

# Pediatric Autism Case Study

## About Michael

Michael is a four and a half year old boy diagnosed with Autism. He lives with his parents and has a typically developing twin sister. Michael has been receiving physical, occupational, and speech therapy since the age of two. During his last physical therapy evaluation, he presented with a delay in gross motor skills, specifically areas involving balance, gross coordination, and bilateral integration skills. He was unable to hop on one foot or stand on a single limb for two seconds and had great difficulty imitating simple gross motor patterns such as a jumping jack or walking sideways while crossing over legs. His father reported that he has difficulty maintaining attention to task and completing activities, especially those requiring gross motor skills. His speech also presents delayed for his age with little voluntary initiation of speech; however, he is quite able to follow verbal direction.

His father initially approached the IM provider in hopes of having Michael perform IM treatment specifically to improve gross motor skills and attention to task. Michael's father had seen media coverage regarding IM, and several of Michael's physicians had recommended IM as an appropriate intervention. Due to the patient's young age the provider was initially skeptical of beginning IM treatment. However, Michael is extremely bright and was able to follow directions as needed to perform the IM tasks. The provider discussed with the father that due to Michael's small size and young age, the IM treatment would probably have to be modified significantly in some ways for him to participate.

## Initial Evaluation

Michael came to the provider's office, which is located in an outpatient facility that provides physical therapy, occupational therapy, and speech therapy for children. Because of his diagnosis of Autistic Disorder, it was decided that IM should be performed in a secluded room with only the provider and the patient present to reduce distractions.

Michael was initially very interested in Interactive Metronome and quickly understood the concept of "hitting" the reference tone. The IM pretest Long Form Assessment was administered. Michael was able to follow directions fairly well but had some difficulty maintaining attention to task. He especially had difficulty with the lower extremity movement patterns and required repeated verbal and physical cues to stay on task. The results of the assessment are shown below:

<b>Unadjusted Overall ms</b>	<b>Hands average ms</b>	<b>Feet average ms</b>
162.49	151.37	173.61

## Development of an IM Plan for Michael

The provider had some concerns when developing an individual plan to suit Michael. First, because he was so young at the beginning the IM treatment, it was decided, after discussions with both parents, to begin with only half-hour sessions, three times per week. All IM treatment was to be performed in a room with little distraction and no other people in the room. Because Michael was so easily distracted by outside activity, even having his parents observing would have made it impossible for him to maintain his attention in the session. The second concern was his small size, which created difficulty in hitting the foot trigger with enough force to record a hit without moving in a ballistic or non-rhythmical movement.

## Modifications Made for Michael

Michael began performing IM with only half-hour sessions due to his poor ability to maintain attention to task. The first four sessions involved only upper extremity activities since he had such great difficulty hitting the foot trigger. The provider gradually taught Michael the proper movements and began introducing the guide sounds slowly. He quickly grasped the concept of hitting “right on” the reference tone, and within five sessions, the provider was able to increase the length of IM treatment sessions to one full hour. At about the same time, Michael no longer required any hand-over-hand assistance and was able to imitate the proper hand movement with only visual or verbal cuing.

Michael’s attention to IM tasks continued to improve; however, he would become fatigued quickly, so for the next four or five sessions a total of 10 minutes (500 repetitions) or less was required from him with rest periods after each task. Because of some sensory integrative issues, Michael found the headphones irritating after a short period. The provider began giving him a two-minute break that allowed him to become more organized and ready to complete the next tasks. Often the provider would have him stretch or do a somersault before resuming with the next tasks. In addition, he was seated in an appropriate chair with no armrests for parts of the session in order to reduce fatigue and allow him to complete longer duration tasks.

Performing lower extremity tasks was still difficult for him due to his small size. The provider asked the parents to ensure that Michael was wearing the appropriate shoes, and by sessions eight and nine, he began tapping toes in a seated position. This worked quite well for him, and he was able to perform those lower extremity exercises with increasing “rhythmicity” and less ballistic movement. His scores began to improve. Other lower extremity exercises such as “balance left foot /tap right toe” were performed with him holding onto a desk or chair. He continued to have significant difficulty with heel exercises.

## Interim Testing and Parent Involvement

By session eight, the provider met with both parents. Everyone involved concurred that Michael should not yet be administered the IM interim Long Form Assessment. He was still having difficulty with most of the lower extremity exercises. His attention to task and his gross motor skills were steadily improving. It was decided by all to continue with one-hour sessions modified as described above and to continue past the 15 sessions originally planned as long as he continued to make steady progress. Michael's parents were reporting improvement in attention to tasks at school and in gross motor skills during play activities.

