<table>
<thead>
<tr>
<th>Year</th>
<th>Publication</th>
<th>Title and Synopsis</th>
<th>Author</th>
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<tbody>
<tr>
<td>2001</td>
<td>American Journal of Occupational Therapy</td>
<td>Theoretical and Clinical Perspectives on the Interactive Metronome®: A View From Occupational Therapy Practice</td>
<td>Jane Koomar, Jeannetta D. Burpee, Valerie DeJean, Sheila Frick, Mary J. Kawar &amp; Deborah Murphy Fischer</td>
</tr>
<tr>
<td>2002</td>
<td>High/Scope Press</td>
<td>Timing in Child Development</td>
<td>Kristyn Kuhlman &amp; Lawrence J. Schweinhart</td>
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<tr>
<td>2002</td>
<td>The Journal of General Psychology</td>
<td>Training in Timing Improves Accuracy in Golf</td>
<td>Terry M. Libkuman &amp; Hajime Otani</td>
</tr>
<tr>
<td>2003</td>
<td>White paper</td>
<td>Interactive Metronome - Underlying Neurocognitive Correlates of Effectiveness</td>
<td>Dr. Patrick Gorman</td>
</tr>
</tbody>
</table>

To View the Full Research Study, Visit www.InteractiveMetronome.com
**Learning Problems and the Left Behind**

This study of 40 4th and 5th grade “at risk” children showed dramatic gains in reading and math fluency in only 4 weeks. 40 similar students in the control group showed no improvement at all.

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**Processing speed and motor planning: the scientific background to the skills trained by Interactive Metronome® technology**

A white paper by psychologist Dr. Susan Diamond explaining the scientific background to the benefits seen by using IM.

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**A study of 13 patients measured across a broad spectrum of function shows that gains made with IM are still present 6 months after therapy was completed.**

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**Improving Motor Planning and Sequencing to Improve Outcomes in Speech and Language Therapy**

Dr. LorRaine Jones, a Speech-Language Pathologist helps explain the connection between IM’s timing exercises and improvements in speech and language therapy.

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**The Role of Functional MRI in Defining Auditory-motor Processing Networks**

A summary of a study using fMRI in defining the organs of the brain activated in repetitive auditory-motor training and the potential of IM to make improvements in those areas.

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<th>Journal/Source</th>
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<tbody>
<tr>
<td>2005</td>
<td>Physiotherapy Theory and Practice</td>
<td>Interactive Metronome® training for a 9-year-old boy with attention and motor coordination difficulties</td>
<td>Melinda L. Bartscherer, PT, MS &amp; Robin L. Dole, PT, EdD, PCS</td>
</tr>
<tr>
<td>2006</td>
<td>White Paper</td>
<td>The Effect of Interactive Metronome Training on Children's SCAN-C Scores</td>
<td>Joel L. Etra</td>
</tr>
<tr>
<td>2007</td>
<td>Psychology in the Schools</td>
<td>Improvements in Interval Time Tracking and Effects on Reading Achievement</td>
<td>Gordon E. Taub, Kevin S. McGrew, &amp; Timothy Z. Keith</td>
</tr>
<tr>
<td>2008</td>
<td>Contemporary Issues In Communication Science and Disorders</td>
<td>A Preliminary Study of the Effects of Interactive Metronome Training on the Language Skills of an Adolescent Female With a Language Learning Disorder</td>
<td>Jessica J. Sabado &amp; Donald R. Fuller</td>
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<td>2009</td>
<td>Journal of Sports Science and Medicine</td>
<td>Improved motor-timing: effects of synchronized metronome training on golf shot accuracy</td>
<td>Marius Sommerand &amp; Louise Rönnqvist</td>
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<td>This European study is an independent recreation of earlier IM research studying golfers. This new study showed the same results: working with IM's timing exercises improves golfers' control of their swing and improves shot accuracy.</td>
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<tr>
<td>2011</td>
<td>International Journal on Disability and Human Development</td>
<td>Effects of motor sequence training on attentional performance in ADHD children</td>
<td>Gerry Leisman &amp; Robert Melillo</td>
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<td>This study addresses the lack of motor coordination in ADHD children and suggests that going through IM training would have a significant effect on improving focus in ADHD children.</td>
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<td>This study of two stroke patients with hemiparesis shows remarkable functional gains made using IM years after the patients suffered their strokes.</td>
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<td>2012</td>
<td>Communication Disorders Quarterly</td>
<td>Reading Intervention Using Interactive Metronome in Children With Language and Reading Impairment: A Preliminary Investigation</td>
<td>Michaela Ritter, Karen A. Colson, &amp; Jungjun Park</td>
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<td>This study shows that after only 4 hours of IM training, larger gains were made in most areas of reading achievement over the control group. In a 4 week time period, the IM group did 15 minutes of training before a traditional reading intervention while the control group just did the traditional reading intervention. The improvements over the control group are listed below.</td>
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<td>• Reading Naturally +5.48&lt;br&gt;• DIBELS-6 +5.77&lt;br&gt;• GORT4-rate +0.96&lt;br&gt;• GORT4-fluency +0.32&lt;br&gt;• GORT4-comprehension +0.77</td>
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A Collective Review of Completed Research Projects Evaluating the Effectiveness of the Interactive Metronome as an Occupational Therapy Intervention

