

\*Significant functional gains can still be achieved in patients who do not achieve normal IM scores by the end of IM treatment.

Phase	Exercises	Performance Goals & IM Adaptations	When to Transition to Next Phase
<b>Phase 1</b>	Hands only	<ul style="list-style-type: none"> <li>With guide sounds off, repeat hand tasks until patient <u>attempts</u> to synchronize with reference tone</li> <li>Adjust IM settings as needed</li> <li>Adapt your approach for sensory &amp; motivational needs of pediatric patients (i.e., high-five, fantasy play, etc)</li> <li>Task duration: 1 – 3 minutes per task</li> </ul>	<ul style="list-style-type: none"> <li>Understands what to do &amp; tries to synchronize without cues or hands-on assistance</li> <li>May still need easier IM settings</li> <li>Task ave (ms) may still be in deficient range</li> <li>Pediatric patients may derive benefit from IM even if they need total assistance through entire IM program</li> </ul>
<b>Phase 2</b>	Hands only	<ul style="list-style-type: none"> <li>Turn guide sounds on</li> <li>Repeat hands tasks until <u>learns</u> what guide sounds mean &amp; begins to <u>modify</u> performance in response to them</li> <li>Adjust Difficulty (see chart next page)</li> <li>Task duration: 1 – 3 minutes per task</li> </ul>	<ul style="list-style-type: none"> <li>Understands what guide sounds mean and responds</li> <li>May still need easier IM settings</li> <li>Task ave (ms) may still be in deficient range</li> </ul>
<b>Phase 3</b>	Hands only	<ul style="list-style-type: none"> <li>With guide sounds on, repeat hand tasks until task ave (ms) improves to average range or better (or best it can be)</li> <li>Increase challenge of IM settings as appropriate</li> <li>Task duration: 2 – 5 minutes per task</li> </ul>	<ul style="list-style-type: none"> <li>Task ave (ms) has significantly improved and patient now knows what it feels like to have good timing &amp; rhythm with the hands</li> <li>May still need easier IM settings</li> </ul>
<b>Phase 4</b>	Toes Heels Bilateral Balance	<ul style="list-style-type: none"> <li>Repeat foot, heel, bilateral &amp; balance tasks until task ave (ms) improves for each</li> <li>Turn off guide sounds, reduce tempo, and/or adjust difficulty as needed to make it easier</li> <li>Introduce your own therapy practices/creative tasks to improve sensory-motor skills</li> <li>Task duration: 2 – 5 minutes per task</li> </ul>	<ul style="list-style-type: none"> <li>Task ave (ms) improves for upper/lower extremity &amp; bilateral tasks</li> <li>May still need easier IM settings</li> </ul>
<b>Phase 5</b>	All tasks	<ul style="list-style-type: none"> <li>Perform IM tasks (or your own creative tasks) to progressively more challenging IM settings for short periods</li> <li>Auditory processing disorder: Tasks via auditory mode only</li> <li>Visual processing disorder: Tasks with combined visual-auditory modes, then via visual only (w/center flash)</li> <li>Task duration: 2 – 5 minutes per task</li> </ul>	<ul style="list-style-type: none"> <li>Achieves best task ave (ms) for all tasks at most challenging IM settings tolerated</li> <li><u>TARGETS:</u> <ul style="list-style-type: none"> <li>Diff 100 or less; Auto Diff</li> <li>Tempo 54</li> <li>Volume 27</li> <li>Auditory Mode if auditory processing disorder</li> <li>Visual Mode if visual processing/reading disorder</li> </ul> </li> </ul>
<b>Phase 6</b>	All tasks	<ul style="list-style-type: none"> <li>Perform tasks for progressively longer periods               <ul style="list-style-type: none"> <li>Children: to developmentally appropriate level</li> <li>Adolescents/adults: to 30 – 60 minutes per task</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Discharge from IM when best scores have been achieved on all tasks.               <ul style="list-style-type: none"> <li>Measure progress according to improvement in function outside of IM sessions</li> </ul> </li> </ul>

