

SAMPLE REPORT: PREDOMINANTLY *VERY* EARLY HITS

Long Form Assessment Calculations

IM Long Form Assessment Date: 04/02/2013
Trainee ID: J
IM Trainer Name: Jane Smith

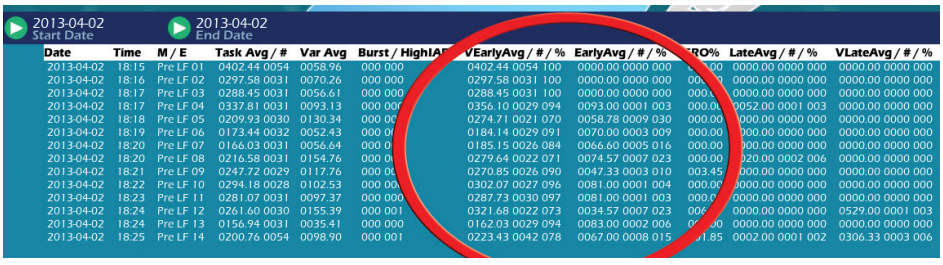
Date of Birth: 03/22/2002
Preferred Hand: Left
Gender: Male

Task	MS	Early Hits	Late Hits
1. Both Hands	402	54	
2. Right Hand	298	31	
3. Left Hand	288	31	
4. Both Toes	338	30	1
5. Right Toe	210	30	
6. Left Toe	173	32	
7. Both Heels	166	31	
8. Right Heel	217	29	2
9. Left Heel	248	29	
10. R Hand/L Toe	294	28	
11. L Hand/R Toe	281	31	
12. Bal. Right Foot	262	29	1
13. Bal. Left Foot	157	31	
14. #1 -w Guide ends	201	50	4
Total Unadjusted	252	466 (98.31223%)	8 (1.687764%)

IM Long Form Assessment Battery Results:
Millisecond Accuracy
a) Hands ms avg. (includes Task 1, 2, 3, 14) = 297
b) Feet ms avg. (includes Task 4, 5, 6, 7, 8, 9, 12, 13) = 221
c) Both Hands ms avg. (includes Task 1, 14) = 302
d) Both Feet ms avg. (includes Task 4, 7) = 252
e) Left Side ms avg. (includes Task 3, 6, 9) = 236
f) Right Side ms avg. (includes Task 2, 5, 8) = 242
g) Bilateral ms avg. (includes Task 10, 11) = 288
h) Adjusted ms avg. ((a + b) / 2) = 259

Long Form Assessment Battery Achievements
Highest In-A-Row: 1, Task = 14
Total Number of IAR Bursts: 0
Percentage within 15 MS: 4%

Optional - Attend Over Time Test
Both Hands 500 reps: Not Taken



The LFA report shown above is for a client who also has a tendency to hit predominantly Early. Upon closer examination of his timing data via Data List View (above image), you can see that unlike the previous client, many more of his hits are Very Early or greater than 200ms from the reference tone. This profile is more concerning, and may be an indication of impulsivity (when the individual does not have a condition like ataxia that would contribute to severe dyscoordination).

Viewing these results in light of other assessments you've performed may help you see a more complete picture and draw more accurate conclusions about how poor timing is impacting your client functionally.

2. Look at the Late Hits column (see sample report below for Predominantly Late Hits). Were hits predominantly Late (a higher number compared to Early Hits)? The tendency to fairly

consistently hit after the beat (even within 100ms of the beat) may be an indication of impaired auditory/information processing. Typically, as an individual attempts to hit on the beat, he will necessarily hit around the beat (some early, some late), and sometimes exactly on the beat. So it is normal to see some early and late hits. However, if the overwhelming majority of hits are Late and your client does not have a motor skill impediment like hemiplegia or ataxia that is interfering with performance, suspect a problem with processing.

SAMPLE REPORT: PREDOMINANTLY LATE HITS

Long Form Assessment Calculations

IM Long Form Assessment Date: 04/02/2013
Trainee ID: J
IM Trainer Name: April Rain

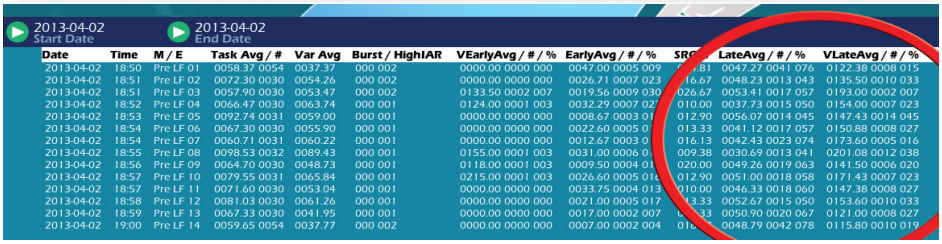
Date of Birth: 08/15/1970
Preferred Hand: Right
Gender: Male

Task	MS	Early Hits	Late Hits
1. Both Hands	58	5	49
2. Right Hand	72	7	23
3. Left Hand	58	11	19
4. Both Toes	66	8	22
5. Right Toe	93	3	28
6. Left Toe	67	5	25
7. Both Heels	61	3	28
8. Right Heel	99	7	25
9. Left Heel	65	5	25
10. R Hand/L Toe	80	6	25
11. L Hand/R Toe	72	4	26
12. Bal. Right Foot	81	5	25
13. Bal. Left Foot	67	2	28
14. #1 -w Guide ends	60	2	52
Total Unadjusted	71	73 (15.4334%)	400 (84.5666%)

IM Long Form Assessment Battery Results:
Millisecond Accuracy
a) Hands ms avg. (includes Task 1, 2, 3, 14) = 62
b) Feet ms avg. (includes Task 4, 5, 6, 7, 8, 9, 12, 13) = 75
c) Both Hands ms avg. (includes Task 1, 14) = 59
d) Both Feet ms avg. (includes Task 4, 7) = 64
e) Left Side ms avg. (includes Task 3, 6, 9) = 63
f) Right Side ms avg. (includes Task 2, 5, 8) = 88
g) Bilateral ms avg. (includes Task 10, 11) = 76
h) Adjusted ms avg. ((a + b) / 2) = 68

Long Form Assessment Battery Achievements
Highest In-A-Row: 2, Task = 14
Total Number of IAR Bursts: 0
Percentage within 15 MS: 4%

Optional - Attend Over Time Test
Both Hands 500 reps: Not Taken


2013-04-02 Start Date
2013-04-02 End Date

Date	Time	M / E	Task Avg / #	Var Avg	Burst / HighIAR	VEarlyAvg / # / %	EarlyAvg / # / %	SRC	LateAvg / # / %	VLateAvg / # / %
2013-04-02	18:50	Pre LF 01	0058.37 0054	0037.37	000 002	0000.00 0000 000	0047.00 0005 009	81	0047.27 0041 076	0122.38 0008 015
2013-04-02	18:51	Pre LF 02	0072.30 0030	0054.26	000 002	0000.00 0000 000	0026.71 0007 023	16.67	0048.23 0013 043	0135.50 0010 033
2013-04-02	18:51	Pre LF 03	0057.90 0030	0053.47	000 002	0133.50 0002 007	0019.56 0009 030	026.67	0053.41 0017 057	0193.00 0002 007
2013-04-02	18:52	Pre LF 04	0066.47 0030	0063.74	000 001	0124.00 0001 003	0032.29 0007 02	010.00	0037.73 0015 050	0154.00 0007 023
2013-04-02	18:53	Pre LF 05	0092.74 0031	0059.00	000 001	0000.00 0000 000	0008.67 0003 01	012.90	0056.07 0014 045	0147.43 0014 045
2013-04-02	18:54	Pre LF 06	0067.30 0030	0055.90	000 001	0000.00 0000 000	0022.60 0005 0	013.33	0041.12 0017 057	0150.88 0008 027
2013-04-02	18:54	Pre LF 07	0060.71 0031	0060.22	000 001	0000.00 0000 000	0012.67 0003 0	016.13	0042.43 0023 074	0173.60 0005 016
2013-04-02	18:55	Pre LF 08	0098.53 0032	0089.43	000 001	0155.00 0001 003	0031.00 0006 0	009.38	0030.69 0013 041	0201.08 0012 038
2013-04-02	18:56	Pre LF 09	0064.70 0030	0048.73	000 001	0118.00 0001 003	0009.50 0004 01	020.00	0049.26 0019 063	0141.50 0006 020
2013-04-02	18:57	Pre LF 10	0079.55 0031	0065.84	000 001	0215.00 0001 003	0026.60 0005 01	012.90	0051.00 0018 058	0171.43 0007 023
2013-04-02	18:57	Pre LF 11	0071.60 0030	0053.04	000 001	0000.00 0000 000	0033.75 0004 013	010.00	0046.33 0018 060	0147.38 0008 027
2013-04-02	18:58	Pre LF 12	0081.03 0030	0061.26	000 001	0000.00 0000 000	0021.00 0005 017	13.33	0052.67 0015 050	0153.60 0010 033
2013-04-02	18:59	Pre LF 13	0067.33 0030	0041.95	000 001	0000.00 0000 000	0017.00 0002 007	33	0050.90 0020 067	0121.00 0008 027
2013-04-02	19:00	Pre LF 14	0059.65 0054	0037.77	000 002	0000.00 0000 000	0007.00 0002 004	016	0048.79 0042 078	0115.80 0010 019

This LFA Calculations Report is for a client who demonstrates predominantly Late hits. If the majority of hits are late, this is atypical and a sign of delayed information processing (if motor function is intact). A more detailed look at this client's timing data via Data List View shows you whether this client's processing speed is slightly delayed (mostly Late hits within 100ms of the reference tone) or is significantly delayed (many more Very Late hits that are > 100ms from the reference tone).

NOTES

3. Did your client hit opposite of the beat consistently (see sample report below for Predominantly Opposite of the Beat) with scores in the high 400ms and 500ms range? This may indicate he did not understand your instructions to hit exactly on the beat and that he waited until he heard the beat to clap, or that his cognitive processing is impaired.

SAMPLE REPORT: PREDOMINANTLY OPPOSITE OF THE BEAT

Long Form Assessment Calculations

IM Long Form Assessment Date: 04/02/2013
Trainee ID: A
IM Trainer Name: Summer Weather

Date of Birth: 12/01/1950
Preferred Hand: Left
Gender: Female

Task	MS	Early Hits	Late Hits
1. Both Hands	497	40	10
2. Right Hand	528	18	10
3. Left Hand	532	18	6
4. Both Toes	514	31	
5. Right Toe	496	29	2
6. Left Toe	489	30	1
7. Both Heels	490	29	2
8. Right Heel	489	27	3
9. Left Heel	493	29	2
10. R Hand/L Toe	486	29	2
11. L Hand/R Toe	432	20	9
12. Bal. Right Foot	536	13	12
13. Bal. Left Foot	534	19	6
14. #1 -w Guide ends	262	49	6
Total Unadjusted	484	381 (84.29204%)	71 (15.70796%)

IM Long Form Assessment Battery Results:
Millisecond Accuracy
a) Hands ms avg. (includes Task 1, 2, 3, 14) = 455
b) Feet ms avg. (includes Task 4, 5, 6, 7, 8, 9, 12, 13) = 505
c) Both Hands ms avg. (includes Task 1, 14) = 380
d) Both Feet ms avg. (includes Task 4, 7) = 502
e) Left Side ms avg. (includes Task 3, 6, 9) = 505
f) Right Side ms avg. (includes Task 2, 5, 8) = 504
g) Bilateral ms avg. (includes Task 10, 11) = 459
h) Adjusted ms avg. ((a + b) / 2) = 480

Long Form Assessment Battery Achievements
Highest In-A-Row: 2, Task = 0
Total Number of IAR Bursts: 0
Percentage within 15 MS: 4%

Optional - Attend Over Time Test
Both Hands 500 reps: Not Taken

2013-04-02 Start Date 2013-04-02 End Date

Date	Time	M / E	Task Avg / #	Var Avg	Burst / HighIAR	VEarlyAvg / # / %	EarlyAvg / # / %	SRO%	LateAvg / # / %	VLateAvg / # / %
2013-04-02	19:13	Pre LF 01	0496.98 0050	0042.75	000 000	0488.10 0040 080	0000.00 0000 000	000.00	0000.00 0000 000	0532.50 0010 020
2013-04-02	19:14	Pre LF 02	0527.71 0028	0014.92	000 000	0532.67 0018 064	0000.00 0000 000	000.00	0000.00 0000 000	0518.80 0010 036
2013-04-02	19:14	Pre LF 03	0531.58 0024	0018.78	000 000	0531.50 0018 075	0000.00 0000 000	000.00	0000.00 0000 000	0531.83 0006 025
2013-04-02	19:15	Pre LF 04	0513.65 0031	0042.19	000 000	0513.65 0031 100	0000.00 0000 000	000.00	0000.00 0000 000	0000.00 0000 000
2013-04-02	19:16	Pre LF 05	0496.16 0031	0038.92	000 000	0493.76 0029 094	0000.00 0000 000	000.00	0000.00 0000 000	0531.00 0002 006
2013-04-02	19:17	Pre LF 06	0488.77 0031	0066.55	000 000	0487.73 0030 097	0000.00 0000 000	000.00	0000.00 0000 000	0520.00 0001 003
2013-04-02	19:17	Pre LF 07	0489.97 0031	0046.40	000 000	0487.79 0029 094	0000.00 0000 000	000.00	0000.00 0000 000	0521.50 0002 006
2013-04-02	19:18	Pre LF 08	0488.83 0030	0041.25	000 000	0494.70 0027 090	0000.00 0000 000	000.00	0000.00 0000 000	0436.00 0003 010
2013-04-02	19:19	Pre LF 09	0492.52 0031	0043.19	000 000	0490.66 0029 094	0000.00 0000 000	000.00	0000.00 0000 000	0519.50 0002 006
2013-04-02	19:19	Pre LF 10	0485.81 0031	0047.64	000 000	0486.86 0029 094	0000.00 0000 000	000.00	0000.00 0000 000	0470.50 0002 006
2013-04-02	19:20	Pre LF 11	0432.31 0029	0100.32	000 000	0477.85 0020 069	0000.00 0000 000	000.00	0000.00 0000 000	0331.11 0009 031
2013-04-02	19:21	Pre LF 12	0535.68 0025	0013.17	000 000	0538.08 0013 052	0000.00 0000 000	000.00	0000.00 0000 000	0533.08 0012 048
2013-04-02	19:22	Pre LF 13	0534.40 0025	0016.41	000 000	0536.58 0019 076	0000.00 0000 000	000.00	0000.00 0000 000	0527.50 0006 024
2013-04-02	19:23	Pre LF 14	0262.44 0055	0179.42	000 002	0313.63 0041 075	0053.00 0008 015	005.45	0029.50 0004 007	0516.50 0002 004

This LFA Calculations Report shows a client who is hitting opposite of the beat rather than ON the beat. This is evident based upon behavioral observation during the LFA and (MS) scores that are in the high 400-500's. After the first few hits during LFA Task 1, the assessment was stopped and this client was reinstructed to hit ON each beat in sync with it (and this was demonstrated for her). Upon resuming the LFA, she continued to hit opposite of the beat. In this case, if you look at the LFA Calculations Report you see predominantly Early hits. Upon closer examination of her timing data via Data List View (above image), you see that most of

her hits were Very Early and were greater than 400ms from the beat. Interestingly, when the guide sounds were turned on during Task 14, she gained greater awareness that she was not hitting ON the beat and made an attempt to synchronize with the reference tone, earning a better (MS) score on that particular task.

4. Did your client hit randomly to the beat or appear to have no sense of timing at all (see sample report below for Predominantly Random Hits)? This indicates more significant difficulty with information processing/cognition. When this occurs, (MS) scores will typically range between 300-500ms. Behavioral observations during the LFA are the key factor in determining whether hits are random.

SAMPLE REPORT: PREDOMINANTLY RANDOM HITS

Long Form Assessment Calculations

IM Long Form Assessment Date: 04/02/2013 — Date of Birth: 02/18/2003
Trainee ID: N — Preferred Hand: Right
IM Trainer Name: Autumn Leaves — Gender: Male

Task	MS	Early Hits	Late Hits
1. Both Hands	296	46	8
2. Right Hand	289	25	2
3. Left Hand	294	24	9
4. Both Toes			
5. Right Toe			
6. Left Toe			
7. Both Heels			
8. Right Heel			
9. Left Heel			
10. R Hand/L Toe			
11. L Hand/R Toe			
12. Bal. Right Foot			
13. Bal. Left Foot			
14. #1 -w Guide ends	276	42	10
Total Unadjusted	289	137 (82.53012%)	29 (17.46988%)

IM Long Form Assessment Battery Results:
Millisecond Accuracy
a) Hands ms avg. (includes Task 1, 2, 3, 14) = 289
b) Feet ms avg. (includes Task 4, 5, 6, 7, 8, 9, 12, 13) = 0
c) Both Hands ms avg. (includes Task 1, 14) = 286
d) Both Feet ms avg. (includes Task 4, 7) = 0
e) Left Side ms avg. (includes Task 3, 6, 9) = 294
f) Right Side ms avg. (includes Task 2, 5, 8) = 289
g) Bilateral ms avg. (includes Task 10, 11) = 0
h) Adjusted ms avg. ((a + b) / 2) = 289

Long Form Assessment Battery Achievements
Highest In-A-Row: 1, Task = 14
Total Number of IAR Bursts: 0
Percentage within 15 MS: 4%

Optional - Attend Over Time Test
Both Hands 500 reps: Not Taken

2013-04-02 Start Date — 2013-04-02 End Date

Date	Time	M / E	Task Avg / #	Var Avg	Burst / HighIAR	VEarlyAvg / # / %	EarlyAvg / # / %	SRO%	LateAvg / # / %	VLateAvg / # / %
2013-04-02	19:34	Pre LF 01	0296.30 0054	0164.98	000 001	0351.90 0041 076	0054.40 0005 009	003.70	0030.00 0003 006	0242.00 0005 009
2013-04-02	19:35	Pre LF 02	0288.96 0027	0177.04	000 001	0354.43 0021 078	0052.00 0004 015	003.70	0075.50 0002 007	0000.00 0000 000
2013-04-02	19:35	Pre LF 03	0293.79 0033	0164.43	000 000	0327.29 0024 073	0000.00 0000 000	000.00	0054.00 0004 012	0324.80 0005 015
2013-04-02	19:37	Pre LF 14	0275.56 0052	0171.56	000 001	0343.63 0035 067	0052.57 0007 013	003.85	0048.33 0003 006	0255.57 0007 013

This LFA Calculations Report is for a client who demonstrated a very poor sense of timing, hitting randomly rather than attempting to synchronize with the reference tone. The LFA Calculations Report shows predominantly Early Hits. A closer look at this client's timing data via Data List View (above image), shows that most of her hits were Very Early, but there were also hits within the Early, Late, and Very Late range. It is important to note here the critical importance of observing your client during the LFA. Your observations help you to interpret the objective data in this

report to explain the reason for this pattern of timing. This client's timing bounced all over (very early, late, very late, early) as she hit the trigger in a random fashion – she did not attempt to synchronize. At times she clapped very rapidly, at times much slower than the beat, and at times she stopped clapping completely for a few beats. In this case, it was readily apparent to the IM provider that her client had a very poor sense of timing. Because she was likely going to hit random on all of the LFA tasks, the provider opted to shorten the LFA to just include Tasks 1-3 and Task 14 to evaluate whether feedback for timing (guide sounds) would be helpful. Based upon a comparison of the (MS) score for Task 14 to Tasks 1-3 and behavioral observations, the provider determined that her client did not appear to benefit from the guide sounds at this time to recognize she needed to try to synchronize with the beat.

5. The more balanced the Early and Late hits are and the better your client responds to Guide Sounds on.

   Task 14 (compared to Tasks 1-13 without guide sounds), the more likely it is that your client will proceed through the IM training phases more expediently and with just a little help from you for timing.

SAMPLE REPORT: BALANCED EARLY TO LATE HITS

Long Form Assessment Calculations

IM Long Form Assessment Date: 04/02/2013
Trainee ID: A
IM Trainer Name: Winter Snow

Date of Birth: 10/14/1968
Preferred Hand: Right
Gender: Female

Task	MS	Early Hits	Late Hits
1. Both Hands	50	46	9
2. Right Hand	60	30	1
3. Left Hand	78	30	1
4. Both Toes	61	31	
5. Right Toe	62	30	1
6. Left Toe	81	31	
7. Both Heels	64	28	3
8. Right Heel	87	31	
9. Left Heel	67	30	1
10. R Hand/L Toe	115	31	
11. L Hand/R Toe	120	29	1
12. Bal. Right Foot	77	28	2
13. Bal. Left Foot	62	27	5
14. #1 -w Guide ends	34	41	13
Total Unadjusted	73	443 (92.29166%)	37 (7.708333%)

IM Long Form Assessment Battery Results:
Millisecond Accuracy
a) Hands ms avg. (includes Task 1, 2, 3, 14) = 56
b) Feet ms avg. (includes Task 4, 5, 6, 7, 8, 9, 12, 13) = 70
c) Both Hands ms avg. (includes Task 1, 14) = 42
d) Both Feet ms avg. (includes Task 4, 7) = 62
e) Left Side ms avg. (includes Task 3, 6, 9) = 75
f) Right Side ms avg. (includes Task 2, 5, 8) = 70
g) Bilateral ms avg. (includes Task 10, 11) = 118
h) Adjusted ms avg. ((a + b) / 2) = 63

Long Form Assessment Battery Achievements
Highest In-A-Row: 6, Task = 7
Total Number of IAR Bursts: 1
Percentage within 15 MS: 4%

Optional - Attend Over Time Test
Both Hands 500 reps: Not Taken

C. MOTOR SKILLS

1. Did your client display movement that was circular, rhythmical, & coordinated? Or were his movements more linear or at times hesitant?
    - Linear and/or hesitant movements may indicate a problem with the brain's ability to plan and carry out smooth, coordinated motor sequences on demand or when "thinking" about it. This condition, called dyspraxia, is important to identify during IM assessment and/or early in IM training in order to remediate it before introducing guide sounds.
    - Dyspraxia may co-occur with many developmental disorders like SPD, ADHD or Autism. It may also be present in clients who have suffered from stroke or brain injury.
    - Clients who display dyspraxia will benefit from a slower tempo when you get to IM training – we will cover more on this subject in a bit.
2. Did your client tend to hit the trigger really hard or clap in a hard or ballistic fashion? This pattern may be combined with a linear rather than circular pattern of clapping and may be seen in individuals with Sensory Processing Disorder.
3. Did your client display weakness or limited function of one arm/ hand that impacted performance when clapping? A slower tempo may be helpful for facilitating timing & rhythm.
4. Did your client have difficulty maintaining balance while standing, moving the lower extremities, or when standing on one foot? If needed, your client can be seated initially for IM training to allow him to focus all of his attentional resources on synchronizing with the beat. You can work in IM training exercises later in standing position as he gains proficiency.

LIMITATIONS OF THE LFA

All of the LFA tasks, with the exception of Task 14 (Both Hands with Guide Sounds) are performed with the reference tone only. Some individuals can perform fairly well with just the reference tone, but they are more challenged when the guide sounds are turned on, and this is where performance may break down for them. So, if you have a client who does fairly well on the LFA, it is worth a trial of IM training with guide sounds turned on to assess performance to get a better picture of cognitive processing skills.

LFA tasks are very short, 30 seconds to 1 minute in duration each. The LFA is not intended to be a thorough assessment of sustained, focused attention. If your client performs well on the LFA, this is an indication that he can focus well for short periods of time. In addition to completing the LFA, your client should participate in other standardized and functional assessments to gather information about speech, language, cognitive, sensory and/or motor function. It is important to measure these abilities pre, interim, and post-IM training to measure progress both objectively and functionally.

NOTE: *If your client must complete the LFA over more than one session, the data will not be aggregated into one single report. Rather, the report for the LFA will reflect only those LFA tasks completed on that particular date.*

If your client does not hit the trigger on at least 80% of the time during the LFA task or does not step cleanly on/off the tap mat during the lower extremity tasks (i.e., remains standing on it so that trigger hits cannot be captured), the score for that task will not appear on the LFA Calculations Report. If that happens, don't worry. All of the data is recorded within Data List View (an alternate & more detailed view of the assessment & training data that can be selected in the software). You can retrieve the data by selecting the date of the LFA while in Data List View.

Lastly, all of your client's data is automatically saved. You never have to manually save any data.

COMPLETE ADDITIONAL LABS
15 minutes

NOTES

MODULE 3

LOG YOUR ACTIVITY TIME HERE!

READING END TIME
_____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES)
_____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 9 MINUTES.

NOTES

LOG YOUR ACTIVITY TIME HERE!

LAB START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 15 MINUTES.

ADDITIONAL LAB 1: PERFORM ATTEND OVER TIME ASSESSMENT*

1. With your IM training file open, select Attend Over Time (top right side of screen, select from drop down menu).
2. Put on your headphones.
3. Put the button trigger on your dominant hand.
4. Press GO. Begin clapping in sync with the reference tone (you will not hear guide sounds during this assessment). DO NOT LOOK AT THE COMPUTER SCREEN.

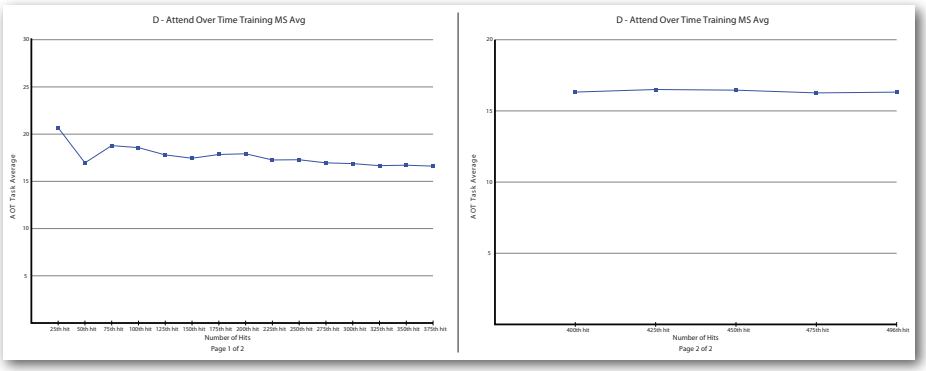
**If you complete this portion of Module 3 on the same day that you completed the LFA, results for Attend Over Time will appear at the bottom of your LFA Calculations Report. If you complete it on a separate day from the LFA, it will not appear in that report. Alternatively, you may obtain the results by going to Data List View or the Attend Over Time Reports.*

INTERPRETING ATTEND OVER TIME RESULTS

Results of the Attend Over Time test are included at the bottom of the Long Form Calculations Report (if it was completed on the same date as the LFA). There are also two additional graphs that will assist you in evaluating your client's ability to sustain focused attention. They are described below.

A. TASK MS AVERAGE GRAPH

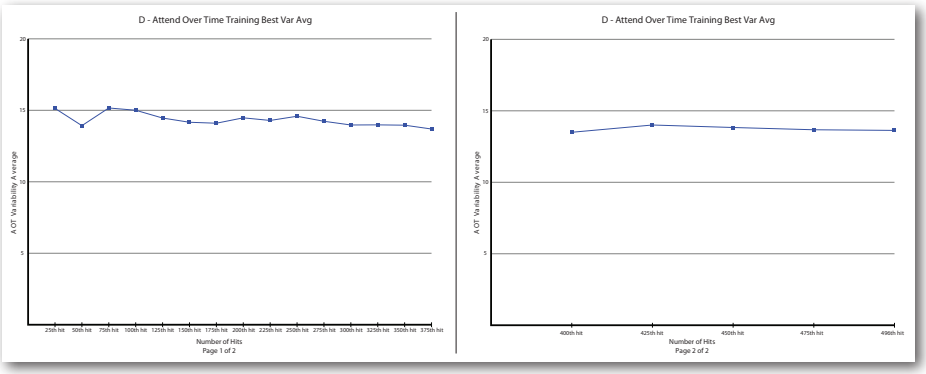
The Task MS Average Graph plots your client's ability to synchronize with the beat every 25th trigger hit over the course of the entire AOT.



1. Compare your client's Task Average (MS) scores over time to the Indicator Table.
2. Note whether your client can maintain the same degree of focus over a longer period of time (in the absence of feedback/prompting from the guide sounds or training visuals).
3. Note whether your client can self-monitor and self-correct to get back on focus if performance degrades at any point during the AOT.

B. VARIABILITY AVERAGE GRAPH

The Variability Average Graph plots your client's ability to maintain a steady rhythm. The difference in timing between one hit to the next hit is averaged and plotted on the graph showing the variability in performance over the course of the entire AOT.



1. Does your client maintain steady performance over time, indicating good rhythm?
2. Or does your client display more variability in performance over time (more of a saw tooth pattern)?

Greater accuracy (lower Task Average scores) and better rhythm (lower Variability Average scores) is ideal and is the goal by the end of IM training. According to research, individuals that demonstrate more accuracy & rhythm with auditory-motor synchronization have more mature neural profiles & better neural network synchronization for cognitive and motor tasks.

ADDITIONAL LAB 2: VIEW YOUR LONG FORM ASSESSMENT RESULTS

1. With your IM training file open, select:
   a. Reports
   b. Long Form Assessment
   c. LFA Calculations
2. When viewing the LFA Calculations Report, notice that each task is assigned a millisecond (MS) Task Average Score according to how well you were synchronized with the reference tone. Use the IM Indicator Table in the Appendix of this certification handbook to determine where your LFA (MS) Task Average Scores fall according to your age.
3. Determine whether your trigger hits were predominantly early or late.
4. Performance is broken down into the following performance domains for a more detailed analysis: "Hands", "Feet", "Both Hands", "Both Feet", "Left Side", "Right Side", and "Bilateral" at the bottom of the LFA Calculations Report. Viewing the data this way allows you to see whether there is a difference in right vs. left performance, whether there is a greater degree of dyscoordination in the lower versus upper extremities, and whether performance breaks down on bilateral versus unilateral tasks. Do you see any discrepancies in your timing data based upon this breakdown?
5. The LFA Calculations Report also provides scores for overall timing performance, including the Total Unadjusted Average (MS) and a Total Adjusted Average (MS) scores. The Unadjusted Average includes all LFA Tasks 1-14. The Adjusted Average excludes the bilateral tasks where you are required to use opposing limbs (Task 10 – Right Hand/Left Toe and Task 11 – Left Hand/Right Toe). What were your Total Unadjusted and Total Adjusted (MS) scores?
6. Results for Attend Over Time can be seen at the bottom of the LFA Calculations Report (if it was completed on the same day as the LFA). What was your Task (MS) Average score for Attend Over Time?
7. Now, let's take a more detailed look at your LFA results in Data List View.
   a. Close out of the LFA Calculations Report
   b. Go to the top of the screen and click on Result View

   c. Select the start date and end date you wish to view. In this case, it will be the date that you completed the LFA in this module.
   d. Detailed data will appear on the screen with a breakdown according the raw number of hits that were very early, early, late, very late or super right-on. When looking at client data in this view, it is helpful to observe whether hits were predominantly early or ***very*** early. Early hits are, generally speaking, more typical whereas a trend toward ***very*** early hits may indicate impulsivity.

NOTES

MODULE 3

NOTES

LOG YOUR ACTIVITY TIME HERE!

LAB END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN. ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 15 MINUTES

DON'T FORGET TO REFERENCE YOUR NOTES FOR THE TIME LOGGED ACTIVITIES IN THIS MODULE, WHICH WILL BE ASKED IN THE EVALUATION.

ADDITIONAL LAB 3: VIEW ATTEND OVER TIME REPORTS

1. With your IM training file open, select:
   a. Reports
   b. General Reports
   c. Attend Over Time Reports
      i. View your Task MS Average Graph. This graph plots your timing accuracy over the course of almost 10 minutes without any feedback to tell you if you are getting off track. How did you perform over the course of the AOT? Did you remain focused the entire time or did your performance degrade at any point?
      ii. View Variability Average Graph. This graph plots your rhythm over the course of the AOT. How rhythmical were you? Remember, the more rhythmical and consistent your auditory-motor synchronization, the more mature your neural system is for information processing.

TAKE THE ONLINE POST-TEST & EVALUATION FOR MODULE 3

5 minutes

To view the course materials for this Module visit:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-3

CONTACT US WITH ANY QUESTIONS

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NOTES

MODULE 4
IM TRAINING - PHASE ONE

75 MINUTES

LEARNING OBJECTIVES:

- Overview: Phases of IM Training
- Developing IM Training Plans
- IM Training: Phase 1

LOG YOUR ACTIVITY TIME HERE!
In each Module evaluation, you will be asked to log the amount of time it takes you to complete each course activity. This information will be used to ensure that the course CEUs have been calculated accurately. Please use this space provided to log your start time.

