

Phase	Performance Goals & IM Adaptations
Phase 1	<p>GOAL: MOVE RHYTHMICALLY WHILE SYNCHRONIZING WITH THE REFERENCE TONE EXERCISES: HANDS ONLY</p> <ul style="list-style-type: none"> • 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; <u>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)</u>

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	<p>GOAL: LEARN TO PROCESS & RESPOND TO THE GUIDE SOUNDS EXERCISES: HANDS ONLY</p> <ul style="list-style-type: none"> • 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.

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

- IMPROVE FOCUS & FINE MOTOR SKILLS/COORDINATION**
- IMPROVE SUSTAINED ATTENTION & COGNITIVE EFFORT**
- 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:

- HANDS**
- TOES**
- HEELS**
- BILATERAL**
- BALANCE**
- 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 skills (see Education portion of IM's website for additional information about using IM to address visual attention & processing).

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)