IM Setting or Score	Definition
<b>Tempo (Default 54)</b>	Speed of the reference tone, ranges 30 – 100 beats per minute
<b>Difficulty (Default 100)</b>	Threshold for very early/very late buzzer, ranges 50 (moderate challenge) – 300 (easiest) or Auto (most difficult)
<b>Volume (Default 27)</b>	Volume of reference tone & guide sounds, ranges 0 – 27
<b>Task ave (ms)</b>	Average number of milliseconds from the beat during exercise, lower task ave (ms) indicates better performance
<b>Variability ave (ms)</b>	Average number of milliseconds from one hit to the next, measure of precision, lower variability ave (ms) is better
<b>Super Right-On (SRO%)</b>	Percentage of hits in the exercise that were within 0 – 15 ms of the beat, higher % indicates better performance
<b>Highest In-A-Row (IAR)</b>	Highest number of consecutive hits within 0 – 15 ms over the entire exercise, higher IAR indicates better performance
<b>Burst &amp; Burst Threshold</b>	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 Ave (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	Description
<b>Dissociative</b>	Hits random, chaotic, completely unrelated to the reference tone in any way, suggests severe cognitive impairments
<b>Hyper anticipatory</b>	Hits consistently very early, suggests problem with impulse-control
<b>Hypo anticipatory</b>	Hits consistently very late, if no obvious problem with coordination, suggests problem with mental processing speed
<b>Variable/Hesitant</b>	Hits back and forth between very early and very late, suggests problem with motor planning/mental processing speed
<b>Contraphasic</b>	Hits consistently opposite of the beat, suggests problem with mental processing or comprehension of task
<b>Hyper ballistic</b>	Hits overly hard, suggests problem with sensory processing, impulse-control, and/or motor planning
<b>Linear movements</b>	Hits straight and lack circular pattern/rhythm, suggests problem with motor planning
<b>Hypersensitive</b>	Volume of reference tone and guide sounds, equipment, fluorescent lighting, your touch, and/or movement (vestibular sensations) associated with IM exercises are fearful and/or noxious, suggests problem with sensory processing
<b>Distracted by guide sounds</b>	Performance declines significantly when guide sounds are on compared to when guide sounds are off (i.e., comparison between LFA Task 1 (Both Hands) & Task 14 (Both Hands with Guide Sounds), performance declines in Phase 2 as compared to Phase 1
<b>Dyscoordinated</b>	Movements lack rhythm, choppy, groping, hesitant, stiff, or otherwise uncoordinated, 54 tempo may appear too fast
<b>Hyperactive</b>	Overly active behavior interferes with participation and focus during IM
<b>Hypoactive</b>	Poor arousal level interferes with participation and focus during IM
<b>Lack of motivation</b>	Avoidance behavior, outbursts, lack of effort during IM session, unexplained decline in performance

Performance Problem	Treatment Strategies
<b>Dissociative</b>	Proprioceptive input: tap on patient's body to beat, Rock/move whole body to beat, Visual mode, Seated, Provide cues, Hit opposite of beat initially (contraphasic), then on the beat
<b>Hyper anticipatory</b>	Increase tempo (go with patient's flow, gradually decrease), Introduce guide sounds, Seated, Visual mode, Adjust difficulty to easier setting, Provide cues
<b>Hypo anticipatory</b>	Decrease tempo, Introduce guide sounds, Seated, Provide cues, Visual mode, Adjust difficulty to easier setting
<b>Variable/Hesitant</b>	Decrease tempo, Introduce guide sounds, Seated, Provide cues, Visual mode, Adjust difficulty to easier setting
<b>Contraphasic</b>	Introduce guide sounds, Seated, Provide cues, Visual mode, Adjust difficulty to easier setting
<b>Hyper ballistic</b>	Tap trigger with one finger; Encourage circular movement pattern, Calming strategies
<b>Linear movements</b>	Decrease tempo, Encourage circular movement, Provide cues
<b>Hypersensitive</b>	Decrease volume, Speakers instead of headphones, Larger or Open-System Headphones, Lamp instead of fluorescent lights, Tap switch with hand or toy (instead of wearing IM glove), Rock on trampoline/ball during IM, Calming strategies
<b>Distracted by guide sounds</b>	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
<b>Dyscoordinated</b>	Decrease tempo, Provide cues, Seated, Work on rhythmic movement
<b>Hyperactive</b>	Calming strategies: chewing gum, slow rocking to the beat (decrease tempo), deep pressure (weighted vest, bean bag, weighted blanket, heavy work, lie on belly while prone on elbows, work against gravity, perform IM in enclosed space (pop-up tent, between furniture, under a table, slower tempo may be indicated, Decrease distractions in room
<b>Hypoactive</b>	Alerting strategies: jumping to beat, frequent change of activity, frequent reinforcement, colorful room, Increase tempo
<b>Pediatric Adaptations</b>	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, <u>Don't rush</u> 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)