VIDEO START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 47 MINUTES

START

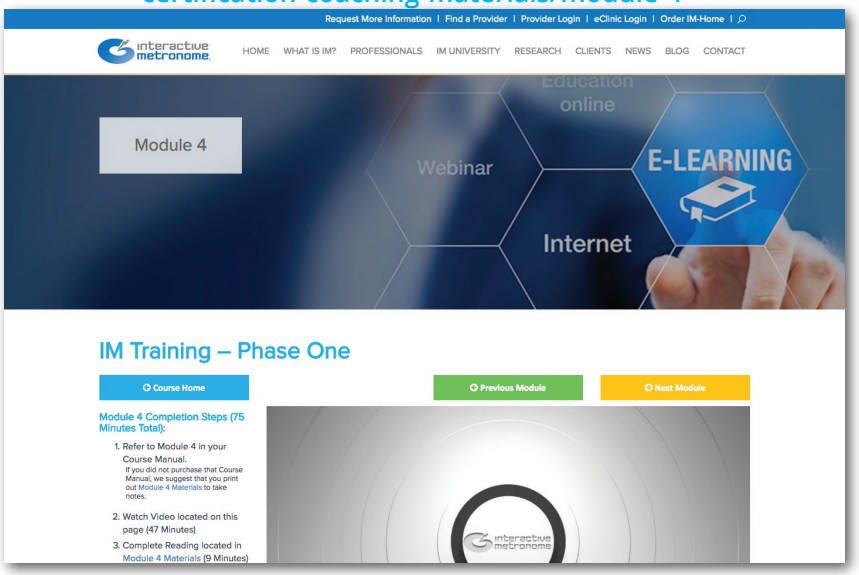
GATHER NEEDED EQUIPMENT & MATERIALS

You will need the following to complete Module 4:

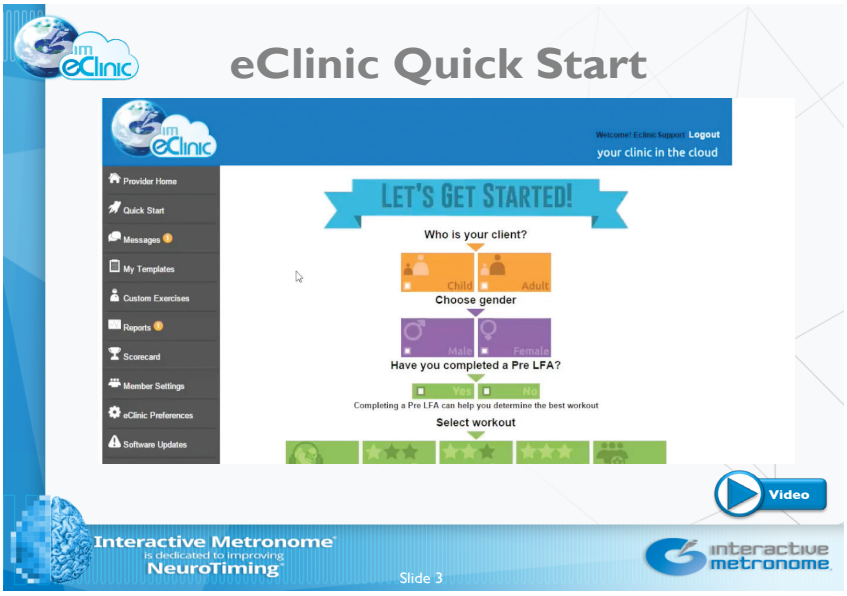
- Computer with good internet connection
- IM equipment (set up, connected to computer and ready to use)
- IM software (open software on your computer)
- IM training file (open your IM file) then minimize the software so you can begin the next module.
- Pencil to take notes

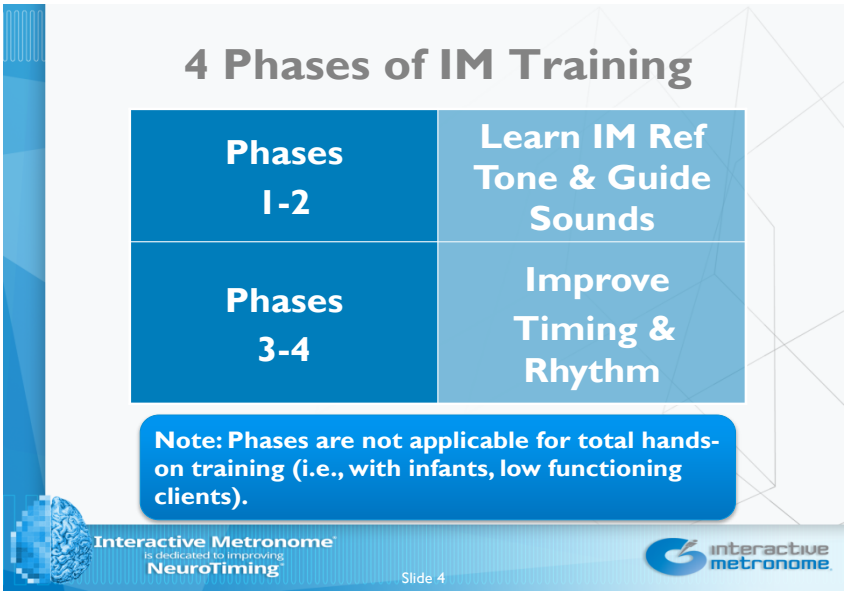
WATCH THE VIDEO
47 minutes

Access the Module video here:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-4



NOTES





IM Training: **PHASE 1**

LEARN REFERENCE TONE

- Hand exercises only (Both Hands, Right Hand, Left Hand)
- 1-3 minutes per exercise; repeat (30 min of IM training per session or approx. 1400-1600 reps per session as tolerated)
- Reference tone ONLY; guide sounds turned OFF
- Encourage rhythmical, circular hand movement to develop fine motor control and facilitate better timing (impacts auditory processing, speech, language, literacy, etc …)

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Facilitate Timing

- **Prime with metronome playing in background at home before IM**
- **Hands-on assistance from IM provider to give a sense of timing & rhythm** (best of provider has good timing)
- **Whole body movement to the beat rather than isolated body part** (rocking on ball to the beat, etc..)
- **Increase tempo initially if individual is hitting way too fast – go with flow, then gradually decrease to 54 bpm**
- **Manage sensory needs** (lighting, noise, sensory inputs, sensitivities, cravings)
- **Reward to motivate individual toward training!!**

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Facilitate Timing

- **Some individuals will demonstrate** impaired motor planning & sequencing.
  - Linear rather than circular movements
  - Trouble sequencing both toes, both heels, and/or bilateral tasks on LFA
- **To help this person:**
  - Avoid feedback of any kind:
    - **Keep guide sounds off**
    - **Avoid verbal cues.**
    - **Avoid training visuals & games.**
  - Decrease tempo (48-52 bpm) to find just right pace where can make circular, rhythmical movements with greater ease.
  - Hand over hand assist, weaning to modeling, then no cues (your timing must be good) to facilitate consistent rhythmical movement
  - Gradually increase tempo to 54 bpm then introduce Phase 2 (guide sounds)

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Facilitate Timing

- **Use of the Training Visuals* may be necessary for some individuals in Phase 1 if they …**
  - Have trouble paying attention to the ref tone
  - Are impulsive
  - Are hitting opposite of beat instead of on it
  - Are hitting randomly, very fast, or very slow – totally out of sync with the ref tone
  - Have severe unilateral hearing impairment and can't hear ref tone and guide sounds in one ear

***TRAINING VISUALS ARE CONTRAINDICATED WHEN MOTOR PLANNING & SEQUENCING IS IMPAIRED AS FEEDBACK FOR MOVEMENT IS NOT HELPFUL AND CAN INTERFERE WITH PERFORMANCE.**

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PHASE 1: Training Visuals

- **If using Training Visuals* in Phase 1, you must adjust the intensity of feedback for timing so that training is too hard:**
  - **Guide sounds remain OFF – individual hears only reference tone while receiving visual cues from the computer screen about timing**
  - **Adjust Difficulty to easier setting**
    - Default is 100ms
    - Increase to give more room for error (up to 300ms)
  - **Adjust SRO to easier setting**
    - Default is 15ms
    - Increase to give more room to achieve SRO (green) hits (up to 50ms)
- **Games are not the best option at this time – stick with less-distracting stationary backgrounds (i.e., kitty)**

*** THE GOAL OF INTRODUCING VISUAL CUES IN PHASE 1 IS TO IMPROVE ABILITY TO ATTEND TO & PROCESS THE REF TONE SO THEY LEARN THE CONCEPT OF TRYING TO SYNCHRONIZE WITH IT.**

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PHASE 1: Adjust Difficulty

THE YELLOW right-on ZONE

DIFF 100 challenging

101+	16 – 100	0 – 15	16 – 100	101+

DIFF 200 easier

201+	16 – 200	0 – 15	16 – 200	201+

DIFF 300 easiest

301+	16 – 300	0 – 15	16 – 300	301+

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NOTES

MODULE 4

NOTES

MODULE 4

PHASE 1: Adjust SRO

THE GREEN super right-on ZONE

SRO 15 challenging

101+	16 – 100	0 – 15	16 – 100	101+

SRO 30 easier

201+	30 – 200	0 – 30	30 – 200	201+

SRO 50 easiest

301+	50-300	0 – 50	50-300	301+

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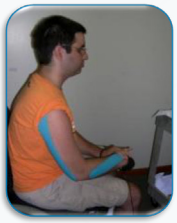
Strategies for Hemiplegia

- Learn with intact hand first – then progress to affected hand
- Try to bring affected hand to midline when clapping (↓ tempo)
- Self-assist or hands-on assist
- Gravity-assisted movement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Pediatric Adaptations

- Hand-over-hand training
- Enclosed space or with deep proprioceptive input
- With obstacle course, mini-trampoline, ball, other unstable surface
- While playing or role-playing
- Turn-taking with you or peer(s)
- Allow child to create fun exercises or help set-up
- In competition with you or others…


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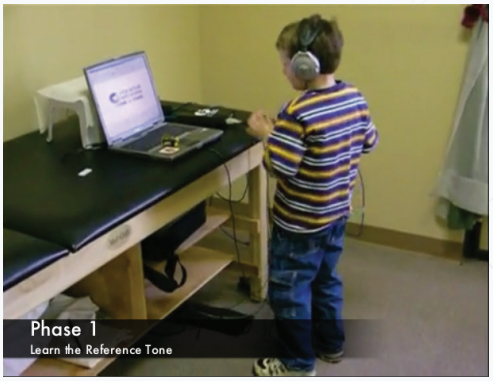
PHASE 1
Training Examples



Video

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PHASE 1 LAB: DEFAULT SETTINGS

SELECT:
- Regular Training
- Both Hands
- 1 minute
- Tempo 54 (default)
- Guide sounds OFF (x)
- Visual Indicator Selection: **Auditory*****
- Background: Default

***Do NOT look at computer screen**

POP QUIZ: Why are you starting with hand exercises OR the most intact hand in Phase 1 of IM Training?

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PHASE 1 LAB: TRAINING VISUALS WITH DIFFICULTY 100 & SRO 15

SELECT:
- Regular Training
- Both Hands
- 1 minute
- Tempo 54 (default)
- Difficulty 100 (default)
- SRO 15 (default)
- Burst threshold 4 (default)
- Guide sounds OFF (x)
- Visual Indicator Selection: Enriched Score without Center Flash*
- Background: Select a stationary background (shown in white font)

***LOOK** at the computer screen

TIP: You are using Training Visuals without the guide sound volumes turned on – visual cues may help your client if he has a lot of trouble processing auditory information.

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NOTES

MODULE 4

NOTES

LOG YOUR ACTIVITY TIME HERE!

VIDEO END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 47 MINUTES

LOG YOUR ACTIVITY TIME HERE!

READING START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 9 MINUTES

PHASE I LAB: TRAINING VISUALS WITH DIFFICULTY 300 & SRO 50

SELECT:
- Regular Training
- Both Hands
- 1 minute
- Tempo 54 (default)
- Difficulty 300 (easiest)
- SRO 50 (easiest)
- Burst threshold 2 (easiest)
- Guide sounds OFF (x)
- Visual Indicator Selection: Enriched Score without Center Flash*
- Background: Select a stationary background (shown in white font)

***LOOK** at the computer screen

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PHASE I LAB: HELP FOR MOTOR PLANNING & SEQUENCING

SELECT:
- Regular Training
- Both Hands
- 1 minute
- Tempo 48 (slower)
- Guide sounds OFF (x)
- Visual Indicator Selection: **Auditory*****
  (*choose "Auditory" from Training Visuals menu)*
- Background: Default

***Do NOT look at computer screen**

Difficulty, SRO & Burst settings don't matter here because you are not looking at the computer screen or worried about scores when working with this type of client/student. Feedback (whether through guide sounds or training visuals) will not be helpful for a person with impaired motor planning & sequencing.

POP QUIZ: What cues would you need to provide your student or client for motor planning & sequencing?

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PHASE I LAB: HELP FOR IMPULSIVE STUDENT/CLIENT

SELECT:
- Regular Training
- Both Hands
- 30 seconds
- Tempo 65 (faster)
- Guide sounds OFF (x)
- Visual Indicator Selection: **Auditory*****
- Background: Default

***Do NOT look at computer screen**

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COMPLETE THE ADDITIONAL READING
9 minutes

IM TRAINING OVERVIEW

Over the course of IM training, the exercises completed will be the same as those performed during the LFA. The exercises progress in a hierarchy from easiest (hands) to most challenging (lower extremeties, bilateral, then balance). Custom exercises can be created at any point in training to better meet the needs of your client or to motivate him to focus and participate. Several software settings can be adjusted to make exercises easier or more challenging.

In general, IM training exercises are repeated until a particular skill is mastered (i.e., hand exercises are repeated over and over in Phase 1 until the following concepts are mastered: 1) learn the reference tone and 2) demonstrate rhythmical clapping. Repetition is a vital ingredient to success, as is training frequency. IM training should ideally be performed at least 3 times per week for optimal results. In circumstances where IM training cannot be performed at the desired frequency of a minimum of 3 times per week, your client/family should consider supplementing training in the clinic setting with IM-Home training.

While the majority of your clients will perform IM with some cues and then independently, you will modify your approach to IM training if you are working with infants, very young children, or clients who are significantly cognitively and/or motorically impaired. In this situation, you will perform IM training in a hand-over-hand manner, essentially transferring your own timing ability to your client. Keep this in mind as we go over each phase of training. If providing IM with a total hands-on approach for young child or a significantly involved client, you will not necessarily need to follow the phases as described in the next few modules, but may introduce all of the tasks and any custom tasks at any point in training according to your own professional judgment.

NOTE: *It is critical to train yourself first so that your own timing scores are in the 20 ms range for you to be most effective with this approach.*

ADJUST IM SETTINGS & APPROACH FOR SUCCESS

OVERCOMING COGNITIVE OBSTACLES

Some suggestions for overcoming cognitive barriers during Phase I include:

- REMAIN SEATED FOR EXERCISES – If your client has difficulty with balance or fatigue, have your client sit in a chair while performing the hand exercises so that he can focus better.
- PROVIDE CUES TO FACILITATE TIMING – If your client has difficulty synchronizing with the beat (i.e., tends to hit way too fast, too slow, opposite of the beat, or random), provide cues in this order:
  - Verbal cues to speed up, slow down, hit on the beat etc.
  - Model appropriate timing for your client by wearing the other set of headphones and clapping to the beat while your client faces you and copies you.
  - Provide total hands-on assistance.

  When providing hands-on assistance, you should be wearing the headphones so that you can hear the reference tone also. Position the computer so that you can view the screen as needed to make sure your timing is good as you provide hands-on assistance. It is of critical importance that your own timing skills are within the exceptional range of 22-29 ms for this approach to be maximally effective.

  As you can see, the goal is to progress from the least amount of cueing to the most. If you have to provide hands-on cueing, you should look for opportunities to step back a bit and wean from the more powerful hands-on assist to modeling to verbal cues as needed. If

your client continues to have difficulty with attending to and processing the reference tone and is still not making an attempt to synchronize with it independently after providing the above cues, then another approach may be needed (see options below).

- **INTRODUCE TRAINING VISUALS –** If your client has difficulty with attending to or processing the reference tone via the auditory presentation via headphones and you have provided verbal and hands-on assistance, you may wish to introduce low distraction Training Visuals including those with a stationary background (Default or solid color background is the least distracting) and feedback for timing (Enriched Score Without Center Flash). It is best to avoid Games at this point, as they will be too distracting for a client that needs visual cues to synchronize with the Reference Tone. If auditory attention/processing are weaker abilities for your client, your goal should be to use the IM Training Visuals as a bridge to help him learn to synchronize with the auditory reference tone. Once he is attending to and processing the auditory reference tone and making an attempt to synchronize with it, you should start the session with the Training Visuals turned on and follow that with the Training Visuals turned off (so your client is just synchronizing with the auditory reference tone). You can alternate between use of Training Visuals and just auditory training over the course of the session. When appropriate, remove the training visuals altogether and continue with just auditory training exercises.

  For clients that can handle it, there are several stationary visual displays to choose from that are appealing for clients of all ages and may increase motivation toward IM training (in lieu of the solid color background or default screen). See images below.

Each time your client claps/taps his hand on his leg, or performs some other motion like a high-five to the beat, he will see his score on the computer screen when Training Visuals are turned on. This will let him know how close to the beat he is and whether he is hitting before, after, or on the beat. The visual information your client sees will be in sync with the auditory reference beat he hears, helping him to learn to attend to and process the auditory information.

Be sure to adjust the Difficulty if you are introducing the Training Visuals so that your client does not receive an overabundance of negative feedback. Use this chart as a guideline to establish the appropriate Difficulty level:

Client's Millisecond Average:	Adjust Difficulty Setting to:
More than 300 ms	300 (highest)
200 ms	300 (add 100)
150 ms	250 (add 100)
100 ms	150 (add 50)
50 ms	100 (add 50)
Less than 25 ms	Auto (most challenging)

Imagine that you are working with a client who has Dyslexia and Auditory Processing Disorder. His timing is in the 300 ms range. He has difficulty processing the auditory reference tone. On LFA Task 14 when guide sounds were turned on, he became very confused and said he could not decipher which sound was the one he was supposed to listen to and clap in sync with.

To facilitate his performance in Phase 1 of IM training with the reference tone alone, you decide to introduce the Training Visuals of the IM system. You quickly realize that he is better able to focus and process information when it is presented visually. His performance improves to the 150ms range. You see that he now has an idea of what he is supposed to do: 1) listen to the reference tone, 2) synchronize with it.

You want to wean him from the visual cues so that his auditory attention and processing skills are required to do the lion's share of the heavy lifting to improve his auditory skills – rather than further building up his already strong visual skills. You begin to pair exercises in his training session so that he does one exercise with the visual cues and the next without (just synchronizing with the auditory reference tone). He temporarily regresses in the absence of visual cues, but then his performance picks up as exercises are paired.

He now attempts to synchronize with the auditory reference tone and demonstrates performance in the 100ms range. Next, you will advance him to Phase 2 to introduce the guide sounds so that he learns to process the auditory feedback and improve his timing further (which will improve his auditory temporal processing – the foundation for auditory processing).

- **REDUCE THE TEMPO –** If your client's tendency during the LFA was to hit consistently after the beat, this may signal a delay in cognitive processing. It may be helpful to reduce the tempo slightly from 54 bpm to anywhere from 48-52 bpm to allow a little more time between beats for your client to better process the reference tone. Once you find the just-right tempo for your client that enables him to process and perform better, work at this tempo for a while until your client demonstrates he can readily keep up with the pace of the reference tone without struggle. As he demonstrates improvement, gradually increase the tempo back toward 54 bpm to encourage him to process information a bit more quickly.

  For example, let's imagine that you are working with a client who has suffered a mild traumatic brain injury. One of the consequences of the brain injury is that your client exhibits a cognitive delay in processing auditory information. He struggles at 54 bpm to keep up and is hitting after the beat on the LFA. You've trialed some slightly slower tempos to see if helps him. You tried 48 bpm, but that was a bit too slow and caused him to have to think too hard as he waited for the next beat and his score got much worse. He didn't seem as fluid in his performance as you'd like. So, you tried 52 bpm and this was just right for him.

  Over a few sessions, his performance at 52 bpm improved to where he could more easily clap in synchrony with the beat without lagging behind it all the time. As he improved, you increased his tempo to 54 bpm. You did so without telling him so that he wouldn't try so hard and over-compensate in anticipation of the slightly faster beat. You found that he can now keep up with 54 bpm.

- **INCREASE THE TEMPO –** If your client's tendency during the LFA was to consistently hit Very Early (confirmed by analyzing the breakdown of more detailed LFA scores in Data List View), this may signal a problem with impulse control and self-monitoring. It may be helpful in this instance to increase the Tempo to match your client's pace initially. Some clients perform much better at 60-65 bpm (i.e., clients with Parkinson's or right hemisphere brain injury) and tend to be more synchronized with the reference tone when the tempo is set at this level, particularly if they are also seated in a chair for hand exercises. Some clients need the Tempo set even faster and are much more engaged when it is faster (i.e., children with ADHD).

As you adjust the tempo, keep in mind that the purpose of doing this is to bring IM to your client's level to help him learn to synchronize with the reference tone. Gradually, over successive trials as your client demonstrates better understanding of synchronizing with the reference tone, you will want to adjust the tempo back toward the default setting of 54 bpm.

For example, let's imagine that you've adjusted the Tempo for a young boy with ADHD to 80 bpm. He is now engaged and synchronizing with the reference tone because you've brought it to his level rather than trying to get him to make the big leap to slow himself down (which would require him to self-monitor and self-regulate, skills he presently has difficulty with). As he demonstrated success at 80 bpm, you gradually reduced the tempo to 78, then 76, then 74, etc until you were as close to 54 bpm as possible, all the while assessing his response to the decrease in tempo. You reduced the tempo without telling him so that he would not anticipate the change in tempo and over-react or over-compensate as he attempted to synchronize with a progressively slower beat.

Obviously, this took a few sessions to accomplish! This brings up the point that it is important not to promise a specific number of IM training sessions to clients or parents. You never know how your client will respond until you get in there and start training – you may be surprised that he is progressing more quickly than you anticipated. On the other hand, you may be surprised that he is taking much longer than you initially thought he would!

- **INTRODUCE WHOLE BODY MOVEMENT TO THE BEAT –** If your client appears to have no sense of timing and hits randomly on the LFA (i.e., no periodicity or rhythm at all), or if your client continues to demonstrate poor timing with scores in the 300 ms range or higher despite providing cues (verbal, visual, hands-on), then you may want to introduce whole body movement to the beat to facilitate a better sense of internal timing and rhythm. This can be accomplished in several ways. Here are some examples:

  - Velcro a button trigger on the surface of a table that is positioned in front of your client who is seated in a chair or wheelchair. Physically assist your client to lean forward at the torso to tap the trigger on the beat with his outstretched hand and to touch the back of the seat with his back as he leans back toward the chair on the next beat. You can progress to having your client wear the hand trigger and lean forward to tap your hand (you can vary the distance of your hand to provide cues for timing, positioning it closer or farther away as necessary so your client taps your hand as close the reference tone as possible). Your goal should be to progress to your client clapping both hands or tapping his own leg on the beat in synchrony with the beat.

  - Have your client lay prone over an exercise ball. Adjust the tempo to a slower setting (i.e., 30-40 bpm). Set up the IM so that the reference tone is playing through speakers instead of headphones. Arrange the computer screen so that you can easily see it (your client does not need to see it). Put the hand glove and trigger on your client's dominant hand. Rock him forward and physically assist him to tap the floor on the beat. Rock him back on the next beat. (he will only activate the trigger in this manner every other beat, skipping a beat as he is rocked back). This is a soothing activity that helps increase a person's internal sense of timing.

  - Have your client stand at a table that is waist-height. Place a medium exercise ball in front of your client on the table. Have your client roll the ball forward away from himself onto the tap mat or button trigger that is Velcroed to the table top on one beat, then back toward his body on the next beat. Set the trigger far enough in front of him that he has to lean forward to activate it. In this way, he is moving his upper torso to the beat each time. He will activate the trigger every other beat. Set the tempo at a nice slow rhythm for this exercise.

  - Sit on the floor with you and your client facing each other, criss-crossed legs. Wrap a sheet around your client's back so that you are holding each end of it as you are seated

across from him. Gather the sheet in your hands so that it is taught. Play the reference tone through the speakers. On one beat pull your client toward you, on the next beat allow your client to rock his upper body back toward the position he started in. Some clinicians who work with small children use a child-sized rocking chair to rock the child forward and back to the beat. There are many creative ways to achieve whole body movement. Feel free to explore and have fun with it!

- **PROVIDE HAND-OVER-HAND TRAINING –** Remember, if working with clients who cannot perform IM training exercises on their own or with your cues (i.e., infants, young children, significantly impaired children and adults), you can facilitate improved cognitive and motor function with a total hands-on approach to training.

  NOTE: *Your own timing should be in the 20 ms range to be the most effective. You may need to practice IM so you can be more helpful to your clients.*

OVERCOMING MOTOR OBSTACLES

Some suggestions for overcoming motor barriers during Phase I include:

- **WORK WITH THE UNAFFECTED UPPER EXTREMITY FIRST IF YOUR CLIENT HAS DECREASED FUNCTION ON ONE SIDE OF THE BODY –** If your client exhibits weakness or impaired functional movement on one side of the body, you should first teach the reference tone using the most intact upper extremity.

- **MODIFY YOUR APPROACH FOR INDIVIDUALS WITH IMPAIRED MOTOR PLANNING & SEQUENCING SKILLS –** Clients that have a developmental disorder or acquired brain injury may demonstrate difficulty with planning and executing motor sequences on demand or when "thinking" about it. This condition, called dyspraxia, is important to identify during IM assessment and/or Phase 1 of IM training. Clients with dyspraxia use an inordinate amount of cognitive resources for movement, which significantly limits the amount of resources they can devote to performance on cognitive tasks. You will need to adapt your IM training approach to help your client learn to move in a more timed, rhythmical manner without having to "think" about *how* he is moving.

  If IM settings are adjusted (i.e., tempo), proper cues are provided to train the brain to plan and execute motor sequences on an "automatic" level (i.e., hand over hand patterning, visual model), and feedback about movement is eliminated or minimized that causes your client to "think" about how he is moving, you can facilitate improvement in motor coordination and use of valuable cognitive resources. Effectively addressing dyspraxia is critical and will help your client achieve both motor and cognitive goals for IM training. Here are some practical tips for identifying dyspraxia during IM assessment and training:

  - When clapping Both Hands, your client may exhibit straight, linear movements rather than circular, rhythmical movements.
  - If you instruct your client to make "circles" and he either can't, or can only do it if you cue or provide a visual model, or he can temporarily make more circular, rhythmical movement but then reverts back to the more linear pattern, these are signs of dyspraxia.
  - Clients with dyspraxia may make very small movements when clapping, spacing the hands quite close together.

  The following strategies have been found to be helpful for remediating this problem. Keep in mind, figuring out what works for your client may take a bit of trial and error. Don't be afraid to explore and try different settings. Once you find the right fit, you will observe your client's movement becoming more fluid/rhythmical and millisecond timing will begin to improve.

  ✓ **KEEP WORKING IN PHASE 1 UNTIL MOTOR SKILLS ARE MORE TIMED, FLUID, and RHYTHMICAL:** If your client is struggling (even subtly) with motor planning and sequencing, *do not advance to Phase 2* until motor skills are fluid, rhythmical, and timed (or at least to the best ability of your client).

NOTES

MODULE 4

Reminder: In Phase 2, guide sounds are turned on. Guide sounds serve as feedback regarding movement which will cause your client to "think" about how he is moving in order to change how he is moving. If you recall, dyspraxia, or impaired motor planning and sequencing, occurs when your client has to "think" about how he is moving. If your client has dyspraxia, you don't want him to think about his movement at all. You want him to move repetitively in a rhythmical and timed manner with the LEAST amount of cognitive effort!

✓ **WORK WITH THE AUDITORY REFERENCE TONE, AND AVOID THE TRAINING VISUALS:** When the "Training Visuals" of IM are used, they provide feedback about timing, requiring fine motor control to make adjustments in performance to get closer to the beat. In Phase 1 of IM training, you are working with just the Reference Tone and are not using the Training Visuals. However, in some instances (limited attention span, impaired processing, and/or for motivational purposes), the Training Visuals may be turned on during Phase 1 even though the guide sounds are NOT turned on.

Be advised that use of the Training Visuals (even with the guide sounds turned off) may be discouraging or too difficult for a client with dyspraxia until his motor planning & sequencing skills improve. Remember, the goal for a client with dyspraxia in Phase 1 of IM training is to achieve more automatic, fluid movement. This is best accomplished by clapping/tapping to the Reference Tone alone (heard via the headphones) over many repetitions with your client positioned so that he cannot see the computer screen.

✓ **FIND THE JUST-RIGHT TEMPO WHERE YOUR CLIENT CAN MOVE MORE FLUIDLY WITHOUT THINKING SO MUCH ABOUT IT:** For some of your clients, a faster tempo may be the trick. Especially for children, boys in particular. This tends to also be true for individuals with Parkinson's. Making them clap and tap to 54 bpm or an even slower tempo is EFFORTFUL for them! For some of your clients, a slightly slower tempo (i.e., ranging from 48 – 52 bpm) may be just the trick. The extra time allotted between beats is just enough time for their brain to plan and execute smoother, more rhythmical and circular movements with the hands.

So, play with the tempo!! Once you find the just-right tempo for your client, stick with it and increase the repetitions to master automatic movement and free up cognitive resources.

NOTE: *There will be some clients that will need to first work on timing, THEN rhythm. For these clients it is too hard to work on BOTH at the same time! These clients typically display more significant impairment in motor planning and sequencing. If you try to work on both and notice that working on rhythm (circular movement) interferes significantly with timing (your client can't focus on the reference tone as well and performance significantly deteriorates when he has to make circular movements), then you will need to first help your client establish good timing with the linear clapping pattern he is comfortable with. Once he demonstrates better timing, you will then begin encouraging him to clap or tap in a circular, more rhythmical manner. Be sure to do sufficient repetitions so that you are successfully mapping the brain for this new skill.*

What do we mean by sufficient repetitions? It means that your client needs to perform enough repetitions for him to learn to automatically execute smooth, fluid movement without thinking about it. Studies show that this requires a lot of repetition of the same movement pattern over and over and over. The exact number of repetitions required for this will vary from person to person. You should constantly reassess how your client is progressing and adapt your approach & IM settings as needed to achieve the goal of more automatic and fluid movement.

✓ **PROVIDE HAND-OVER-HAND ASSISTANCE OR PERFORM THE IM EXERCISE SIMULTANEOUSLY WITH YOUR CLIENT, PROVIDING HIM WITH A VISUAL MODEL TO COPY:** Once you've established the just-right tempo, determine whether your client can now clap and tap to the beat with the 3 hand exercises (Both Hands, Right Hand, Left Hand) on his own in a more rhythmical, effortless, coordinated manner. Watch for his timing to improve and for him to be able to make gradually smaller incremental changes in millisecond timing as he attempts to synchronize with the beat. If your client still cannot make circular, rhythmical movements, then you need

to continue to provide hand-over-hand assistance to help him accomplish this.

NOTE: *Your proprioceptive input is very powerful and will facilitate progress IF YOUR OWN TIMING IS GOOD (between 20 - 30ms). If your timing is not good, you will be of little assistance to your client unfortunately! It is very important to improve your own personal ms averages, particularly for Both Hands and your dominant hand as you will use these to aid your clients.*

After an extended period of providing hand-over-hand assistance, look for an opportunity to wean from your direct assistance. At this point, see if your client can maintain rhythmical movement while copying you as you simultaneously clap or tap to the beat (you should also be wearing headphones). Once this level of cueing is established and successful (i.e., your client's timing is improving, and he is maintaining circular rhythmical movement by watching you and copying you), then look for opportunities to wean more from your cues. Begin the exercise by having your client copy your movements, then at some point in the exercise, you will stop clapping or tapping while your client continues on his own. If your client displays any difficulty in timing or with the circular rhythmical movement pattern, then jump back in and provide either hands-on assistance to get back on track or start clapping/tapping again along with him so that he can watch you and copy you.

- ✓ **PERFORM EXERCISES AT HIGHER REPETITIONS ONCE THE JUST-RIGHT TEMPO IS ESTABLISHED:** Once the just-right tempo is established, increase the repetitions substantially to 5-10 minutes (more if tolerated) with the same exercise (i.e., Both Hands). It is vital to move fluidly over many many repetitions to create neurological change and improve motor coordination. Remember to provide cues as needed and wean from them as your client demonstrates readiness.

- ✓ **WATCH THE COMPUTER SCREEN AS YOUR CLIENT CLAPS OR TAPS TO THE BEAT, LOOK FOR HITS TO BE CLOSER TOGETHER IN MILLISECONDS, AND WATCH FOR YOUR CLIENT TO BE ABLE TO MAKE SMALLER ADJUSTMENTS IN TIMING MORE EFFORTLESSLY:** Once you see your client is able to keep "a happy medium" with his IM performance where he is not bouncing back and forth between very early and very late (over and under-correctioning) and appears to be moving more smoothly and fluidly on his own, you may begin to increase the tempo back toward 54 bpm. You may need to make gradual changes in the tempo as you work back toward 54 bpm (i.e., go from 50 bpm to 52 bpm, then to 54 bpm once 52 bpm is mastered). It is important to NOT tell your client that you are adjusting the tempo so that he doesn't make any extra effort to compensate for the tempo change. You still want him to move fluidly to synchronize with the reference tone without "thinking" about it.

- ✓ **PROCEED TO PHASE 2 (TURN ON GUIDE SOUNDS):** You should proceed to Phase 2, once your client demonstrates he is trying to synchronize with the beat and his clapping and tapping motions are smoother and more rhythmical. Your client is now ready to begin receiving feedback about his timing, in which case he will now begin to "think" about how he is moving. With the improvement he has made thus far, he should be better able to process & respond to guide sounds without so much interference from dyspraxia.

  NOTE: *In some cases where dyspraxia is severe, your client may not achieve completely smooth, rhythmical movement with the above approach. He should demonstrate substantial improvement however. In this case, your goal would be to improve motor coordination as much as possible before proceeding to Phase 2 of IM Training.*

NOTES

NOTES

OVERCOMING SENSORY OBSTACLES

The following are some suggestions for overcoming obstacles associated with Sensory Processing Disorder (SPD) during IM training. This course will not cover all of the complexities of SPD or its management. SPD is a very common disorder, is under-diagnosed, and is almost always associated with children on the autism spectrum. SPD often co-occurs with many developmental disorders like ADHD. Behaviors that you observe in your sessions may in some cases be attributed to SPD and are most effectively managed with a sensory approach in addition to IM Training.

