Creighton UNIVERSITY

School of Pharmacy and Health Professions
Department of Occupational Therapy

Implementing Interactive Metronome

Olivia Fair-Lafferty– Creighton University
Mentor(s): Natalie Garcia, OTR and Lynn Athey, OTR

BACKGROUND

Champion Pediatric Therapy in San Antonio, TX is a pediatric therapy clinic that opened in June 2018. The owner of the clinic wanted to offer Interactive Metronome ® (IM) to be more competitive with many other nearby facilities.

IM is a popular evidence-based assessment and treatment tool that is used by more than 30,000 practitioners and 5,000 clinics, hospitals, and colleges across the world (Interactive Metronome, 2020).

The DCE student met with the clinic's owner and her other mentor to co-create the Interactive Metronome program that would be implemented. Details of meetings included program length, cost, staff training, marketing the program, and intervention planning. The program would be completed 100% on-site at the clinic due to needing to use the IM software.

PROGRAM DETAILS

General Idea: the IM program is a piece of software that plays a metronome beat at a trainer-set tempo and beat count. The person using IM will be wearing headphones and will be completing an exercise (clapping, foot tapping, balance, etc) to the metronome beat. The IM program will then provide real-time feedback to inform the user how far off the beat he/she is, allowing him/her many opportunities to self-correct.

By completing hundreds to thousands of repetitions over time, the child will theoretically improve the above skills and will be able to translate those improvements outside of IM intervention.

My Role: The DCE student planned all Interactive Metronome interventions clients in the program. The student also trained staff members in IM software and provided hands on assistance during IM intervention provided by the primary therapist. The DCE student determined outcome measures and collected data throughout the program's implementation to determine effectiveness.

FOCUSED QUESTION

Will the implementation of a modified interactive metronome program as a part of daily OT/PT intervention result in significant changes in observable behavior, motor skills, coordination, and/or cognitive skills?

METHODS

Eight therapists and the DCE student became certified in Interactive Metronome intervention.

Nineteen boys and four girls aged 4.75-16.08 years were selected to participate in the IM program. Children were chosen by their primary therapist based on specific difficulties that IM would be able to address. Once identified, the primary therapist received permission from the child's parent before initiation of the IM protocol.

The Modified Model: ~15min/session at $7.50 extra out of pocket a session. The first session, the child completed the Long Form Assessment (LFA) (14 exercises: unilateral/bilateral, hands and/or feet, and balance). Results were then entered into the IM software to create a general treatment plan of 30-48 additional sessions. These sessions were modified by the DCE student to fit time restrictions and specific client needs (determined by the primary therapist). Children would complete IM as a part of general PT/OT intervention during regularly scheduled appointments while on-site at the clinic. Each session was documented and tracked for future reference. The LFA will be completed at three-month intervals to determine efficacy of the treatment intervention. (Not re-assessed for this research).

The primary therapist conducted all IM intervention previously planned by the DCE student. The DCE student was present for all IM intervention to provide immediate technical assistance. As the program continued and therapists learned to operate IM software with increased competence, the DCE student provided less assistance, but was still present for all sessions.

Outcome Measures:

Percent improvement of millisecond average and variance average for the first three exercises of the LFA (both hands, right hand, left hand). Will also present pre/post descriptive timing norms by age per IM guidelines.

Additional Measures

Primary therapist's ability to independently operate the IM software and design intervention sessions for future clients.

REFERENCES

1. Interactive Metronome Inc. (2020). *What is Interactive Metronome?* https://www.interactivemetronome.com/
2. Shank & Harron. (2015). A retrospective outcomes study examining the effect of interactive metronome on hand function. *Journal of Hand Therapy. 28*(4), 396-402.

RESULTS

IM Outcomes

Eleven boys and one girl (4.75 to 13.8 years) were considered for data analysis. 11 Children not considered for data analysis due to limited sessions completed as well as increased physical assistance required. The children completed between 3 and 9 (mean 4.8) sessions of IM training for approximately 15 min per session.

The average millisecond improvement for both hands, right hand, and left hand were 50.87%, 43.31%, and 23.57% respectively. The average variance average improvement for both hands, right hand, and left hand were 46.45%, 30.84%, and 6.26% respectively.