The purpose of this project was to compile the different pilot studies that have been conducted of the last 5 years in regard to using the Interactive Metronome and identify the strengths and weakness of the outcomes and feasibility of using the Interactive Metronome as a viable treatment modality in the clinic.

- Study 1 looked at normal individuals over the age of 55 and compared pre and post test IM scores and those of the NHPT. Notable improvements ave. 24% and above were achieved.
- Study 2 compared those clients following standard of care Active ROM exercise program compared to those who received the IM for 8 sessions. The percentage of change was 24% for the IM participants as compared to 10% following the in home ROM.
- Study 3 looked at 2 CVA cases – Both making notable changes with 30 days longevity retest and 2nd series of IM provided demonstrated performance improvement.
- Study 4 showed compared 22 individuals both Post CVA and Healthy Individual groups. There were no significant differences in percentage of improvement between groups, which indicates IM may be just as effective with individuals who are post-CVA as in healthy aging individuals.

Leonard G Trujillo, OTR/L, FAOTA
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<th>Year</th>
<th>Domain</th>
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<tbody>
<tr>
<td>2013</td>
<td>Neuropsychology</td>
<td>Effects of Interactive Metronome Therapy on Cognitive Functioning After Blast-Related Brain Injury: A Randomized Controlled Pilot Trial</td>
<td>Lonnie A. Nelson, Margaret MacDonald, Christina Stall, and Renee Pazdan</td>
</tr>
<tr>
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<td>Preliminary findings of a randomized, controlled study concerning the efficacy of IM for remediation of cognitive deficits in active duty soldiers following blast-related mild-to-moderate TBI. Compared outcomes of standard rehabilitation care alone (OT, PT, SLP) to the same standard rehabilitation care + 15 IM treatment sessions. The group that received IM in addition to standard care outperformed the group who received standard rehabilitation care alone on several neuropsychological measures with medium to large effect sizes. Future publications based upon this study will reveal the results of 6 month follow-up testing (still in process) and analysis of electrocortical (EEG) data.</td>
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<tr>
<td>2014</td>
<td>Sports Biomechanics</td>
<td>Synchronized metronome training induces changes in kinematic properties of the golf swing</td>
<td>Marius Sommer, Charlotte Hager and Louise Rönnqvist</td>
</tr>
<tr>
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<td>This study is a follow-up to that published by the same team in 2009. The purpose of this research was to explore more deeply the effect of Interactive Metronome® on golf-swing performance. The authors concluded that Interactive Metronome® influences temporal synchronicity &amp; domain-general abilities that underlie brain-based motor control strategies for the coordinated movement pattern of golf-swing performance.</td>
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IM Research References


Supporting Research References

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<thead>
<tr>
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<tr>
<td>Colom, R., Rebello, I., Palacios, A., Juan-Espinosa, &amp; Kyllonen, P.C. (2004). Working memory is (almost) perfectly predicted by g. Intelligence, 32, 277-296.</td>
<td>2004</td>
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