NOTE: *The STAR INSTITUTE for Sensory Processing Disorder provides online education for professionals who wish to learn more about serving individuals with Sensory Processing Disorder. https://www.spdstar.org/basic/online-education*

- **INCORPORATE SENSORY INTEGRATION STRATEGIES INTO IM TRAINING SESSIONS –** Perform sensory modulating activities prior, during, and/or after IM training as indicated to decrease the sensory impact of IM (i.e., heavy work, deep proprioceptive input).
- **INCREASE NOVELTY –** Make the IM exercises more engaging for children by incorporating their interests. Rather than always doing the 3 hand exercises in the traditional manner you may opt to have your client high-five you or your client may come up with some fun way of performing IM that is engaging and puts him in control for part of the session. Incorporate age-appropriate therapy tools, obstacle courses and games to facilitate motivation and sensory integration.
- **REDUCE THE VOLUME –** Reduce the Volume of the Reference Tone if your client exhibits auditory hypersensitivity. The volume can be reduced during the IM Assessment and Training.
- **USE SPEAKERS INSTEAD OF HEADPHONES –** Use external speakers or alternate headphones (i.e., such as those used with various sound therapies) instead of the IM headphones if your client is overly sensitive to the feel of the headphones. If using speakers, find a set that have separate left and right speakers (not the folding type), their own volume adjustment, and their own power source. Alternative headphones can be used with the IM if better tolerated (i.e., the headphones used with the various sound therapies).
- **MODIFY TRIGGER PLACEMENT –** If your client is overly sensitive to the feel of the IM glove, attach the IM button trigger or tap mat to an alternate surface (i.e., table-top, wall, etc.) for him to hit. Alternatively, your client can wear a soft glove (chenille fabric is great), and the IM glove can be placed over it. This particular strategy also works well for individuals who have a lot of allergies to avoid the build-up of histamine and subsequent itching from clapping the hands together.
- **INCORPORATE SENSORY BREAKS INTO TRAINING –** Incorporate sensory breaks into your IM training sessions. For example, if your client puts forth maximum effort and does the 3 IM exercises you request of him, he can earn 10 bounces on the trampoline or 10 repetitions on the swing. Then you can go back to IM and if he performs another 3 exercises with good effort he can earn 10 repetitions again or an activity from choices you provide. You may end the session in the ball pit for deep proprioceptive input or with some other fun activity that involves heavy work.
- **MONITOR SENSORY INPUTS TO AVOID SENSORY OVERLOAD –** Monitor the type and dosage of sensory input in your sessions to avoid sensory overload. For example, if your client with SPD looks at the computer screen while doing IM and the vestibular system is also being challenged (i.e., you have him on a balance board or exercise ball) at the same time, this may contribute to sensory overload for some.

LOG YOUR ACTIVITY TIME HERE!

READING END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 9 MINUTES

TAKE THE ONLINE POST-TEST & EVALUATION FOR MODULE 4

5 minutes

To view the course materials for this Module visit:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-4

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NOTES

MODULE 4

DON'T FORGET TO REFERENCE YOUR NOTES FOR THE TIME LOGGED ACTIVITIES IN THIS MODULE, WHICH WILL BE ASKED IN THE EVALUATION.

MODULE 5
IM TRAINING - PHASE TWO

55 MINUTES

LEARNING OBJECTIVES:

- Phase 1 Review
- IM Training: Phase 2

LOG YOUR ACTIVITY TIME HERE!
In each Module evaluation, you will be asked to log the amount of time it takes you to complete each course activity. This information will be used to ensure that the course CEUs have been calculated accurately. Please use this space provided to log your start time.

VIDEO START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 44 MINUTES

START

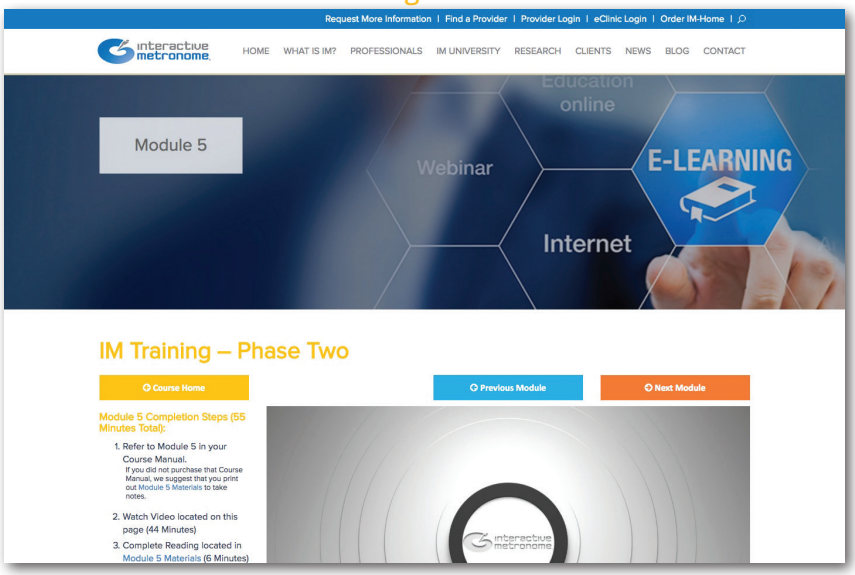
GATHER NEEDED EQUIPMENT & MATERIALS

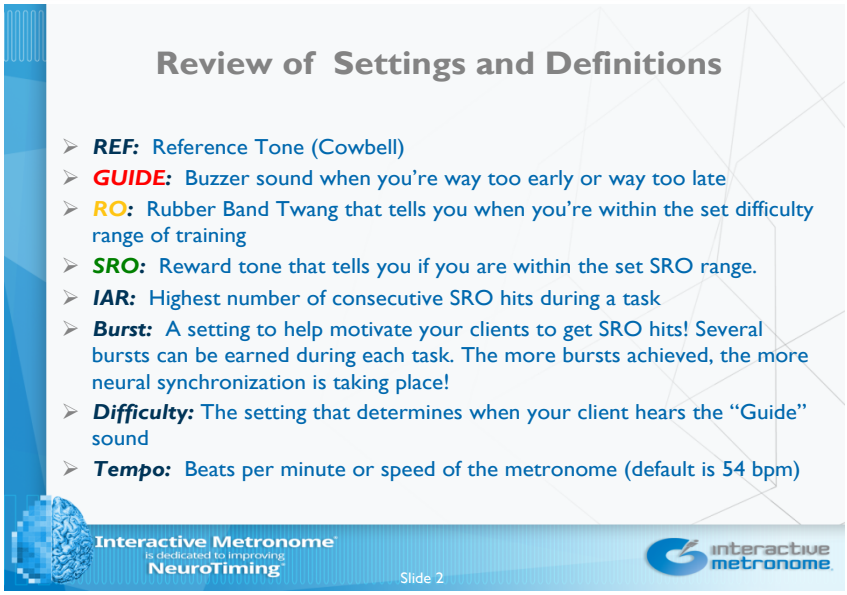
You will need the following to complete Module 5:

- Computer with good internet connection
- IM equipment (set up, connected to computer and ready to use)
- IM software (open software on your computer)
- IM training file (open your IM file) then minimize the IM software so you can begin the next module.
- Pencil to take notes

WATCH THE VIDEO
44 minutes

Access the Module video here:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-5





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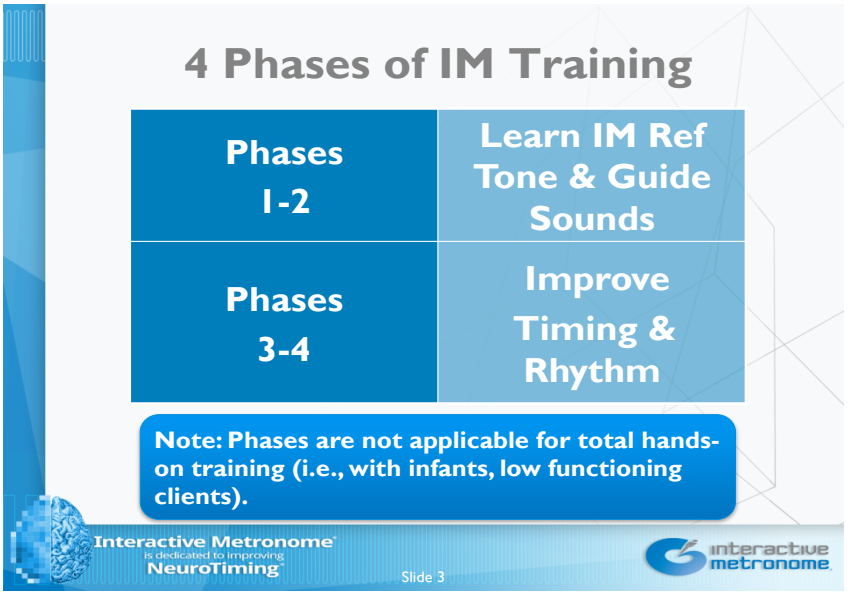

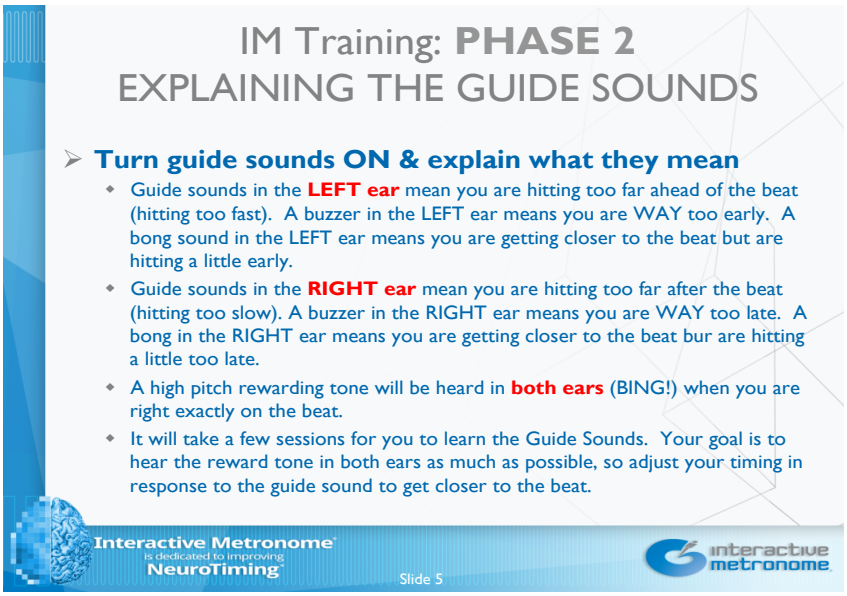

NOTES

MODULE 5

IM Training: **PHASE 2**

- **Strategies to help learn & process guide sounds:**
  - Reduce volume of guide sounds relative to reference tone
    (ref tone will stand out more)
  - Turn some guide sounds off if too much to process
    (i.e., keep GUIDE turned on as a boundary to stay within, turn off RO, and SRO)
  - Turn on Training Visuals
    (Games are not the best option for most when learning guide sounds as they may be too distracting)

***GOALS: TO PROCESS & RESPOND TO GUIDE SOUNDS TO IMPROVE TIMING. TO BE ABLE TO PROCESS AUDITORY GUIDE SOUNDS WITHOUT VISUAL CUES (i.e., Training Visuals).**

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PHASE 2: Adjust Difficulty

101+	16 – 100	0 – 15	16 – 100	101+
201+	16 – 200	0 – 15	16 – 200	201+
301+	16 – 300	0 – 15	16 – 300	301+
25+	16 – 24	0 – 15	16 – 24	25+

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PHASE 2: Adjust Difficulty

Patient's MS Average	*Suggested* Difficulty Setting
More than 300 ms	300 (easiest setting)
200 ms.....add 100 to range	300
150 ms.....add 100 to range	250
100 ms.....add 50 to range	150
50 ms.....add 50 to range	100
Less than 25 ms	Auto (most challenging)

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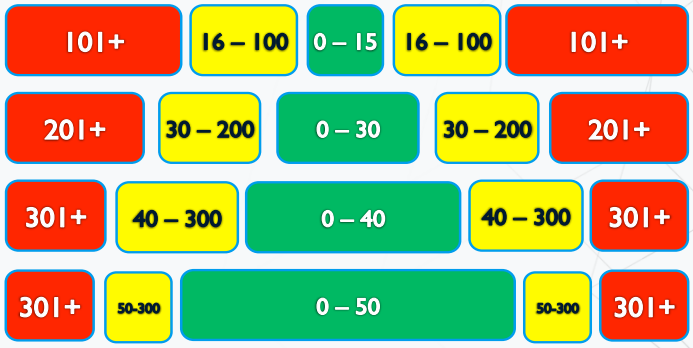
PHASE 2: Adjust SRO



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PHASE 2: Adjust SRO

Patient's MS Average	*Suggested* SRO Setting
More than 300 ms	50 (easiest setting)
Between 200 ms and 300 ms	45 - 50
Between 150 ms and 200 ms	30 - 45
Between100 ms and 150 ms	25 - 35
Under 100 ms	15 - 25
Less than 25 ms	10 - 15

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PHASE 2

Adjust the Intensity of Feedback for Timing

Performs **BETTER** with guide sounds	Performs **WORSE** with guide sounds
Adjust Difficulty & SRO settings to be more challenging as appropriate to nudge patient closer and closer toward 0 milliseconds (lower scores are better).	Adjust Difficulty & SRO settings so that buzzer is heard less often, making it easier to process.
Adjust burst threshold higher as appropriate to encourage more intense & precise focus, processing, & fine motor control.	Turn down the volume of the guide sounds so that the ref tone is the loudest sound he hears to aid processing.
Increase repetitions as tolerated.	Turn volume of all guide sounds down to zero except for the one labeled GUIDE & use this as an outer boundary to keep timing below a certain threshold.
	Turn on the visual mode to help process guide sounds & learn to respond to them.

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NOTES

MODULE 5

NOTES

MODULE 5

IM Training: **PHASE 2**

- Hand exercises (Both Hands, Right Hand, Left Hand)
- Increase duration of each exercise to 2-5 minutes per exercise.
- Aim for 30 min of active training per session (1400-1600 reps per session as tolerated).
- Continue to cue as needed (verbal, physical assist)
- Adjust IM settings to facilitate better timing
  - As processing guide sounds & responding to them improves, adjust Difficulty & SRO range (i.e., to leverage the feedback and improve timing more rapidly)

A MORE HANDS-ON APPROACH WILL BE NECESSARY FOR INFANTS AND INDIVIDUALS WHO ARE SUBSTANTIALLY COGNITIVELY AND/OR PHYSICALLY IMPAIRED. MORE ON THAT NEXT…

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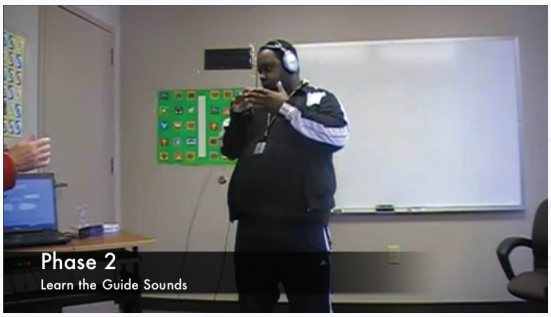
PHASE 2
Training Examples



Video

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Hands-On IM Training

Video

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Hands-On IM Training

Video

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Infants/Early Intervention
POSITIONING

- In your lap
- In parent's lap
- In Kinder chair
- In stander

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Infants/Early Intervention
TRIGGER LOGISTICS

Button trigger for foot tasks

Therapist wears trigger and couples child's hand

Tap mat on wedge or slant board

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NOTES

MODULE 5

NOTES

MODULE 5

Infants/Early Intervention
DISTRACTIONS

- **IM games (in software)**
- **Singing/Nursery Rhymes**
- **Visual Toys or One-Handed Toys**
- **Videos/DVDs**
- **Counting**
- **Word Labeling-Vocabulary Building**

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PHASE 2 LAB: LEARN GUIDE SOUNDS
WITHOUT VISUAL CUES DEFAULT SETTINGS

SELECT:
- Regular Training
- Both Hands
- 2 minutes
- Tempo 54 (default)
- Difficulty 100 (default)
- SRO 15 (default)
- Burst threshold 4 (default)
- Guide sounds ON ✓
- Visual Indicator Selection: **Auditory*****
- Background: Default
- Try closing your eyes to help focus
- Counteract your timing tendency

***Do not look at the computer screen

POP QUIZ: Does closing your eyes help you focus? Would you eventually want to do all exercises with eyes open? Why?

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PHASE 2 LAB: LEARN GUIDE SOUNDS
WITH VISUAL CUES DEFAULT SETTINGS

SELECT:
- Regular Training
- Both Hands
- 2 minutes
- Tempo 54 (default)
- Difficulty 100 (default)
- SRO 15 (default)
- Burst threshold 4 (default)
- Guide sounds ON ✓
- Visual Indicator Selection: Enriched Score without Center Flash*
- Background: Select a stationary background (shown in white font)
- Counteract your timing tendency

*Look at the computer screen

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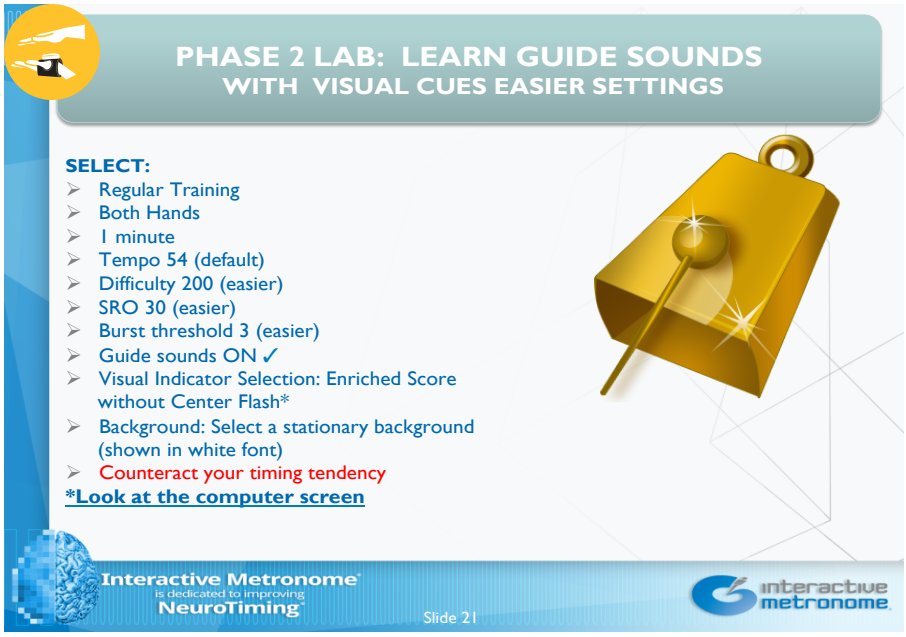

COMPLETE THE ADDITIONAL READING

6 minutes

REVIEW OF THE GUIDE SOUNDS

VERY EARLY - VERY LATE GUIDE SOUND

+/- 101+

- When Difficulty is set at the default setting of 100, hits that are > 100ms ahead of or after the beat receive a buzzer sound.
- A buzzer heard in the LEFT ear means he hit VERY EARLY.
- A buzzer heard in the RIGHT ear means he hit VERY LATE.

EARLY - LATE GUIDE SOUND (RIGHT ON)

+/- 16 to 100

- When Difficulty is set at the default setting of 100 and SRO is set at 15, hits that are between 16-100 ms before or after the beat receive a rubberband twang sound (bong).
- A bong heard in the LEFT ear means he hit EARLY.
- A bong heard in the RIGHT ear means he hit LATE.

SUPER RIGHT-ON GUIDE SOUND

+/- 0 to 15

- When the SRO is set at the default setting of 15, hits that fall between 0-15ms are considered Super Right On.
- A high pitch reward tone (ding) is heard in both ears simultaneously when this happens.
- The goal of IM training is to achieve more and more of these SRO hits, which is an indication of improved timing & rhythm.

NOTES

LOG YOUR TIME HERE!

VIDEO END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 44 MINUTES

LOG YOUR ACTIVITY TIME HERE!

READING START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 6 MINUTES

NOTES

ADJUST IM SETTINGS TO HELP YOUR CLIENT LEARN THE GUIDE SOUNDS

The following setting adjustments may help your client learn to process the guide sounds so that he can improve his timing & rhythm:

- **INTRODUCE TRAINING VISUALS –** Introduce low distraction Training Visuals (avoid Games at this point).
- **ADJUST THE DIFFICULTY –** Adjust the Difficulty to an easier setting so that your client does not hear the buzzer (Guide) too frequently. The easiest setting is 300.

Client's Millisecond Average:	Adjust Difficulty Setting to:
More than 300 ms	300 (highest)
200 ms	300 (add 100)
150 ms	250 (add 100)
100 ms	150 (add 50)
50 ms	100 (add 50)
Less than 25 ms	Auto (most challenging)

- **ADJUST THE SRO RANGE –** Adjust the SRO range to a higher number so that it is easier to obtain SRO hits. It can be set as high as 50.
- **ADJUST THE TEMPO –** By decreasing the tempo slightly, your client will have more time to process and respond to the guide sounds. In some cases, increasing the tempo is helpful for clients who have trouble controlling impulses.
- **ADJUST THE VOLUME –** To help your client better distinguish the reference tone from the guide sounds, turn down the Volume of the Guide Sounds so that the Reference Tone will be heard the loudest. You can also opt to turn the volume of some of the guide sounds to zero (0) temporarily so that your client only has to process one guide sound (i.e., the buzzer can serve as a boundary to tell your client he's too fast or too slow while he hears just the reference tone the rest of the time). In this example, the volume settings may look like this:
  - Reference Tone - 127
  - Guide - 90
  - Right-On - 0
  - SRO – 0

  You may also wish to adjust the volume to a lower setting for the reference tone and guide sounds for individuals with auditory hypersensitivity.

MODULE 5

LOG YOUR ACTIVITY TIME HERE!

READING END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 6 MINUTES

TAKE THE ONLINE POST-TEST & EVALUATION FOR MODULE 5

5 minutes

To view the course materials for this Module visit:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-5

CONTACT US WITH ANY QUESTIONS

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NOTES

MODULE 5

DON'T FORGET TO REFERENCE YOUR NOTES FOR THE TIME LOGGED ACTIVITIES IN THIS MODULE, WHICH WILL BE ASKED IN THE EVALUATION.

MODULE 6
IM TRAINING - PHASE THREE

40 MINUTES

LEARNING OBJECTIVES:

- Phases 1 & 2 Review
- Introduction of IM Games
- IM Training: Phase 3

LOG YOUR ACTIVITY TIME HERE!
In each Module evaluation, you will be asked to log the amount of time it takes you to complete each course activity. This information will be used to ensure that the course CEUs have been calculated accurately. Please use this space provided to log your start time.

VIDEO START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 31 MINUTES

START

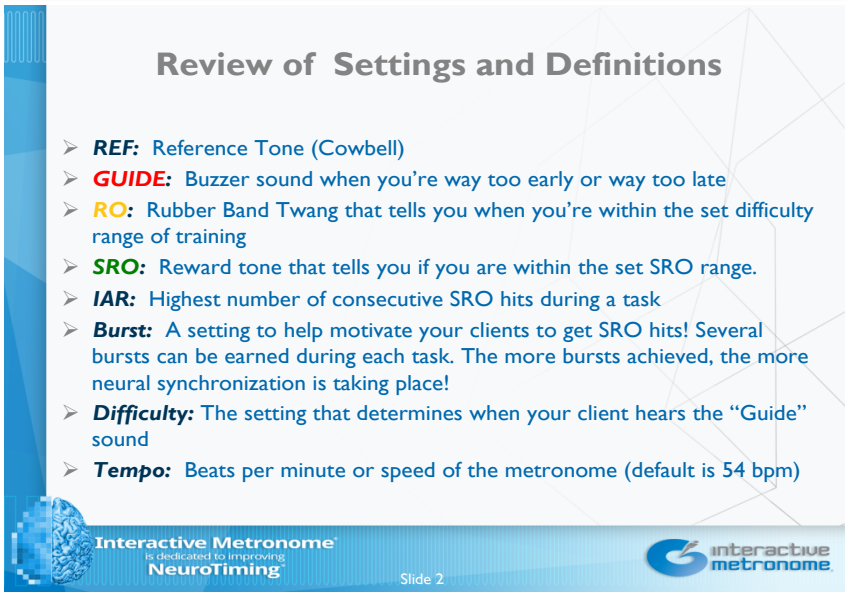
GATHER NEEDED EQUIPMENT & MATERIALS

You will need the following to complete Module 6:

- Computer with good internet connection
- IM equipment (set up, connected to computer and ready to use)
- IM software (open software on your computer)
- IM training file (open your IM file) then minimize the IM software so you can begin the next module.
- Pencil to take notes

WATCH THE VIDEO
31 minutes

Access the Module video here:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-6



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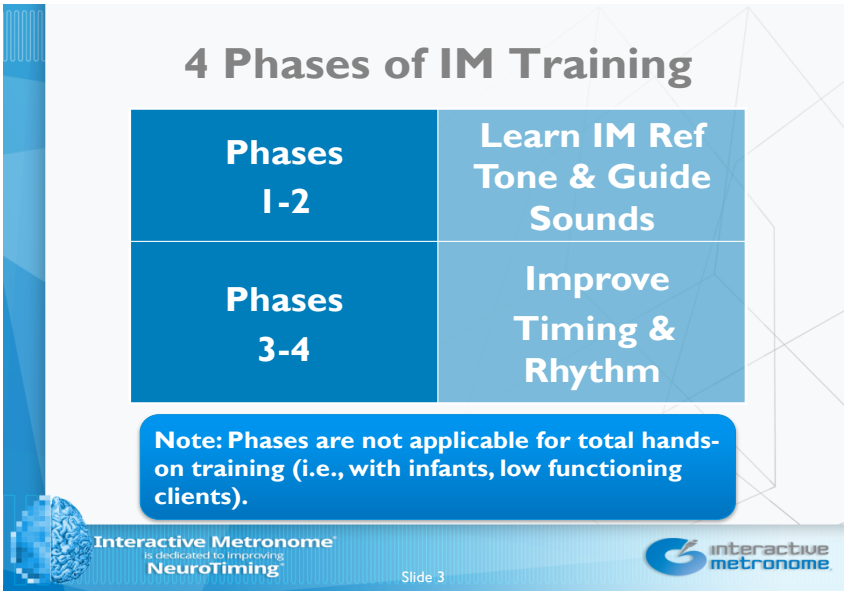

NOTES

PHASE 3: Games

How can the games influence performance?

- Help learn to process the auditory guide sounds
- Enhance training experience & motivate
- Improve timing with emphasis on SRO hits
- Encourage sustained attention and effort for completion of longer exercises

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PHASE 3: Games

When is the best time to introduce the games?

- Use your best judgment – don't introduce games too early. eClinic templates ease into the games.
- Trial & error approach to finding the right fit
- Monitor for sensory overload – check with caregivers about behavior and function outside of sessions.
- Games can facilitate visual tracking- beware of computer monitor placement

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PHASE 3: Games

How can I use the games to leverage performance?

- Use the games as a reward or motivator

"Johnny, if you get a score below 65 MS on this two minute task, I will let you choose a game to play for your next 2 minute task!"

- Have your student/client target "greens" – adjust SRO range to as much as 50 MS to make "greens" easier to achieve.
- Continually adjust settings to nudge toward better timing.

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MODULE 6

PHASE 3: Games*

- All IM games have POSITIVE reinforcement
- A few have NEGATIVE reinforcement (consequence for very early or late hits)
- Keep this in mind when selecting games for your student/client

*(see appendix page A-14 for more detailed descriptions)

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PHASE 3
Training Examples

Video

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PHASE 3 LAB: IMPROVE TIMING & RHYTHM WITH YOUR HANDS (ADJUST YOUR SETTINGS)

SELECT:

- Regular Training
- Both Hands
- 2 minutes
- Tempo 54 (default)
- SELECT Difficulty*
- SELECT SRO*
- SELECT Burst threshold*
- Guide sounds ON ✓
- SELECT Auditory or Training Visuals*

(NO GAMES YET)

CHOOSE SETTINGS THAT WILL PROVIDE THE MAXIMUM FEEDBACK IN ORDER TO NUDGE YOUR MS TASK AVERAGE LOWER (TOWARD 0 MS)

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NOTES

MODULE 6

NOTES

PHASE 3 LAB:
GAMES WITH POSITIVE REINFORCEMENT

SELECT:

- Regular Training
- Both Hands
- 2 minutes
- Tempo 54 (default)
- SELECT Difficulty*
- SELECT SRO*
- SELECT Burst threshold*
- Guide sounds ON ✓
- **SELECT A GAME WITH POSITIVE REINFORCEMENT**
  (see appendix page A-14)

CHOOSE SETTINGS THAT WILL PROVIDE THE MAXIMUM FEEDBACK IN ORDER TO NUDGE YOUR MS TASK AVERAGE LOWER (TOWARD 0 MS)

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PHASE 3 LAB:
GAMES WITH NEGATIVE REINFORCEMENT

SELECT:

- Regular Training
- Both Hands
- 2 minutes
- Tempo 54 (default)
- SELECT Difficulty*
- SELECT SRO*
- SELECT Burst threshold*
- Guide sounds ON ✓
- **SELECT A GAME WITH NEGATIVE REINFORCEMENT**
  (see appendix page A-14)

CHOOSE SETTINGS THAT WILL PROVIDE THE MAXIMUM FEEDBACK IN ORDER TO NUDGE YOUR MS TASK AVERAGE LOWER (TOWARD 0 MS)

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IM TRAINING TIP

An "off" session or two can be expected at some point in the training

- Don't change plans just yet
- Some clients have a few poor scores right before they make a big gain in their timing
- Explore environmental and family changes that could be affecting overall behavior
- If lack of progress persists, it is time to reassess

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LOG YOUR ACTIVITY TIME HERE!

VIDEO END TIME _____ AM/PM

TOTAL VIDEO ACTIVITY TIME (IN MINUTES) _____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 31 MINUTES

MODULE 6

COMPLETE THE ADDITIONAL READING
4 minutes

ADJUST IM SETTINGS TO FACILITATE PROGRESS

Over the course of Phases 1 and 2 you have identified the IM settings that work best for your client (i.e., volume, tempo, difficulty, SRO, etc.). In Phase 3, you will continue to monitor the impact of the IM settings you have selected on your client's performance and adjust them as appropriate to continue to facilitate progress.

- SRO RANGE – If you adjusted the SRO range to a higher number (i.e., 50) to make it easier for your client to achieve SRO hits and bursts, you will want to adjust this setting gradually back toward 15-20 as your client's scores improve.
- TRAINING VISUALS – If your client demonstrates weaker auditory attention and processing skills and you have used the Training Visuals to help your client learn the guide sounds, you may want to wean from these visual cues to address auditory processing by training in Auditory mode.
- DIFFICULTY - As your client's scores get better, use the following chart as a guide to adjust the Difficulty to facilitate further progress.

Client's Millisecond Average:	Adjust Difficulty Setting to:
More than 300 ms	300 (highest)
200 ms	300 (add 100)
150 ms	250 (add 100)
100 ms	150 (add 50)
50 ms	100 (add 50)
Less than 25 ms	Auto (most challenging)

- TEMPO – If you've adjusted the tempo to a slower or faster setting, work on progressively getting it back to the default setting of 54 bpm.
- TASK DURATION – Increase the minutes or repetitions on each exercise as your client demonstrates readiness. Repetition creates neurological change!
- GUIDE SOUND VOLUMES – If you've made adjustments in the volume settings to make it easier for your client to process the guide sounds, work toward getting all of the volumes turned on and at the same level as the reference tone (with the exception of Master Volume – that should remain untouched).

BACKGROUND NOISE IN GAMES

Once basic timing skills have been established with the hands in Phase 3, you may wish to introduce Games. It is important that Games are not introduced too early in IM training so that your client is not overly distracted and can be successful at them.

Background noise is an optional feature in the games for more advanced training. This feature is helpful for working on focusing in the presence of distractions and auditory processing in background noise. The default volume for Games is zero (0). You can adjust this to introduce background noise in Phase 3 once your client demonstrates readiness. Your client may be ready for this challenge when he has achieved very good to excellent timing according to the Indicator Table.

NOTES

LOG YOUR ACTIVITY TIME HERE!

READING START TIME _____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 4 MINUTES

LOG YOUR ACTIVITY TIME HERE!

READING END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 4 MINUTES

NOTES

INDICATOR TABLE

Age	6	7 to 8	9 to 10	11 to 12	13 to 15	16+
Extreme Deficiency	280+	270+	260+	240+	215+	200+
Severe Deficiency	175–279	170–269	160–259	155–239	150–214	147–199
Below Average	120–174	90–169	80–159	75–154	72 –149	70–146
Average	90–119	65–89	55–79	45–74	43–71	41–69
Above Average	56–89	45–64	38–54	36–44	33–42	30–40
Exceptional	40–55	32–44	28–37	26–35	23–32	22–29
Superior	Below 40	Below 32	Below 28	Below 26	Below 23	Below 22

TAKE THE ONLINE POST-TEST & EVALUATION FOR MODULE 6

5 minutes

To view the course materials for this Module visit:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-6

CONTACT US WITH ANY QUESTIONS

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DON'T FORGET TO REFERENCE YOUR NOTES FOR THE TIME LOGGED ACTIVITIES IN THIS MODULE, WHICH WILL BE ASKED IN THE EVALUATION.

NOTES

MODULE 7
IM TRAINING - PHASE FOUR

70 MINUTES

LEARNING OBJECTIVES:

- Phases 1, 2 & 3 Review
- IM Training: Phase 4

LOG YOUR ACTIVITY TIME HERE!

In each Module evaluation, you will be asked to log the amount of time it takes you to complete each course activity. This information will be used to ensure that the course CEUs have been calculated accurately. Please use this space provided to log your start time.