## The Next Phase

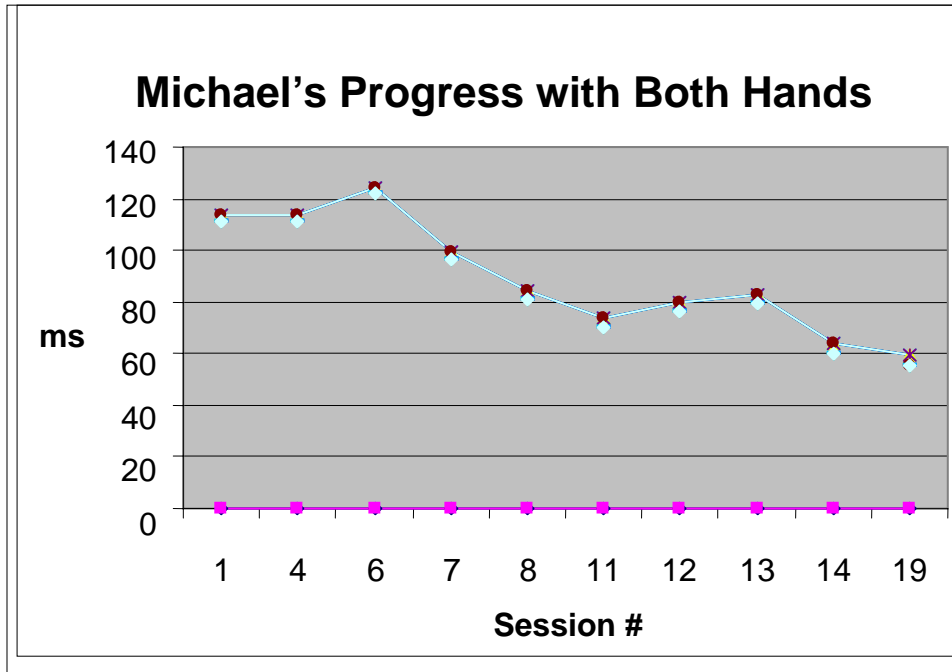
In the following sessions, the provider began to increase the durations of the tasks, up to almost 28 minutes (1,500 repetitions) per task by the eleventh session. Most sessions were focused on upper extremity tasks and included just a few short duration lower extremity tasks involving exercises such as toe tapping or balance on one foot. Michael began achieving "bursts" of four Super-Right-On (SRO) trigger hits in a row during his upper extremity tasks and was given a positive "reinforcer" such as a sticker for each burst. This proved to work very well with him. The number of bursts continued to increase steadily as his ms average continued to decrease (on upper extremity tasks).

## Completing Michael's IM Program

Michael continued to make progress and performed a total of 23 sessions. Toward the end of the sessions, he began to plateau in his progress, and his behavior occasionally became an issue. The IM posttest Long Form Assessment was performed, results shown below:

<b>Unadjusted Overall ms</b>	<b>Hands average ms</b>	<b>Feet average ms</b>
126.49	73.39	180.61

His hands and overall averages dramatically improved since his pretest. Looking at just "both hands" (Task 1). The chart below further shows this dramatic improvement:



These sessions were completed with Michael performing approximately nine minutes (500 repetitions) to 28 minutes (1,500 repetitions) per task. Although he did not appear to make progress with the overall ms average for feet, the results of a few specific exercises compared pre to post Long Form Assessment demonstrate that, in actuality, Michael did make significant gains.

Task 4 Both Toes		Task 5 Right Toe		Task 6 Left Toe		Task 10 R Hand/L Toe		Task 11 L Hand/R Toe	
405.17	201.09	108.83	81.00	124.56	94.26	236.63	66.90	213.35	85.96

### Other Improvements

Following IM treatment, his physical therapist reported an improvement in Single Limb Stance time from two to four seconds. In addition, he was able to perform jumping jacks with only a visual cue. Both his balance and gross coordination were markedly improved. He began hopping with either foot for three consecutive hops without loss of balance. Michael's parents and teachers reported an improvement in his ability to stay on and complete a task as well as an improvement in his ability to focus.

### Conclusion

Michael's progress with IM shows the ability of children with challenging diagnoses to benefit from IM treatment. It also demonstrates that with modifications for individual needs, progress can be significant.