Therapist Competency

At the end of the program initiation, therapist competency with independently operating the IM program varied. All therapists were able to conduct daily training sessions and navigate essential aspects of the software independently. Some therapists continued to require DCE student assistance for technical aspects of IM intervention planning.

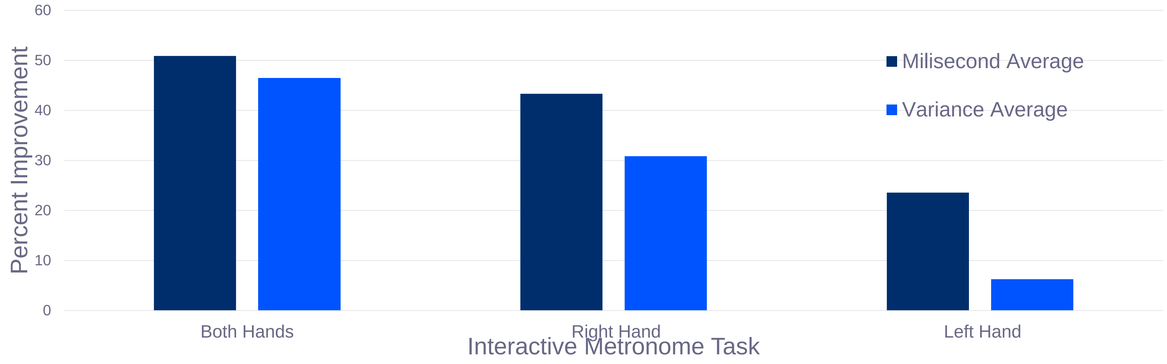

Figure 1. Percent improvement of millisecond and variance average of Interactive Metronome hand tasks after intervention.

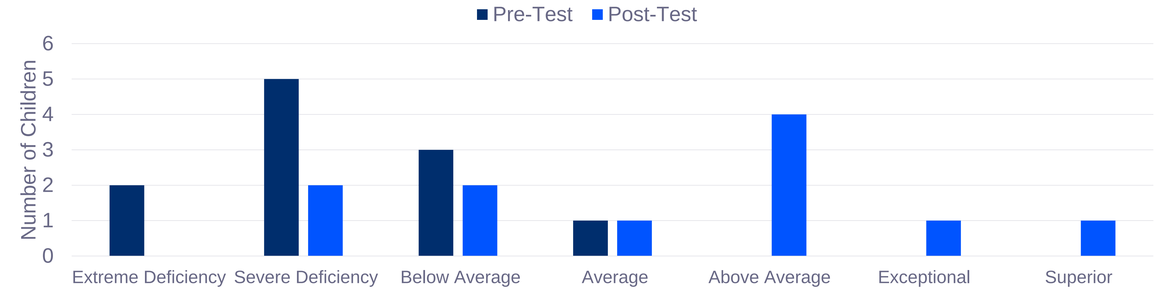

Figure 2. Number of children in each Interactive Metronome descriptive category at beginning and end of treatment

BOTTOM LINE FOR OT

Fifteen minutes of direct IM required up to 30 minutes to complete depending on need for breaks as well as the child's physical, cognitive, and attention skills.

Therapists must put in a lot of time to learn and operate the IM program for daily operation. Even more time required to learn technical intricacies of intervention planning. The DCE student provided staff with many custom intervention templates to ease therapist burden while they are still learning the program.

All children required modification to the IM program: time increase/decrease, games, difficulty change, specific tasks. Some children benefitted from more customization: custom exercises, hand over hand, eyes closed, using additional equipment. Therapist requires advanced skills to make these changes

Considerations: approximately 2-3 weeks into most children's IM program, COVID-19 was an issue. As such, many children in the IM program cancelled future in-clinic appointments. This meant that the children were not able to complete IM sessions. Additionally, therapists were unable to practice use of IM software as much due to the reduced client load. While the initial results of the program are positive, it is unknown how much COVID will impact the future of the program considering all IM intervention must be completed on-site.