VIDEO START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 39 MINUTES

START

GATHER NEEDED EQUIPMENT & MATERIALS

You will need the following to complete Module 7:

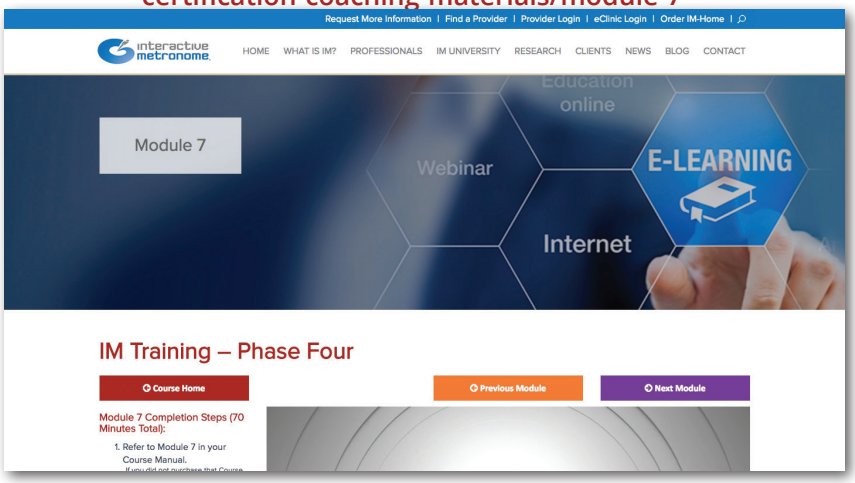
- **Additional therapeutic tools from your clinic/school (items of your choice to incorporate along with IM for custom exercises that you create based upon your client's therapy/academic goals)**
- Computer with good internet connection
- IM equipment (set up, connected to computer and ready to use)
- IM software (open software on your computer)
- IM training file (open your IM file) then minimize the IM software so you can begin the next module.
- Pencil to take notes

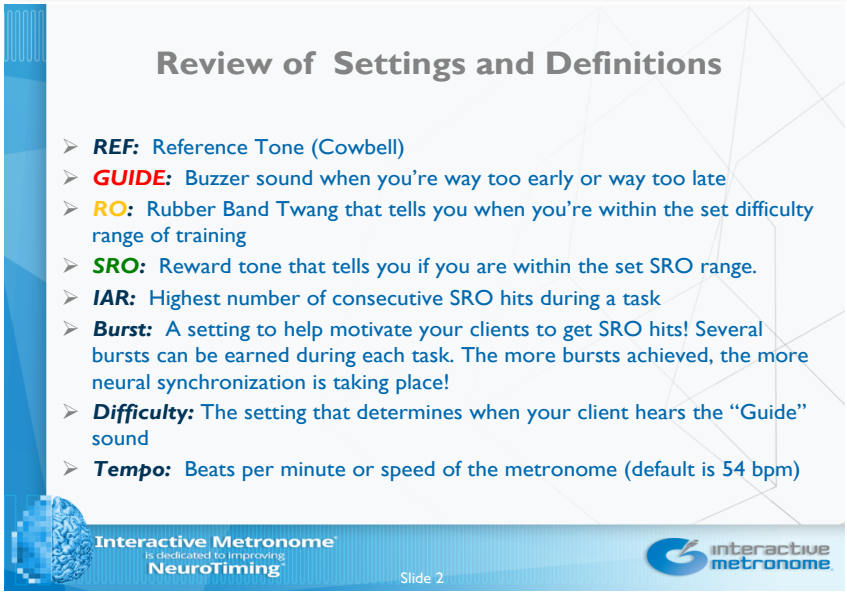
WATCH THE VIDEO

39 minutes

Access the Module video here:

https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-7





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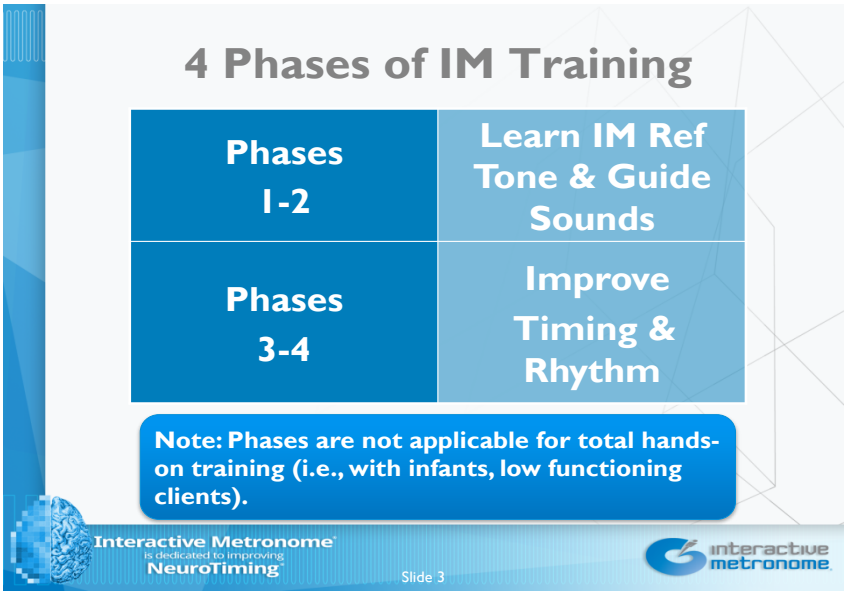

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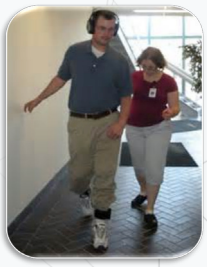
IM Training: **PHASE 4**
For OT, PT, ATC, CMT, PHYSICIAN, CHIRO



- **To address coordination, gait, balance & functional mobility…**
  - Lower extremity exercises 4-13
  - In-Motion Trigger for gait training (feedback for cadence, step length, heel strike every step)
  - Custom exercises to address specific skills (i.e., balance with head-turns, vestibular rehab, stair-climbing, etc..)

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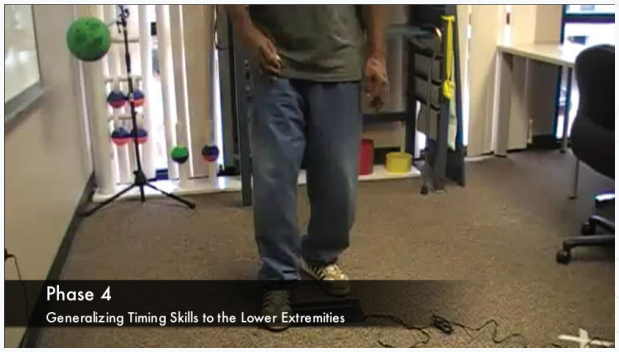
Phase 4
TRAINING EXAMPLES



Video

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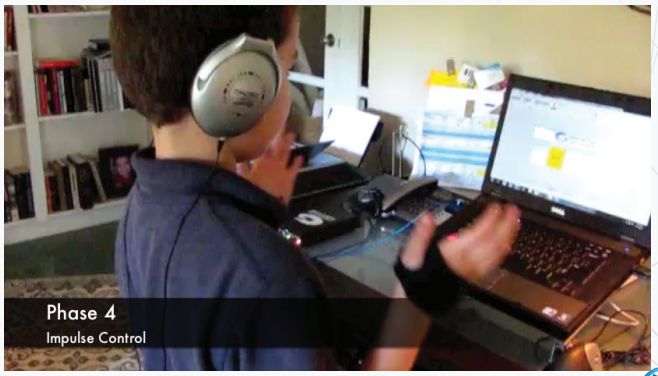
PHASE 4: CUSTOM EXERCISES
Improving Impulse Control with Slower Tempo



Video

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MODULE 7

PHASE 4: CUSTOM EXERCISES

Improving Attention Shifting, Response Inhibition, Working Memory

Video

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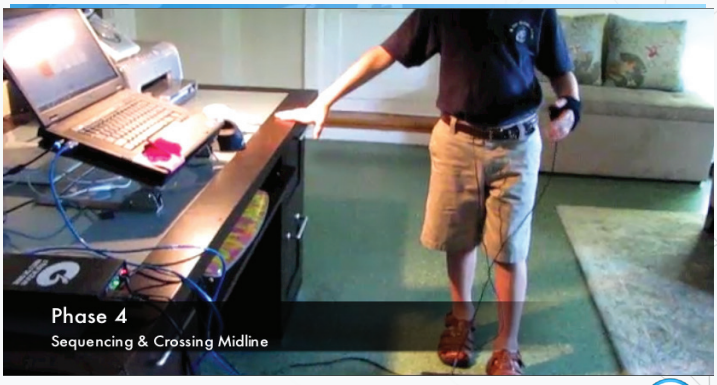
PHASE 4: CUSTOM EXERCISES

Improving Self-Regulation, Sequencing & Crossing Midline

Watch his progression over time…



Video

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PHASE 4: CUSTOM EXERCISES

Improving Sensory Integration

Video

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MODULE 7

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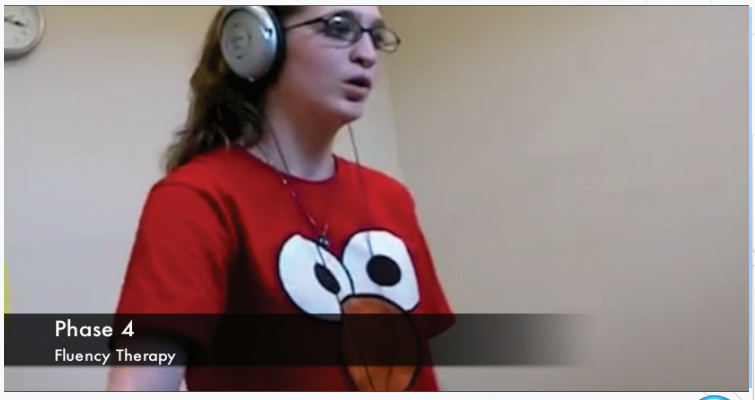
PHASE 4: CUSTOM EXERCISES

Improving Speech Fluency



Video

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PHASE 4: CUSTOM EXERCISES

Improving Handwriting

Video

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PHASE 4: CUSTOM EXERCISES

Improving Balance & Gait with IM In-Motion Trigger
(*inside the shoe*)
Watch as he progresses over time…

Video

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MODULE 7

PHASE 4: CUSTOM EXERCISES
Work Hardening

Video

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PHASE 4: CUSTOM EXERCISES
Facilitating Ortho & Neuro Motor Rehabilitation

Video

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PHASE 4: CUSTOM EXERCISES
Incorporating feedback for millisecond timing with Bioness

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MODULE 7

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PHASE 4: CUSTOM EXERCISES

Peak Performance, Athletics

Video

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Counteracting Timing Tendency

- **Counteract** = do the opposite of what you are currently doing
- If too fast, purposefully slow down a little.
- If too slow, purposefully speed up a little.
- Facilitates successful training
- Encourages meta-thinking & impulse control
- Counteracting timing tendency may be contraindicated & counterproductive for individuals with impaired motor planning & sequencing

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PHASE 4 LAB:
GENERALIZE TIMING TO LOWER EXTREMITIES

SELECT:

- Regular Training
- Both Toes
- 1 minute
- Tempo 54 (default)
- SELECT Difficulty*
- SELECT SRO*
- SELECT Burst threshold*
- Guide sounds ON ✓
- SELECT Auditory or Training Visuals*

POP QUIZ: Under what circumstances would you change the IM settings (tempo, difficulty, SRO etc.) when beginning the lower extremity & bilateral exercises? Why?

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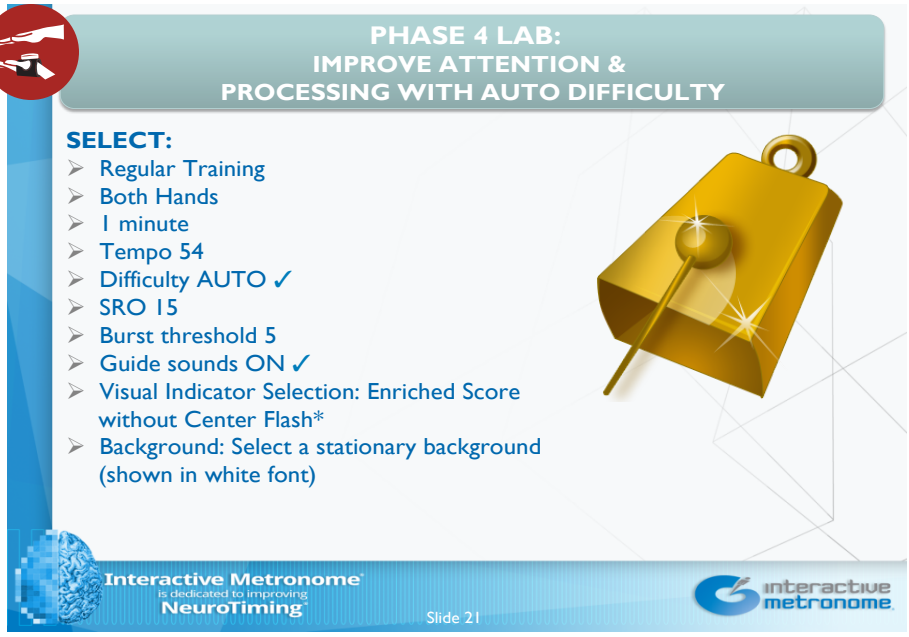
MODULE 7



COMPLETE THE ADDITIONAL READING

25 minutes

CONTINUE TO IMPROVE TIMING WITH HANDS

Now that your client has demonstrated steady improvement with the hands (or intact hand if you are working with a client with affected function on one side), he will continue to work on hand exercises in Phase 4 with the purpose of improving focus and fine motor control.

In Phase 4, you will make further adjustments in the following settings for the hand exercises (Both Hands, Right Hand, Left Hand):

- BURST THRESHOLD – You may have previously adjusted the Burst Threshold to make it possible for your client to achieve Bursts by lowering it from the Default setting of 4 (see image below). By setting

NOTES

LOG YOUR ACTIVITY TIME HERE!

VIDEO END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 39 MINUTES

LOG YOUR ACTIVITY TIME HERE!

READING START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 25 MINUTES

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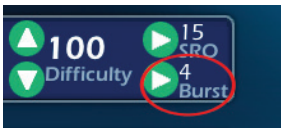
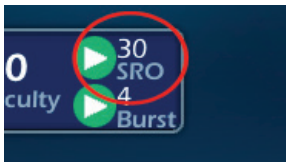
the Burst Threshold at 2 or 3, your client only had to hit 2 or 3 consecutive times in the 0-15 ms SRO range to earn a burst. By adjusting the Burst Threshold a little higher (i.e., 4 or more) for hand exercise(s), your client will need to make even more consecutive SRO hits to earn bursts. This facilitates focus and fine motor skills.



To determine a realistic Burst Threshold setting, you should observe your client's performance during the hand exercise(s). How easy is it for your client to earn Bursts? How many Bursts is he earning? What is his IAR (In-A-Row) score? (see image below) Set the Burst Threshold at a level you think your client can achieve based upon these attributes. For example, if your client fairly easily achieves bursts (Bursts=45, IAR=8) when the Burst Threshold is set at 4, then you may wish to increase the Burst Threshold to 5 or 6.

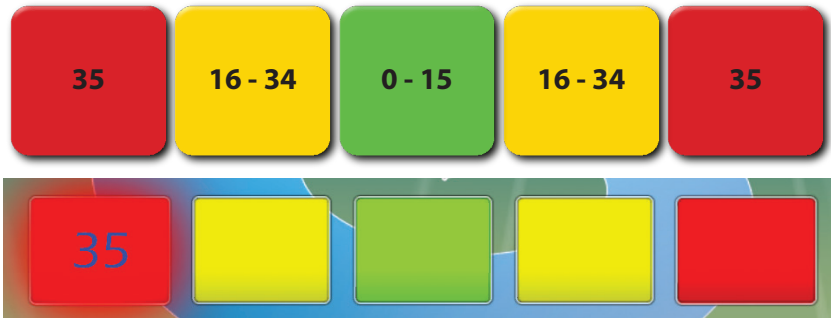
- **SRO RANGE –** Progressively adjust the SRO back to the default setting of 15 as your client performs well.



- **DIFFICULTY –** Once your client is performing well at the default Difficulty setting of 100, make it even more challenging by lowering it to 50 and then to AUTO Difficulty.

AUTO Difficulty is the most challenging setting for focus and fine motor coordination. You will know your client is ready for AUTO Difficulty if he is able to quickly and successfully process and adjust his timing and rhythm in response to the guide sounds when the Difficulty is set at 50.

When AUTO Difficulty is turned on, the Difficulty automatically adjusts itself to your client's best Task Average, so your client may hear a buzzer when he hits the trigger at 23 ms from the beat! This means he will hear the buzzer A LOT when AUTO Difficulty is selected. This is a good thing and helps to improve cognitive and fine motor skills. When you transition a client to AUTO Difficulty, prepare him by letting him know that he is doing very well and is ready for the next challenge. Tell him he will hear the buzzer much more when AUTO Difficulty is turned on, even though he is performing very well. At this point, he will be used to hearing the more rewarding guide sounds, so this warning will prevent him from becoming overly alarmed.



In the above image, AUTO Difficulty has been turned on. The Difficulty setting automatically adjusts to this person's best Task Average MS score. In this case, that score is 30ms. Each time this person hits at 30ms or more from the reference beat, he will hear a buzzer (Guide). This more intense level of feedback will accelerate improvement in timing and rhythm.

IMPROVE SUSTAINED ATTENTION

Progressively increase the duration of the Both Hands exercise as your client demonstrates readiness. Keep function in mind when setting the duration. For example, a 3rd grader needs to focus for 15 minutes at a time before a break is given. An adult must focus for at least an hour at a time uninterrupted.

NOTE: *When increasing the time on an exercise to 60 minutes to address sustained attention, this one exercise will take up the entire training session. You may wish to work on this goal every other training session to allow you to address other goals with IM training such as working on the lower extremity exercises.*

IMPROVE TIMING IN LOWER EXTREMITIES

The lower extremity exercises are listed here in order from easiest to most challenging. It is a good idea to introduce them in this order:

4-Both toes
5-Right toe
6-Left toe
7-Both heels
8-Right heel
9-Left heel
10-Right hand/Left toe
11-Left hand/Right toe
12-Balance right foot/Tap left toe
13-Balance left foot/Tap right toe

Adjust the following settings if needed for the lower extremity exercises:

- **GUIDE SOUNDS –** You may wish to temporarily turn off the guide sounds as you introduce lower extremity exercises. Be sure to turn them back on, however, at the soonest possible opportunity because feedback for timing is essential for improving synchronization.
- **DIFFICULTY –** While your client may be performing the hand exercises with a more challenging Difficulty setting at this time (i.e., less than 100 or Auto Diff), he may require an easier Difficulty setting for the lower extremity exercises until he demonstrates improvement in timing & rhythm. So, the Difficulty setting for hands may differ from the Difficulty setting for feet for a while!
- **SRO RANGE –** It may also be appropriate to adjust the SRO Range to a higher number for lower extremities.
- **TRAINING VISUALS –** The Training Visuals and Games may be distracting for some individuals when performing the lower extremity exercises, even though they were

NOTES

helpful during completion of the Hand exercises. It is worth trialing lower extremity exercises with and without the Training Visuals to see which elicits best performance (i.e., lowest Task Average MS scores).

NOTE: *You may feel the need to stop here and think that doing anything with the LOWER extremities is not within your scope of practice. However, timing throughout the body is directly linked to how well your client is utilizing his cognitive resources, especially in situations where motor coordination/praxis is affected. Regardless of your professional discipline, it is important for your client to improve timing throughout the body in order to free up cognitive resources that are devoted to motor skills to improve attention, cognitive speed, working memory, and executive. Only qualified professionals (i.e., physical therapists) should proceed beyond the basic 13 IM exercises to address more specific skills like gait.*

MODIFICATIONS FOR DYSPRAXIA

LOWER EXTREMITY EXERCISES

If you've observed any difficulty with sequencing the feet on either Both Toes or Both Heels on the LFA or during IM Training, try the following strategies to remediate the problem:

- **WORK ON TOE EXERCISES FIRST –** Toes are easier than the other lower extremity exercises, so work on these first before progressing to the others.
- **TURN OFF THE GUIDE SOUNDS -** The feedback of the guide sounds will force your client to THINK about how he is moving and make corrections. This will create further problems for a client who has dyspraxia.
- **AVOID THE TRAINING VISUALS FOR NOW -** Do not use the Training Visuals as this is another form of feedback that may interfere with performance (of course, there are always exceptions so if you feel it may help you can always try it with the Difficulty adjusted to the easiest setting 300).
- **ADJUST THE TEMPO -** Your client may be able to perform the Toe exercises at the Default tempo of 54 bpm. If he struggles to control the rate and rhythm of tapping his toe or struggles at all with smoothly sequencing the feet during Both Toes, then you may wish to reduce the tempo slightly to 48-52 bpm.

  If you slow the tempo down too much, it is harder for your client to perform because he must ANTICIPATE a longer time interval between beats, causing him to THINK about his movement. Your goal should be to find the just right tempo where he can move as automatically as possible with the least amount of cognitive effort.
- **INCREASE THE REPETITIONS -** Once you have found the right tempo, set the repetitions at a substantial level for each exercise (i.e., 5-10 minutes) as tolerated.
- **PROVIDE A MODEL -** Your client may benefit from watching you and copying you as you do the exercise. If this level of cueing is necessary, set up the training environment so that you are also wearing a set of headphones. You will perform the Toe exercises while standing next to your client. You will not hit the tap mat, only your client will so that you can record his data. You will tap your foot on the floor in sync with the reference tone while your client copies you (his toe hitting the tap mat).
- **ENCOURAGE RHYTHM -** When performing either the Right Toe or the Left Toe exercise, encourage your client to move his hips back and forth so that he rocks onto and off of the tap mat with his toe propped over it. If he has difficulty with his timing, encourage him to rock forward on one beat and back on the next. In this manner, he will activate the tap mat every other beat instead of on every beat. This will teach him an on/off rhythm.

  You may need to model the rocking motion, or you may need to provide hands-on assistance to help him achieve this rocking motion which will help improve his sense of timing and rhythm and his motor planning and sequencing skills. Look for opportunities to wean from your physical assistance and modeling. Step back in and provide assistance as needed, allowing him more independence as he improves. Remember, once you get

the right tempo and rhythm going, aim for HIGH repetitions on each exercise! In cases of mild-moderate dyspraxia, you will see motor movements become more fluid during the exercise and will notice your client is able to make more minute changes in timing to get closer to the beat. How exciting this is to watch!!

- **INTRODUCE THE OTHER EXERCISES AS IMPROVEMENT IS DEMONSTRATED WITH TOES -** As Toes improve, you will then introduce the other lower extremity exercises, including Heels, Bilateral, and Balance. Heels may be more difficult than Toes. You may need to adjust the tempo again when working on heels. Again, once you establish the right tempo, push for high repetitions.

- **OBSERVE PERFORMANCE AND SCORES TO KNOW WHEN TO MAKE FURTHER ADJUSTMENTS TO FACILITATE MOTOR PLANNING AND SEQUENCING, TIMING, AND RHYTHM -** Watch your client's performance on the computer screen during each exercise. As motor planning and sequencing (praxis) improves, you will see your client's scores bounce around a lot less (decreased variability/increased rhythm), millisecond scores for each hit will remain in a tighter range, and your client will begin to make smaller adjustments in timing to get closer to SRO. He will begin earning Bursts. This is very fun to watch! It has even been observed in adults with life-long dyspraxia and those with acquired brain injury after years of chronic impairment! (One adult reported he was able to line-dance for the first time in his life after he completed IM training). The just-right tempo and high repetitions are key ingredients for success!

For more severe dyscoordination, you may wish to employ these additional modifications:

- **MODIFY FOOT EXERCISES -** As you introduce the individual Toe exercises, modify the manner in which your client hits the tap mat with his foot. Rather than having him tap the mat with his toe, have him step forward with the foot onto the mat on one beat, then back off of the mat on the next beat, and so on. For example, if performing the Right Toe exercise, your client will stand with the tap mat in front of him on the floor. He will step forward onto the tap mat with this Right Foot on one beat, then back off and onto the carpet with this Right Foot, then back onto the tap mat again with his Right Foot, then back off onto the carpet with this Right Foot.

  Your client will activate the tap mat in this manner every other beat. This will help teach him timing, rhythm, motor planning and sequencing. Stepping is a more automatic movement than tapping. When tapping the foot, we have to think about the pace of our tapping and regulate it during IM. However, stepping forward is akin to walking, something we do without really thinking about it. Your goal here should be to get your client STEPPING onto/off the tap mat at the just right tempo for many repetitions.

  As your client gets better at sequencing the stepping movements with the individual Toe exercises, you will notice that he begins to start stepping more fluidly and hitting the tap mat more ahead of the beat than he had previously (as if the tempo is now too slow for him). This is a sign that his motor planning and sequencing are improving. When you see this happen, adjust the exercise so that he is performing at the same tempo but stepping forward onto the tap mat on every beat (rather than every other beat). For example, if your client is working on the Left Toe. He will now STEP forward with the Left Foot onto the tap mat on the beat then immediately back onto the carpet, then STEP forward again on the next beat onto the tap mat, etc. Adjust the tempo if needed so that he can accomplish this easier.

  As your client improves the timing of his stepping motions with the individual Toe exercises when hitting the tap mat every beat, progress to where he is now stabilizing his heel on the floor with his toe propped over the tap mat, TAPPING his toe on the tap mat every OTHER beat. He will bring his toe down on one beat and up on the next beat. Encourage rhythmic swaying of the hips as he rocks his body and foot onto the tap mat on one beat, then brings his toe back up on the next beat, then back down on the tap mat on the next beat, and so on.

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As he gets better with tapping every other beat, then progress to where he taps on EVERY beat. All the while, monitor the tempo and adjust it as he performs better. If the tempo seems too slow for him at any point, increase it slightly (i.e., 2 bpm, going from 48 to 50bpm). Aim for HIGH repetitions. You will see his timing improve on the computer screen, and you will notice increased rhythm as you watch him.

- **INTRODUCE BILATERAL AND BOTH TOE EXERCISES ONCE INDIVIDUAL TOE EXERCISES ARE IMPROVING -** Bilateral exercises (Right Hand/Left Toe and Left Toe/Right Hand) can be introduced at this point with adjustment in the tempo. You should provide a model for your client to copy as needed.

  You should also introduce Both Toes. When introducing this exercise, you will again need to adjust the tempo to a slower pace (between 40-50 bpm). It is harder to sequence movements when both sides of the brain must work in concert. You may need to model this exercise for your client while he copies you over many repetitions. As he improves, you will need to wean from your model and only jump in and help as needed. Verbal cues are not going to be very effective. A visual model to copy (with no talking) is far more effective. When you model the exercise, you will need to wear a set of headphones in order to synchronize with the beat. Timing matters!!! The better your own timing skills are, the more effective your model will be.

- **INTRODUCE HEEL EXERCISES ONCE BOTH TOES EXERCISE IS IMPROVING -** Once Both Toes are steadily improving, progress to Heels. Follow the same plan to work on Heels, focusing on individual heels first with the same modifications (stepping back onto the trigger, hitting every other beat, etc as described above). Once individual heels are steadily improving, proceed to Both Heels, adjusting IM settings as needed and modeling as needed.

- **PROGRESSIVELY ADJUST TEMPO TOWARD 54 BPM AND TURN ON THE GUIDE SOUNDS -** Once your client is sequencing the movements better for the foot exercises, you should progressively adjust the tempo toward the Default setting of 54 bpm to encourage further improvement in motor planning and sequencing. You should also turn on the guide sounds when you think your client is ready. Be sure to adjust Difficulty so that you are not providing TOO much feedback and then gradually make the Difficulty more challenging so that more feedback is provided (i.e., more buzzer) to nudge your client toward SRO hits and better motor control and coordination.

MODIFICATIONS FOR HEMIPLEGIA

UPPER EXTREMITY EXERCISES

After improving timing and rhythm with the more intact upper extremity in Phases 1-3, the client with hemiplegia should now start working on improving synchronization with the affected upper extremity in Phase 4.

Here are some suggestions for training the affected extremity:

- **PERFORM A SHORT EXERCISE WITH THE INTACT HAND TO START THE TRAINING SESSION –** A short hand exercise with the intact hand will get your client ready to focus and prime him for working on his affected hand. When working on this exercise, remember to adjust Difficulty, Burst Threshold, SRO Range, and Repetitions to facilitate improvement in cognitive and motor skills.

- **REDUCE THE TEMPO FOR THE AFFECTED HAND -** Reduce the tempo to a pace that allows your client to move the affected arm/hand as rhythmically as possible. The tempo may need to be considerably slower than that of the intact hand. As motor control and coordination improve, the tempo should gradually be increased. (It is okay for you to use a different tempo for each hand and is often necessary!)

- **TURN OFF GUIDE SOUNDS FOR BOTH HANDS AND THE AFFECTED HAND -** You may wish to turn off the guide sounds temporarily or adjust the Difficulty level to an easier setting if your client is receiving too much buzzer (Guide) feedback. As he improves, you may wish to either turn on the guide sounds or adjust the Difficulty to slightly more challenging settings to nudge him closer to SRO.

- **KEEP REPETITIONS SHORT FOR BOTH HANDS AND THE AFFECTED HAND -** Adjust the number of repetitions for the affected hand and Both Hands to a level that your client can achieve. Your client may not be able to perform as many repetitions with the affected side as compared to the intact side. Work on increasing repetitions gradually – repetitions are a key factor in improving motor function in the affected extremity.

- **PERFORM EXERCISES WITH BOTH HANDS AND THE AFFECTED HAND -** As your client performs these exercises, encourage him to make circular, rhythmical movements with the affected arm/hand to the best of his ability (a slower tempo will facilitate this). During Both Hands, encourage him to bring his hand to midline to meet the intact hand. A mirror can sometimes be helpful (if not too distracting or contraindicated due to impaired praxis). Provide hands-on assistance to facilitate smooth, rhythmical movement as needed for neuromuscular re-education of the affected arm/hand.

  Monitor your client for increased pain or spasticity in the affected extremity. Stop the exercise if there is pain or increased muscle tone. (Qualified professionals, such as Occupational and Physical Therapists, may implement therapeutic strategies for pain and tone management during IM training).

- **PERFORM REPETITIVE MOTION ACTIVITIES FOR FUNCTIONAL TASKS/ADLS IMMEDIATELY FOLLOWING IM TRAINING -** Repetitive motion activities should follow IM training to promote functional use of the affected extremity. It is also possible, and many times a more efficient use of time, to combine IM training with functional movements.

LOWER EXTREMITY EXERCISES

Here are some strategies to facilitate successful IM training of the lower extremities for individuals with hemiplegia:

- **SEATED FOR EXERCISES INITIALLY -** Your client may need to be seated initially for foot exercises. If standing balance is poor, you may wish to progress from sitting on a stable surface (chair), to a less stable surface (exercise ball – with gait belt and assist for safety as needed), to standing while holding onto a surface for balance (like an assistive device or chair), to standing with contact guard (using a gait belt for safety), to progressively more independent standing.

- **BEGIN WITH EXERCISES FOR THE INTACT LOWER EXTREMITY –** Just as you taught your client good timing with the more intact upper extremity before introducing exercises for the affected side, you will first introduce the lower extremity exercises to the more intact lower extremity. It is easier for your client to learn good timing by structuring the session this way. So for the time being, your client will perform the following exercises (with adjustments to IM settings as deemed appropriate):

  1. Hand exercise with intact hand (warm up)
  2. Hand exercise with affected hand
  3. Both hands
  4. Right or Left Toe (choose the more intact extremity for this exercise)

  For the intact lower extremity, you will likely be working at a Tempo of 54 bpm and with the guide sounds on. Of course, adjust Difficulty and other settings as needed to facilitate a positive training experience.

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If your client struggles with timing in the intact lower extremity, he may tap his intact hand on that leg while simultaneously tapping that leg on the tap mat to the beat to improve timing & rhythm. Alternatively, you may provide hands-on assistance. Sometimes having your client move the foot forward onto the tap mat on one beat and back off the tap mat on the next beat instead of tapping the foot on the trigger helps. When doing so, your client will hit the tap mat every other beat. Once you see improvement in timing with this approach, transition back to tapping the toe on the tap mat. Whatever modifications or assistance you provide, gradually wean from it to promote more independent and timed movement at the default tempo of 54 bpm.

- **TRANSITION TO INCLUDE EXERCISES FOR THE AFFECTED LOWER EXTREMITY -** As your client demonstrates improvement in timing & rhythm with the intact lower extremity, introduce exercises for the affected lower extremity. Adapt the IM settings and your approach to IM training as needed for each individual. For example, dorsiflexion may be impaired so that your client cannot raise and lower his foot onto the tap mat. In this instance, you may wish to place the tap mat on a wedge, and position the wedge under the affected foot so that your client can more easily tap it. Alternatively, your client may use a stepping motion to hit on the trigger, moving his whole foot forward onto the tap mat on one beat and then back off on the next beat (hitting the tap mat every other beat). Other suggestions for modifying the IM settings include the following:
  - **ADJUST THE TEMPO FOR THE AFFECTED LOWER EXTREMITY -** You most certainly will need to adjust the Tempo to a slower setting for the affected lower extremity. It may take a bit of trial and error to find the just-right tempo where your client can achieve his best performance.
  - **TURN OFF GUIDE SOUNDS TEMPORARILY –** When first introducing lower extremity exercises to the affected side, you may wish to turn off the guide sounds for those specific exercises. So, the guide sounds will be turned on for all but the lower extremity exercises on the affected side. As your client demonstrates readiness, turn the guide sounds back on for these exercises.
  - **ADJUST DIFFICULTY –** If you elect to keep the guide sounds turned on for the affected lower extremity exercises, adjusting the Difficulty will be important so that your client does not hear the very early/very late buzzer (Guide) too frequently and become discouraged. Use the chart below to adjust the Difficulty for a more positive training experience.

Client's Millisecond Average:	Adjust Difficulty Setting to:
More than 300 ms	300 (highest)
200 ms	300 (add 100)
150 ms	250 (add 100)
100 ms	150 (add 50)
50 ms	100 (add 50)
Less than 25 ms	Auto (most challenging)

  - **ADJUST SRO RANGE –** Along with adjusting the Difficulty, adjusting the SRO Range will make it easier for your client to experience success at synchronizing with the beat and earning SRO hits & Bursts. The more success your client experiences, the more likely his is to progress.
  - **INTRODUCE TRAINING VISUALS –** If your client is struggling to synchronize with the auditory Reference Tone and you think visual cues may be helpful, you may wish to introduce the Training Visuals. It is a good idea to begin with the least distracting default background, and avoid the Games initially as they may be too distracting.

ADDRESS SELECTIVE ATTENTION & MULTITASKING

As your client becomes more proficient in a quiet, non-distracting environment, he will benefit from training with distractions and background noise. You may wish to open the door to the training room to allow in ambient noise. Next, you might want to introduce talk radio or you may read aloud while your client performs a hand exercise. Then you may read a story and ask your client questions about the content or have 2-way dialogue with your client as he performs the exercise. If you are using the Training Visuals or Games, you may wish to turn on the volume for background noise. In any case, you will want to make behavioral observations and watch your client's scores in order to grade the level of distraction/background noise in order to facilitate progress.

The In-Motion trigger may be used by all disciplines to address multi-tasking and selective attention. When wearing the In-Motion Trigger, your client will receive feedback about timing for each step as he walks around amidst the milieu of other people, sounds, and sights or while performing custom exercises.

TAKE THE ONLINE POST-TEST & EVALUATION FOR MODULE 7

5 minutes

To view the course materials for this Module visit:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-7

CONTACT US WITH ANY QUESTIONS

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Technical Support:
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NOTES

LOG YOUR ACTIVITY TIME HERE!

READING END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN.
ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 25 MINUTES

DON'T FORGET TO REFERENCE YOUR NOTES FOR THE TIME LOGGED ACTIVITIES IN THIS MODULE, WHICH WILL BE ASKED IN THE EVALUATION.

40 MINUTES

MODULE 8
IM REPORTS, INSURANCE & BILLING

LEARNING OBJECTIVES:

- IM Reports
- Insurance & Billing

LOG YOUR ACTIVITY TIME HERE!
In each Module evaluation, you will be asked to log the amount of time it takes you to complete each course activity. This information will be used to ensure that the course CEUs have been calculated accurately. Please use this space provided to log your start time.

VIDEO START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 12 MINUTES

START

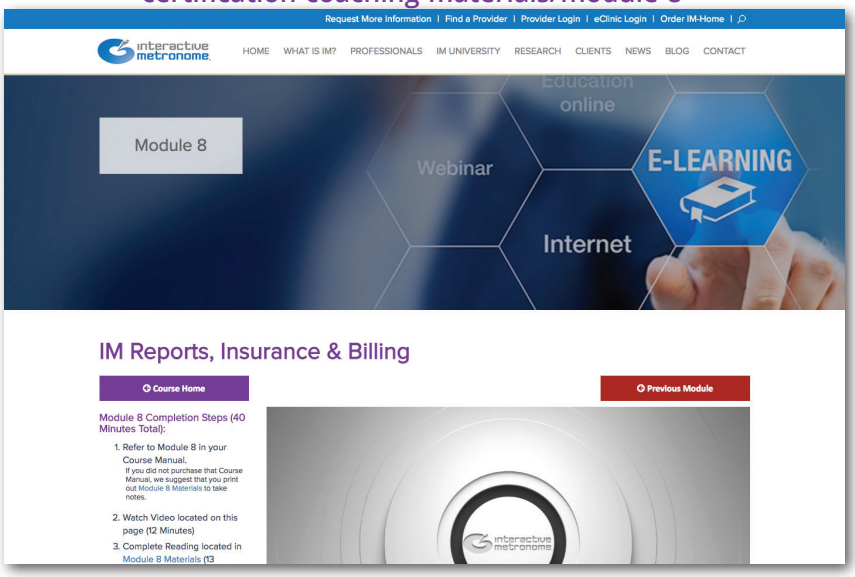
GATHER NEEDED EQUIPMENT & MATERIALS

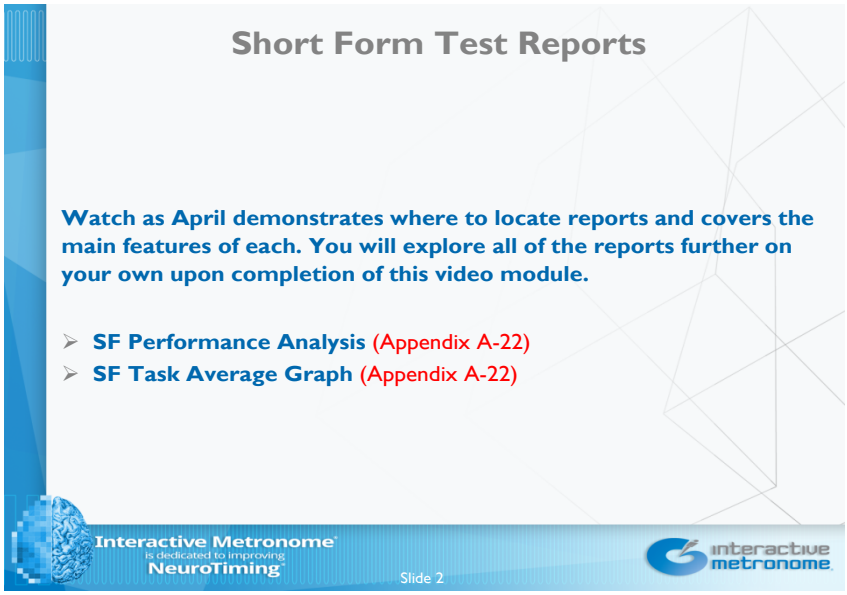
You will need the following to complete Module 8:

- Computer with good internet connection
- IM equipment (set up, connected to computer and ready to use)
- IM software (open software on your computer)
- IM training file (open your IM file) then minimize the IM software so you can begin the next module.
- Pencil to take notes

WATCH THE VIDEO
12 minutes

Access the Module video here:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-8





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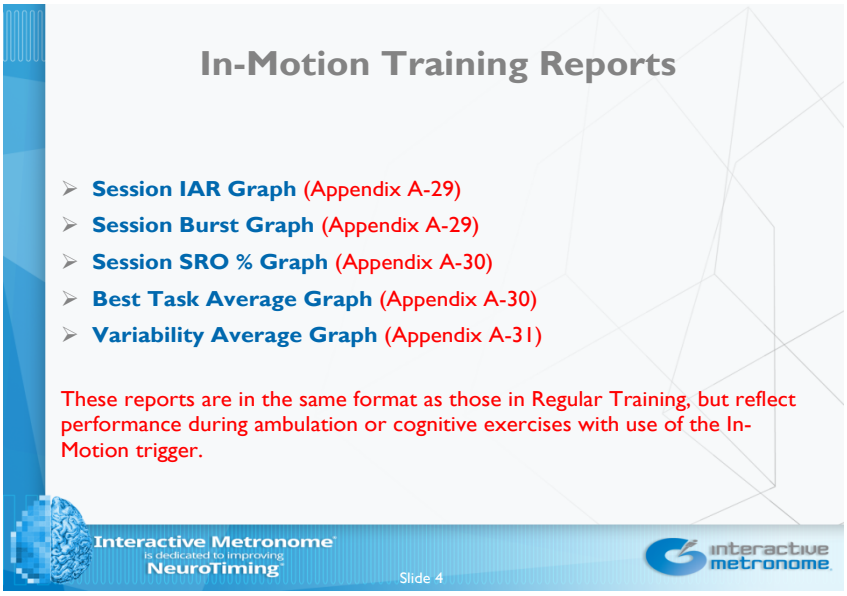

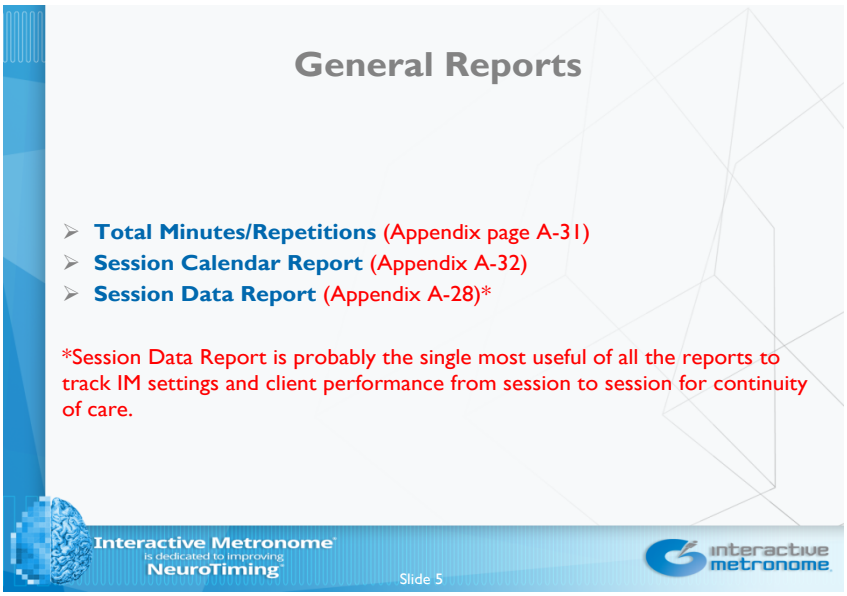

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Attend Over Time Reports

- **AOT Task MS Average Graph** (Appendix A-27)
- **AOT Variability Average Graph** (Appendix A-27)

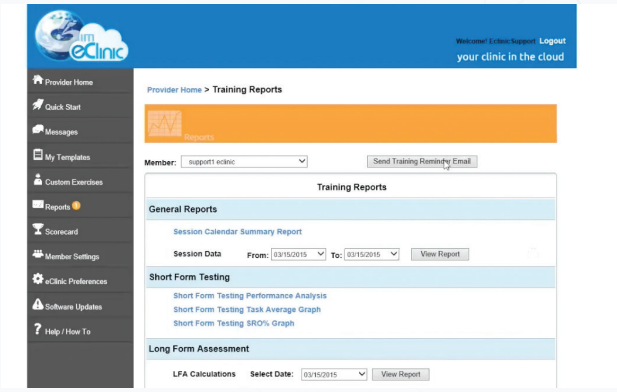
These reports track your client's ability to consistently sustain attention over time.

Interactive Metronome is dedicated to improving NeuroTiming

Slide 6

interactive metronome

Reports on the eClinic



Video

***Go to Appendix Page A-39 thru A-43**

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Slide 7

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Insurance Reimbursement

- **IM is a treatment modality & does not have its own CPT code**
- **Prescription & insurance authorization for SLP/PT/OT/ PSYCH eval and treat**
- **Bill customary charges:**
  - Speech & language therapy
  - Cognitive development
  - Manual therapy
  - Gait training
  - Therapeutic activity
  - Therapeutic exercise
  - Neuromuscular reeducation
  - Individual psychotherapy

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Slide 8

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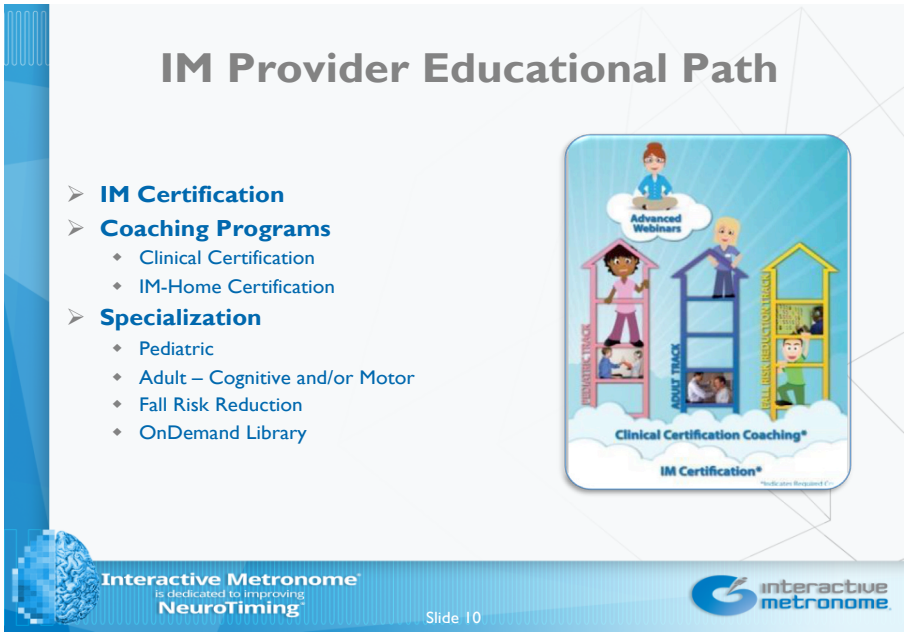
MODULE 8



COMPLETE THE ADDITIONAL READING

13 minutes

INTERPRETING IM DATA

TASK AVERAGE & VARIABILITY AVERAGE SCORES

The primary scores you are concerned with for IM Training are:

- TASK AVERAGE (MS) – Compares each one of your trigger hits to the reference beat… a measure of timing
- VARIABILITY AVERAGE (MS) – Compares the timing of one of your trigger hits to your next, to your next, to your next… a measure of rhythm

By comparing these scores from any IM Assessment or training exercise to the Indicator Table, you will have a ballpark idea of your client's current timing & rhythm. Research consistently shows that the more in sync a person is when

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LOG YOUR TIME HERE!

VIDEO END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 12 MINUTES

LOG YOUR ACTIVITY TIME HERE!

READING START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 13 MINUTES

MODULE 8

NOTES

they clap or tap to an auditory beat (referred to as auditory-motor synchronization), the better their speech, language, cognitive, sensory, motor and academic skills like reading and math. Conversely, those that have more difficulty with synchronizing tend to struggle in one or more of these areas.

INDICATOR TABLE

Age	6	7 to 8	9 to 10	11 to 12	13 to 15	16+
Extreme Deficiency	280+	270+	260+	240+	215+	200+
Severe Deficiency	175–279	170–269	160–259	155–239	150–214	147–199
Below Average	120–174	90–169	80–159	75–154	72 –149	70–146
Average	90–119	65–89	55–79	45–74	43–71	41–69
Above Average	56–89	45–64	38–54	36–44	33–42	30–40
Exceptional	40–55	32–44	28–37	26–35	23–32	22–29
Superior	Below 40	Below 32	Below 28	Below 26	Below 23	Below 22

The goal of IM training is to improve the Task Average (MS) and Variability Average (MS) scores by lowering them to as close to zero (0ms) as possible. Task Average & Variability Average scores generally improve together simultaneously as your client becomes more accurate and rhythmical with auditory-motor synchronization.

Use the IM reports and graphs to document the progress made from session to session and from one assessment to the next. And, as mentioned previously, it is also important to administer other standardized and functional pre/post assessments to measure the impact of IM training on speech, language, cognitive, sensory, motor and/or academic skills.

SRO, BURSTS & IN-A-ROW (IAR) SCORES

Three additional scores give you an indication of your client's timing & rhythm. These scores will get higher and higher as your client achieves better timing & rhythm. Recently, researchers discovered that the CONSISTENCY of synchronization over the entire exercise is an important indicator of neural maturation. As these scores continually get higher and higher, your client is achieving greater CONSISTENCY and better timing & rhythm. This will result in better outcomes.

- SRO – Each time your client hits the trigger within the SRO Range you have set, he earns one SRO point. As your client makes more and more SRO hits and the SRO score goes up, it is an indication of improvement in timing. He is getting better at "targeting" the SRO zone! This is encouraging! CONSISTENCY often develops from here to the point where your client can then string together consecutive hits within the SRO Range to earn Bursts!
- BURSTS – A reward score for consistently synchronizing with the beat for a designated number of hits within the SRO Range.
    - The default Burst Threshold is 4. So, each time your client makes 4 consecutive hits within the SRO Range, he earns a burst.
    - You can adjust the SRO Range to as high as 50ms to make it easier to earn Bursts initially, then make it more challenging by lowering it to as low as 10ms to nudge your client's synchronization closer & closer to 0ms as he is ready.
    - You can adjust the Burst Threshold to as low as 2 to make it easier to earn Bursts initially, then make it more challenging by increasing it to as high as 15 to nudge your client's synchronization closer & closer to 0ms and to encourage CONSISTENCY!

- IN-A-ROW (IAR) – This score captures the longest string of consecutive hits your client made within the SRO Range in a particular exercise. For example, an IAR score of 10 indicates your client made 10 consecutive SRO hits during that exercise! IAR is an indication of CONSISTENCY.

Sample IM Assessment & Training Reports are included in the appendix of this handbook for closer review.

ESTABLISHING GOALS FOR IM TRAINING

Ordinarily, you do not set long term or IEP goals for your client to improve on a training tool or assessment battery. Rather, long term goals are written in a way that measurable progress can be observed over time in some area of function in the real world. You should always establish goals before you start IM training. It is important to measure where your client is performing in regard to those goals before, at interim point(s), and the conclusion of IM training even if you are only doing so by using a functional assessment tool and are not performing objective, standardized measures. This information will allow you to communicate with your client and his family regarding meaningful outcomes.

AREAS OF IMPROVEMENT

Your long term goals for IM training should be written in functional and measurable terms that do not include IM language (since your long term goal is not to get better at IM). Improvement may be seen in multiple areas of speech, language, cognitive, sensory and motor function (results may vary from person to person):

COGNITIVE SKILLS

- **Executive functions**
  - self-awareness
  - self-initiation
  - self-monitoring
  - self-correction
  - self-control
  - planning and anticipation
  - organization and sequencing
  - prioritization & time-management
  - problem-solving & reasoning
- **Attention**
  - focused attention & concentration
  - selective attention to tune out distractions
  - alternating attention to switch from one thing to another appropriately
  - multi-tasking
- **Processing Speed**
- **Working memory**
- **Mental & physical stamina**

SPEECH & LANGUAGE SKILLS

- **Auditory processing and comprehension**
- **Expressive language**
  - Vocabulary
  - Mean length of utterance (MLU)
  - Word retrieval
  - Thought organization
- **Critical pre-reading skills**
- **Reading rate, fluency and comprehension**
- **Written expression & spelling**
- **There have been a few anecdotal reports of improved speech fluency**

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BEHAVIORAL/SOCIAL SKILLS

- **Self-regulation & self-control**
  - Less impulsive
  - Less disinhibited
  - Less aggressive
- **Eye-contact & reciprocal communication**
- **Social initiation & turn-taking**
- **Interpreting nonverbal language**

SENSORY PROCESSING SKILLS

- **Sensory modulation**
  - Less tactile and vestibular defensiveness
  - Less sensory seeking activity
  - More calm
- **Sensory discrimination**
  - Body in space awareness
  - Proprioceptive sense
- **Sensory-based motor skills**
  - Motor planning and sequencing/praxis
  - Bilateral coordination
  - Postural control

MOTOR SKILLS

- **Fine & gross motor skills**
- **Balance**
- **Gait**
- **Coordination & motor control**
- **Posture**

IM providers that specialize in working with children on the Autism Spectrum, frequently report improvements in the following areas when IM training is included in a comprehensive therapy program that includes interventions for Sensory Processing Disorder:

- Increased synchrony and engagement with environment and functional activities.
- Increased associated engagement
  - Increased specific engagement especially with siblings and family members
  - Increased volitional task-specific eye contact and sustained focused eye engagement
- Increased attention, ability to follow functional related directions
- Increased timing and coordination of motor control (decreased clumsiness, improved posture and symmetry)
- Decreased anxiety
  - Improved ability to self-calm and implement self-calming strategies
- Decreased agitated and frustration-related behaviors
- Improved sensory-processing
  - Ability to give and receive hugs
  - Ability to tolerate handling and positional facilitation
  - Ability to tolerate unexpected changes to environment
  - Decreased startle response
  - Decreased oral motor defensiveness
  - Increased processing and perception of social cues
- Increased fluidity and content to speech
- Decreased perseverative behaviors, ticks, fidgets, compulsions.
- Improved classroom behaviors and academic achievement
- Parents describe a child as being 'more comfortable in their own skin.

NOTE: *IM training outcomes vary depending upon the clinical degree of autistic behaviors. Very often the more profound the issues, the more rapidly improvements are noted. Also of note is the methodology of IM training: improvements are noted even with substantial modifications, total hand-over-hand assist and limited duration in IM training. Parents have reported changes even after the first IM session. Families are cautioned that, due to the nature of re-organizing and 'shaking up' a child's central nervous system that occurs during this powerful intervention, a child may appear to make initial gains and then a decline in skills prior to reaching ultimate goals (often referred to as the 'funk' period, as neurological change occurs through the process of neuroplasticity).*

DEVELOPING LONG-TERM GOALS

Your long term goals should focus on areas of function impacted by IM training outlined above. Here are some sample long term goals:

- June will communicate basic needs & wants effectively & independently.
- Dorothy will demonstrate safety & independence with self-care activities.
- Elizabeth will demonstrate focused, attentive behavior in the classroom over the course of the school day with fewer than 2 reminders.
- Joseph will demonstrate safe & independent wheelchair transfers.

DEVELOPING SHORT-TERM GOALS

Short-term goals are written so that progress toward the long-term goals can be measured in smaller increments. Key elements of short term goals include:

- Training task to be completed: IM training (auditory-motor synchronization)
- Target range for task average (MS)
- Characterize IM settings as Easy, Moderate, or Challenging for: Guide Sounds on/off, Tempo, Difficulty, SRO Range, Auditory/Training Visuals
- Expected level of assistance to perform: hands-on, verbal cues, modeling,...
- Functional outcome expected: .....in order to be able to _____.

Here are some examples of short-term goals:

- June will consistently achieve a score of less than 50ms on moderately challenging auditory-motor synchronization exercises without cues in order to improve ability to communicate basic needs & wants independently.
- Dorothy will consistently achieve a score of less than 80ms on moderately challenging auditory-motor synchronization exercises with fewer than 5 verbal cues in order to improve attention, self-monitoring, and sequencing to perform self-care activities safely with minimal assist.
- Elizabeth will consistently achieve a score of less than 30ms on challenging auditory-motor synchronization exercises with no more than 1 redirection per exercise in order to improve self-regulation & attention for improved academic performance.
- Joseph will consistently achieve a score of less than 150ms on easy level auditory-motor synchronization exercises with fewer than 12 cues/assists in order to improve motor control, coordination, attention & sequencing for safe wheelchair transfers with moderate assist.

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BILLING FOR IM ASSESSMENT & TRAINING

Interactive Metronome®, Inc does not regulate or make specific recommendations regarding what you should charge for your IM training sessions. What you bill for your time will vary and depend upon several factors including the geographic location of your practice and your area of specialty. Based on feedback from our existing network of IM providers, the average rate is between $60 and $150 per hour in the U.S. The hourly rate for IM training is typically congruent with customary billing practices of the provider.

If you are an allied health professional and you wish to bill a 3rd party payor (insurance) for your services, you should use CPT code(s) that apply to your discipline, your client's diagnosis and your treatment approach. Interactive Metronome® is considered a therapy modality that does not have its own assigned CPT code. You will incorporate IM training into your treatment just as you do with other non-specific therapy modalities (i.e., therapy ball, balance beam, treadmill, etc).

The prescription for your services should state "(Your discipline) Evaluate and Treat." You then have discretion as the therapist to determine what treatment modalities are appropriate based upon your client's individual needs. This may include Interactive Metronome®. For successful reimbursement, your treatment must be deemed medically necessary, your documentation must meet the standards of the 3rd party payor, and you must bill appropriately (i.e., correct CPT codes, modifiers, etc).

Due to the complex and evolving nature of coding for reimbursement, Interactive Metronome® does not provide specific billing codes. IM providers that bill their customary charges and document their treatment according to what is required to justify their services report they are reimbursed for their services. Allied health professionals who are IM providers report successfully using the following treatment codes for reimbursement of services that include Interactive Metronome®:

PT
Gait Training
Prosthetic Training
Orthotic Training
Therapeutic Exercises
Neuro-muscular Re-education
OT
Therapeutic Activities
Therapeutic Procedures
Cognitive Skills Development
Sensory Integration
Neuro-muscular Re-education
ST
Speech Therapy
Cognitive Skills Development
PSYCH
Individual psychotherapy

MODULE 8

LOG YOUR ACTIVITY TIME HERE!

READING END TIME _____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES) _____ MIN.

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 13 MINUTES

COMPLETE THE LABS
10 minutes

TAKE A CLOSER LOOK AT THE IM REPORTS

Sample IM reports are included in the Appendix of this handbook. Take a few moments to peruse & familiarize yourself with them.

PAGE	REPORT
A-22	SAMPLE SHORT FORM TEST PERFORMANCE ANALYSIS REPORT
A-22	SAMPLE SHORT FORM TEST TASK AVERAGE GRAPH
A-23	SAMPLE SHORT FORM TEST SRO% GRAPH
A-24	SAMPLE PRE LFA CALCULATIONS REPORT
A-25	SAMPLE POST LFA CALCULATIONS REPORT
A-26	SAMPLE LFA COMPARISON REPORT
A-27	SAMPLE AOT TASK MS AVERAGE GRAPH
A-27	SAMPLE AOT VARIABILITY AVERAGE GRAPH
A-28	SAMPLE SESSION DATA REPORT
A-29	SAMPLE SESSION IAR GRAPH
A-29	SAMPLE SESSION BURST GRAPH
A-30	SAMPLE SESSION SRO% GRAPH
A-30	SAMPLE BEST TASK AVERAGE GRAPH
A-31	SAMPLE VARIABILITY AVERAGE GRAPH
A-31	SAMPLE TOTAL MINUTES/REPETITIONS REPORT
A-32	SAMPLE SESSION CALENDAR REPORT

TAKE THE ONLINE POST-TEST & EVALUATION FOR MODULE 8

5 minutes

To view the course materials for this Module visit:
https://www.interactivemetronome.com/im-ondemand-certification-coaching-materials/module-8

CONTACT US WITH ANY QUESTIONS

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Education Support:
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Technical Support:
support@interactivemetronone.com

NOTES

LOG YOUR ACTIVITY TIME HERE!

LAB START TIME

_____ AM/PM

ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 10 MINUTES

LOG YOUR ACTIVITY TIME HERE!

LAB END TIME
_____ AM/PM

TOTAL ACTIVITY TIME (IN MINUTES)
_____ MIN.
ESTIMATED TOTAL TIME FOR THIS ACTIVITY IS 10 MINUTES

DON'T FORGET TO REFERENCE YOUR NOTES FOR THE TIME LOGGED ACTIVITIES IN THIS MODULE, WHICH WILL BE ASKED IN THE EVALUATION.

NOTES

APPENDIX

CONTAINS:

SAMPLE REPORTS:

RESOURCES & REFERENCES:

ECLINIC MANAGEMENT SYSTEM:

CONTINUING EDUCATION & CONTACT:

INTERACTIVE METRONOME® RESEARCH STUDIES

PUBLISHED PAPERS 2013-2021

1. Bonacina S, Krizman J, White-Schwoch T, Kraus N. (2018). Clapping in time parallels literacy and calls upon overlapping neural mechanisms in early readers. Annals of the New York Academy of Sciences. doi.org/10.1111/nyas.13704
2. Bonacina S, Krizman J, White-Schwoch T, Nicol, T. & Kraus N. (2019). How Rhythmic Skills Relate and Develop in School-Age Children. Global Pediatric Health, 6, 1-7.
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4. Johansson, A. Demellöf, E. & Rönnqvist, L. (2014). Timing training in three children with diplegic cerebral palsy: Short- and long-term effects on upper-limb movement organization and functioning. Frontiers in Neurology, 5(38): 1-9.
5. Kim, K., Heo, S., Kim, M., & Lee, S. (2015). Validity of Long Form Assessment in Interactive Metronome as a Measure of Children's Praxis. The Journal Korean Academy of Sensory Integration, 13(1), 1-21.
6. Kim, K., Kim, M., & Lee, S. (2015). The Effects of Interactive Metronome on Timing, Attention, Bilateral Coordination and Balance for Adult with Intellectual Disabilities: Single Subject Design. Journal of Special Education & Rehabilitation Science, 54(3), 349-364.
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IM PROGRAM FEATURES

A. **Menu Bar**: Contains lists of necessary and additional functions and settings.

B. **Control Panel**: Displays options and information used during tasks

1. **Counter**: Displays and counts down the number of repetitions and the number of minutes set for a task. When in assessment modes, the number of repetitions/minutes is preset. However, for "Regular Training" and "In-Motion" modes, you can set the number of repetitions or minutes by clicking on the up or down arrows. **NOTE:** *The repetitions/minutes can only be adjusted when a training file is open.*

2. **Tempo**: Displays the rate (beats per minute) of the reference tone. The default setting is 54 beats per minute. When in assessment modes, this is a fixed setting. However, for "Regular Training" and "In-Motion" task modes, this can be adjusted by clicking on the up arrow to increase the tempo or the down arrow to decrease the tempo.

3. **Difficulty**: Indicates the millisecond threshold beyond which your client will hear negative feedback telling him he is Very Early or Very Late. As long as your client stays below this millisecond threshold, he will hear the more pleasing Right-On and Super Right-On guide sounds. To select the Difficulty, the "Auto Dif" must be turned off (no check in box). Difficulty is adjusted by clicking on the up or down arrows on the Control Panel to increase or decrease it.

4. **SRO**: Displays the minimum millisecond score required to achieve a "Super-Right-On" or SRO hit. The default setting is 15 milliseconds (therefore, if you don't change anything your client must hit between 0-15 ms before or after the reference beat to achieve a SRO hit). The SRO threshold can be adjusted as you deem appropriate to make training easier or more challenging. You can choose a SRO threshold between 10 - 50 milliseconds. **NOTE**: *This feature should be used in conjunction with difficulty and/or tempo to achieve the most SRO hits.*

5. **Burst Threshold:** Burst Threshold determines the number of consecutive, or in-a-row, hits your client must make to earn 1 Burst. A burst is earned each time your client hits a designated number of times consecutively in the SRO range. This number is designated by you when you set the Burst Threshold. For example, the default Burst Threshold is 4. Therefore, each time your client hits 4 times in-a-row within the SRO range of 0-15 ms, he earns 1 burst. If he earns 10 bursts over the entire exercise, that means on 10 different occasions during that exercise he made at least 4 SRO hits in-a-row. To adjust the Burst Threshold, click on the arrow on the Control Panel next to Burst. You will then select a threshold between 2 -15 hits. **NOTE**: *This feature should be used in conjunction with difficulty and/or tempo to achieve the most bursts.*

C. **Sound Volumes Panel**: Displays the volume setting for IM tasks.

6. **Ref**: Displays the volume for the **Reference Tone.** The default setting is 127. Use the arrow and slider to set the desired volume.

7. **Guide**: Displays the volume for the **Guide Sounds.** The default setting is 127. Use the arrow and slider to set the desired volume.

8. **RO**: Displays the volume for the **Right On** tone. The default setting is 127. Use the arrow and slider to set the desired volume.

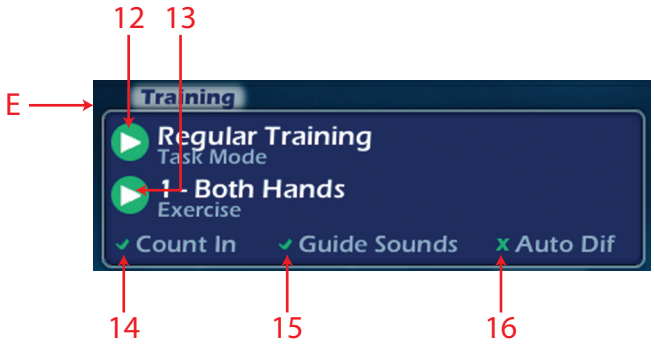
9. **SRO**: Displays the volume for the **Super-Right-On** tone**.** The default setting is 127. Use the arrow and slider to set the desired volume.

10. **Master**: Displays the master volume for the IM exercise**.** The default setting is 107. Use the arrow and slider to set the desired volume.

11. **Game**: Displays the volume setting for the background audio on training visual screens. Use the arrow and slider to set the desired volume.

D. **Traffic Light Icon Button:** Starts and stops the selected task. The "F2" key performs the same action. This button will not illuminate if the MCU is not connected or if no file is open.

E. **Training Panel:** Contains options for task mode and exercises.



12. **Task Mode Selector:** Lists and indicates which mode is selected including: Short Form Test, Long Form Assessment, Regular Training, In-Motion, or Attend Over Time.
NOTE: *Selection of Long Form Assessment enables another group of check boxes – Pre, Interim, and Post.*

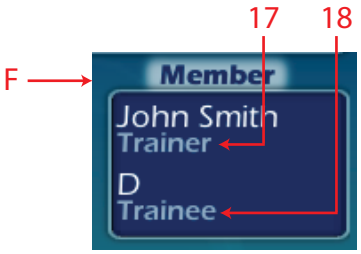
13. **Exercise Selector:** Lists and indicates which exercise is selected. Each task mode has a different list of available exercises.
NOTE: *When in assessment modes, the sequence of exercises is presented in a set order and automatically advances to the subsequent exercise.*

14. **Count-in:** When checked, adds five "warm-up" repetitions (beats) to the counter. These will not be counted by the program, which will begin recording data on the sixth repetition of the task.

15. **Guide Sounds:** When selected (checked), activates feedback tones in addition to the reference tone. When deselected (no check in box), only the reference tone is heard. When in assessment modes, this is preset. However, for "Regular Training" and "In-Motion" modes, this can be turned on or off.

16. **Auto Dif:** When "Auto Dif" (Auto Difficulty) is selected (box checked), the program continuously changes the "Difficulty" setting during an exercise based on the individual's most recent trigger hits.

F. **Member Panel:** Contains trainer and trainee information.

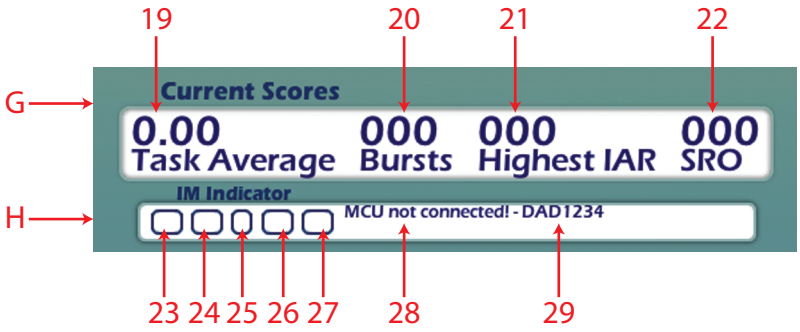


17. **Trainer:** Displays the IM provider's name. If there is more than one provider name in the file (which is possible only with a file created using a version of the IM software prior to IMPro version 6.0), select from the drop-down box by clicking the arrow and then select the desired name.

18. **Trainee:** Displays your client's name. If there is more than one individual's name in the file (which is possible only with a file created using a version of the IM software prior to IMPro version 6.0), select from the drop-down box by clicking the arrow and then select the desired name.

The **Performance Status Area** displays data calculations based on trigger hits recorded during an assessment or exercise. In certain Training Visual screens, it also displays indicators related to accuracy of your client's trigger hits in relation to the reference beat. Hits fall into pre-defined specified areas range from 555 milliseconds before the reference tone (Very Early) to 555 milliseconds after the reference tone (Very Late). A hit falling on zero milliseconds is synchronized exactly with the reference tone.

Performance Status Area



G. **Current Scores Panel:** Contains performance data during the task.

19. **Task Average**: Displays the current millisecond average of your client's trigger hit while an assessment or exercise is in progress.

20. **Bursts**: Counts and displays how many times the current burst rate was achieved during an exercise. For example, if the **Burst Threshold** is set to 4, each time 4 trigger hits in-a-row are within 15 milliseconds of the reference tone, the Burst counter will increase by 1.
NOTE: *You can make changes to the **Burst Threshold** via the control panel.*

21. **Highest IAR**: Counts and displays the highest number of trigger hits in-a-row that were within the selected SRO range during any one uninterrupted assessment task or exercise. Keep in mind, 15 milliseconds is the default SRO setting.
NOTE: *You can make changes to the SRO threshold via the control panel.*

22. **SRO:** Counts the number of "Super-Right-On" hits during an assessment task or exercise.
NOTE: *You can make changes to the SRO threshold via the control panel.*

H. **IM Indicator Panel:** Displays real-time feedback as your client hits the trigger.

23. **Very Early Hit Box**: Indicates that the trigger hit was very early (beyond the maximum millisecond value set for "Early" trigger hits) and displays how far away from the reference tone it was in milliseconds.

24. **Early and "Super-Right-On" Hit Box**: Indicates that the trigger hit was early and displays how far away from the reference tone it was in milliseconds. "Super-Right-on" hits that do not fall exactly on the reference tone, but are early by less than 15 milliseconds, also appear in this location.

25. **Visual Guide**: A set of lines in the square that flash exactly on the reference beat.

26. **Late and "Super-Right-On" Hit Box**: Indicates that the trigger hit was late and displays how far away from the reference tone it was in milliseconds. "Super-Right-on" hits that do not fall exactly on the reference tone, but are late by less than 15 milliseconds, also appear in this location.

27. **Very Late Hit Box**: Indicates that the trigger hit was very late (beyond the maximum millisecond value set for "Late" trigger hit) and displays how far away from the reference tone it was in milliseconds.

28. **MCU Connection:** Displays the connection status of the MCU.

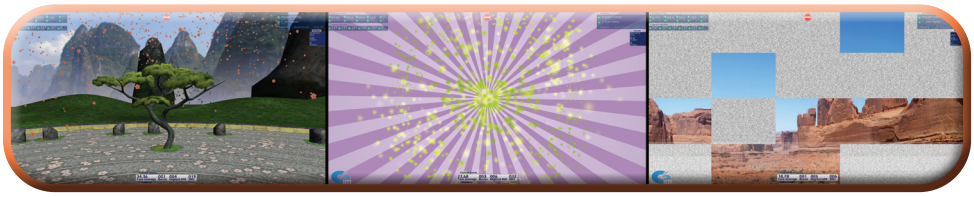
29. **IM Data File:** Displays the file that is currently open for training.

GAMES

IMPro 9.0 offers a selection of games (animated 3D graphics). The games are a fun way to improve timing and rhythm while keeping your client engaged and challenged. The better your client's timing and rhythm, the higher he scores on the games. The games included in this software were developed with both children and adults in mind.

Some will appeal more to children (i.e., Monkey, Space Invaders, and Fairy Land), while others appeal more to adults (i.e., Zen Garden, Groovy, and Picture Board).

Left to Right: Monkey, Space Invaders, and Fairy Land

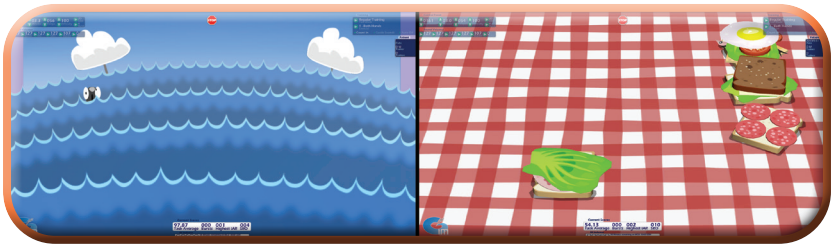


Left to Right: Zen Garden, Groovy, and Picture Board

There are sport games that appeal to both children and adults (i.e., Hoops (basketball), Golf, and Goal (soccer).

Left to Right: Hoops (basketball), Golf, and Goal (soccer)

And lastly there are games that encourage saccadic and smooth visual pursuit eye movements (i.e. Fishin' and Sammich'). Fishin' requires your client to move his eyes back and forth rapidly between targets in all plains (saccades). Sammich' encourages your client to follow the movement of a visual target with smooth visual tracking (smooth visual pursuits). As appropriate, you may encourage your client to follow the visual targets without head movement and without eye deviation away from the target (shown below).



Left to Right: Fishin' and Sammich'

Most of the games provide rewards for SRO hits, while a few of the games provide both rewards & penalties to help motivate your client to get into and stay in the SRO range as much as possible. See the examples listed below:

GAMES WITH REWARDS

HOOPS	SRO hits earn baskets.
GOAL	SRO hits earn goals.
GOLF	SRO hits make a green trail down the middle of the course directly towards the flag.
FISHIN'	SRO hits reel in a fish bobbing out of the water.
SAMMICH'	SRO hits adds a novel/funny layer of food to the sandwich going across the screen.
FAIRY LAND	SRO hits make dead flowers turn purple and have magical fairy dust come out of the wand.
GROOVY	The reward in this game is subtle. SRO hits make the purple background and green lava matter slowly fade away until the screen is white.

GAMES WITH REWARDS & PENALTIES

MONKEY	**Reward:** SRO hit makes the monkey climb up the tree. Penalty: Very Early/Vary Late hits make the monkey fall from the tree, and the monkey must start climbing from the bottom.
SPACE INVADERS	**Reward:** SRO hits make a mean red alien turn into a happy green alien and fly off the screen. **Penalty:** Early/Late and Very Early/Very Late hits will add the angry aliens back. This does not happen all of the time, but rather randomly. The screen will always have at least one alien in it until they replenish.
ZEN GARDEN	**Reward:** SRO hits make leaves appear on a tree branch. **Penalty:** Very Early/Very Late hit take away earned leaves from the branch.
PICTURE BOARD	**Reward:** SRO hits make a block of the picture appear. **Penalty:** Very Early/Very Late hit takes away an earned block of the picture.

Interactive Metronome Indicator Table

Age	6	7 to 8	9 to 10	11 to 12	13 to 15	16+
Extreme Deficiency	280+	270+	260+	240+	215+	200+
Severe Deficiency	175-279	170-269	160-259	155-239	150-214	147-199
Below Average	120-174	90-169	80-159	75-154	72-149	70-146
Average	90-119	65-89	55-79	45-74	43-71	41-69
Above Average	56-89	45-64	38-54	36-44	33-42	30-40
Exceptional	40-55	32-44	28-37	26-35	23-32	22-29
Superior	Below 40	Below 32	Below 28	Below 26	Below 23	Below 22

IM is Measuring and Changing Something Real and Important

No human investigation can be called real science if it cannot be demonstrated mathematically

Leonardo da Vinci, Treatise on Painting (1651)

Progress in science depends on new techniques, new discoveries and new ideas, probably in that order

Sydney Brenner (1980)

At the core of the IM intervention technology is a precise measurement system. To users and clinicians the IM measurement system is transparent. Yet, without the valid and precise measurement system, IM would not work.

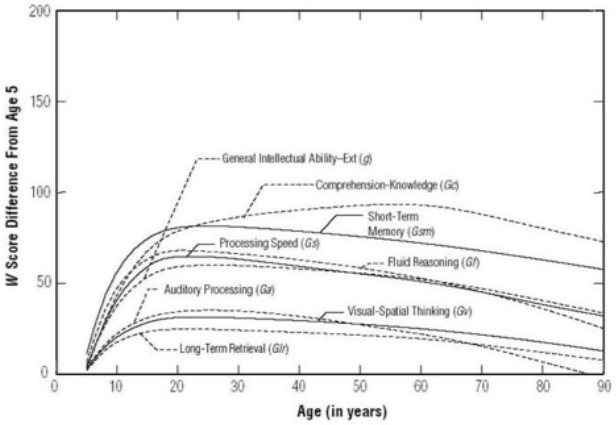
In my "Brain or neural efficiency: Is it quickness or timing?" post, I advanced the hypothesis that the effectiveness of Interactive Metronome may be due to IM operating on a fundamental dimension of brain or neural efficiency, which intelligence scholars also relate to general intelligence (g). I have also suggested that this mechanism improves control of attention and may allow individuals to "quiet a busy mind"and invoke "on-demand focus."

As an applied intelligence test developer (click here), I have been intrigued by the underlying precise millisecond-based measurement system which is the heart of IM technology. IM technology would not work if the underlying measurement system could not reliably measure differences in synchronized metronome tapping between individuals and changes within the same individual over repeated sessions.

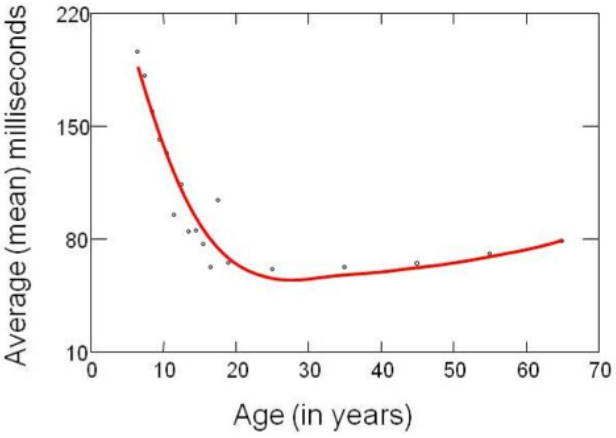
Wanting to know how precise the underlying IM measurement system is, I extracted the average millisecond scores from an unpublished 2003 Interactive Metronome document that reported average times for different age groups. The sample consisted of the initial IM Long Form Assessment performance of 1,583 clinical and normal subjects ranging in age from 6 thru 60+. It is important to note that the sample was not a nationally representative normal sample and was comprised of more clinical subjects receiving IM therapy. Nevertheless, I wondered if this less-than-optimal set of data might demonstrate a pattern of increasingly shorter response times as individuals became older. Why did I want to examine this?

Developmental increase in proficiency on tests and measures of human abilities is considered one form of evidence that a test or measurement system is reliably and validly measuring an important human ability. In the case of intelligence, valid measures of cognitive abilities show developmental growth curves where the youngest subjects obtain the lowest raw scores and the average raw scores gradually increase with increasing age. They eventually level out and then start a decline as old age sets in. Below are growth curves from seven cognitive ability scores from the Woodcock-Johnson Battery—III, a test battery of which I am a co-author. The important observation to note is that, despite the specific cognitive ability measure, all curves show low scores for the younger ages followed by acceleration of growth to a certain point. Each curve then plateaus at a certain age range, after which age-related cognitive decline is noted, but at different rates for different abilities. These curves are presented in the WJ III Technical Manual (McGrew & Woodcock, 1991) as a form of developmental validity evidence—which

provides one piece of evidence that the WJ III tests are valid measures of different and important human intellectual abilities.



Scholars in intelligence have studied and postulated about the different rates of growth and decline for different abilities. These are serious data about human intelligence and the measures used to capture differences in human abilities. Within this context, I was *ecstatic* when I plotted the initial IM Long Form Assessment data (which is analogous to the first time a person is "tested" with the IM measurement system) and discovered the following plot.

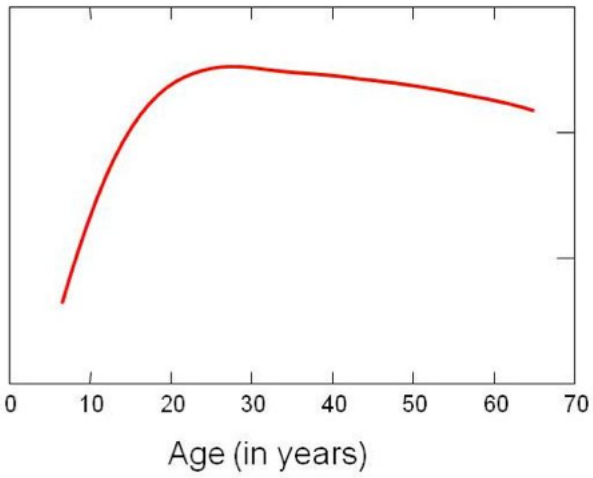


The first thing the reader should note are the individual data points (the dots). The points show some random "bouncing around" which we measurement folks call *sampling error*. The critical point is that they follow a systematic trend that can be estimated by fitting a mathematical curve to the data points. This was the same procedure used to develop the WJ III cognitive curves in the first figure. In the second figure, the IM timing curve is demarcated in red. We who develop test norms and study human ability growth curves generate these smoothed growth curves as they are the best estimate of the real reality of the data if extremely large number of individuals had been tested at each age (there would be much less bounce).

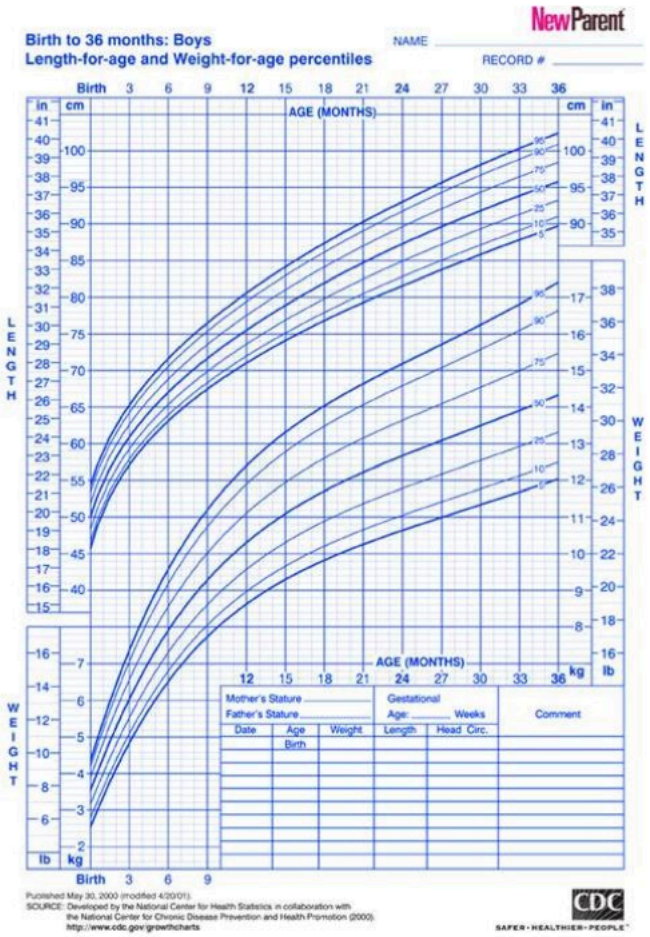
One does not need to be a rocket scientist to interpret the smoothed IM growth curve. Individuals at the youngest ages, on the average, show the largest millisecond discrepancy from the IM reference tone. Then, with increasing age, the average IM target-to-response for individuals decreases systematically as children age. At approximately 25 years of age the curve "bottoms out," and then as individuals get older, IM millisecond timing scores increase (or get less accurate). The systematic nature of this curve is *amazing*, considering it is based on a less-than-optimal sample for determining what constitutes average.

If the reader is having a hard time relating the IM timing curve to the WJ III cognitive ability curves, I have taken the liberty of simply rotating and flipping the IM timing accuracy growth curve in the figure below. *Vioila (aka, walla—"there it is")!* The curve has the same general shape as the WJ III cognitive ability growth curves! The reason for the difference between the WJ III growth curves and the first IM timing growth curve is that the meaning of

high and low scores are reversed—higher IM times mean lower skilled performance while lower scores on the WJ III battery are associated with lower performance (and vice versa).



Readers who are parents may have seen similar growth curves during well-child visits with the family doctor. Below are growth charts for weight and length for male children from birth to 36 years. Although covering a much smaller age span than the WJ III cognitive and IM timing curves above, the shape of the curves is identical for the comparable age ranges (gradually increasing with age). The middle dark line in each set (labeled 50 for 50th percentile) is conceptually identical to the above single curve plots. These physical measurement curves show the systematic and developmental nature of physical growth.



Why am I so excited about the IM timing growth curve? Because it demonstrates, similar to the physical and intelligence growth curves, that the underlying measurement unit used as the core of IM therapy *is measuring a human ability that follows a similar and expected developmental pattern*. Such curves are believed to be due, depending on the specific ability, to the influence of education and experiences as well as genetically-driven biological maturation of the central nervous system (CNS). The IM timing curve is one form of evidence that *the IM measurement system is measuring a fundamental human capacity*. This is extremely exciting! It is one more piece of evidence that the IM core measurement technology is measuring and working on a core critical human ability. Coupled with other validity evidence previously discussed here and elsewhere, this additional piece of scientific evidence has convinced me that the IM measurement and intervention system is most likely measuring a fundamental aspect of the development of the central nervous system (e.g., neural efficiency). The cognitive abilities I have suggested fall under the broad umbrella term of *executive functions*, and more specifically *controlled attention (focus)* and *working memory*.

A caveat before I close. The smoothed IM timing curve should not be used by IM providers to evaluate how typical, normal, or close-to-average a person is on their initial IM Long Form Assessment. The mixed nature of the sample (normal and clinical subjects; more of the later) argues against such use. Also, the curve only represents the *average* at each age and calculating and plotting the typical *variability* around the curve would also be necessary. I deliberately left out the variability data curves so as not to encourage misuse of the information.

However, IM providers can evaluate their client's performance by using the official IM Indicator Table. A copy is reproduced below. This table can be used to determine whether a client's performance is in the "ballpark" for their age. Providers simply locate the clients age in the row at the top then go down that column to find the millisecond score or range that includes their specific IM Long Form Assessment timing score. The verbal description associated with each level (extremely deficient to exceptional) can be used to make *quality of performance* statements reflecting where an individual is at the time of the initial assessment. The scores and labels should not be used for diagnostic purposes. Instead, they can be used to describe, in approximate ball park terms, where an individual is at the time of the assessment when compared to others of the same age and to make comparisons about that same client's performance over time.

Age	6	7 to 8	9 to 10	11 to 12	13 to 15	16+
Extreme Deficiency	280+	270+	260+	240+	215+	200+
Severe Deficiency	175-279	170-269	160-259	155-239	150-214	147-199
Below Average	120-174	90-169	80-159	75-154	72-149	70-146
Average	90-119	65-89	55-79	45-74	43-71	41-69
Above Average	56-89	45-64	38-54	36-44	33-42	30-40
Exceptional	40-55	32-44	28-37	26-35	23-32	22-29
Superior	Below 40	Below 32	Below 28	Below 26	Below 23	Below 22

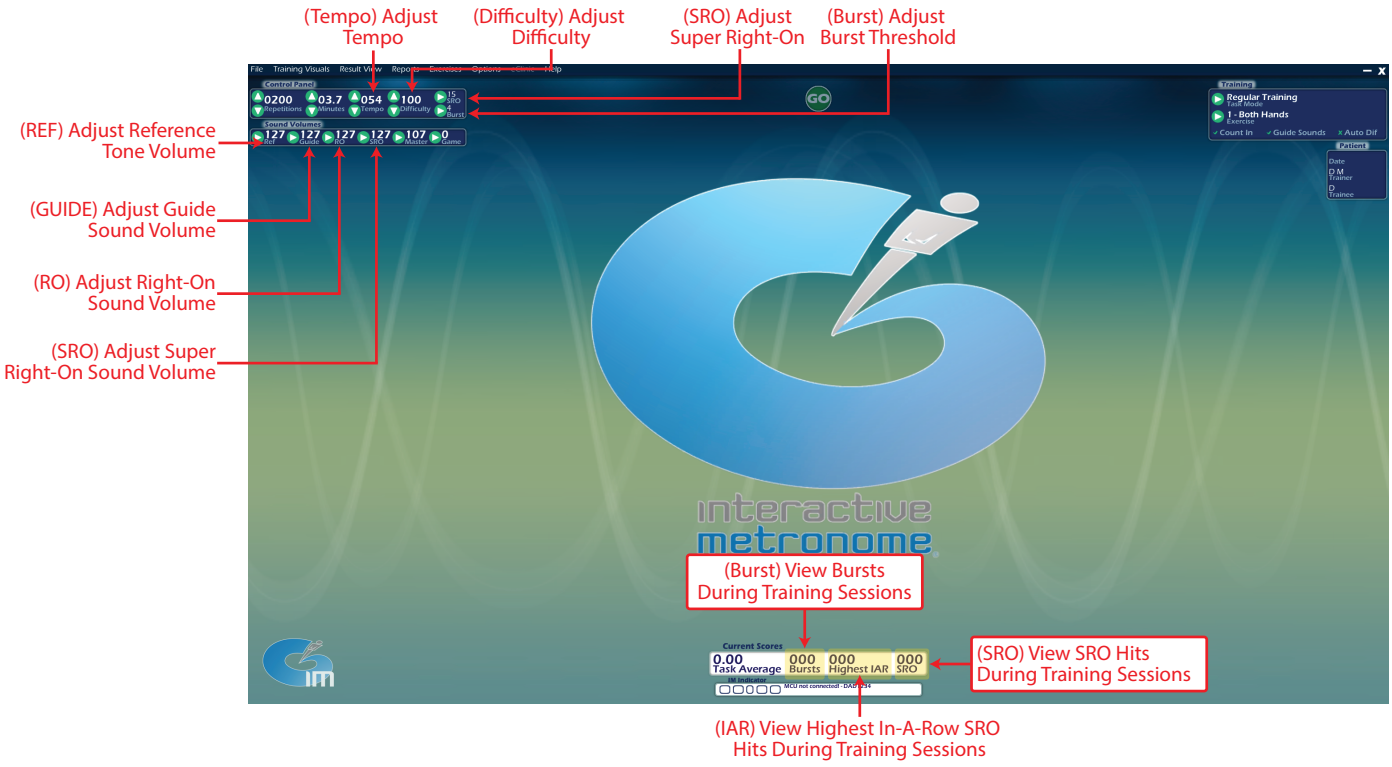
In summary, I have traversed a number of empirical domains in my journey to understand IM. The finding of such powerful and clear *developmental evidence* for the underlying IM measurement system is one of the final dots I connected which convinced me of the promise of IM. The IM program is founded on a valid scientific measurement system of an important human cognitive ability (or constellation of related abilities).

More information about Kevin McGrew, PhD can be found at http://www.themindhub.com/

IM SETTINGS & DEFINITIONS

REF:	Reference Tone (Cowbell)
GUIDE:	Buzzer sound when you're way too early or way too late
RO:	Rubber Band Twang that tells you when you're within the set difficulty range of training
SRO:	Reward tone that tells you if you are within the set SRO range.
IAR:	Highest number of consecutive SRO hits during a task
Burst:	A setting to help motivate your clients to get SRO hits! Several bursts can be earned during each task. The more bursts achieved, the more neural synchronization is taking place!
Difficulty:	The setting that determines when your client hears the "Guide" sound
Tempo:	Beats per minute or speed of the metronome (default is 54 bpm)

ON-SCREEN VIEW



SAMPLE SFT PERFORMANCE ANALYSIS REPORT

Short Form Test Performance Analysis

Trainee ID: D

Report 03/19/2015

Comparison With Previous Session

	A Previous SF Test Date: 03/07/2015				B Latest SF Test Date: 03/10/2015				% Performance Change From A to B*		
Task	Rep.	Task Avg	Var Avg	SRO%	Rep.	Task Avg	Var Avg	SRO%	Task Avg	Var Avg	SRO%
1	54	102	60	6	52	18	24	56	82%	60%	833%
2	54	102	53	6	52	16	18	56	84%	66%	833%

Comparison With Best Task Scores In Current File**

	A Previous Best Scores: 03/07/2015				B Latest SF Test Date: 03/10/2015				% Performance Change From A to B*		
Task	Rep.	Task Avg	Var Avg	SRO%	Rep.	Task Avg	Var Avg	SRO%	Task Avg	Var Avg	SRO%
1	54	102	60	6	52	18	24	56	82%	60%	833%

	A Previous Best Scores: 03/07/2015				B Latest SF Test Date: 03/10/2015				% Performance Change From A to B*		
Task	Rep.	Task Avg	Var Avg	SRO%	Rep.	Task Avg	Var Avg	SRO%	Task Avg	Var Avg	SRO%
2	54	102	53	6	52	16	18	56	84%	66%	833%

Comparison With First Short Form Test In Current File

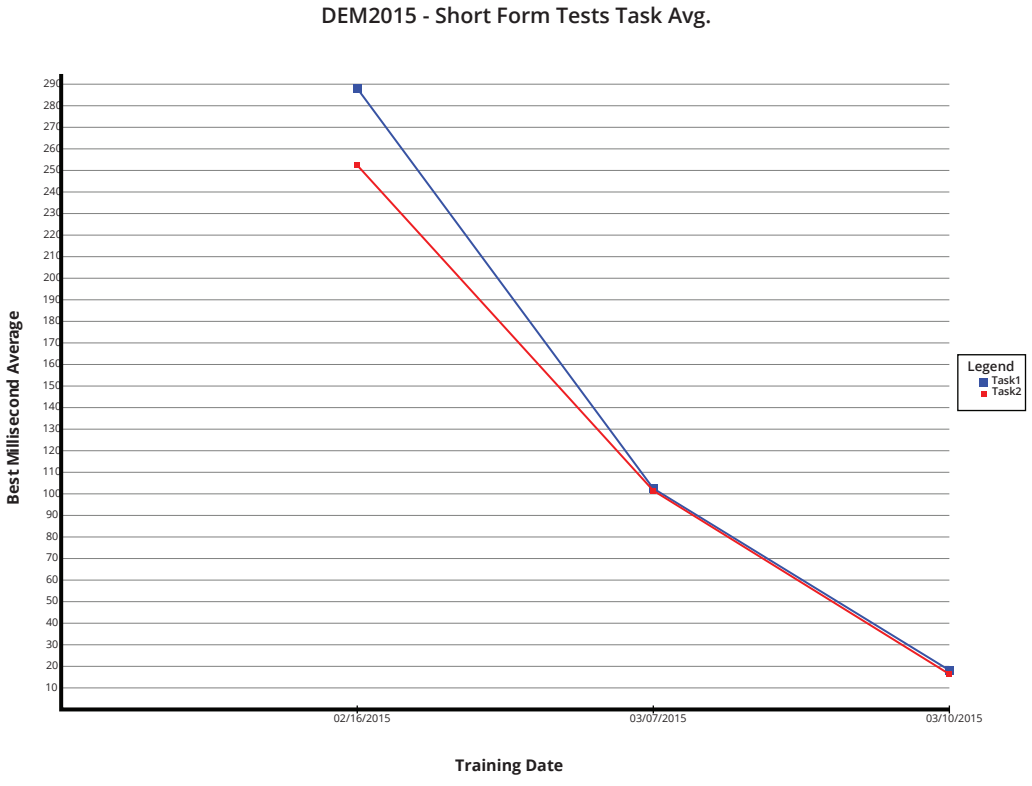
	A First SF Test In File Date: 02/16/2015				B Latest SF Test Date: 03/10/2015				% Performance Change From A to B*		
Task	Rep.	Task Avg	Var Avg	SRO%	Rep.	Task Avg	Var Avg	SRO%	Task Avg	Var Avg	SRO%
1	52	288	138	0	52	18	24	56	94%	83%	100%
2	54	252	232	0	52	16	18	56	94%	92%	100%

NOTES
If less than 20 repetitions of a task were completed no data will be reported for that task.

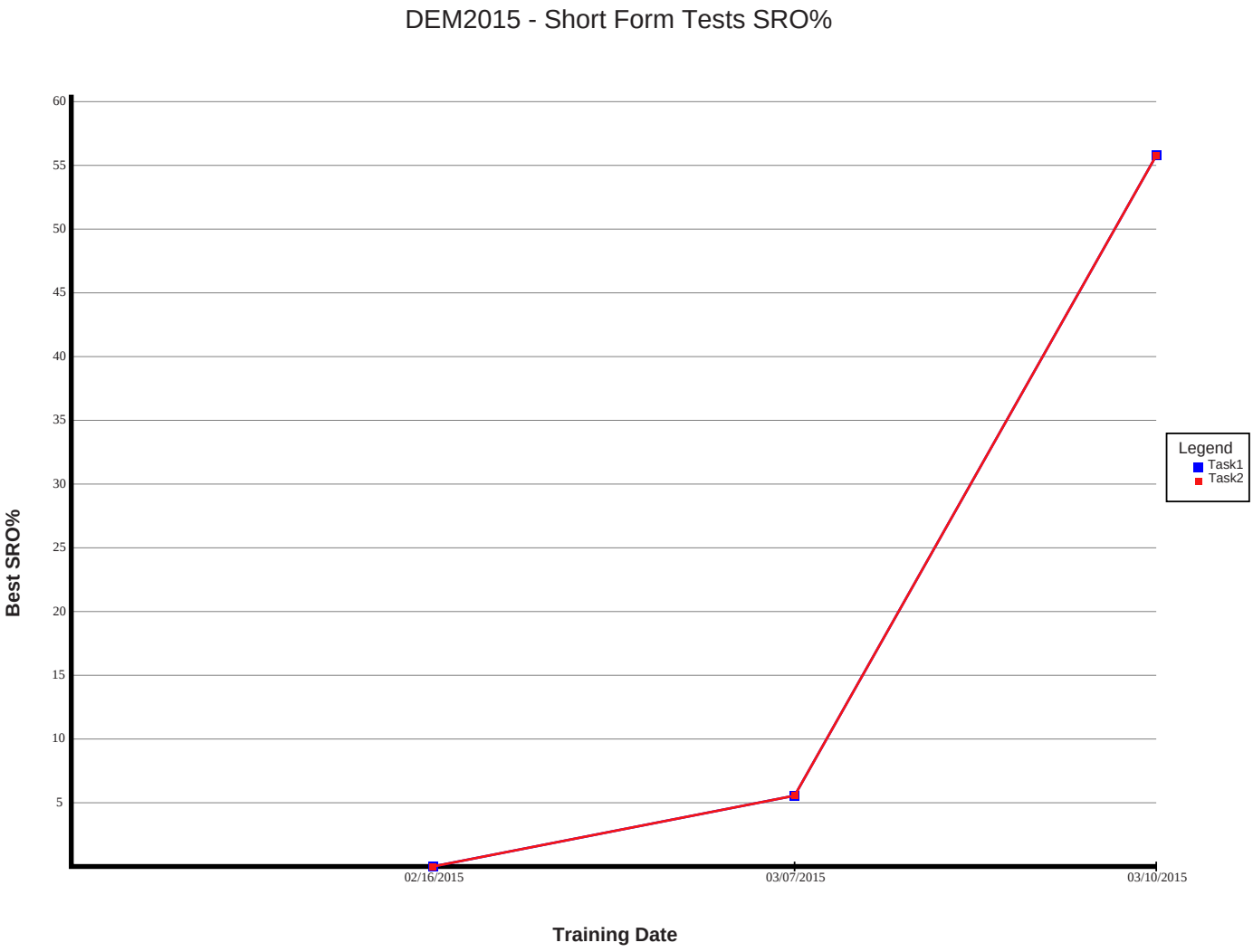
* Positive values = Performance improvement
Negative (-) values = Performance decrease
Zero (0) values = No significant change in performance

** Based on best Task Average score for each Short Form Test task in the current file

SAMPLE SFT TASK AVERAGE GRAPH



SAMPLE SHORT FORM TEST SRO% GRAPH



SAMPLE PRE LFA CALCULATIONS REPORT

Long Form Assessment Calculations

IM Long Form Assessment Date: 02/16/2015
Trainee ID: D
IM Trainer Name: demo file

Date of Birth: 10/14/1968
Preferred Hand: Right
Gender: Female

Task	MS	Early Hits	Late Hits
1. Both Hands	345	54	
2. Right Hand	305	26	
3. Left Hand	267	30	
4. Both Toes	171	19	11
5. Right Toe	326	30	
6. Left Toe	187	29	
7. Both Heels	164	18	12
8. Right Heel	288	27	
9. Left Heel	185	29	
10. R Hand/L Toe	160	21	8
11. L Hand/R Toe	288	23	6
12. Bal. Right Foot	211	19	11
13. Bal. Left Foot	268	25	4
14. #1 -w Guide ends	274	39	13
Total Unadjusted	246	389 (85.7%)	65 (14.3%)

IM Long Form Assessment Battery Results:

Millisecond Accuracy

a) Hands ms avg. (includes Task 1, 2, 3, 14) = 298
b) Feet ms avg. (includes Task 4, 5, 6, 7, 8, 9, 12, 13) = 225
c) Both Hands ms avg. (includes Task 1, 14) = 310
d) Both Feet ms avg. (includes Task 4, 7) = 168
e) Left Side ms avg. (includes Task 3, 6, 9) = 213
f) Right Side ms avg. (includes Task 2, 5, 8) = 306
g) Bilateral ms avg. (includes Task 10, 11) = 224
h) Adjusted ms avg. ((a + b) / 2) = 262

Long Form Assessment Battery Achievements

Highest In-A-Row: 1, Task = 14
Total Number of IAR Bursts: 0
Percentage within 15 MS: 4%

Optional - Attend Over Time Test

Both Hands 500 reps: 237.7

SAMPLE POST LFA CALCULATIONS REPORT

Long Form Assessment Calculations

IM Long Form Assessment Date: 03/10/2015
Trainee ID: D
IM Trainer Name: demo file

Date of Birth: 10/14/1968
Preferred Hand: Right
Gender: Female

Task	MS	Early Hits	Late Hits
1. Both Hands	19	34	18
2. Right Hand	19	19	11
3. Left Hand	19	21	9
4. Both Toes	42	25	4
5. Right Toe	39	28	2
6. Left Toe	17	18	11
7. Both Heels	51	24	5
8. Right Heel	43	23	6
9. Left Heel	29	26	3
10. R Hand/L Toe	24	20	10
11. L Hand/R Toe	28	15	15
12. Bal. Right Foot	45	24	6
13. Bal. Left Foot	22	25	5
14. #1 -w Guide Sounds	18	38	16
Total Unadjusted	30	340 (73.7%)	121 (26.2%)

IM Long Form Assessment Battery Results:

Millisecond Accuracy

a) Hands ms avg. (includes Task 1, 2, 3, 14) = 19
b) Feet ms avg. (includes Task 4, 5, 6, 7, 8, 9, 12, 13) = 36
c) Both Hands ms avg. (includes Task 1, 14) = 19
d) Both Feet ms avg. (includes Task 4, 7) = 46
e) Left Side ms avg. (includes Task 3, 6, 9) = 22
f) Right Side ms avg. (includes Task 2, 5, 8) = 34
g) Bilateral ms avg. (includes Task 10, 11) = 26
h) Adjusted ms avg. ((a + b) / 2) = 28

Long Form Assessment Battery Achievements

Highest In-A-Row: 6, Task = 2
Total Number of IAR Bursts: 6
Percentage within 15 MS: 4%

Optional - Attend Over Time Test

Both Hands 500 reps: 18.7

SAMPLE LFA COMPARISON REPORT

LFA Comparison - Page 1
Comparison With The Previous LFA In Current File

	A Previous LFA Date: 02/16/2015				B Latest LFA Date: 03/10/2015				% Performance Change From A to B*		
Excercises	Rep.	Task Avg	Var Avg	SRO%	Rep.	Task Avg	Var Avg	SRO%	Task Avg	Var Avg	SRO%
1	54	345	84	0	52	19	20	35	94%	76%	100%
2	26	305	110	0	30	19	26	43	94%	76%	100%
3	30	267	56	0	30	19	20	47	93%	64%	100%
4	30	171	182	3	29	42	39	24	75%	79%	700%
5	30	326	68	0	30	39	24	13	88%	65%	100%
6	29	187	44	0	29	17	20	55	91%	55%	100%
7	30	164	183	3	29	51	51	31	69%	72%	933%
8	27	288	94	0	29	43	42	17	85%	55%	100%
9	29	185	98	0	29	29	26	31	84%	73%	100%
10	29	160	176	7	30	24	28	50	85%	84%	614%
11	29	288	242	3	30	28	33	30	90%	86%	900%
12	30	211	236	3	30	45	40	13	79%	83%	333%
13	29	268	193	0	30	22	19	43	92%	90%	100%
14	52	274	258	2							

NOTES:
If less than 20 repetitions of a task were completed no data will be reported for that task.
If a task was performed more than once in a session, the data from the performance with the best Task Avg is used.

* Positive values = Performance improvement
Negative (-) values = Performance decrease
Zero (0) values = No significant change in performance

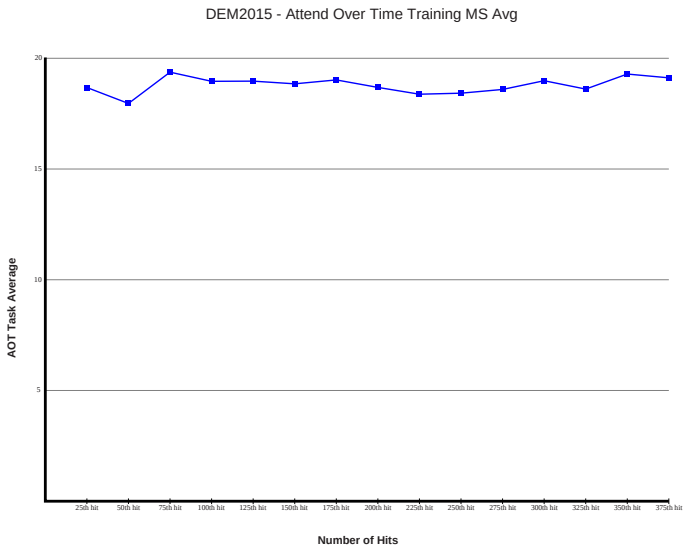
LFA Comparison - Page 2
Comparison With The First LFA In Current File

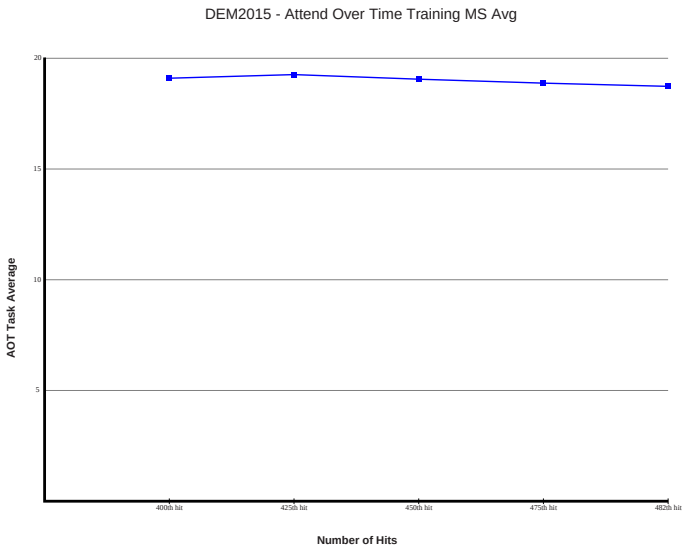
	A First LFA Date: 02/16/2015				B Latest LFA Date: 03/10/2015				% Performance Change From A to B*		
Excercises	Rep.	Task Avg	Var Avg	SRO%	Rep.	Task Avg	Var Avg	SRO%	Task Avg	Var Avg	SRO%
1	54	345	84	0	52	19	20	35	94%	76%	100%
2	26	305	110	0	30	19	26	43	94%	76%	100%
3	30	267	56	0	30	19	20	47	93%	64%	100%
4	30	171	182	3	29	42	39	24	75%	79%	700%
5	30	326	68	0	30	39	24	13	88%	65%	100%
6	29	187	44	0	29	17	20	55	91%	55%	100%
7	30	164	183	3	29	51	51	31	69%	72%	933%
8	27	288	94	0	29	43	42	17	85%	55%	100%
9	29	185	98	0	29	29	26	31	84%	73%	100%
10	29	160	176	7	30	24	28	50	85%	84%	614%
11	29	288	242	3	30	28	33	30	90%	86%	900%
12	30	211	236	3	30	45	40	13	79%	83%	333%
13	29	268	193	0	30	22	19	43	92%	90%	100%
14	52	274	258	2							

NOTES:
If less than 20 repetitions of a task were completed no data will be reported for that task.
If a task was performed more than once in a session, the data from the performance with the best Task Avg is used.

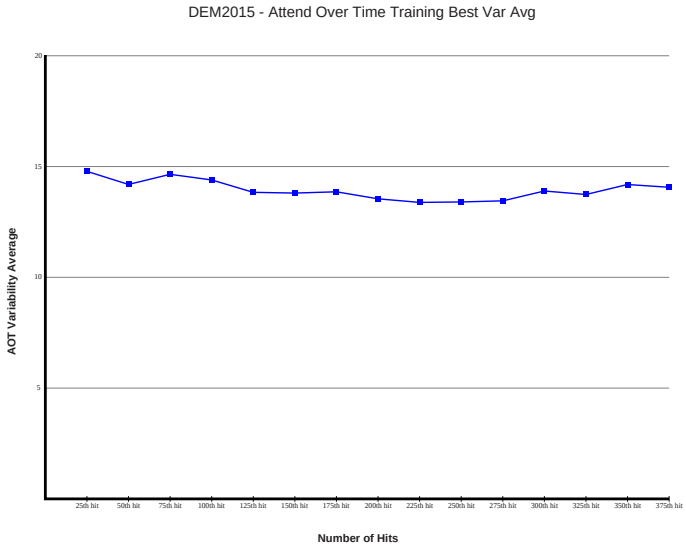
* Positive values = Performance improvement
Negative (-) values = Performance decrease
Zero (0) values = No significant change in performance

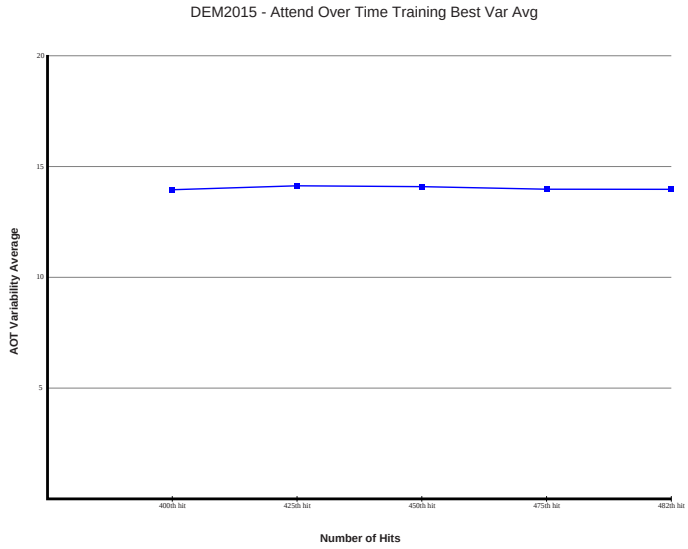
SAMPLE AOT TASK MS AVERAGE GRAPH





SAMPLE AOT VARIABILITY AVERAGE GRAPH





SAMPLE SESSION DATA REPORT

Training Session Data Detail

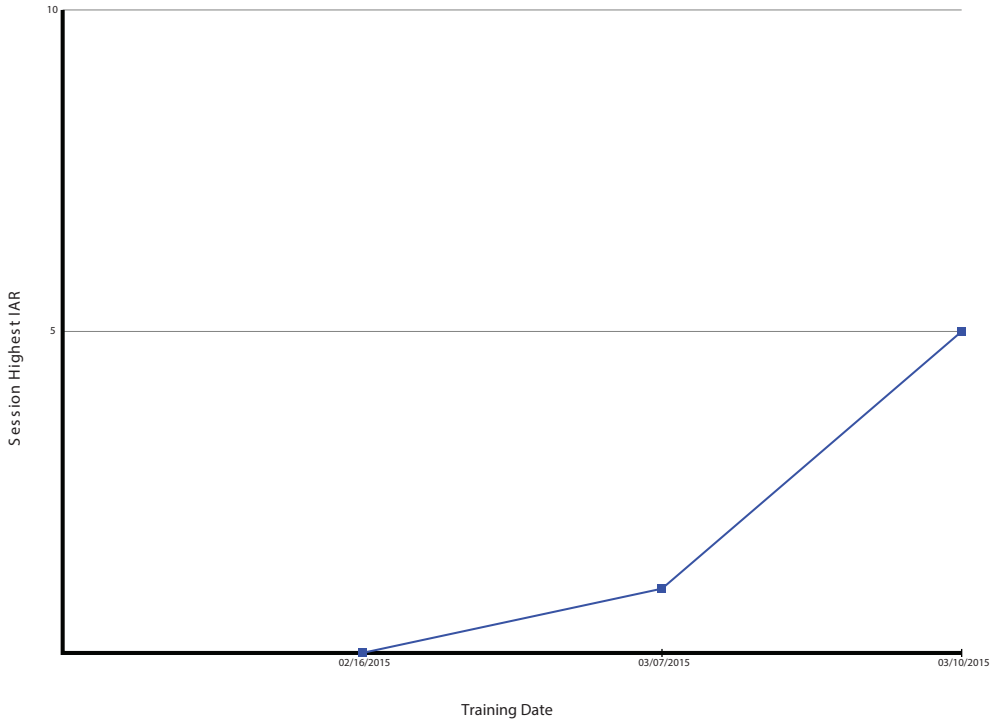
Trainee ID: D

Session Date: 2015-03-10. Total Reps Hit / Assigned: 1046/1076

Mode	Training Type	Session	Task	Excerise	Reps Hit/Assigned	Tempo	Guide Sounds	Difficulty	Visual Indicator	Avg (MS)	Var Avg (MS)	SRO %	Burst	IAR	Early/Late Hits %	Notes
Manual	Short Form Testing	1	1	Both Hands	52/54	54	Off	100	Auditory, Default	18	24	55	2	29	50.00% / 50.00%	
Manual	Short Form Testing	1	2	Repeat #1 with Guide Sounds	52/54	54	On	100	Auditory, Default	16	18	55	3	29	71.15% / 28.85%	
Manual	Regular Training	1	1	Both Hands	53/54	54	On	100	Auditory, Default	17	22	54	3	29	52.83% / 47.17%	
Manual	Long Form Assessment	1	1	Both Hands	52/54	54	Off	100	Auditory, Default	19	20	34	1	18	65.38% / 34.62%	
Manual	Long Form Assessment	1	2	Right Hand	30/30	54	Off	100	Auditory, Default	19	26	43	1	13	63.33% / 36.67%	
Manual	Long Form Assessment	1	3	Left Hand	30/30	54	Off	100	Auditory, Default	19	20	46	0	14	70.00% / 30.00%	
Manual	Long Form Assessment	1	4	Both Toes	29/30	54	Off	100	Auditory, Default	42	39	24	0	7	86.21% / 13.79%	
Manual	Long Form Assessment	1	5	Right Toe	30/30	54	Off	100	Auditory, Default	39	24	13	0	4	93.33% / 6.67%	
Manual	Long Form Assessment	1	6	Left Toe	29/30	54	Off	100	Auditory, Default	17	20	55	2	16	62.07% / 37.93%	
Manual	Long Form Assessment	1	7	Both Heels	29/30	54	Off	100	Auditory, Default	51	51	31	1	9	82.76% / 17.24%	
Manual	Long Form Assessment	1	8	Right Heel	29/30	54	Off	100	Auditory, Default	43	42	17	0	5	79.31% / 20.69%	
Manual	Long Form Assessment	1	9	Left Heel	29/30	54	Off	100	Auditory, Default	29	26	31	0	9	89.66% / 10.34%	
Manual	Long Form Assessment	1	10	Right Hand / Left Toe	30/30	54	Off	100	Auditory, Default	24	28	50	1	15	66.67% / 33.33%	
Manual	Long Form Assessment	1	11	Left Hand / Right Toe	30/30	54	Off	100	Auditory, Default	28	33	30	0	9	50.00% / 50.00%	
Manual	Long Form Assessment	1	12	Balance Right Foot / Tap Left Toe	30/30	54	Off	100	Auditory, Default	45	40	13	0	4	80.00% / 20.00%	
Manual	Long Form Assessment	1	13	Balance Left Foot / Tap Right Toe	30/30	54	Off	100	Auditory, Default	22	19	43	0	13	83.33% / 16.67%	
Manual	Attend Over Time	1	1	Both Hands	482/500	54	Off	100	Auditory, Default	19	23	47	15	231	54.77% / 45.23%	

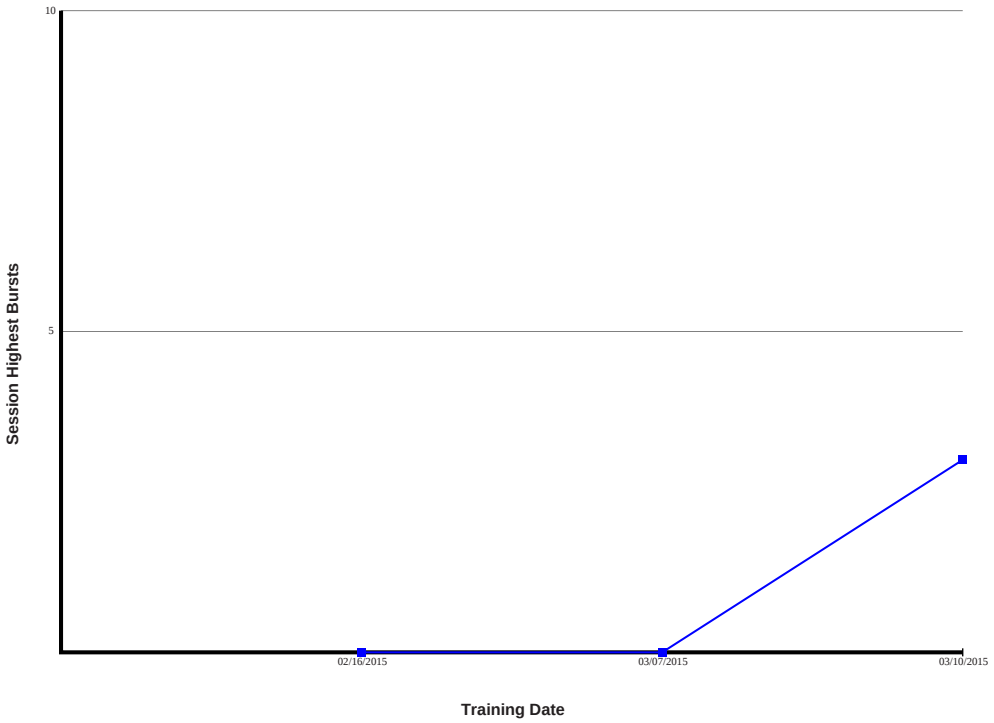
SAMPLE SESSION IAR GRAPH

D - Regular Training Session Highest IAR for All Exercises



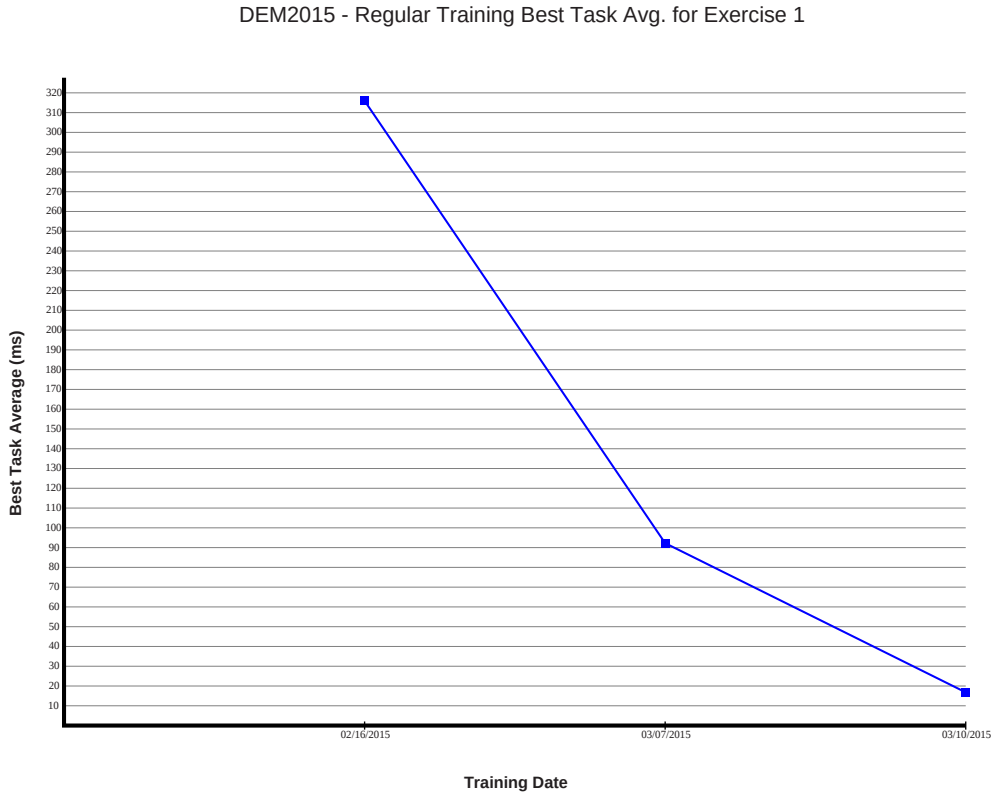
SAMPLE SESSION BURST GRAPH

D - Regular Training Session Highest Bursts for Exercise 1

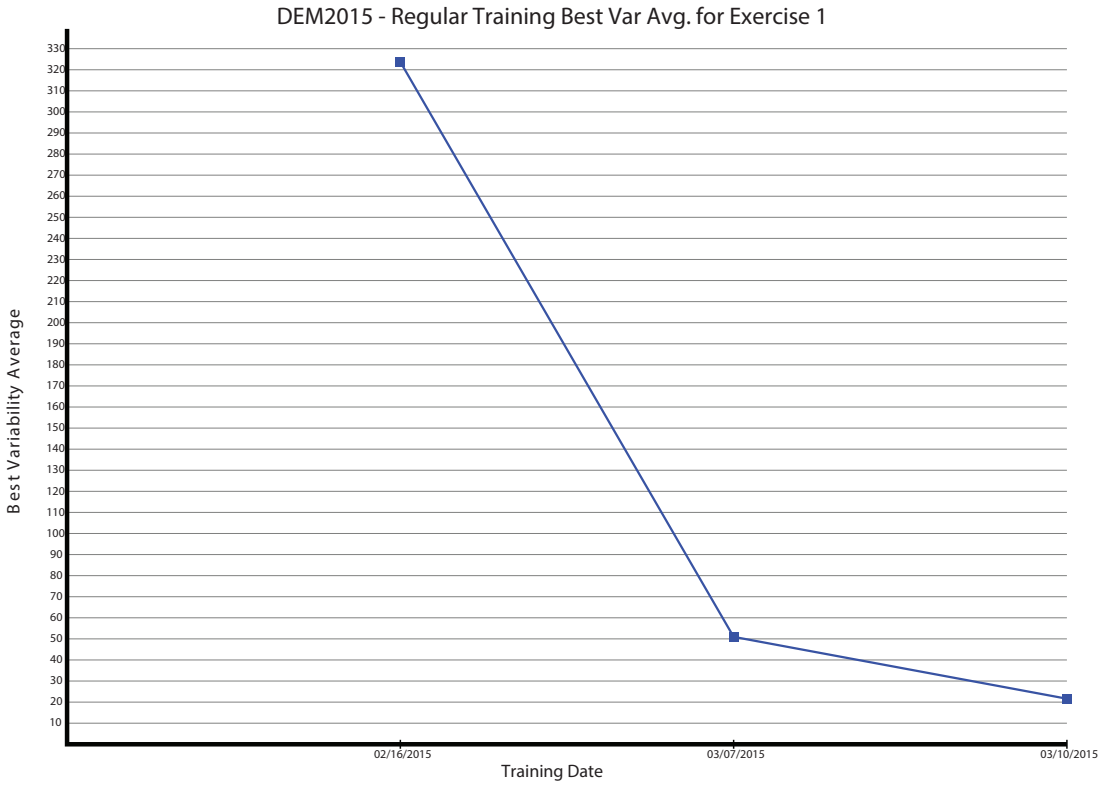


SAMPLE SESSION SRO% GRAPH

SAMPLE BEST TASK AVERAGE GRAPH



SAMPLE VARIABILITY AVERAGE GRAPH



SAMPLE TOTAL MINUTES/REPETITIONS REPORT

Total Minutes/Repetitions

Trainee ID: D
Session Date: 02/16/2015 - 03/10/2015

Date	Session Mins.	Total Mins.	Session Reps.	Total Reps
02/16/2015	26	26	1052	1052
03/07/2015	3	29	162	1214
03/10/2015	26	55	1051	2265

NOTE:
*Indicates that the training minutes were not calculated because the training on that date was conducted with a version of the IM program earlier than version 8.0. Older versions do not save all of the data necessary to accurately calculate the training minutes.

SAMPLE SESSION CALENDAR REPORT

IM Session Calendar

Trainee ID: D

Report 03/19/2015

June, 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28 20Min.	29

IM Session Calendar

Trainee ID: D

Report 03/19/2015

July, 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 56Min.	2 56Min.	3 57Min.	4 56Min.	5 56Min.	6
7 56Min.	8 56Min.	9	10 20Min.	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

IM Quick Reference Guide

IM Setting or Score	Definition
Tempo (Default 54)	Speed of the reference tone, ranges 30 – 100 beats per minute
Difficulty (Default 100)	Threshold for very early/very late buzzer, ranges 50 (moderate challenge) – 300 (easiest) or Auto (most difficult)
Volume (Default 27)	Volume of reference tone & guide sounds, ranges 0 – 27
Task Average (ms)	Average number of milliseconds from the beat during exercise, lower Task Average (ms) indicates better performance
Variability Average (ms)	Average number of milliseconds from one hit to the next, measure of precision, lower variability ave (ms) is better
Super Right-On (SRO%)	Percentage of hits in the exercise that were within 0 – 15 ms of the beat, higher % indicates better performance
Highest In-A-Row (IAR)	Highest number of consecutive hits within 0 – 15 ms over the entire exercise, higher IAR indicates better performance
Burst & Burst Threshold	Bonus score for making consecutive hits within 0 – 15 ms range during the exercise, burst threshold can be set between 2 (easiest) – 15 (hardest), higher # of bursts is better & is strongly correlated with better performance in the cognitive, communicative, behavioral, sensory and fine/gross motor skills. ENCOURAGE BURSTS!!!
Patient's Task Average (ms)	**Suggested Difficulty Setting**
More than 200 ms	300 (easiest)
150 ms	250
100 ms	150
50 ms	100
25 ms or less	Auto (most challenging)

Performance Problem	A Few Strategies to Help Your Client Achieve Better Timing & Rhythm (click on EDUCATION page of IM website for additional ideas & CEUs)
No sense of timing; random hits	Whole body movement to the beat (i.e., moving a ball forward to hit a trigger then back, rocking to the beat with assistance), proprioceptive input to the beat, visual mode, hands-on assistance, hit opposite of beat initially, then on the beat
Hits are consistently VERY EARLY (200-400 ms range)	Increase tempo initially to go with client's flow, then reduce it over time, place distance between client and trigger (Velcro to a surface) so that client must physically move to hit the trigger, building in a natural delay to help him get more in sync with the beat
Hits are consistently VERY LATE (200-400 ms range)	Decrease tempo initially to match what client is able to process or coordinate to; look at why hits are late (is it a movement issue? Or a cognitive processing issue?)
Hits with hands are not circular or rhythmical (may clap straight, linear, choppy, or hesitantly)	Adjust tempo slightly faster or slower (experiment a bit to find the just-right tempo where your client does not have to "think" about how he is moving); once the tempo is established focus on circular movement at high repetitions to improve motor planning & sequencing; provide hands-on assistance to achieve rhythmical movement, weaning to visual model to no cues as able
Hits are opposite from the beat instead of on it	Hands-on assistance; visual mode to "show" hitting on the green with hands-on assist (this can be done in Phase 1 if needed with guide "sounds" turned off – client will just see visual guides
Hits are overly hard	Have client tap the trigger with one finger instead of open palm, encouraging circular movement. Check effect of IM volume or feel of the IM equipment on sensory processing – this may be a contributing factor. Incorporate strategies for sensory integration (i.e., deep pressure & other strategies to calm the central nervous system)
Overly sensitive to IM sounds or feel of the equipment	Decrease volume. Speakers instead of headphones. Larger or Open-System Headphones. Velcro switch to a surface or you wear it instead of your client so he can tap it; soft chenille gloves or mittens with the IM glove and trigger over top. Slow, linear rocking to the beat & other sensory strategies.
Score is a lot worse when guide sounds are turned on	Adjust Difficulty to easier setting (i.e., 200-300). Decrease volume of guide sounds. Visual mode. Visual mode with guide sounds turned off (visual feedback only). Introduce guide sounds gradually instead of all at once by adjusting volume on some to zero.
Difficulty focusing and participating	Make IM training kid-friendly if working with child. Shorter exercises initially – gradually lengthen as able to attend/participate. Sensory strategies for organization and calming. Positioning changes to decrease mobility around the room and distraction.
Hyporesponsive	Alerting strategies: jumping to beat, frequent change of activity, frequent reinforcement, colorful room, Increase tempo
Pediatric Adaptations	Break session into small increments/intersperse with play (child-led), Incorporate IM into an obstacle course using spatial terms (i.e., inside, outside, on, under, over, etc), Do IM in pop-up tent or under table (i.e., cave), 'help' favorite toy stay on beat, hit trigger with favorite toy, challenge the therapist…then try to beat the therapist's score, take turns….therapist does 10 beats, then child does 10 beats… repeat, Vary positions (lying, sitting, standing on a chair…), Play dress-up with costumes during IM…. role play a character/super hero, Don't rush into guide sounds if not ready, Tangible reward (i.e., penny or other token for every burst or amount of time focusing or participating during IM)

IM Quick Reference Guide

Phase	Performance Goals & IM Adaptations
Phase 1	**GOAL: MOVE RHYTHMICALLY WHILE SYNCHRONIZING WITH THE REFERENCE TONE** **EXERCISES: HANDS ONLY** • With guide sounds off, repeat hand exercises until client attempts to synchronize with reference tone • If movements with hands are choppy, hesitant, linear instead of circular, or otherwise lack coordination, adjust the tempo to either slightly slower setting (i.e., 52 bpm) or slightly faster setting (i.e., 65-70 bpm) so that your client can move more rhythmically and automatically without having to think about the movement so much. Once you find the "just-right" tempo, increase repetitions (i.e., as much as 5-10 minutes per hand exercise) as tolerated to improve motor planning & sequencing. This will help your client progress through IM training and will contribute to optimal training outcomes. • If your client has hemiplegia or other condition that affects use of one arm/hand, start with use of the good arm/hand first to teach the client what to do, then progress to the weaker or more affected side. When using the weaker/affected side, you will need to reduce the tempo (experiment to find the right tempo for the person to move as effortlessly and rhythmically as possible) • Adjust other IM settings & equipment as needed (volume, use of visual mode without guide sounds if needed to aid attention or to engage the client, etc) • Adapt your approach for sensory & motivational needs of pediatric patients (i.e., high-five, fantasy play, etc). Custom exercises can be created that engage the hands to teach the reference tone while engaging the child. • If your client has difficulty tolerating a full IM training session, start with shorter sessions, but increase time and repetitions as tolerated. • Repetition is critical. Your client will not likely derive benefit from IM training once per week or if sessions are too abbreviated. Consider IM Home training as an adjunct to in-clinic or in-school IM training to achieve the desired frequency and intensity (minimum of 3 training sessions per week for 30-45 minutes) • Duration of each exercise should be 1-3 minutes; Note: exercise durations longer than 3 min may be more effective to teach motor planning & sequencing/rhythm (the tempo must also be adjusted for the individual if working on this)

When to Transition to Next Phase

Understands what to do & tries to synchronize without cues or hands-on assistance

- Clapping in a circular, rhythmical fashion with good motor planning & sequencing should be a goal of Phase 1. Some clients may require only a few sessions to achieve this goal, while others may require more training. At times, motor planning & sequencing is significantly impaired so that some improvement is seen with IM training but the condition is not completely eradicated. In that case, aim for as good as you can get in Phase 1 before moving on to Phase 2 where feedback will be added in the form of guide sounds.
- Your client may still need easier IM settings (i.e., reduced volume, modified tempo, visual cues)
- Your client's Task Averages (ms) may still be in deficient range; you should see further improvement once in Phase 2 where the client begins to receive feedback (Exception: if your client displays continued impairment in motor planning & sequencing/dyspraxia, the feedback about timing & movement may make performance worse. Responding to the feedback requires fine motor control. A person with impaired motor planning & sequencing often does not have adequate fine motor control to make the necessary adjustments in response to the feedback. Therefore, it may be necessary to work in Phase 1 for a longer period of time for these individuals to help them improve before moving to Phase 2).
- Pediatric clients may derive benefit from IM even if they need total assistance through entire IM program

Phase	Performance Goals & IM Adaptations
Phase 2	**GOAL: LEARN TO PROCESS & RESPOND TO THE GUIDE SOUNDS** **EXERCISES: HANDS ONLY** • Turn guide sounds on • Repeat hands exercises until your client learns what the guide sounds mean & begins to modify performance in response to them (i.e., self-monitors and self-corrects to get progressively closer to the beat). Task Averages will begin to improve. As you watch the computer screen, you will see your client process & respond – this will be reflected with better scores each hit and with changes in timing of gradually smaller millisecond increments. • If your client bounces back and forth between very early and very late & can't quite seem to find a happy medium, there may be difficulty with fine motor control (motor planning & sequencing). First try adjusting Difficulty (see chart below), volume of guide sounds, and/or discontinue use of the visual mode if this is being used (feedback about timing & movement makes performance worse when the client exhibits impaired motor planning & sequencing). If this does not resolve the problem and help the client improve ms scores, then try turning off the guide sounds, return to Phase 1 & follow instructions above for working on motor planning & sequencing. Note: Clients with significant attention & cognitive processing deficits may benefit from guide sounds, but may need hand-over-hand assistance and cues to learn to process and respond to the feedback. If you have to backtrack to Phase 1, that is entirely okay. Work on fluid, rhythmical movement and help the client achieve the best motor planning & sequencing he can achieve before moving on to Phase 2 again. • Duration of each exercise should be 1-3 minutes; attempt to increase duration of exercises to 5 min if tolerated. Remember, repetition is very important. • NOTE: If working with client with Auditory Processing Disorder, do not train with the visual mode. Visual mode may be necessary to teach guide sounds, then should be turned off.

IM Quick Reference Guide

When to Transition to Next Phase

Your client understands what the guide sounds mean and responds to them, even though response to guide sounds may be somewhat delayed and timing (ms Task Averages) are still not where you want them to be

- Your client may still require modifications to IM settings or exercises when you transition to Phase 3

Phase	Performance Goals & IM Adaptations
Phase 3	**GOAL: ACHIEVE BEST POSSIBLE TIMING & RHYTHM WITH HANDS IN ORDER TO IMPROVE FOCUS, COGNITIVE PROCESSING, & MOTOR COORDINATION. THIS IMPORTANT STEP SETS THE STAGE FOR FURTHER IM TRAINING.** **EXERCISES: HANDS ONLY** • With guide sounds on, continue to repeat hand exercises until Task Averages (ms) improve. Use the Indicator Table as a guide for where your client should be according to his developmental age. Some clients will reduce ms scores significantly (20-40ms range) in Phase 3, while others will perform within 40-100ms range). Get scores as low as you can with IM setting modifications & cues to help the client process & motor plan/sequence. Improvements in timing here set the stage for further gains! The timing skills your client gains with his hands serves as the frame of reference for timing in the lower extremities and other areas as you progress through IM training. • Continually increase the challenge level of IM settings as appropriate & increase the duration of each exercise as tolerated (3-5 minutes is typical here). • NOTE: Remember, if working with a client with Auditory Processing Disorder, do not train with the visual mode.

When to Transition to Next Phase

Task Averages (ms) have significantly improved and your client now knows what it feels like to have good timing & rhythm with the hands. This very important framework will set the stage for the next level of IM training in Phase 4.

- Your client may still need modifications to IM settings or exercises – that is okay. Keep going with what is working for each individual client. Skills will be refined in Phase 4.

Phase	Performance Goals & IM Adaptations
Phase 4	**GOALS: GENERALIZE TIMING SKILLS TO OTHER AREAS** **1. IMPROVE FOCUS & FINE MOTOR SKILLS/COORDINATION** **2. IMPROVE SUSTAINED ATTENTION & COGNITIVE EFFORT** **3. WORK ON SPECIFIC SKILLS RELATED TO THERAPY, ACADEMIC OR ATHLETIC GOALS ALONG WITH IM (I.E., SPEECH FLUENCY, READING, FUNCTIONAL USE OF HEMIPLEGIC LIMB, SPECIFIC COGNITIVE-MOTOR SKILLS RELATED TO SPORTS PERFORMANCE, ETC)** **EXERCISES:** **A. HANDS** **B. TOES** **C. HEELS** **D. BILATERAL** **E. BALANCE** **F. CUSTOM EXERCISES** • At this point in IM training, include hand exercises with the aim of challenging focus, cognitive processing, and motor planning & sequencing (fine motor control) by gradually adjusting to harder IM settings (i.e., reduce Difficulty setting toward 50, then to Auto Diff, adjust Burst Threshold to require higher IAR hits to earn bursts, etc) • In the same session, begin to increase the length of one hand exercise by extending the duration it each session (i.e., Both Hands) to 10, 15, 20, 30 minutes with the goal of maintaining the lowest possible exercise average (ms), IAR level, & rate of burst achievement over the entire duration of the exercise • Also, in the same session begin to introduce lower extremity IM exercises. They are listed in the IM software in a hierarchy of difficulty: toes, heels, bilateral, then balance. As you introduce lower extremity exercises, watch for the need to modify IM settings (i.e., Difficulty, tempo) or turn off guide sounds temporarily. This will be especially true if you are working with a client who exhibits impaired motor planning & sequencing. As your client becomes proficient with toes, introduce heels. Once proficient with heels, introduce bilateral, etc. Repeat these exercises each session until Task Averages (ms) improve for each. • Once timing is mastered & your client demonstrates greater automaticity with motor skills (i.e., no longer needs to use cognition to motor plan & sequence & cognitive resources are free to work on other tasks), you may introduce custom exercises to work toward motor, speech, language, cognitive, academic, or athletic goals. This is discipline-specific and based upon your area of clinical/professional expertise. • At this point, you may also wish to explore your client's visual timing skils (see Education portion of IM's website for additional information about using IM to address visual attention & processing).

IM BEST PRACTICE RESOURCES

RETAIL HUNTING GROUNDS

- Dollar stores
- Big Lots
- K-Mart: www.kmart.com
- Walmart: www.walmart.com
- Target: www.target.com
- Goodwill
- Hardware stores
- Toy Stores
- Sports Stores

ONLINE HUNTING GROUNDS

Specialized Triggers:

- Ablenet
  www.ablenetinc.com
- Enabling Devices
  www.enablingdevices.com
- Tapeswitch Corporation
  www.tapeswitch.com

OTHER EDUCATIONAL TOYS & KNICK-KNACKS

- Abilitations
  www.abilitations.com
- Achievement Products
  www.achievement-products.com
- Discount School Supply
  www.DiscountSchoolSupply.com
- Discount Teacher Supply
  www.earlychildhood.com
- Discovery Toys
  www.discoverytoysinc.com
- Flaghouse
  www.flaghouse.com
- Fun and Function
  www.funandfunction.com
- Lakeshore Learning
  www.lakeshorelearning.com
- Linguisystems
  www.linguisystems.com
- Oriental Trading
  www.orientaltrading.com
- PDP – Professional development Products
  www.pdppro.com
- Pocket Full of Therapy
  www.pfot.com
- Pro-ed inc
  www.proedinc.com
- Sensory Edge
  www.sensoryedge.com
- Southpaw Enterprises
  www.southpawenterprises.com
- Talk Tools
  www.talktools.com
- Therapro
  www.theraproducts.com
- Therapy Shoppe
  www.therapyshoppe.com
- U.S. Toys/Constructive Playthings
  www.ustoy.com
- Your Therapy Source
  www.yourtherapysource.com

RECOMMENDED WEBSITES

- American Occupational Therapy Association
  www.aota.org
- American Speech and Hearing Association
  www.asha.org
- American Physical Therapy Association
  www.apta.org
- American Psychological Association
  www.apa.org
- Optometrists Network-Vision Therapy
  www.visiontherapy.org
- National Education Association
  www.nea.org
- American Academy of Audiology
  www.audiology.org
- American Chiropractic Association
  www.americhiro.org
- Clinical Exercise Physiology Association
  www.acsm-cepa.org
- SPD Foundation
  www.SInetwork.org
- Sensory Resources
  www.sensoryresources.com
- S.I. Focus
  www.sifocus.com
- Special Needs Net
  www.SPDNET.org (great resource for figuring out how Sensory play helps kids learn)
- SPD Support
  www.SPDSupport.org
- Sensory Processing Support Group
  groups.yahoo.com/group/SID-DSI_AllAbout-Kids/
- The Out of Sync Child
  www.out-of-sync-child.com
- About.com
  www.about.com (search sensory integration)
- A Teach About
  www.ateachabout.com

IM BEST PRACTICE RESOURCES CONT.

- Children with Special Needs
  specialchildren.about.com/od/sensoryintegration/

RECOMMENDED READING LIST

*For those interested in learning more about sensory integration, and how it may apply to their professional practice

- **The Out-of-Sync Child : Recognizing and Coping with Sensory Integration Dysfunction.**
  By: Carol Stock Kranowitz, M.A.
  (New York: Perigee)
- **The Out-of-Sync Child Has Fun : Activities for Kids with Sensory Integration Dysfunction**
  By: Carol Stock Kranowitz, M.A.
  (New York: Perigee)
- **Sensory Integration and the Child**
  By: Jean Ayres
  (Los Angeles: Western Psychological Services)
- **The Sensory Sensitive Child : Practical Solutions for Out-of-Bounds Behavior**
  By: Karen A Smith, PhD. and Karen R Gouze, PhD.
  (Harper Resource)
- **Sensory Processing for Parents: From Roots to Wings**
  By: Judith E. Reisman
  (Available through Sensory Comfort, 888 436 2622)
- **Raising a Sensory Smart Child : The Definitive Handbook for Helping Your Child with Sensory Integration** Issues
  By: Lindsey Biel, MA OTR/L, Nancy Peske
  (Penguin)
- **Quirky Kids : Understanding and Helping your Child Who Doesn't Fit In – When to Worry and When Not to Worry.**
  By: Perri Klass, MD and Eileen Costello, MD
  (Random House)
- **The Explosive Child**
  By: Ross W. Greene
  (New York: HarperCollins)

RECOMMENDED MAGAZINES

- **S.I. Focus Magazine** – call 1 (241) 341 9999
- **Integrations, bright solutions for kids with learning and sensory differences** – call 1 (800) 622 0638
- **Today in OT** – www.todayinot.com

GOAL-WRITING TIPS FOR THERAPISTS & HEALTHCARE PROVIDERS

EXAMPLES OF LONG TERM FUNCTIONAL GOALS FOR PEDIATRIC & ADULT PATIENTS

- Integrate visual motor skills to whole task activities
- Increase length of focused attention to non-preferred/ challenging activities
- Increase proximal stability/core strength during static tasks
- Improve sensory integration
- Increase recognition of body part identification during motor activities
- Relax body posture and exhibit engaged facial exchanges during communication
- Improve handwriting
- Improve attention & concentration
- Improve ability to tune out distractions
- Improve reading comprehension & fluency
- Improve math calculations
- Improve speech prosody
- Increase vocal regulation and articulation
- Improve phonological awareness
- Improve expressive communication skills
- Improve receptive communication skills
- Improve visual processing
- Improve auditory processing
- Increase speed of mental processing
- Improve social skills
- Improve memory
- Improve decision-making/problem-solving skills
- Improve organizational skills
- Improve self-monitoring and behavioral self-regulation
- Improve toileting and self-care skills
- Improve coordination for play activities
- Remain seated and focused for classroom and tabletop (i.e., mealtime, homework) activities
- Initiate and organize homework assignments
- Write down assignments accurately
- Use mouse to navigate on computer
- Maintain balance when seated without support
- Ambulate through school hallways without falling
- Decrease falls
- Perform transfers safely and independently
- Safely & successfully reach for items outside of base of support
- Increase independence with dressing/ADLs
- Cook accurately and safely
- Open medication & food containers
- Functional use of prosthetic limb(s)
- Manage finances
- Recall functional information
- Maintain focus and concentration in noisy/distracting environments
- Community reintegration (work, school, social)
- Improve driving (usually not reimbursed by insurance since not a medical necessity, although IM can improve skills necessary for driving)

KEY ELEMENTS OF SHORT-TERM GOALS

- Treatment task(s) to be completed: IM exercise and/or performance area targeted (i.e., attention, processing, motor coordination)
- Measurable score: IM Task Average or millisecond range you want your client to perform within (i.e., <150ms)
- Challenge level of IM settings: easy, moderate, difficult, most challenging
- Expected level of assistance to perform: independent, min, mod, max assist
- Functional outcome expected ……in order to be able to……

EXAMPLES OF SHORT-TERM GOALS

- Patient will perform IM Both Toes exercise for 2 minutes while wearing a gait belt with score of < 200 ms with moderately challenging feedback for timing & rhythm & min assist in order to improve balance for safety with standing & ambulation short distances during ADLs.
- Patient will perform IM bilateral coordination exercises for 2 minutes each with a score of < 125 ms with easiest feedback settings for timing & rhythm in order to improve handwriting and other fine motor skills.
- Patient will complete IM exercises with a score of < 300 ms that challenge attention, concentration & cognitive processing for 2 minutes each with the pace reduced to 50 bpm to aid processing, easy feedback settings, and moderate assistance in order to improve auditory comprehension of simple, 1-step instructions.
- Patient will demonstrate ability to sustain auditory/ visual attention & concentration for 15 consecutive minutes in the presence of auditory/visual distractions with a score of <30 ms in order to improve functional independence & safety in the home environment.

EXAMPLES OF LONG-TERM GOALS

- Patient will demonstrate safety and independence with self-care activities and basic ADLs in the home environment with use of assistive devices as necessary.
- Patient will demonstrate improved handwriting on standardized testing to within the average range of ability.
- Patient will communicate basic/needs and wants and comprehend simple commands with 85% accuracy.
- Patient will demonstrate ability to maintain focus in the presence of distractions in order to reduce the risk of falling at home and in the community.

ECLINIC MANAGEMENT SYSTEM
SAMPLE TRAINING PLAN

Family Home > Training Plan

Training Plan: **Template A- Movements Coordinated (LFA <100 ms) for Minnie**

Member Name: **Minnie Mouse**

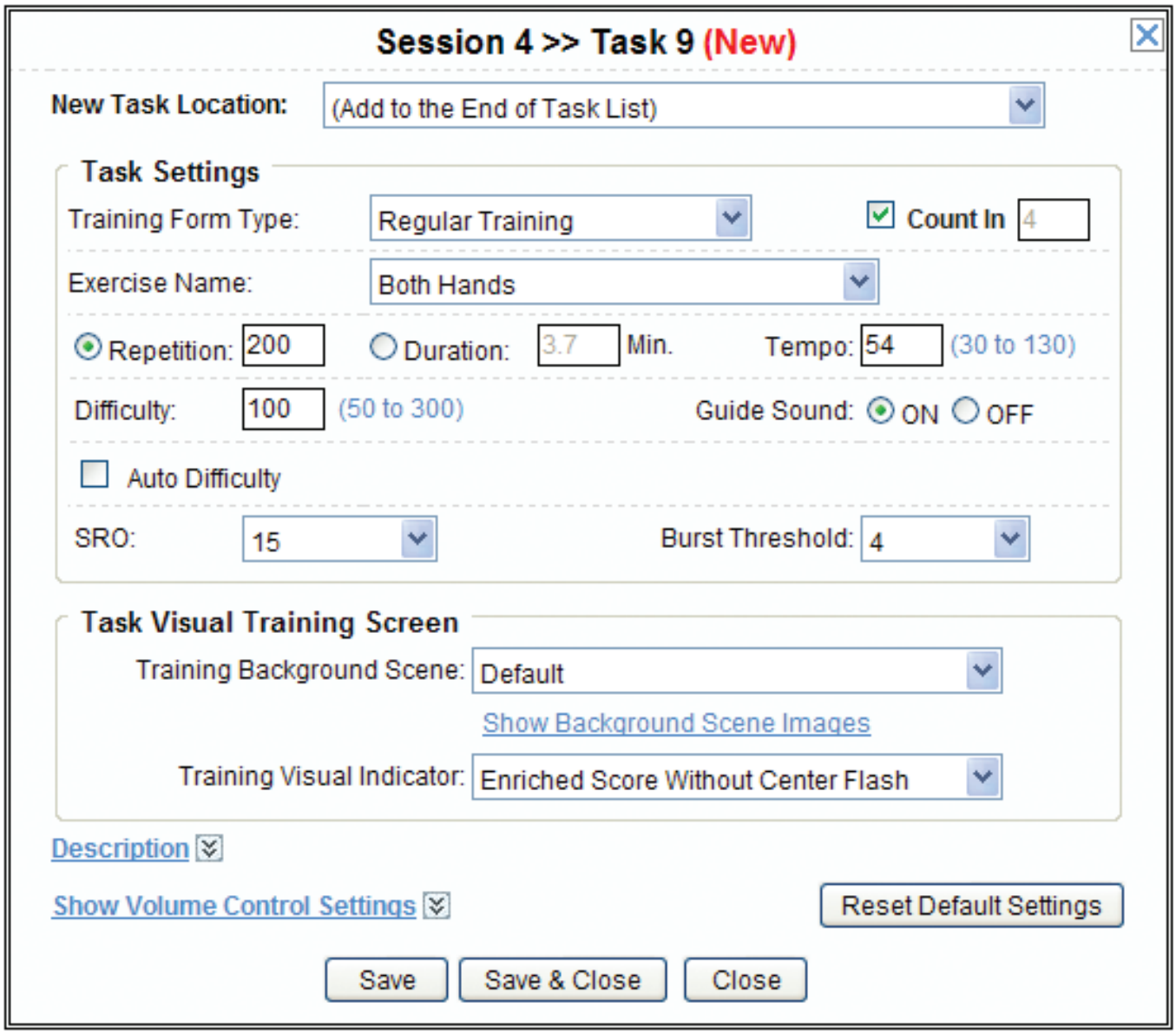
Print Training Plan

Session 1	Session 2	Session 3
T1: SF Both Hands 54 Reps No Guide Sound; Scene: Default; Visual: Auditory	T1: SF Both Hands 54 Reps No Guide Sound; Scene: Default; Visual: Auditory	T1: SF Both Hands 54 Reps No Guide Sound; Scene: Default; Visual: Auditory
T2: SF Both Hands 54 Reps with Guide Sounds; Scene: Default; Visual: Auditory	T2: SF Both Hands 54 Reps with Guide Sounds; Scene: Default; Visual: Auditory	T2: SF Both Hands 54 Reps with Guide Sounds; Scene: Default; Visual: Auditory
T3: Both Hands 200 Reps No Guide Sound; Scene: Default; Visual: Auditory	T3: Both Hands 200 Reps with Guide Sounds; Scene: Default; Visual: Enriched without Flash	T3: Both Hands 200 Reps with Guide Sounds; Scene: Default; Visual: Enriched without Flash
T4: Right Hand 200 Reps No Guide Sound; Scene: Default; Visual: Auditory	T4: Right Hand 200 Reps with Guide Sounds; Scene: Default; Visual: Enriched without Flash	T4: Right Hand 200 Reps with Guide Sounds; Scene: Default; Visual: Enriched without Flash
Tasks: 8, Reps: 1308, Mins: 24.2	**Tasks: 8, Reps: 1308, Mins: 24.2**	**Tasks: 8, Reps: 1308, Mins: 24.2**

Session 4	Session 5	Session 6
T1: SF Both Hands 54 Reps No Guide Sound; Scene: Default; Visual: Auditory	T1: SF Both Hands 54 Reps No Guide Sound; Scene: Default; Visual: Auditory	T1: SF Both Hands 54 Reps No Guide Sound; Scene: Default; Visual: Auditory
T2: SF Both Hands 54 Reps with Guide Sounds; Scene: Default; Visual: Auditory	T2: SF Both Hands 54 Reps with Guide Sounds; Scene: Default; Visual: Auditory	T2: SF Both Hands 54 Reps with Guide Sounds; Scene: Default; Visual: Auditory
T3: Both Hands 200 Reps with Guide Sounds; Scene: Default; Visual: Enriched without Flash	T3: Both Hands 200 Reps with Guide Sounds; Scene: Default; Visual: Enriched without Flash	T3: Both Hands 200 Reps with Guide Sounds; Scene: Default; Visual: Enriched without Flash
T4: Right Hand 200 Reps with Guide Sounds; Scene: Default; Visual: Enriched without Flash	T4: Right Hand 200 Reps with Guide Sounds; Scene: Default; Visual: Enriched without Flash	T4: Right Hand 200 Reps with Guide Sounds; Scene: Default; Visual: Enriched without Flash
Tasks: 8, Reps: 1308, Mins: 24.2	**Tasks: 8, Reps: 1308, Mins: 24.2**	**Tasks: 8, Reps: 1308, Mins: 24.2**

ECLINIC MANAGEMENT SYSTEM

ADJUST TASK SETTINGS WITH SESSION MANAGER



ECLINIC MANAGEMENT SYSTEM
REPORTING FEATURES

Provider Home > Training Reports

Member: -- Select a Member -- Send Training Reminder Email

Training Reports

General Reports

Session Calendar

Session Data From: To:

Short Form Testing

Short Form Testing Performance Analysis

Short Form Testing Task Average Graph

Short Form Testing SRO% Graph

Long Form Assessment

LFA Calculations Select Date:

LFA Comparison Select Date: Compare To #1: Compare To #2:

Regular Training

Session Performance Analysis

Comparison with Previous Session

Comparison with Best Scores in File

Comparison with First LFA in File

Session IAR Graph

Select an Exercise: Exercise 1 View Report

Session Burst Graph

Select an Exercise: Exercise 1 View Report

Session SRO% Graph

Select an Exercise: Exercise 1 View Report

Best Task Average Graph

Select an Exercise: Exercise 1 View Report

Variability Average Graph

Select an Exercise: Exercise 1 View Report

APPENDIX

ECLINIC MANAGEMENT SYSTEM
SAMPLE TRAINING CALENDAR

Sunday	Monday	Tuesday	Wendesday	Thursday	Friday	Saturday
	Show Details 1 Short Form, 27.06 Total Rep: 54	Show Details 2 Short Form, 138.56 Long Form, 22 Reg Form, 20.45 Total Rep: 974	3	Show Details 4 Short Form, 21.78 Reg Form, 18.72 Total Rep: 1508	5	Show Details 6 Short Form, 20.37 Reg Form, 71.82 Total Rep: 508
Show Details 7 Reg Form, 22.31 Total Rep: 200	8	Show Details 9 Short Form, 19.94 Reg Form, 17.87 Total Rep: 2462	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

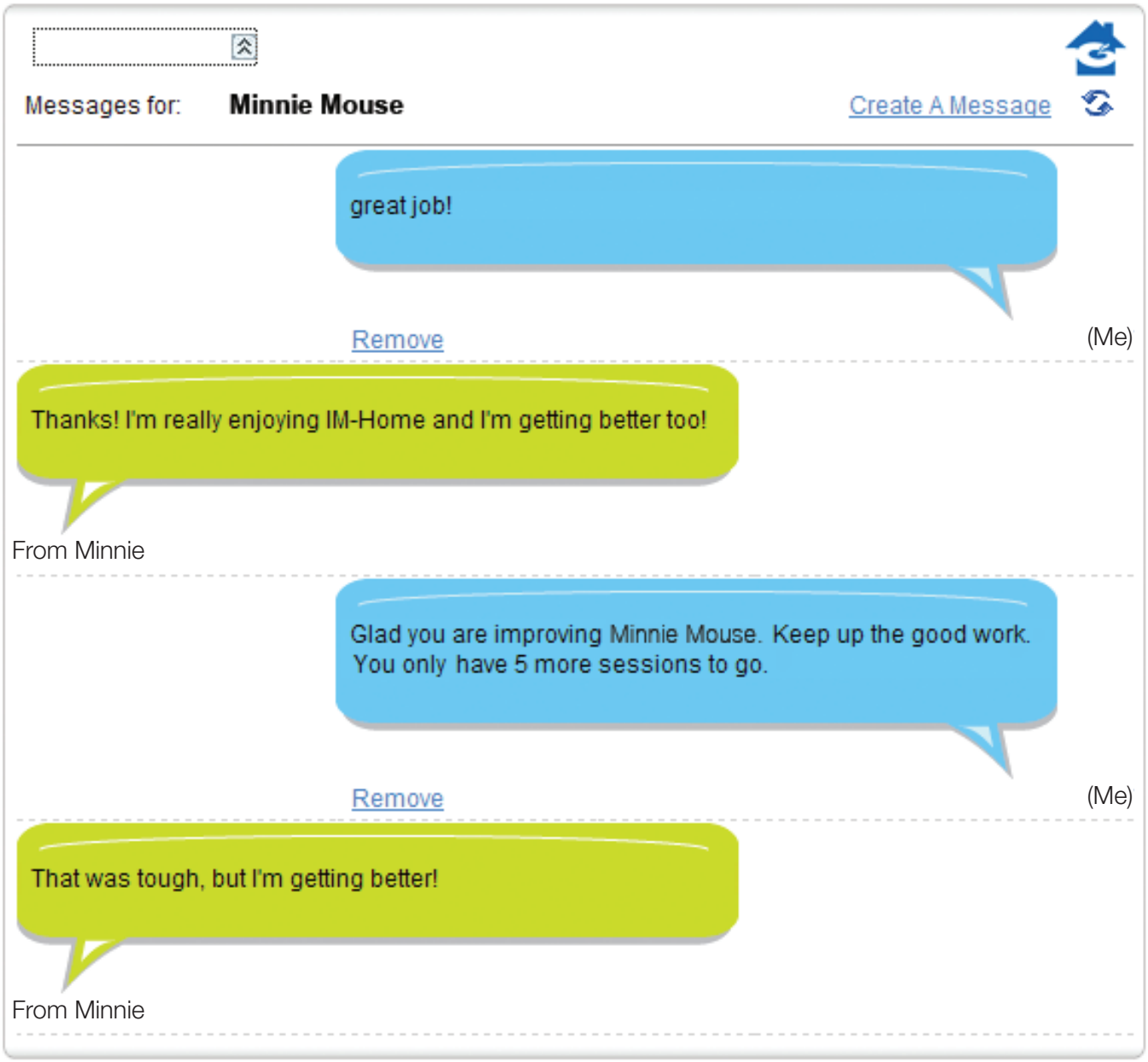
IM-Home Training Session Data Detail

Trainee ID: bree | **Training Date:** | **Total Reps Hit / Assigned: 1503 / 1508** | Report Date:

Training Plan	Session	Task	Mode	Training Type	Exercise	Reps Hit / Assigned	Tempo	Guide Sounds	Difficulty	Visual Indicator	Avg (MS)	Var Avg (MS)	SRO %	Burst	IAR	Early/Late Hits %	Family Comments
Plan A- Intensive Movements Coordinated ...	1	1	Auto	SF	1 - Both Hands	54 / 54	54	Off	100	Auditory default	21.78	19.00	40.74%	1	7	48.15% / 51.85%	Add Comment
Plan A- Intensive Movements Coordinated ...	1	2	Auto	SF	2 - Repeat #1 with Guide Sounds	54 / 54	54	On	100	Auditory default	22.28	14.00	40.74%	0	3	24.07% / 75.93%	Add Comment
Plan A- Intensive Movements Coordinated ...	1	3	Auto	RT	1 - Both Hands	200 / 200	54	Off	100	Enriched default	19.92	16.00	49.50%	9	7	48.50% / 51.50%	Add Comment
Plan A- Intensive Movements Coordinated ...	1	4	Auto	RT	1 - Both Hands	198 / 200	54	On	200	Enriched without Flash default	21.57	16.00	40.91%	4	6	44.95% / 55.05%	Add Comment
Plan A- Intensive Movements Coordinated ...	1	5	Auto	RT	2 - Right Hand	200 / 200	54	On	200	Enriched without Flash default	21.47	16.00	41.50%	4	5	51.50% / 48.50%	Add Comment
Plan A- Intensive Movements Coordinated ...	1	6	Auto	RT	3 - Left Hand	198 / 200	54	On	200	Enriched without Flash default	34.54	25.00	22.73%	0	3	62.12% / 37.88%	David talking to me during this task, so wasn't looking at visual screen for reference
Plan A- Intensive Movements Coordinated ...	1	7	Auto	RT	1 - Both Hands	200 / 200	54	On	200	Enriched without Flash default	18.72	14.00	50.00%	9	7	61.00% / 39.00%	Add Comment
Plan A- Intensive Movements Coordinated ...	1	8	Auto	RT	2 - Right Hand	200 / 200	54	On	200	Enriched without Flash default	21.38	18.00	45.00%	7	12	52.00% / 48.00%	started tapping foot to keep rhythm about half way thru where highest IAR occurred
Plan A- Intensive Movements Coordinated ...	1	9	Auto	RT	3 - Left Hand	199 / 200	54	On	200	Enriched without Flash default	24.21	18.00	39.70%	3	7	44.72% / 55.28%	Add Comment

Training Type: **SF**=Short Form Testing, **LF**=Long Form Assessment, **RT**=Regular Training, **GM**=Gait Mate, **AO**=Attend Over Time

ECLINIC MANAGEMENT SYSTEM
SAMPLE MESSAGES



interactive metronome

Climb the Ladder to IM Success!

Advanced Webinars

Clinical Certification

IM Certification*

*Indicates Required Course

www.InteractiveMetronome.com ➔ 877-994-6776

IM Provider Educational Path

At Interactive Metronome we understand that treating a pediatric patient is far different than treating an adult cognitive patient or even a fall risk patient. We are proud to present a library of courses to bring you up to speed with what you need to know to treat Pediatric and Adult patients. So you don't feel overwhelmed with our over 80 course library, we have broken our specialization into 3 tracks. Each track is packed with what you need to know and then you have the option to take it a step it a further with our extracurricular on demand webinar library! Below is your IM Provider Path to Success!

IM Certification*

It all starts with Basic IM Certification, you can take this course Live or as a Self-Study- **Note for the Self-Study you need to own or rent the IM equipment

Provider Coaching

Clinical Certification

If don't feel ready to train your first client, don't worry! The Clinical Certification Coaching will refresh your memory on how to set-up the equipment, go over the software features and give you more practical hands-on experience to get the confidence you need to start training clients. As an added bonus, this course is offered for CEUs (0.4 AOTA & 0.45 ASHA) and is FREE!

IM-Home Certification

Training your client in the clinic is ideal, but unfortunately it's not always feasible due to limited insurance co-pays, travel issues or competing modalities. That's why IM-Home was invented. IM-Home allows your client to train in the comfort of their home, but still gives you complete control of their training plan. This IM-Home Clinical Certification will focus on teaching you how to use the eClinic (IM's online training management tool) and have you experience the home-system on yourself using your FREE IM-Home Demo unit (*Only 1 per facility, you must own or rent IM Universe). Upon completion, you will be listed on the IM Locator Board as an IM-Home Certified Provider. As an added bonus, this course is offered for CEUs (0.2 AOTA & ASHA) and is FREE!

Specialization Tracks

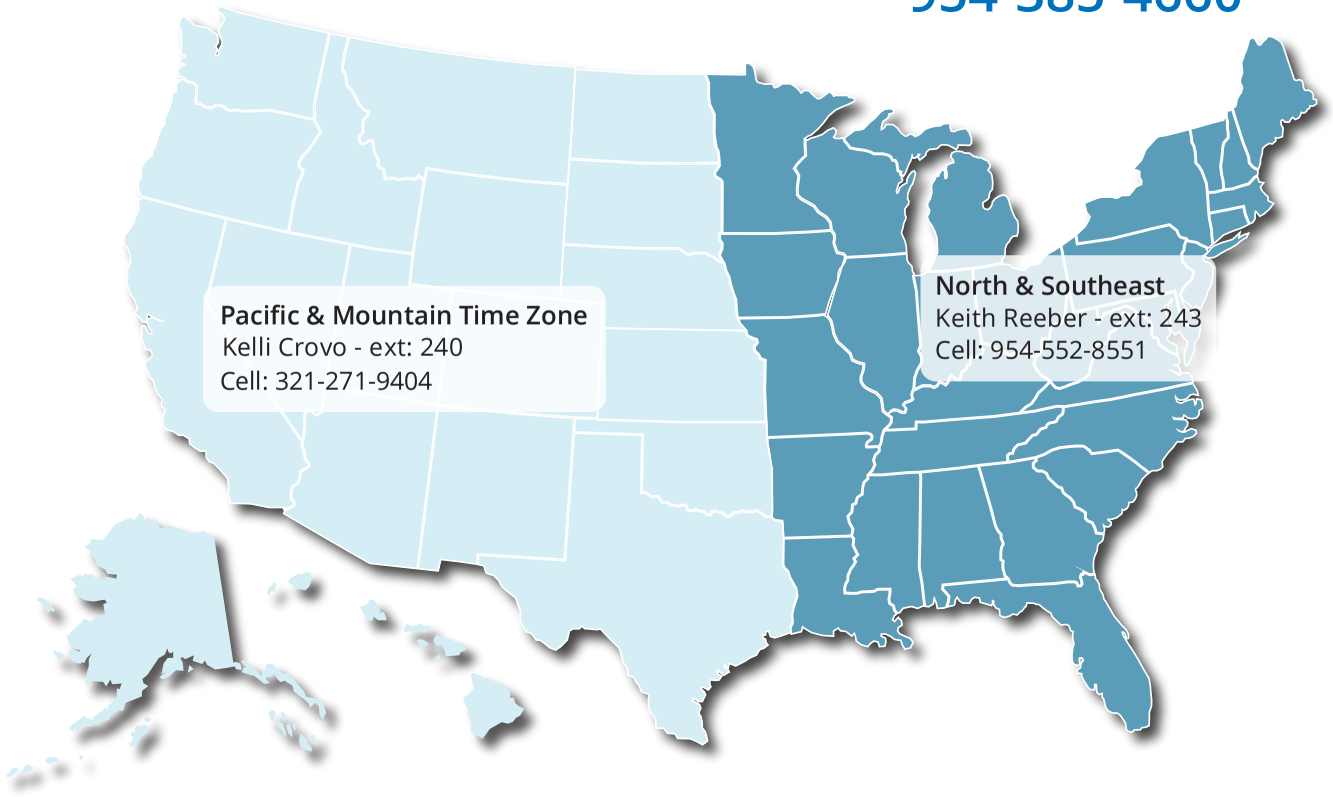
Pediatric
Adult - Cognitive and/or Motor
Fall Risk Reduction

Continuing Education

We have over 100 1-hour courses to help get your creative juices flowing!! Browse our Online Course Catalog and check out the Live Webinar Schedule on our IM University website.

CONTACT US

If you have questions, please feel free to call us!
954-385-4660



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DEPARTMENTS

Sales: opt. 1
IM-Home: opt. 2
Education: opt. 3
Authorize Hours: opt. 4
Technical Support: opt. 5
Clinical Support: opt. 6
Marketing: opt. 7
Accounting: opt. 8

BUSINESS HOURS

Monday - Friday
9:00 a.m. - 5:00 p.m.

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